MEADOWBANK MINE

2019 WILDLIFE MONITORING SUMMARY REPORT

FINAL

SECTION 10 • HUNTER HARVEST STUDY

10.1 OVERVIEW

As outlined in the TEMP (Cumberland 2006) and as a requirement of NIRB Project Certificate No. 004 Terms and Conditions 51 and 54, the Baker Lake Hunter Harvest Study (HHS) was initiated in March 2007 by Agnico Eagle in association with the Baker Lake HTO to monitor and document the spatial distribution, seasonal patterns, and harvest rates of hunter kills and angler catches within the Meadowbank RSA.

After low participation during the first year of the study, methods were strategically adapted, participation increased steadily, and valuable information on harvest patterns in the Baker Lake area was collected. The HHS, through regular visits, contributed to developing a strong relationship with local harvesters, the HTO, and GN DoE. Data were provided annually in monitoring reports from 2007 to 2015. The HHS was suspended for three years (2016 and 2018) to develop new approaches and direction.

Following consultation with the HTO, KivIA, GN, and other agencies in November 2016 (Winnipeg) and June 2017 (Ottawa), Agnico Eagle reinitiated the HHS in March 2019. The study approach was similar to previous years but suggestions and guidance received during the consultation period were incorporated into the study.

10.2 OBJECTIVES

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; and
2. The total level (or an index of) Caribou, Muskox, and Wolverine harvest by residents of Baker Lake.

Other objectives of the HHS established in consultation with TAG or other participants 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; and

4) Determining whether increased harvest and catch rates are associated with the AWAR.

As discussed during consultation with stakeholders, HHS will further seek to: a) increase and maintain the hunter participant rate in the future of the program; b) improve resource protection; c) improve hunter awareness and education; d) increase the integration of Inuit Qaujimajatuqangit and Traditional Knowledge; f) increase availability of data to support a collective approach to understanding wildlife harvest; and g) assist Agnico Eagle in mitigative actions and the GN in management decisions.

10.3 METHODOLOGY

The wildlife species that are the focus of the Hunter Harvest Study are Caribou, Muskox and Wolverine; however, harvest data on other species, such as Wolf, Arctic Fox, geese and other birds is also collected. The few species in the study were deliberately chosen to make data entry and collection as simple as possible. To support creel surveys, data on fish harvest (Arctic Char, Lake Trout, Lake Whitefish, and Arctic Grayling) are also collected.

Inuit and non-Inuit residents, at least 16 years of age, are eligible to participate in the harvest survey. Harvest calendars are provided on a household basis rather than an individual basis in order to simplify data entry and collection. The harvest calendar is attractive and consists of local photographs of wildlife and Baker Lake residents (see **Appendix H** for 2019 calendar). Space is provided for each calendar day where harvest details can be documented. A map is provided at the end of the calendar that delineates a 4 km^2 UTM grid within the Baker Lake and Meadowbank areas. Each grid has a unique code to facilitate recording of information. When calendars are issued, participants or participating households are encouraged to write harvest details (e.g., number of animals, sex, age and location [i.e., grid code]) for the appropriate date on the calendar.

Participants were interviewed in person four times during the year (i.e., March, June, and October 2019, and January 2020) by the harvest study coordinator. During the January 2020 interviews, remaining data from 2019 were collected. The purpose of the interviews is to ensure all harvest data are recorded on the calendars and collect incidental information to compliment calendar data, including notable Caribou movements, aggregations, and unique observations. Between interview periods, participants were often contacted by phone or social media to encourage recording of harvest data.

Improvements to the 2019 Hunter Harvest Study included: 1) increasing the amount of time researchers spent in the community interacting with participants; 2) building long-term relationships between participants and researchers; 3) increasing engagement with participants on social media platforms such as Facebook and Instagram; and 4) increasing incentives for participating in the study (e.g., prizes).

10.4 HISTORICAL RESULTS

The Baker Lake HTO member list (provided by Ms. Joan Scottie [HTO Board Member] in 2008) consisted of 683 local area hunters/trappers/fishermen (collectively termed ‘hunter’ for the remainder of this memo), a number that has likely changed since then. The 2008 member count was a highly conservative (i.e., high) estimate of the number of individuals that hunt, trap or fish in the community as the list typically includes entire families. If just the heads of each household are counted, there were 389 potential hunters within the Baker Lake community in 2008. Although this value is still likely conservative (given that many of these individuals do not actively hunt or fish), the number is more

comparable to the comprehensive 5-year Nunavut Wildlife Harvest Study (NWMB 2005) in which 336 Baker Lake hunters were contacted / interviewed.

Between 1996 and 2001, 18% of Caribou harvests were estimated to be within 5 km of the AWAR (prior to construction) and 67% of harvests occurred within the RSA (NWMB 2005). In the first year of the HHS study (2007), prior to completion of the AWAR, 34% of harvests were reported within 5 km of the AWAR alignment and 79% were recoded within the RSA. The HHS data (2007 to 2015) fluctuate between 34 and 43% of reported harvest within 5 km of the AWAR, and between 73 and 85% within the RSA.

In 2008, 296 Caribou were reported as being harvested by Baker Lake HHS study participants. Harvest numbers steadily increased to 685 in 2011, and then decreased to 269 in 2014, the lowest reported harvest in seven years. Assuming that an average of approximately 10% of all Baker Lake hunters actively participated in the study (5% estimated for 2014), extrapolation of historical HHS values suggests approximately 3,000 to 6,000 Caribou are harvested each year in the Hamlet of Baker Lake. These estimates are in general agreement with historical harvest studies. Specifically, using the upper limit of the standard error in the Nunavut Wildlife Harvest Study, between 2,230 and 3,116 Caribou were harvested each year between 1996 and 2001 (NWMB 2005). Similarly, the Interdisciplinary Systems (IDS) report (IDS 1978) estimated an annual Caribou harvest in Baker Lake of 4,100 during the 1970s.

Based on the NWMB (2005) and HHS results (2007 to 2015), highest Caribou harvests have occurred in September and October, with a second smaller peak in March and April. The similar pattern between the studies indicates that seasonal hunting preferences have not changed markedly in the last decade.

Reported counts for Muskox and Wolverine remained low, precluding any interpretation of potential mine-related effects. Low densities of these species and their general aversion to humans require hunters to hunt well away from the AWAR; therefore, the presence of the AWAR is thought to have little effect on participant hunting patterns for Muskox and Wolverine. Wolverine harvest reports decreased from a maximum of 15 animals in 2010 to one (1) animal in 2015.

10.5 2019 RESULTS – WILDLIFE HARVESTS

10.5.1 Number of Hunters

The hunter harvest study included 66 participants by the end of 2019. Of these, Caribou hunting data had been collected from 42 participants, which is considerably higher than the 28 participants that reported Caribou harvests in 2015, and higher than the average of 35 successful hunters between 2007 and 2015.

Based on the previous discussion of total numbers of hunters in the Hamlet of Baker Lake (**Section 10.4 Historical Results**), there were 389 potential hunters within the Baker Lake community in 2008. The number is comparable to the comprehensive 5-year Nunavut Wildlife Harvest Study (NWMB 2005) in which 336 Baker Lake hunters were contacted and interviewed. Recent discussions with Baker Lake HTO members suggest the total number of hunters is over 300. Given the historical and current number of hunters in Baker Lake, an estimate of 300 to 350 active hunters is used in this analysis. Based on

these numbers, the 42 hunters reporting Caribou harvest in 2019 conservatively represent from 12 to 14 % of total hunters in the community.

10.5.2 Distribution of Hunting

Figure 10.1 shows the distribution of Caribou harvest within the Hunter Harvest Study data collection area. Hunting is concentrated in the Baker Lake area, along the road to approximately KM 85, along the Thelon River system in the vicinity of Schultz and Aberdeen lakes, and on the southwest shore of Baker Lake. Annual variation in harvest location and intensity is attributable to numerous factors. For instance, many hunters have stated during informal discussions that they have a 'favorite' hunting area that they frequent each year. Some hunters have stated that they prefer hunting in 'convenient' locations, whereas other hunters prefer remote locations well away from frequented areas. A percentage of hunters also enjoyed partaking in long distance hunting trips over multiple days.

Between 1996 and 2001, 18% of Caribou harvests were estimated to be within 5 km of the AWAR (prior to construction) and 67% of harvests occurred within the RSA (NWMB 2005). In the first year of the HHS study (2007), prior to completion of the AWAR, 34% of harvests were reported within 5 km of the AWAR alignment and 79% were recorded within the RSA (see **Table 10.1**). The HHS data (2007 to 2015) fluctuated between 34 and 54% of reported harvest within 5 km of the AWAR, and between 73 and 85% within the RSA. The 2019 HHS data indicated that 34% of reported harvest occurred within 5 km of the AWAR, and 64% occurred within the RSA, representing the lowest proportion of Caribou harvested within 5 km of the AWAR since the road was built (see **Table 10.1**). One of the reasons for this may have been because of the large number of Caribou harvested in the vicinity of Baker Lake in fall 2019. As was the case in other years, threshold levels of 20% set for monitoring the effects of the Meadowbank mine development on the distribution of Caribou harvest were not exceeded (see **Figure 10.2**).

10.5.3 Magnitude of Hunting

In 2019, a total of 647 Caribou were reported as being harvested by 42 participants (see **Table 10.2**). Given that the 42 hunters represent an estimated 12 to 14% of the Baker Lake hunting community, assuming that the average number of Caribou shot per hunter is similar, the total estimated number of Caribou harvested in 2019 ranges from 4,621 to 5,392 animals. This estimate is considered to be conservative (i.e., high) since the Baker Lake Hunter Harvest Study targeted known hunters in the community with some known to be particularly successful.

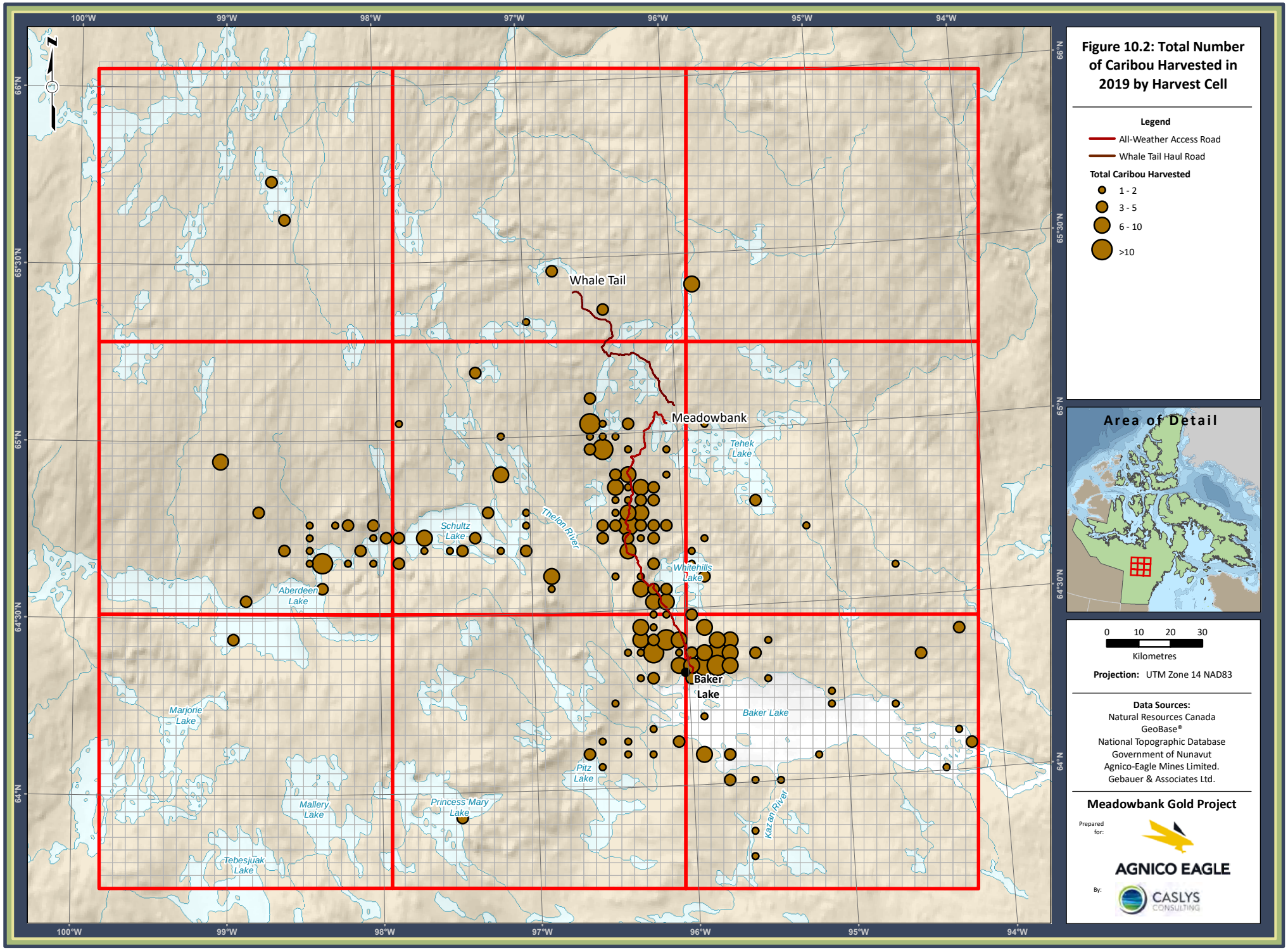
Figure 10.2: Total Number of Caribou Harvested in 2019 by Harvest Cell
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Harvested
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
Government of Nunavut
Agnico-Eagle Mines Limited.
Gebauer & Associates Ltd.
Meadowbank Gold Project
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AGNICO EAGLE
By:
CASLYS CONSULTING
Whale Tail
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Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kazan River
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66°N
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Table 10.1: Caribou Harvest Distribution along the AWAR and within the Meadowbank LSA and RSA (1996 to 2001 [NWMB], and 2007 to 2015 and 2019 [Baker Lake HHS]).

Study	Participation Rate within 5 km of AWAR (% of total hunters)	Average Caribou Harvest within 5 km of AWAR per participant	% of annual harvest within 5 km of AWAR	% of harvest within Meadowbank LSA	% of harvest within Meadowbank RSA
NWMB 1996 to 2001	n/a	n/a	18	7	67
Baker Lake HHS 2007	17 (49%)	4.8	34	12	79
Baker Lake HHS 2008	16 (94%)	6.9	37	28	73
Baker Lake HHS 2009	27 (75%)	7.9	36	20	78
Baker Lake HHS 2010	33 (89%)	7.3	38	22	73
Baker Lake HHS 2011	40 (85%)	7.1	42	25	74
Baker Lake HHS 2012	31 (67%)	5.6	35	20	80
Baker Lake HHS 2013	38 (86%)	4.8	43	27	85
Baker Lake HHS 2014	19 (70%)	5.7	40	28	83
Baker Lake HHS 2015	24 (67%)	6.9	54	34	84
Baker Lake HHS 2019	40 (95%)	5.4	34	22	64
Average (2007 to 2019)	29 (78%)	6.2	39	24	77

Figure 10.2: Percent of Caribou Harvest within the RSA from 2007 to 2015, and 2019 Compared to Baseline and Threshold Levels.

Table 10.2: Hunter Caribou Harvest Statistics from the NWMB (2005) Study and Baker Lake HHS (2007 to 2015; 2019).

Baker Lake Wildlife Harvest Study – Agnico Eagle Mines Ltd.

Year	January	February	March	April	May	June	July	August	September	October	November	December	Yearly Total
2007		7	89	22	44	6	6	6	37	14	5	2	238
2008	13	15	14	10	19	14	25	34	56	47	24	25	296
2009	42	52	41	28	28	18	30	88	114	102	11	33	587
2010	27	35	34	66	47	41	46	67	82	117	48	18	628
2011	14	47	64	53	78	39	42	35	123	108	2	75	680
2012	43	30	60	71	41	44	13	19	39	37	72	27	496
2013	5	47	55	28	18	18	20	46	76	40	35	32	420
2014	13	26	20	42	7	11	4	5	43	68	14	16	269
2015	7	9	17	13	6	46	12	8	66	74	35	12	305
2019	7	25	72	86	30	39	17	29	52	187	55	48	648
Total #	171	293	466	419	318	276	215	337	688	794	301	288	4,566
Average	19.0	29.3	46.6	41.9	31.8	27.6	21.5	33.7	68.8	79.4	30.1	28.8	456.6
% of Total	3.7	6.4	10.2	9.2	7.0	6.0	4.7	7.4	15.1	174	6.6	6.3	100.0%

Table 10.2: Continued.

Nunavut Wildlife Harvest Study - Nunavut Wildlife Management Board (NWMB)

Year	January	February	March	April	May	June	July	August	September	October	November	December	Yearly Total
1996						141	190	490	428	435	202	178	2,064
1997	118	144	146	167	217	159	162	354	322	553	295	196	2,833
1998	137	124	192	193	159	85	163	153	272	407	254	135	2,274
1999	137	131	99	211	222	111	148	433	528	409	74	66	2,569
2000	96	86	75	135	213	76	187	333	309	98	186	163	1,957
2001	150	126	146	156	127								705
Total #	638	611	658	862	938	572	850	1,763	1,859	1,902	1,011	738	12,402
Average	127.6	122.2	131.6	172.4	187.6	114.4	170	352.6	371.8	380.4	202.2	147.6	2,067
% of Total	5.1	4.9	5.3	7.0	7.6	4.6	6.9	14.2	15.0	15.3	8.2	6.0	100.0

10.5.4 Seasonal Distribution and Timing of Hunting

Based on the NWMB (2005) and HHS results (2007 to 2015; 2019), highest Caribou harvests have occurred in September and October, with a second smaller peak in March and April (see **Figure 10.3**). The similar pattern between the studies indicates that seasonal hunting preferences have not changed markedly in the last decade. More details on the seasonal timing of harvest in 2019 can be found in **Figure 10.4** (i.e., numbers of animals harvested, numbers of participants, and average number of animals harvested by participant by month) and **Figure 10.5** (i.e., Caribou harvest numbers by season and proximity to the access roads).

The seasonal distribution of hunting is illustrated in **Figures 10.6a,** which includes all 2019 results, and **Figures 10.6b** to **10.6e**, representing the spring, summer, fall and winter Caribou seasons outlined in the TEMP. In spring, the majority of Caribou hunting occurs in the vicinity of Baker Lake and along the Thelon River system (**Figure 10.6b**). Although large numbers of Caribou were moving across the northern part of the AWAR and the Whale Tail Haul Road in April (see **Section 3**), few Caribou were hunted in this area. During the summer, Caribou were harvested across a much larger area but particularly along the AWAR and in areas along Baker Lake accessible by boat (**Figure 10.6c**). In the fall, hunting was much more concentrated along the AWAR and in the Baker Lake area (**Figure 10.6d**). The large numbers harvested just north of Baker Lake in the fall reflects the large herd of Caribou that moved through the area in October 2019 (see **Section 3**). In winter, very few Caribou were hunted along the AWAR (**Figure 10.6e**), primarily because few Caribou were present (see **Section 3**). Successful hunters were those that travelled further afield by snowmobile (e.g., Schultz Lake area and southwest end of Baker Lake).

10.5.5 Other Wildlife Species

Reported harvests for Muskox remained low, precluding any interpretation of potential mine-related effects; however, most harvests were well away from the AWAR and relatively close to Baker Lake (see **Figure 10.7**). Most Wolverines were hunted close to Baker Lake and regularly visited areas such as participant's cabins and the Prince River bridge suggesting that they are hunted opportunistically (see **Figure 10.8**). Wolves were either trapped close to Baker Lake or hunted in larger numbers west of Schultz Lake and north of Aberdeen Lake in winter (**Figure 10.8**). Relatively low densities of Wolves and their general aversion to humans requires hunters to hunt well away from the AWAR. The presence of the AWAR is thought to have little effect on participant hunting patterns for Muskox, Wolverine and Wolf.

Arctic Fox was primarily trapped in the vicinity of Baker Lake while one Grizzly Bear was taken near Aberdeen Lake (**Figure 10.7**). Duck, goose and swan egg collections were reported in greater numbers in 2019 with primary collection areas being Schultz Lake and the southwest shore of Baker Lake (**Figure 10.9).**

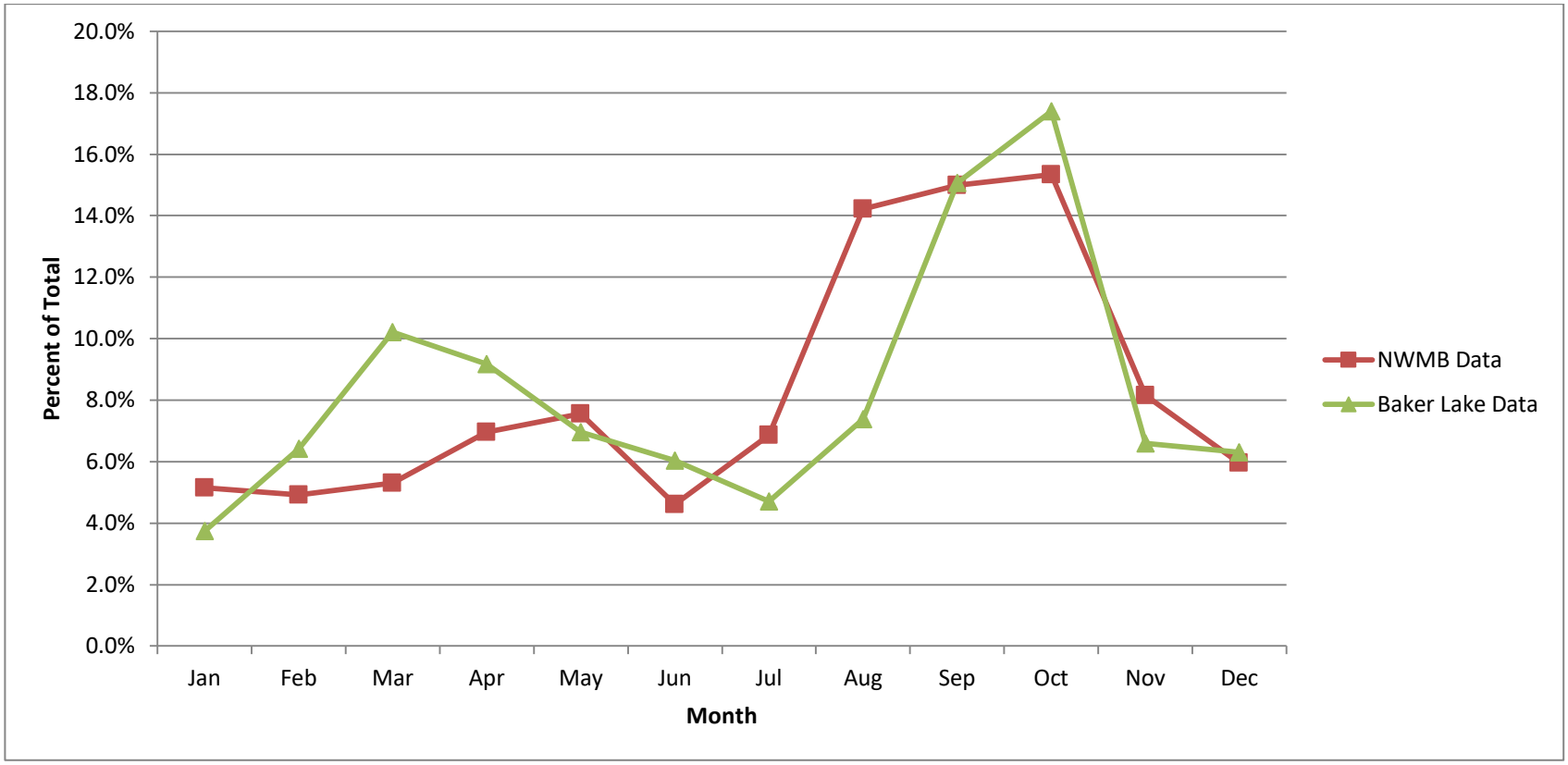


Figure 10.3: Seasonal Trends in Caribou Harvest from the Baker Lake Hunter Harvest Study (2007 to 2015; 2019) and the NWMB Study (1996 to 2001)

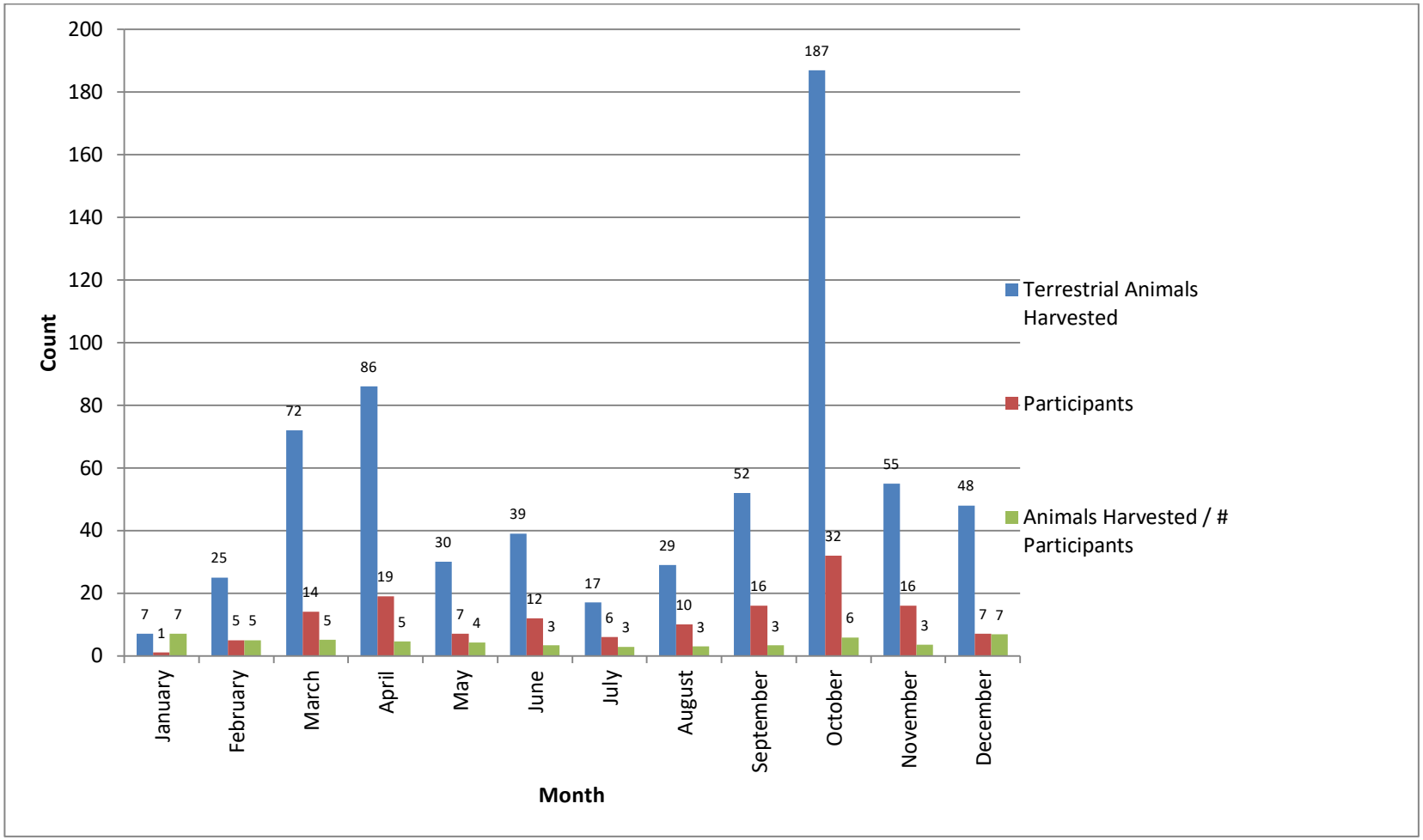


Figure 10.4: Terrestrial Animals Harvested per Month and by Participant in 2019.

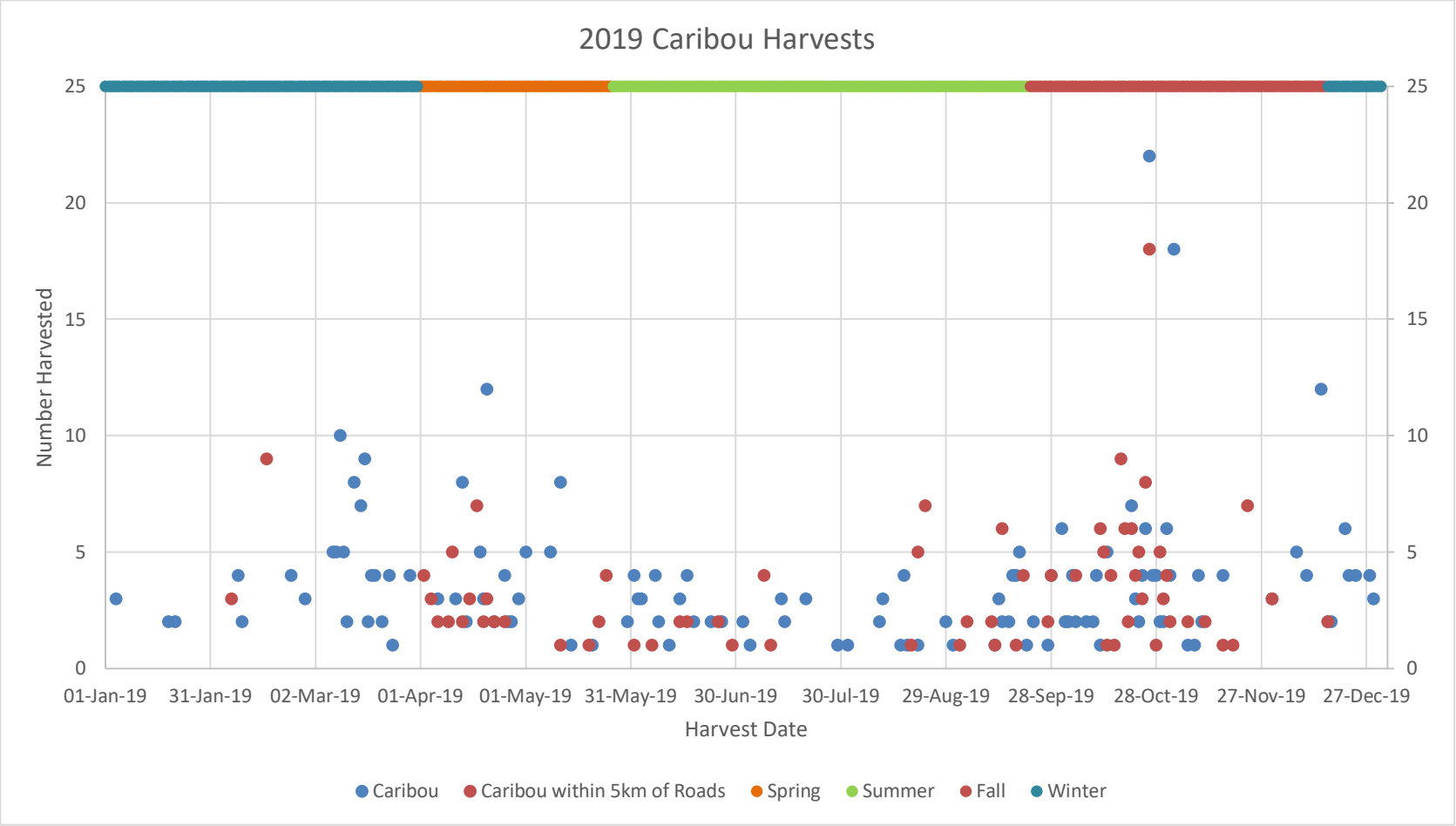
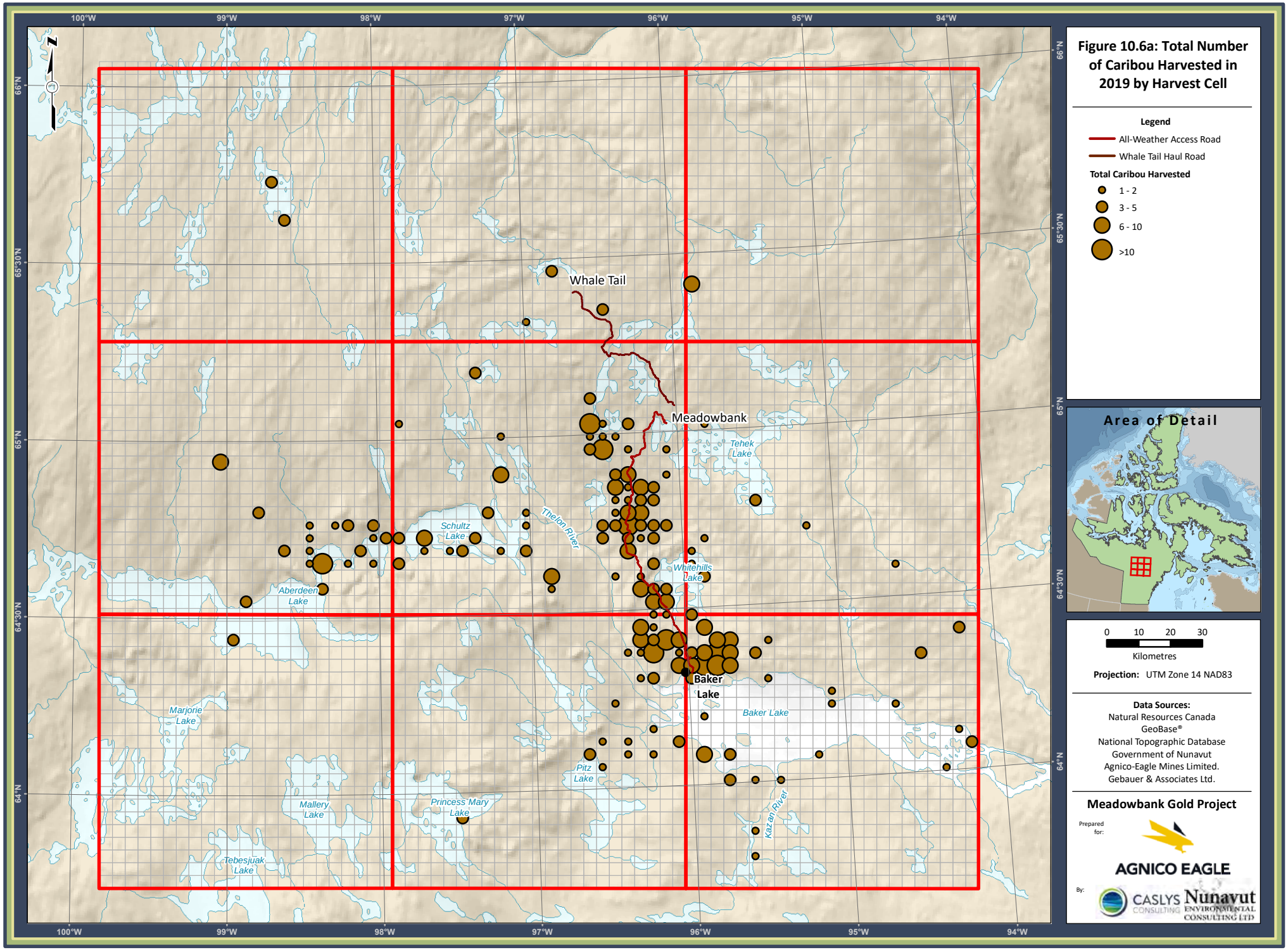


Figure 10.5: Number of Caribou harvested in each Caribou Season and Proximity to Access Roads in 2019.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Meadowbank
Tehek Lake
Schultz Lake
Thelon River
Whitehills Lake
Aberdeen Lake
Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kaz an River
Tebesjuak Lake
Figure 10.6a: Total Number of Caribou Harvested in 2019 by Harvest Cell
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Harvested
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
Government of Nunavut
Agnico-Eagle Mines Limited.
Gebauer & Associates Ltd.
Meadowbank Gold Project
Prepared for:
AGNICO EAGLE
By:
CASLYS CONSULTING
Nunavut ENVIRONMENTAL CONSULTING LTD

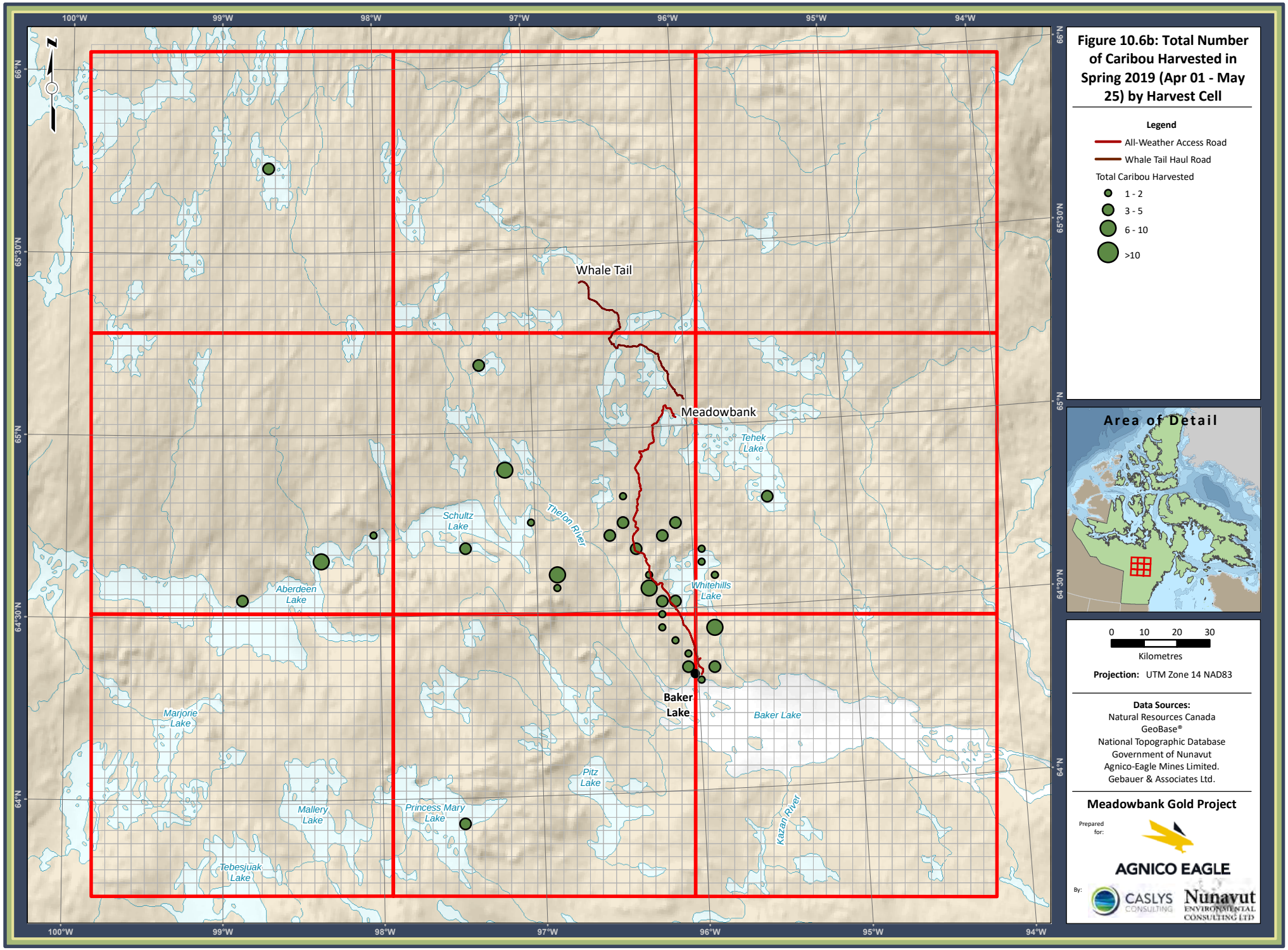
Figure 10.6b: Total Number of Caribou Harvested in Spring 2019 (Apr 01 - May 25) by Harvest Cell
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Harvested
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
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Mallery Lake
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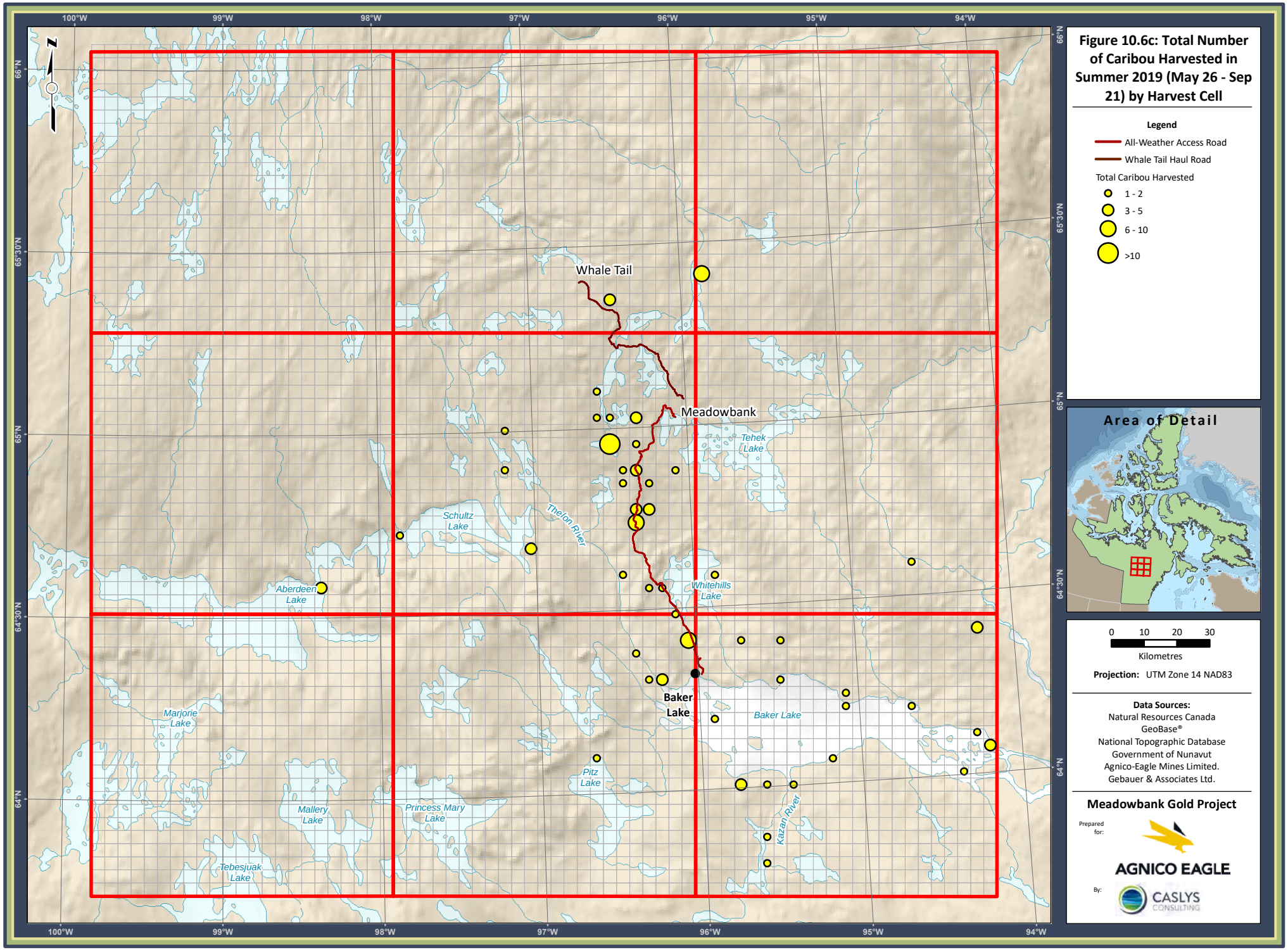
Figure 10.6c: Total Number of Caribou Harvested in Summer 2019 (May 26 - Sep 21) by Harvest Cell
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Harvested
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
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Aberdeen Lake
Whitehills Lake
Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kazan River
Tebesjuak Lake
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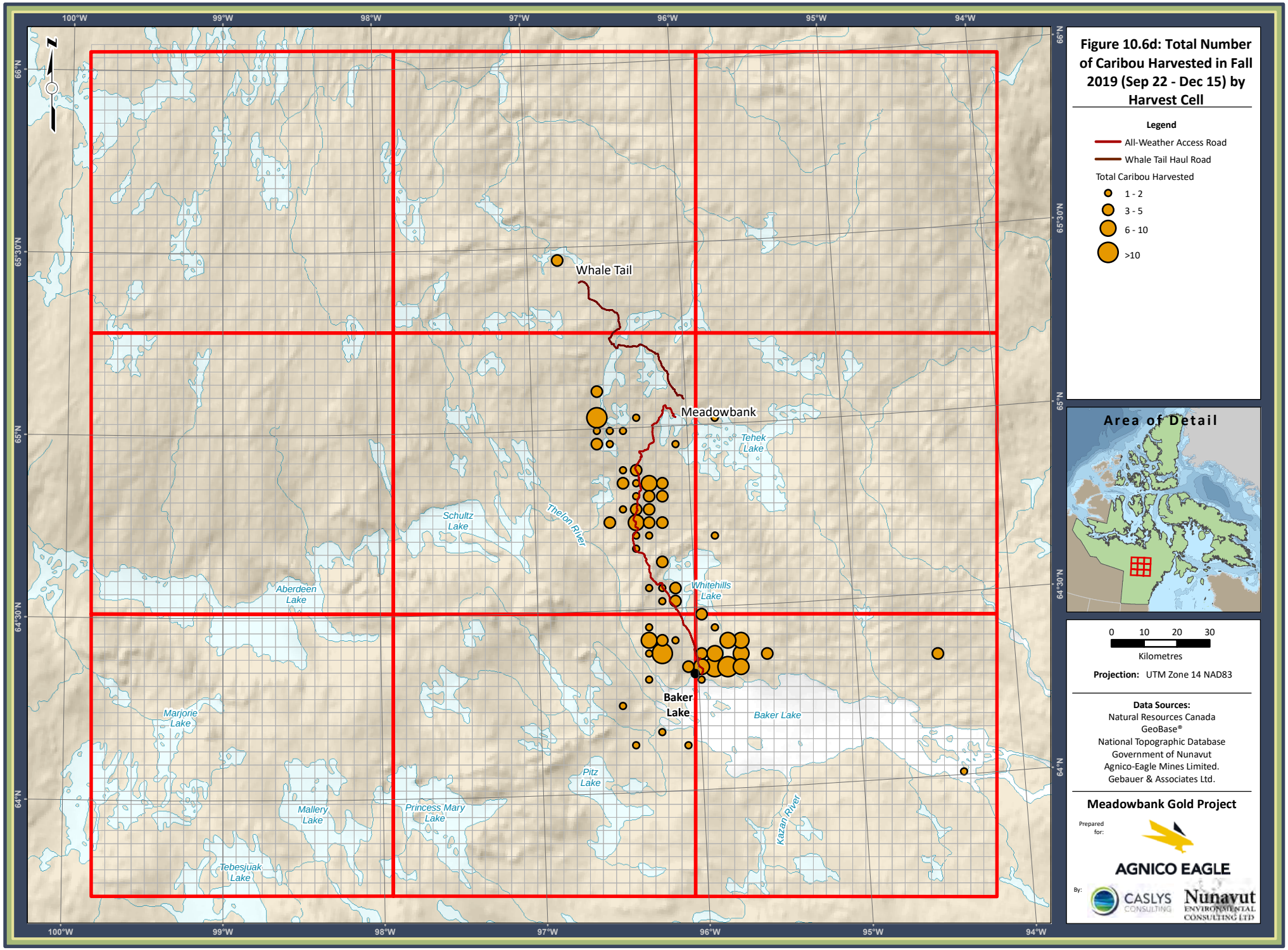
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Whale Tail
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Tehek Lake
Schultz Lake
Thelon River
Aberdeen Lake
Whitehills Lake
Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kazan River
Tebesjuak Lake
Figure 10.6d: Total Number of Caribou Harvested in Fall 2019 (Sep 22 - Dec 15) by Harvest Cell
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Harvested
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
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National Topographic Database
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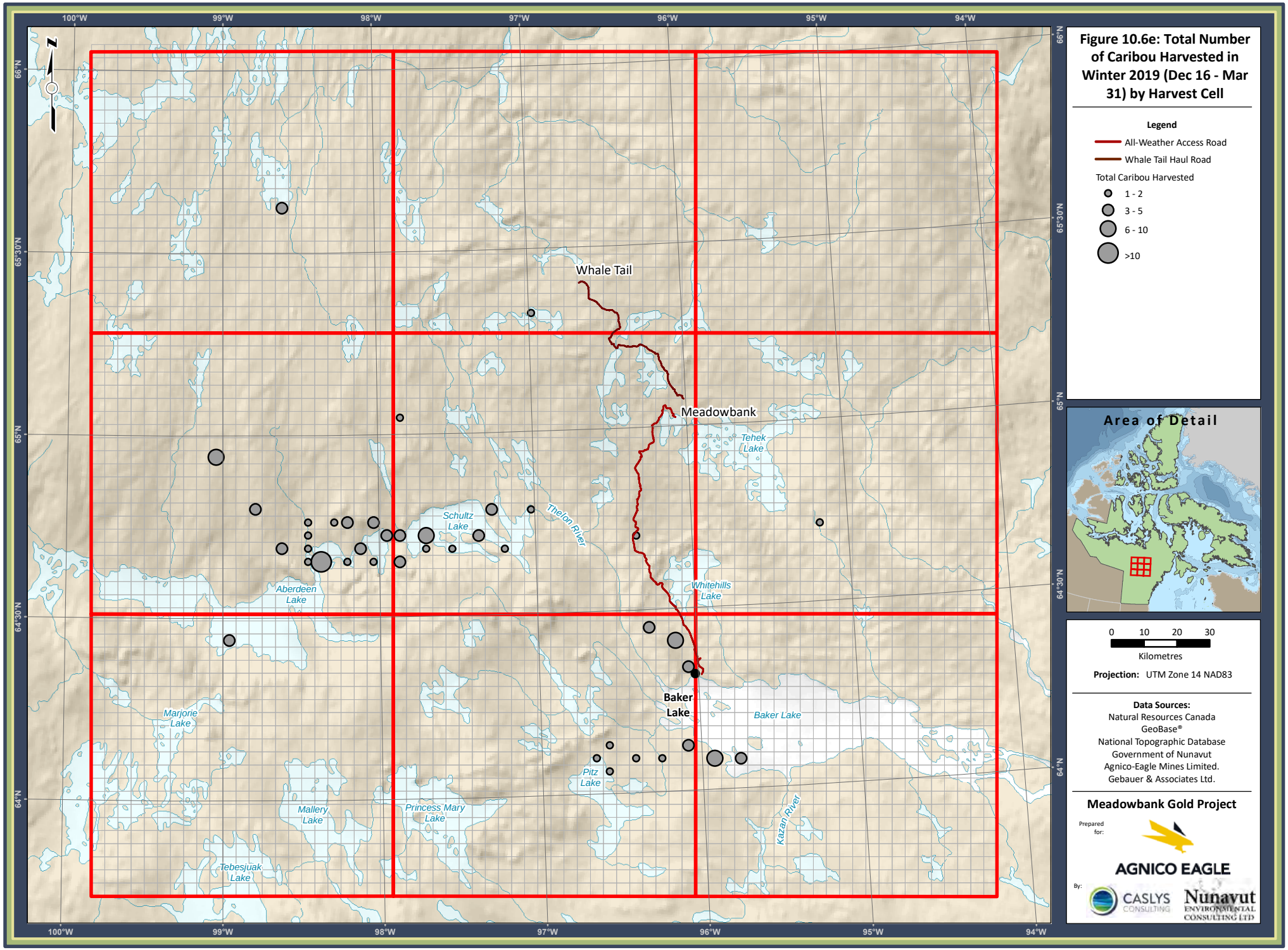
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Tehek Lake
Schultz Lake
Thelon River
Aberdeen Lake
Whitehills Lake
Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kazan River
Tebesjuak Lake
Figure 10.6e: Total Number of Caribou Harvested in Winter 2019 (Dec 16 - Mar 31) by Harvest Cell
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Harvested
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
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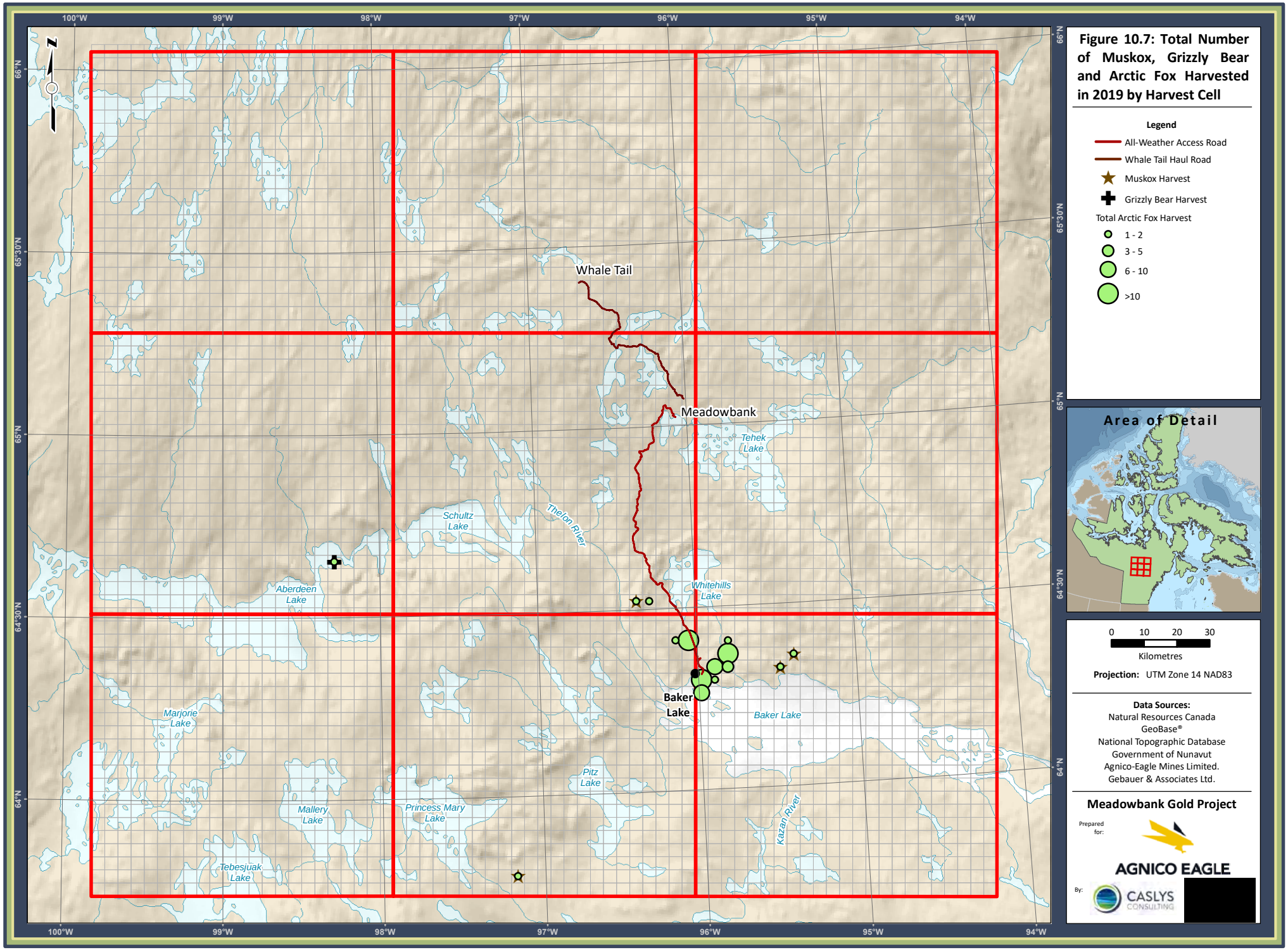

Figure 10.7: Total Number of Muskox, Grizzly Bear and Arctic Fox Harvested in 2019 by Harvest Cell

Legend

- All-Weather Access Road
- Whale Tail Haul Road
- Muskox Harvest
- Grizzly Bear Harvest

Total Arctic Fox Harvest

- 1 - 2
- 3 - 5
- 6 - 10
- >10

0 10 20 30

Kilometres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
Government of Nunavut
Agnico-Eagle Mines Limited.
Gebauer & Associates Ltd.

Meadowbank Gold Project

Prepared for: AGNICO EAGLE

By: CASLYS CONSULTING [redacted]

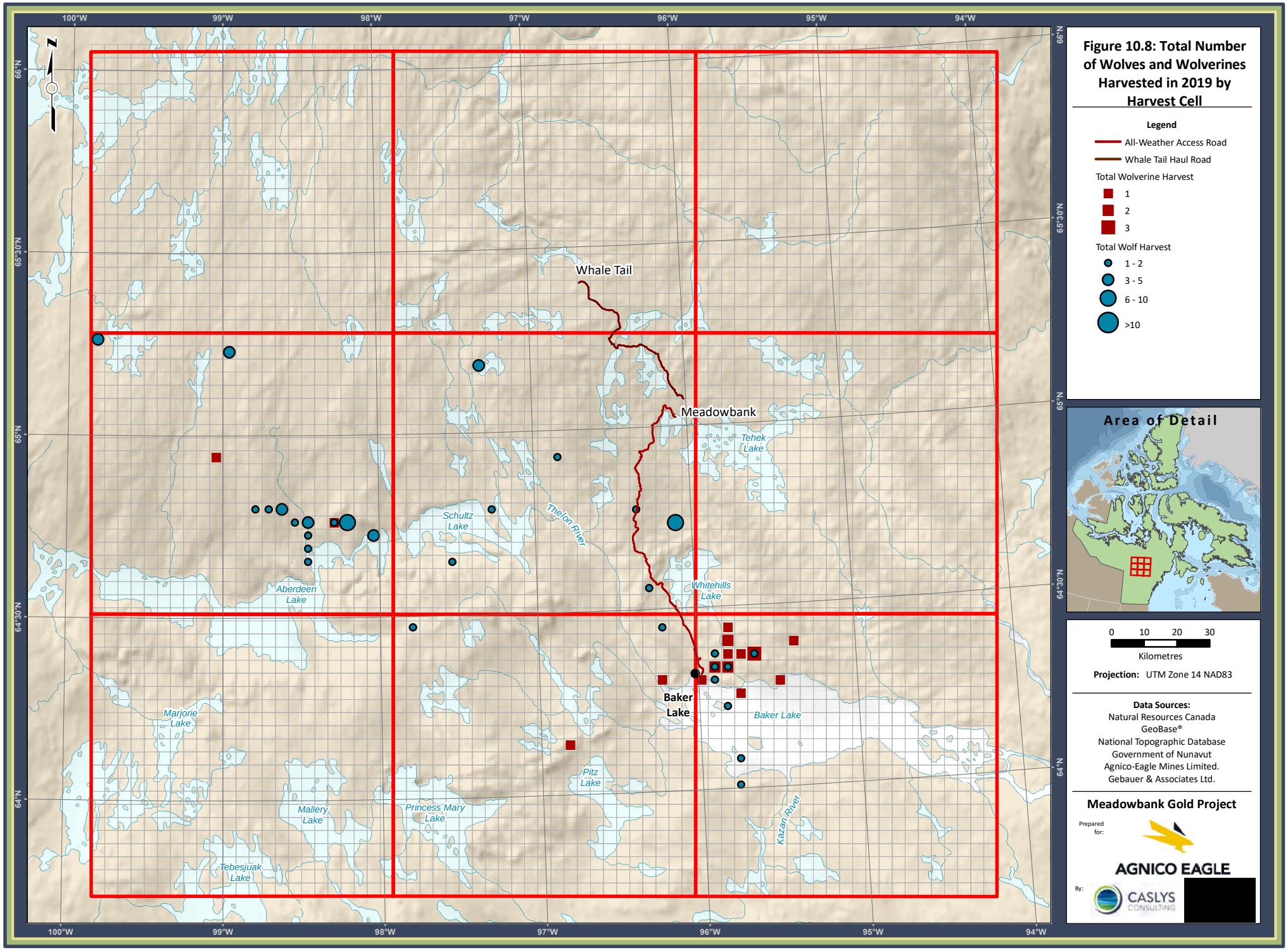
Figure 10.8: Total Number of Wolves and Wolverines Harvested in 2019 by Harvest Cell
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Wolverine Harvest
1
2
3
Total Wolf Harvest
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
Government of Nunavut
Agnico-Eagle Mines Limited.
Gebauer & Associates Ltd.
Meadowbank Gold Project
Prepared for:
AGNICO EAGLE
By:
CASLYS CONSULTING
[redacted]
Whale Tail
Meadowbank
Tehek Lake
Schultz Lake
Thelon River
Aberdeen Lake
Whitehills Lake
Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kazan River
Tebesjuak Lake
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64°30'N
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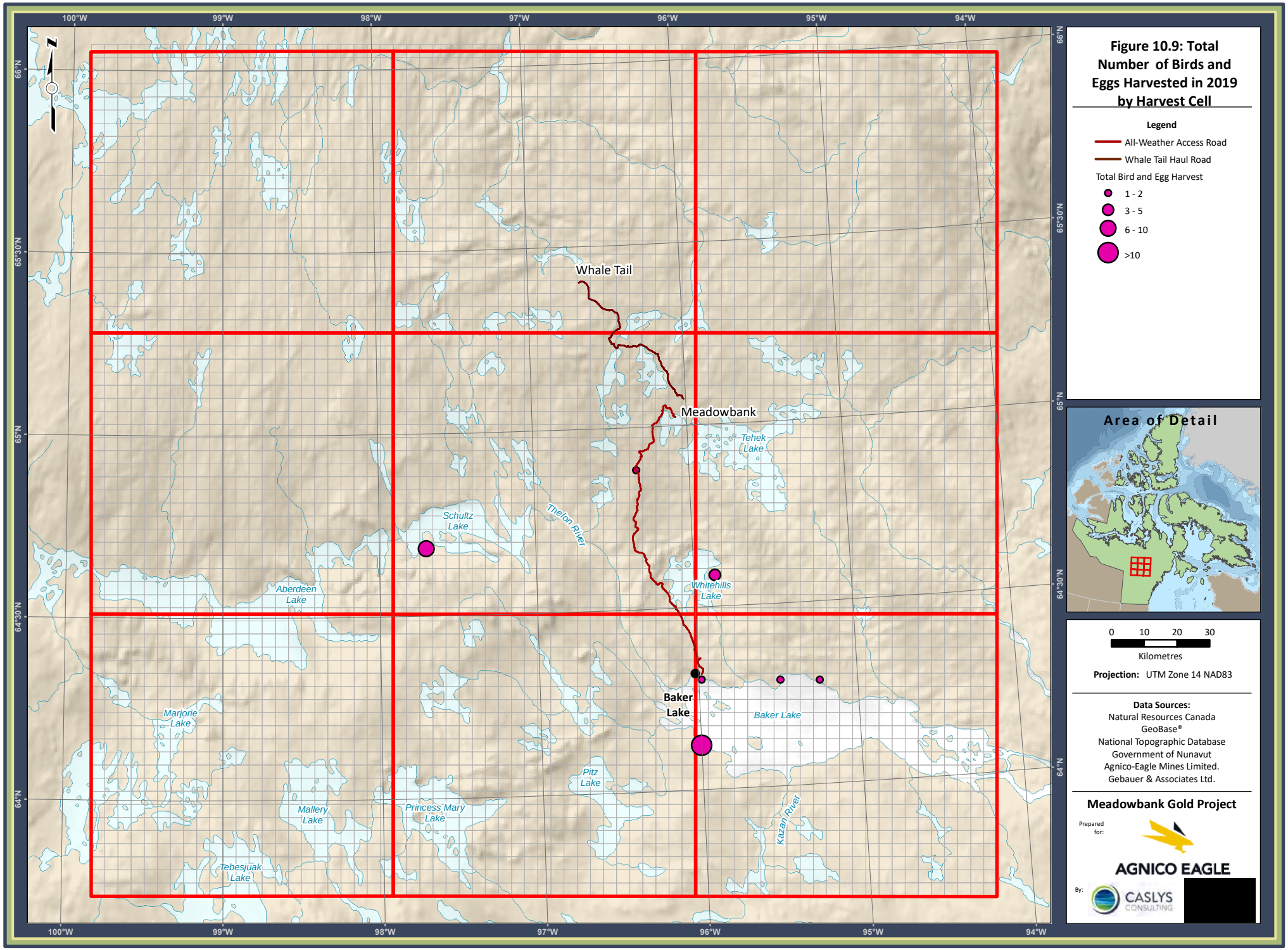
Figure 10.9: Total Number of Birds and Eggs Harvested in 2019 by Harvest Cell
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Bird and Egg Harvest
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
Government of Nunavut
Agnico-Eagle Mines Limited.
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Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kazan River
Tebesjuak Lake
100°W
99°W
98°W
97°W
96°W
95°W
94°W
65°30'N
65°N
64°30'N
64°N

10.6 2019 RESULTS – FISH HARVEST

10.6.1 Number of Fisherman

The number of fisherman reporting successful fishing trips in 2019 was 26, which is higher than the average of 22 fisherman between 2007 and 2015, and higher than the 16 fisherman reporting success in 2015. Interestingly, the highest numbers of fisherman reporting success in 2019 were in the April to June period (see **Table 10.3**) despite the highest numbers of fish being caught in the winter months by a small group of fisherman (see **Section 10.6.4 Magnitude of Fishing**).

Table 10.3: Number of Fisherman in the Baker Lake Who have Recorded Fishing Success by Year and Month.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007			4	6	7	1	1		1			
2008	1	1	2	6	6	6	4	3			2	1
2009	2	2	5	10	9	9	9	6	1	8	2	2
2010			6	13	18	17	13	4	2	2	3	1
2011	1	3	6	15	21	18	9	6	2	9	9	5
2012	3	1	1	7	7	18	12	4	3	9	7	3
2013			2	5	4	11	9	1		2	1	1
2014	2	1	1	4	6	3	4	2		2	2	2
2015	1	1	1	2	9	8	6	2		3	4	2
2019	1	2	3	12	14	15	7	3	1	1	8	4
Total	**11**	**11**	**31**	**80**	**101**	**106**	**74**	**31**	**10**	**36**	**38**	**21**

10.6.2 Composition of Catch

Three fish species were reported as being caught in 2019: Arctic Char, Lake Trout and Lake Whitefish. The most common fish species captured, Lake Whitefish, represented 58% of the total catch in 2019, which was higher than the average of 34% between 2007 and 2015 (see **Table 10.4**). In interviews, some fisherman indicated that Lake Whitefish numbers in Baker Lake were particularly high in 2019.

Table 10.4: Total Number of Fish Caught between 2007 and 2015, and in 2019.

Species	2019	2015	2014	2013	2012	2011	2010	2009	2008	2007	Total
Arctic Char	89	41	22	96	24	113	103	117	24	3	632
Arctic Grayling		29			1	1	3	1			35
Lake Trout	900	370	353	490	1,014	1,710	860	525	825	210	7,257
Lake Whitefish	1573	1386	651	50	471	460	326	51	192		5,160
Unidentified Fish	119										119
Totals	**2,681**	**1,826**	**1,026**	**636**	**1,510**	**2,284**	**1,292**	**694**	**1,041**	**213**	**13,203**

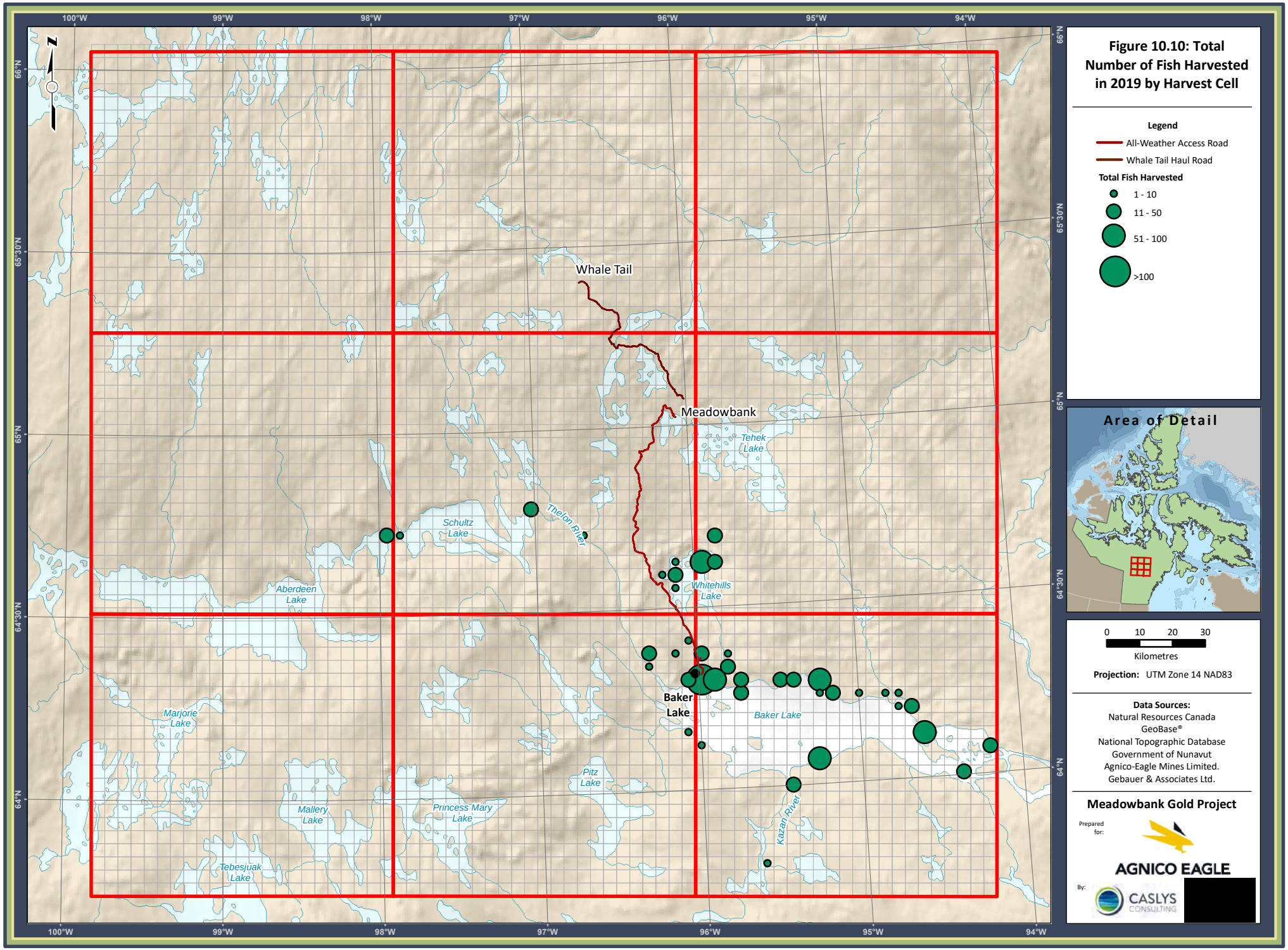
Figure 10.10: Total Number of Fish Harvested in 2019 by Harvest Cell
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Fish Harvested
1 - 10
11 - 50
51 - 100
>100
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
Government of Nunavut
Agnico-Eagle Mines Limited.
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Meadowbank Gold Project
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AGNICO EAGLE
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Whitehills Lake
Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kazan River
Tebesjuak Lake
100°W
99°W
98°W
97°W
96°W
95°W
94°W
65°30'N
65°N
64°30'N
64°N

10.6.3 Distribution of Fishing

Fishing trips, regardless of success rate, did not generally occur beyond the immediate areas of Baker Lake, Whitehills Lake, and along the AWAR (see **Figure 10.10**). Some fishing occurred along the Thelon River system and associated lakes (**Figure 10.10**) during the summer when these areas can be accessed by boat. Results indicate that study participants are less willing to travel long distances to catch fish, regardless of AWAR access, likely due to the abundance of fish in close proximity to the Hamlet of Baker Lake.

10.6.4 Magnitude of Fishing

The average number of fish harvested per fisherman was highest in the winter months, which reflects the high catches of Lake Whitefish and Lake Trout caught in nets set under the ice (**Figure 10.11**). In 2019, the most commonly captured fish species, in order of abundance, were Lake Whitefish, Lake Trout and Arctic Char (see **Table 10.4**).

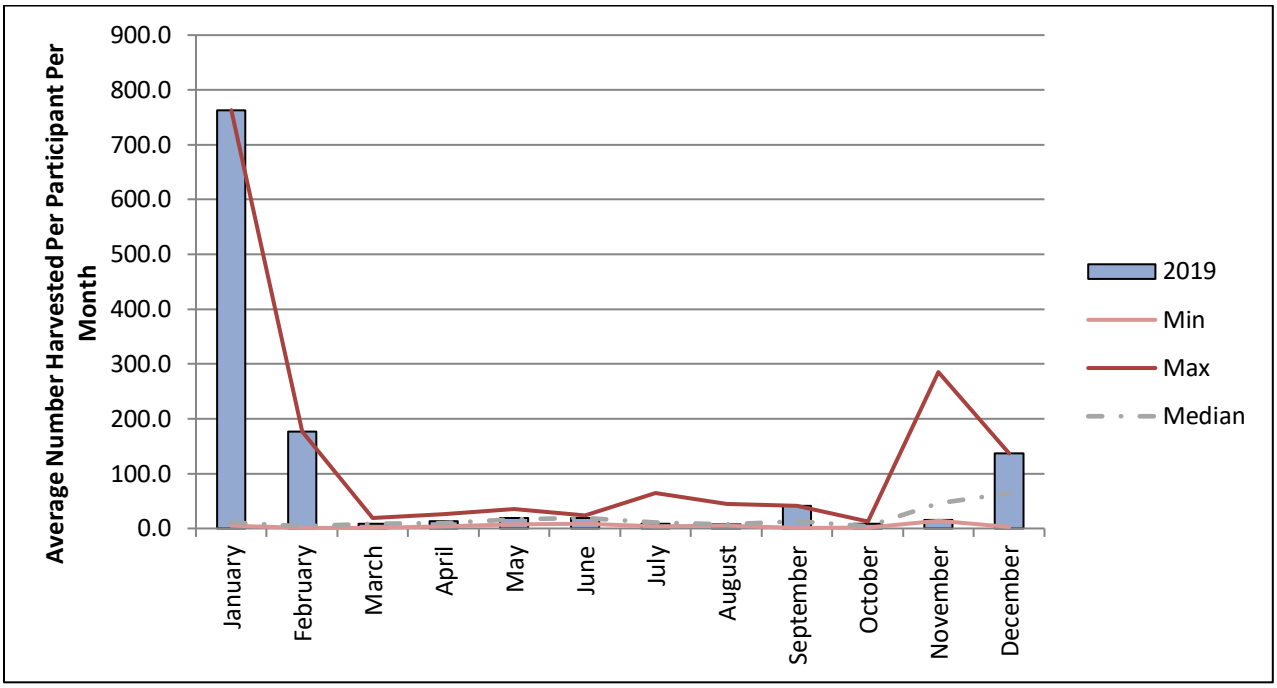

Figure 10.11: Average Number of Fish Caught per Participant in 2019 and the Minimum and Maximum Range from 2007 to 2015.

10.6.5 Seasonal Timing of Fishing

In 2019, fishing periods with the most active fisherman was from April to June (see **Table 10.3**). The periods with the most fish caught included the winter months (especially January), which reflects the high number of Lake Whitefish caught with nets below the ice, and spring (i.e., May and June), when Arctic Char and Lake Trout catches are the highest (**Figure 10.12**).This trend is reflected in the overall trend between 2007 and 2015 (**Figure 10.12)**.

10.7 ACCURACY OF IMPACT PREDICTIONS

Table 10.5 provides a summary of the impact predictions identified in the TEMP (Cumberland 2006). The 2019 HHS data were compared to the impact prediction thresholds to evaluate adherence to the impact predictions and the provision of adaptive management, as either a necessary or proactive measure. No thresholds were surpassed in 2019.

Table 10.5: Accuracy of Impact Predictions – Baker Lake Hunter Harvest Study

Potential Effect	Threshold	Threshold Exceeded (2019)	Adaptive Management Implemented	Status
Hunting by Baker Lake Residents	The AWAR will not result in significant changes in the spatial distribution, seasonal pattern, or harvest levels of Caribou kills by Baker Lake hunters. Changes will not exceed 20% of historical harvest activities within the RSA	NO (64% of harvest in RSA in 2019 compared to 67% baseline; average of 77% of harvest within RSA since 2007)	Future discussion with HTO and GN representatives required to identify management options	Hunter Harvest Study

10.8 MANAGEMENT RECOMMENDATIONS

The Hunter Harvest Study should be continued on an annual basis to monitor the hunting patterns of Baker Lake residents and the potential effects of the mine. Quarterly meetings with participants are particularly important in maintaining contact, building relationships, expanding the study and collecting good harvest data.

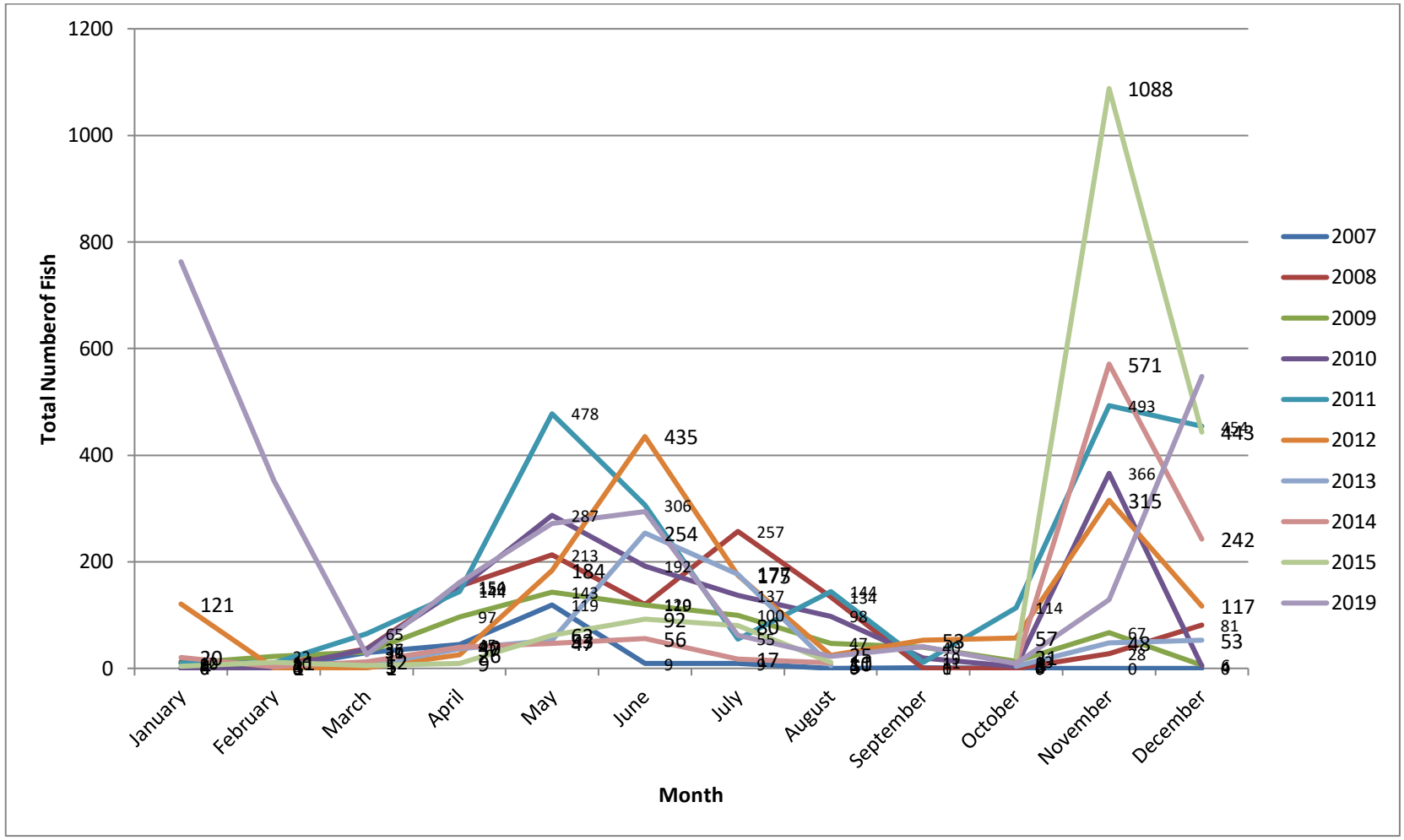

Figure 10.12: Seasonal Trends in Fishing in the Baker Lake Area between 2007 and 2015, and in 2019.

SECTION 11 • INTEGRATED CARIBOU MONITROING RESULTS

11.1 OVERVIEW AND OBJECTIVES

Management of mine-related effects on Caribou is the greatest wildlife-related challenge facing operation and environmental managers at the Meadowbank mine. As such, a variety of Caribou monitoring programs have been developed (see **Sections 3** through **10**). To facilitate an understanding of mine-related effects on Caribou, this section summarizes Caribou monitoring data collected in 2019 and lists potential mine-related effects.

11.2 INTEGRATED RESULTS

Table 11.1 summarizes results from each of the eight programs that monitored Caribou activity and responses to mine-related activity in 2019, while **Table 11.2** summarizes potential mine-related effects on Caribou in 2019.

Figures 11.1 to **11.4** depict combined data from road surveys (i.e., AWAR, Vault Haul Road and Whale Tail Haul Road), the Caribou collaring program, and the Hunter Harvest Study. In spring, walklines of collared migrating Caribou (i.e., primarily Ahiak) correspond with the higher numbers of Caribou observed along the northern portion of the AWAR and along the Whale Tail Haul Road (see **Figure 11.1**). The walklines also correspond with a moderate amount of harvesting activity in the Whitehills Lake area. During the summer, the low numbers of collared Caribou in the Meadowbank and Whale Tail RSAs corresponded with low numbers of Caribou observed on road surveys and limited harvesting activity along the AWAR (**Figure 11.2**). With lower numbers of Caribou in the Baker Lake area, harvest was much more spread out than in other seasons. In the fall, Caribou migration, as depicted by walklines, Caribou road survey results, and Caribou harvesting activity were all high along the southern two-thirds of the AWAR (**Figure 11.3**). Unlike the spring migration, when Caribou from primarily the Ahiak herd were present in northern areas of the Meadowbank project (e.g., Whale Tail Haul Road), Caribou present in the fall were primarily from the Lorillard and Wager Bay herds. In winter, collared Caribou were well to the west of the study area resulting in a corresponding low number of Caribou observed on road surveys or harvested by Baker Lake residents (**Figure 11.4**).

Table 11.1: Summary of Caribou Monitoring Activities and Management Responses at the Meadowbank and Whale Tail projects in 2019.

Monitoring Program	Summary of 2019 Monitoring Results	Summary of 2019 Management Responses
Section 3 Road Surveys	High number of road surveys conducted. High numbers of Caribou along the Whale Tail Haul Road in April, May, and October and high numbers along the AWAR in April, October and November	Traffic along the Whale Tail Haul Road restricted for 34 days in the spring season, 11 days during the summer, and 15 days during the fall. Traffic along the AWAR restricted for 27 days during the spring season and 15 days during the fall.
Section 4 Pits and Mine Site Ground Surveys	Numerous mine site surveys conducted. Highest numbers reported in April, May August, October and November	Traffic restricted on mine roads limiting movements of most vehicles.
Section 5 Wildlife Habitat Monitoring	Not conducted in 2019	Not conducted in 2019
Section 6 Caribou Satellite-Collaring Program	At the beginning of 2019, 35 active Baker Lake collars. Significant movements of collared Caribou observed in the spring along the northern portion of the AWAR and the entire Whale Tail Haul Road, and in fall along the southern portions of the AWAR.	When Caribou within the RSA, requests for telemetry locations increased to daily. As collared Caribou approached mine facilities, the number of mine site and road surveys increased. A high number of adaptive management actions taken (e.g., road closures).
Section 7 Height of Land	Fifty HOL surveys were conducted along the Whale Tail Haul Road in 2019 (access in winter restricted to some locations). High numbers of Caribou documented in spring and fall, and moderate numbers observed in summer.	Results from surveys used to notify Operation and Environment staff so that adaptive management actions (e.g., road closures) could be taken.
Section 8 Remote Camera	Some documentation of Caribou road crossings.	No actions in response to remote camera data
Section 9 Caribou Management Decision Tree	Decision tree used when Caribou were close to project facilities as outlined in the 2019 TEMP.	Decision tree process uses data from the road, mine site, and HOL surveys, and satellite collaring to determine the scale of Caribou monitoring and management required.
Section 10 Hunter Harvest Study	Of 66 participants, 42 documented Caribou harvests. Given that the 42 Caribou hunters represent an estimated 12 to 14% of hunters in Baker Lake, total reported Caribou harvest of 647 Caribou may indicate total Baker Lake harvest ranging from 4,621 to 5,392 animals	The number of Caribou harvested within the project RSA in 2019 (64%) was lower than the baseline level of 67%. Total estimated harvest is likely higher than actual harvest because several highly productive hunters are part of the study but overall numbers are higher than previous estimates. Other than sign-in requirements for hunters along the AWAR, no other management response occurred

Table 11.2: Summary of Meadowbank and Whale Tail Mine-related Effects on Caribou in 2019.

Monitoring Program	Potential Effect	Threshold	Threshold Exceeded (2019)	Adaptive Management Implemented
Section 3 Road Surveys	Sensory Disturbance	No threshold but Decisions Trees followed when Caribou are seen near mine facilities	NA	YES. Multiple road closures and notices. Use of Decision Tree for Management and Monitoring.
	Project-related Mortality	Caribou or Muskoxen will not be killed or injured by vehicle collisions. Threshold level of mortality is two (2) individuals per year.	NO	NO
Section 4 Pits and Mine Site Ground Surveys	Sensory Disturbance	No threshold but Decisions Trees followed when Caribou are seen near mine facilities	NA	YES. Multiple road closures and notices. Use of Decision Tree for Management and Monitoring.
Section 5 Wildlife Habitat Monitoring	Not conducted in 2019	NA	NA	NA
Section 6 Caribou Satellite-Collaring Program	Sensory Disturbance	No threshold but Decisions Trees followed when Caribou are seen near mine facilities	NO	YES. Multiple road closures and notices. Use of Decision Tree for management and monitoring. Ongoing analysis by GN (in partnership with Agnico Eagle)
Section 7 Height of Land	Sensory Disturbance	No threshold but Decisions Trees followed when Caribou are seen near mine facilities	NA	YES. Multiple road closures and notices. Use of Decision Tree for Management and Monitoring.
Section 8 Remote Camera	Road Barrier to Crossing	No thresholds	NA	NA

Table 11.2: Continued.

Monitoring Program	Potential Effect	Threshold	Threshold Exceeded (2019)	Adaptive Management Implemented
Section 9 Caribou Management Decision Tree	Sensory Disturbance	No threshold but Decisions Trees followed when Caribou are seen near mine facilities	NA	YES. Multiple road closures and notices. Use of Decision Tree for Management and Monitoring.
Section 10 Hunter Harvest Study	Hunting by Baker Lake Residents	The AWAR will not result in significant changes in the spatial distribution, seasonal pattern, or harvest levels of Caribou kills by Baker Lake hunters. Changes will not exceed 20% of historical harvest activities within the RSA	NO (64% of harvest in RSA in 2019 compared to 67% baseline; average of 77% of harvest within RSA since 2007)	Future discussion with HTO and GN representatives required to identify management options

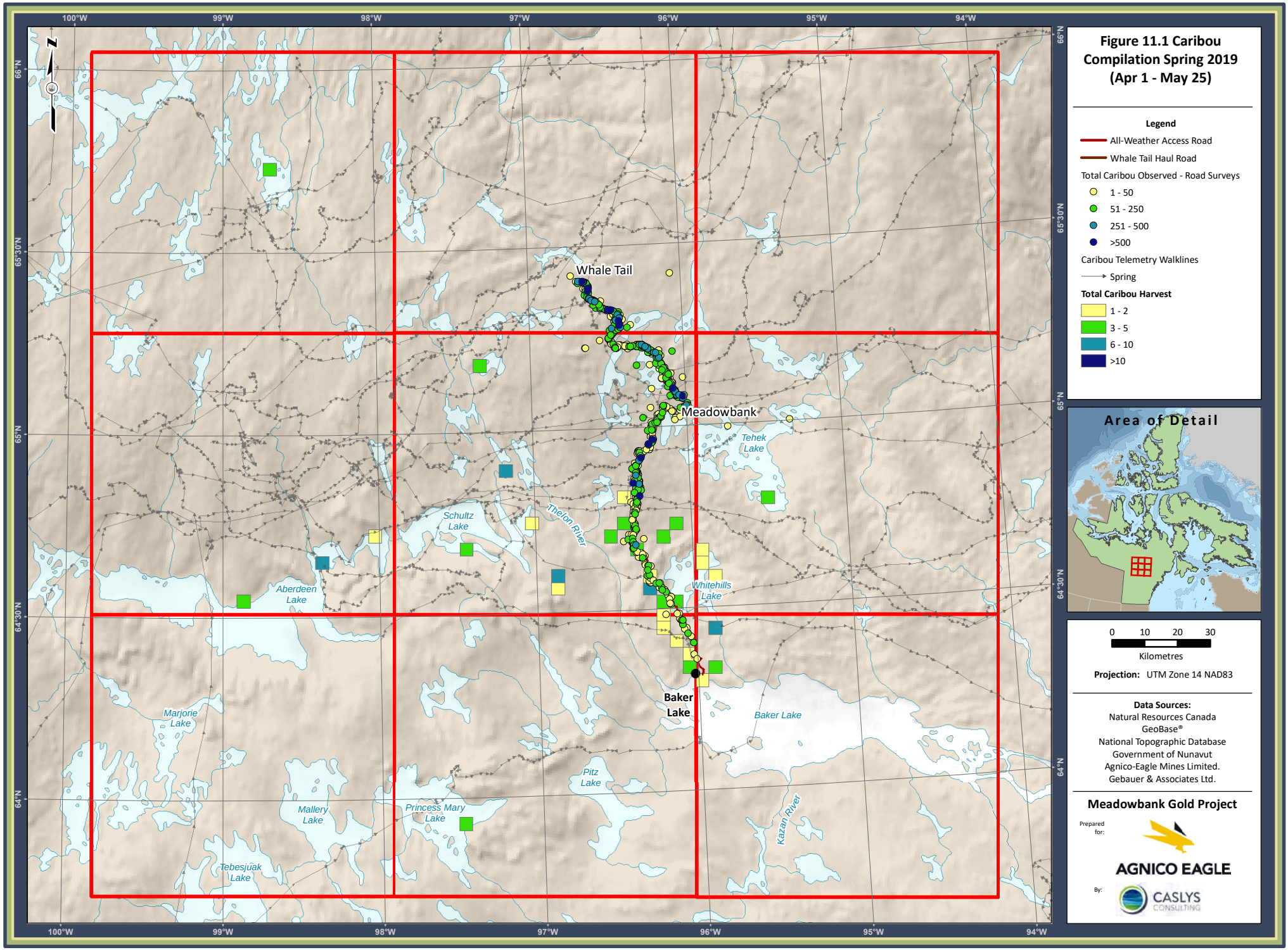
Figure 11.1 Caribou Compilation Spring 2019 (Apr 1 - May 25)
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Observed - Road Surveys
1 - 50
51 - 250
251 - 500
>500
Caribou Telemetry Walklines
Spring
Total Caribou Harvest
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
Government of Nunavut
Agnico-Eagle Mines Limited.
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Mallery Lake
Princess Mary Lake
Tebesjuak Lake
100°W
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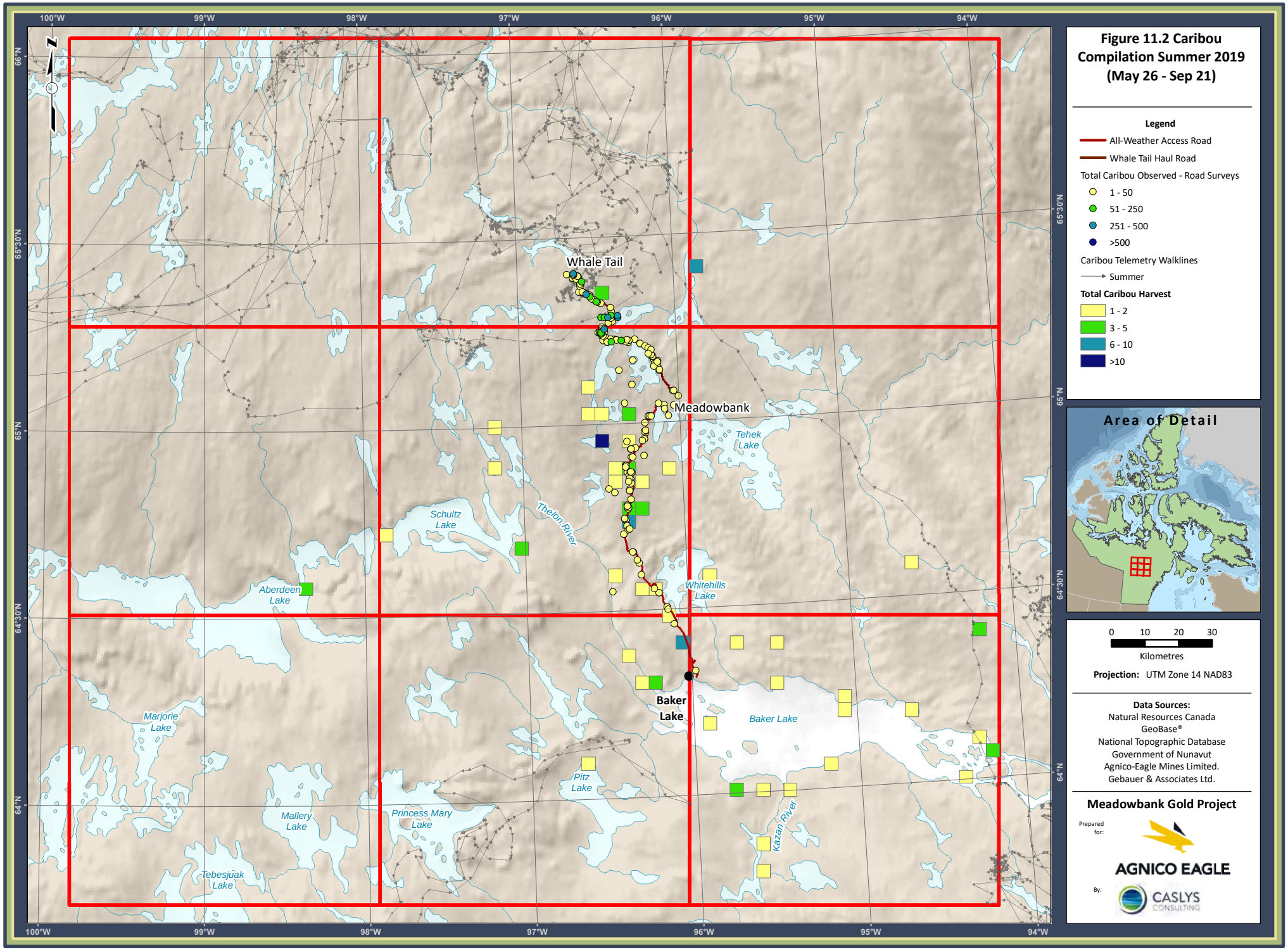
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Whale Tail
Meadowbank
Tehek Lake
Schultz Lake
Thelon River
Aberdeen Lake
Whitehills Lake
Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kazan River
Tebesjuak Lake
Figure 11.2 Caribou Compilation Summer 2019 (May 26 - Sep 21)
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Observed - Road Surveys
1 - 50
51 - 250
251 - 500
>500
Caribou Telemetry Walklines
Summer
Total Caribou Harvest
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
Government of Nunavut
Agnico-Eagle Mines Limited.
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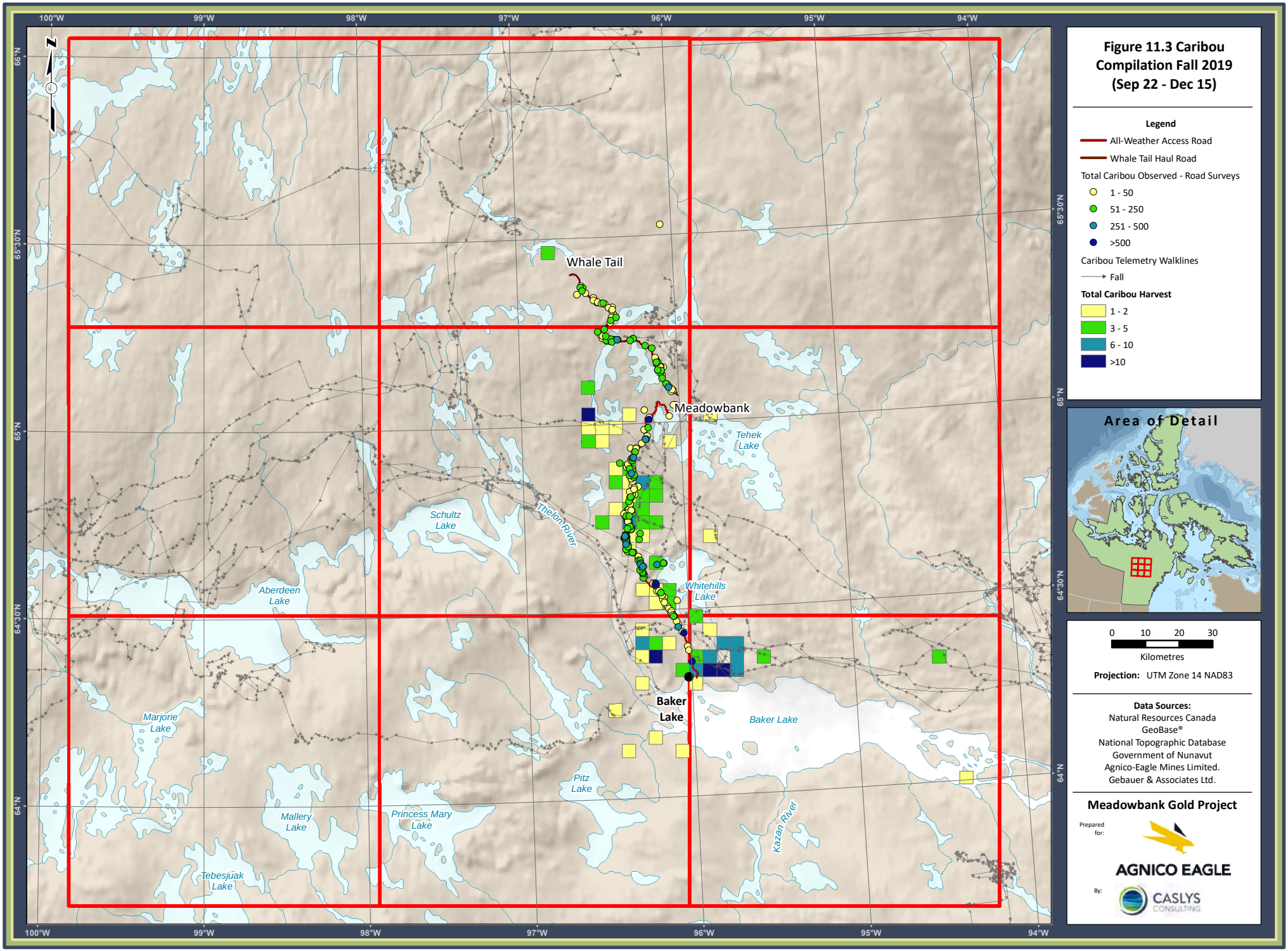
Figure 11.3 Caribou Compilation Fall 2019 (Sep 22 - Dec 15)
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Observed - Road Surveys
1 - 50
51 - 250
251 - 500
>500
Caribou Telemetry Walklines
Fall
Total Caribou Harvest
1 - 2
3 - 5
6 - 10
>10
Area of Detail
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada
GeoBase®
National Topographic Database
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Kazan River
Tebesjuak Lake
100°W
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66°N
65°30'N
65°N
64°30'N
64°N

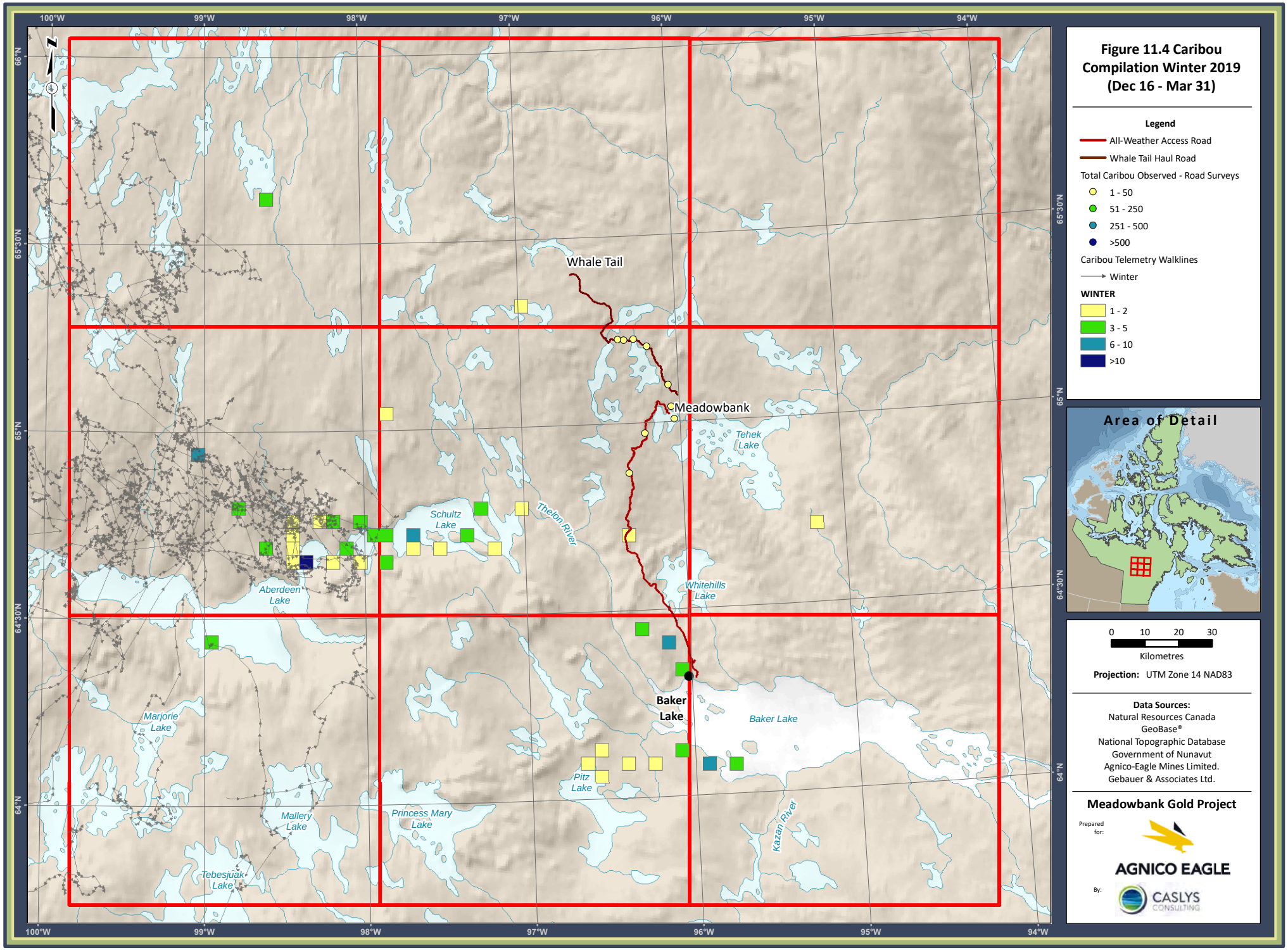
Figure 11.4 Caribou Compilation Winter 2019 (Dec 16 - Mar 31)
Legend
All-Weather Access Road
Whale Tail Haul Road
Total Caribou Observed - Road Surveys
1 - 50
51 - 250
251 - 500
>500
Caribou Telemetry Walklines
Winter
WINTER
1 - 2
3 - 5
6 - 10
>10
Area of Detail
Whale Tail
Meadowbank
Tehek Lake
Schultz Lake
Thelon River
Aberdeen Lake
Whitehills Lake
Baker Lake
Baker Lake
Marjorie Lake
Pitz Lake
Mallery Lake
Princess Mary Lake
Kazan River
Tebesjuak Lake
100°W
99°W
98°W
97°W
96°W
95°W
94°W
66°N
65°30'N
65°N
64°30'N
64°N
0 10 20 30
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
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Meadowbank Gold Project
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AGNICO EAGLE
By:
CASLYS CONSULTING

SECTION 12 • PREDATORY MAMMAL DEN MONITORING

12.1 OVERVIEW

Predatory Mammals, representing a valued ecosystem component (VEC), occur and are known to den in the vicinity of the Meadowbank and Whale Tail project facilities. Sensory disturbances near 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.

Predatory Mammal den monitoring is applicable to four species: Arctic Wolf (natal dens), Grizzly Bear (natal/overwintering dens), Arctic Fox (natal dens), and Wolverine (natal dens).

12.2 OBJECTIVES

The purpose of the Predatory Mammal den monitoring program is to identify and monitor active dens in close proximity to mining operations in order to protect any detected dens from disturbance.

12.3 DURATION

The den monitoring program is ongoing during the lifetime of the mine

12.4 METHODOLOGY

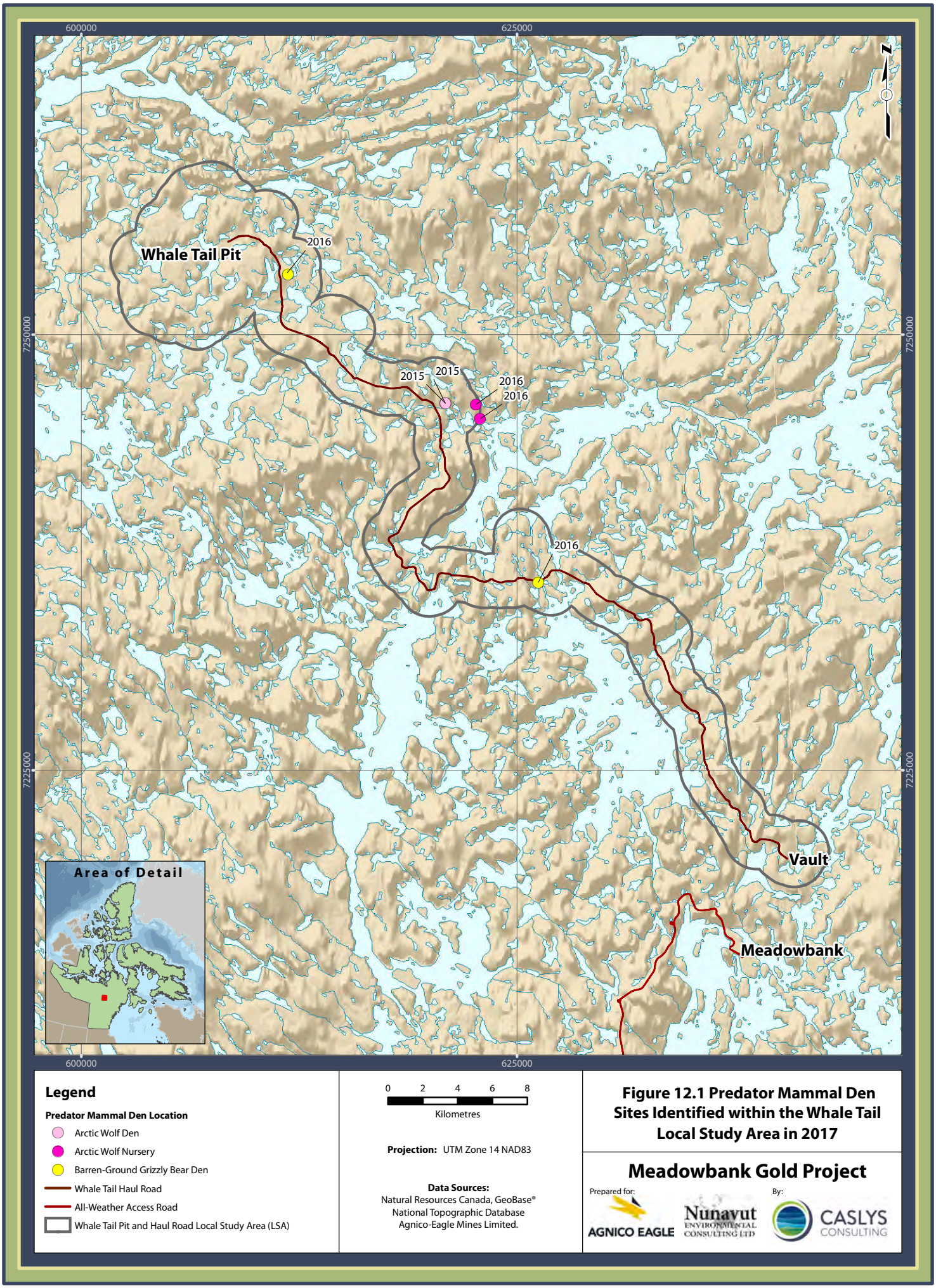
Data will be collected on Predatory Mammal abundance and behaviour during ground surveys, vehicle surveys, and HOL surveys. Active den sites identified during baseline studies will also be monitored. If a wildlife technician suspects or confirms that an active den is present within the active footprint and vicinity of Project facilities or roads, a den management plan will be prepared. 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 Figure 13 and Appendix I of the 2019 TEMP (Agnico Eagle 2019) for den management and protection plan components.

12.5 HISTORICAL RESULTS

Active den sites of Wolf and previous dens of Grizzly Bear were identified during baseline surveys at the Whale Tail site and along the Whale Tail Haul Road (Dougan 2019; see **Figure 12.1**).

12.6 2019 RESULTS

Predatory mammal dens were not monitored in 2019 as potential effects due to mine-related activities were not identified.



Legend

Predator Mammal Den Location

- Arctic Wolf Den
- Arctic Wolf Nursery
- Barren-Ground Grizzly Bear Den
- Whale Tail Haul Road
- All-Weather Access Road
- Whale Tail Pit and Haul Road Local Study Area (LSA)

0 2 4 6 8

Kilometres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.

Figure 12.1 Predator Mammal Den Sites Identified within the Whale Tail Local Study Area in 2017

Meadowbank Gold Project

Prepared for: AGNICO EAGLE

Nunavut Environmental Consulting Ltd

By: CASLYS CONSULTING

12.7 ACCURACY OF IMPACT PREDICTIONS

A summary of the impact predictions identified in the TEMP (Agnico Eagle 2019) is provided in **Table 12.1**; however, no impacts to denning predators were observed in 2019.

Table 12.1: Accuracy of Impact Predictions – Disturbance to Denning Predatory Mammals for the Meadowbank and Whale Tail Projects.

Potential Effect	Threshold	Threshold Exceeded (2018)	Adaptive Management Implemented	Status
Disturbance to Denning Predators	Predatory mammal den failures will not be caused by mine-related activities. Threshold is one den failure per year.	NO	NO	AWAR and haul road Surveys Daily and weekly systematic pit and mine site ground surveys Incident and vehicle encounter HOL surveys

12.8 MANAGEMENT RECOMMENDATIONS

When an active den site is identified in close proximity to project facilities, a den management plan should be developed that outlines a monitoring schedule and appropriate mitigation strategies. See Figure 13 and Appendix I of the 2019 TEMP (Agnico Eagle 2019) for den management and protection plan components.

SECTION 13 • RAPTOR NEST MONITORING

13.1 OVERVIEW

The raptor nest survey monitoring program has been designed to confirm that mine-related activities do not result in inadvertent negative effects on nesting raptors. Raptor surveys along the proposed AWAR alignment in 2005 (i.e., prior to construction) indicated that only low suitability habitat for nesting raptors was available. During AWAR construction in 2007/2008, excavated and blasted rock materials were extracted from numerous quarries along the alignment, resulting in some moderate and high suitability raptor nesting habitat areas characterized by steep rock walls. Established Peregrine Falcon nests within some of these quarries are monitored on an annual basis to evaluate occupancy.

In the Whale Tail Pit and Haul Road study area, researchers from the University of Alberta identified 56 occupied raptor nests during surveys in 2015, 2016, 2017 and 2019 (see **Appendix L** for 2019 results). The most common nesting species was Peregrine Falcon, followed by Gyrfalcon (*Falco rusticolus*) and Rough-legged Hawk. Nests of Common Raven (*Corvus corax*) were also identified during the raptor nest surveys. Most occupied nests (43) were located north of the Whale Tail Pit study area, while the remainder (13) were along the Whale Tail Haul Road. None of the occupied nests will be disturbed by proposed development activities, but four nests (i.e., 1 Peregrine Falcon; 3 Rough-legged Hawk), are located in the Whale Tail LSA.

13.2 OBJECTIVES

The primary objectives of the raptor nest survey monitoring program are to:

1. Confirm that raptor nest failures are not caused by mine-related activities. The threshold level is one (1) nest failure per year; and

2. Confirm that no project-related mortality of raptors occurs. The threshold level of mortality is one (1) individual per year.

13.3 DURATION

Raptor nest monitoring is to continue annually during the operation and decommissioning phases of the mine in accordance with the TEMP (Agnico Eagle 2019).

13.4 METHODOLOGY

13.4.1 Overview

Raptor nest monitoring is conducted according to Figure 14 in the 2019 TEMP while management and mitigation approaches are according to the ‘Peregrine Falcon Management and Protection Plan on the Meadowbank Gold Project Site' (see Appendix E of the 2019 TEMP).

A dedicated raptor nest survey (i.e., search for new nests) was in 2019 at the Whale Tail site (see **Appendix L**), but raptor activity and potential nest locations were also noted on other surveys including road surveys, HOL surveys, freshet monitoring, and on-site environmental monitoring. A dedicated and thorough raptor nest survey is also planned for the Meadowbank and Whale Tail mine sites, and all access roads in 2020. Of note is that the small number of nests monitored annually do not allow for the statistical power to determine whether potential nest failures are mine-related.

13.4.2 Meadowbank Mine and AWAR

Between 2000 and 2009, raptors were periodically recorded during AWAR road surveys, waterbird nest surveys, and aerial surveys and investigated further, as required; however, given the overall low probability of raptor occurrence within the LSA and RSA, a specific raptor survey was not scheduled. In 2009, an active Peregrine Falcon nest at Quarry 19 prompted the initiation of a dedicated raptor nest survey in 2010. Surveys from 2011 through 2019 continued this work, focusing particularly on quarries along the AWAR. Sporadic surveys in specific areas (i.e., Portage, Goose, and Vault pits, fuel tank storage) were also conducted when raptors were observed during mine site environmental inspections or employees reported any sightings. Visual checks of active falcon nest sites were conducted during regular ground reconnaissance surveys along the AWAR. Non-disruptive monitoring techniques, which included monitoring nests from a vehicle within the quarry or from the AWAR, ensured that active nests were not approached by Agnico Eagle personnel. Using these techniques, environmental personnel were able to monitor nest success throughout the summer season. Nest monitoring was not completed along the Vault Road since neither quarries nor potential raptor habitat are present. Any observed raptor activity in this area is documented through regular mine site inspection and road surveys.

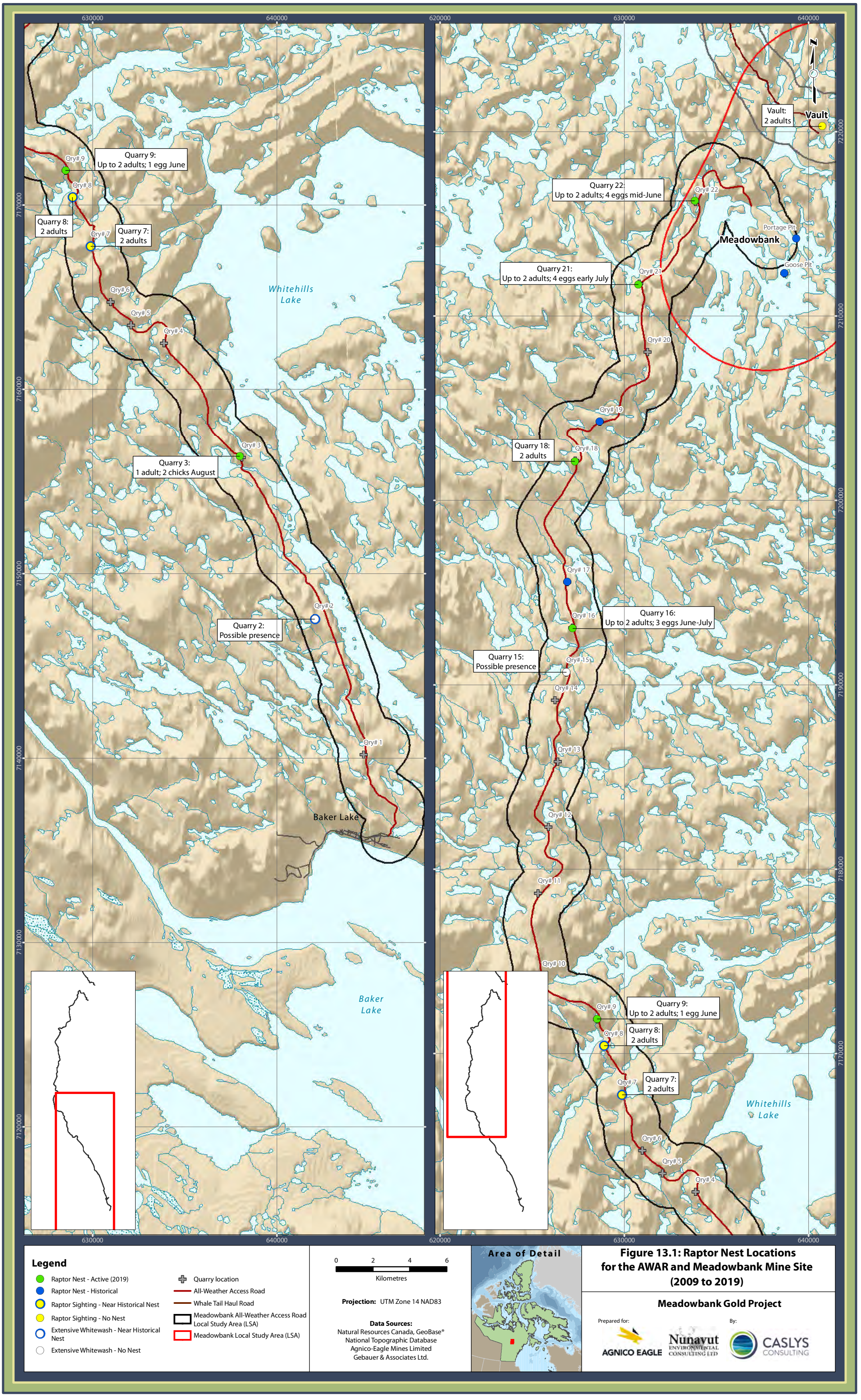
13.4.3 Whale Tail Pit and Haul Road

Raptor nests in the Whale Tail Pit and Haul Road study area were previously identified by researchers from the University of Alberta during the environmental assessment process (i.e., 2015 to 2017, and 2019). Surveys were conducted from a helicopter by trained observers. Nest monitoring was conducted in the Whale Tail area, including the Haul Road, in June 2019 but none of the identified active nests are in close proximity to project facilities or were effected by project activities in 2019 (**Appendix L**).

13.5 HISTORICAL RESULTS

13.5.1 Meadowbank Mine and AWAR

Single nesting pairs of Peregrine Falcon were recorded in 1996 and 2005 in the Mine RSA, but nests near mine facilities have only been routinely recorded since 2009, at which time dedicated nesting surveys were included in the monitoring program. Thirteen unique Peregrine Falcon nesting sites have been recorded between 2009 and 2019; eleven of these were in quarries along the AWAR, one nest was located on the Portage Pit wall (observed in 2012 and 2013), and one nest was in Goose Pit (observed in 2016) (**Figure 13.1**). Not all nesting sites are active every year.



Legend

- Raptor Nest - Active (2019)
- Raptor Nest - Historical
- Raptor Sighting - Near Historical Nest
- Raptor Sighting - No Nest
- Extensive Whitewash - Near Historical Nest
- Extensive Whitewash - No Nest
- Quarry location
- All-Weather Access Road
- Whale Tail Haul Road
- Meadowbank All-Weather Access Road Local Study Area (LSA)
- Meadowbank Local Study Area (LSA)

0 2 4 6
Kilometres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited
Gebauer & Associates Ltd.

Area of Detail

Figure 13.1: Raptor Nest Locations for the AWAR and Meadowbank Mine Site (2009 to 2019)

Meadowbank Gold Project

Prepared for: AGNICO EAGLE

By: Nunavut Environmental Consulting Ltd; CASLYS CONSULTING

13.5.2 Whale Tail Pit and Haul Road

Of 56 nests recorded between 2015 and 2017 within the Whale Tail Pit and Haul Road RSA, four were located within the Whale Tail Pit LSA but none were close to project facilities (see **Figure 13.2**); therefore, monitoring was not conducted at any of the nests.

13.6 2019 RESULTS

13.6.1 Meadowbank Mine and AWAR

In 2019, six active Peregrine Falcon nests were documented in Quarries 3, 9, 16, 18, 21 and 22, with only the nest at Quarry 9 recorded for the first time. No falcon activity was observed at previous nest sites at Quarry 2 (2018), Quarry 7 (2017), Quarry 8 (2017), Quarry 17 (2017), Quarry 19 (2018), Portage Pit (2013), and Goose Pit (2016) (see **Table 13.1**). In addition to the six active nest sites documented in 2019, falcon activity was observed at four additional quarry sites (i.e., Quarries 2, 7, 8, and 15) and one pit (Vault) during the monitoring program. Cumulative information on Peregrine Falcon nests from 2009 to 2019 is summarized in **Table 13.1** and **Figure 13.1**.

Once an active nest has been identified, mine-related activity (e.g., vehicle operation, heavy equipment, aircrafts, blasting etc.) is automatically halted within the quarries with the only disturbance being traffic on the nearby AWAR. For example, at Quarry 22, no remediation of contaminated soils is conducted when falcons are present in the quarry. In addition, to minimize direct disturbance to nesting birds and as per Alistair Franke recommendations, intensive monitoring, which would require approaching nests by foot, is not conducted. Agnico Eagle is also careful not to broadcast locations of nesting birds to avoid inadvertent disturbance by curious mine employees.

Observations made throughout the nesting season on raptor activity and nesting success are detailed in **Table 13.2**. Nesting success was confirmed through the presence of aggressive adults, eggs, or chicks at the six active nesting sites along the AWAR in 2019. Specific raptor nest management plans were not warranted at any of the active nest sites, as mine-related activity was restricted within the quarries.

Additional observations of raptor activity around the mine site are included in **Appendix E**, which lists all incidental sightings, and in **Table 4.2**, which summarizes incidental sightings by month. The first Peregrine Falcon of the season along the AWAR was observed at Quarry 16 on 09 May and individuals or pairs were seen regularly until September. The first Rough-legged Hawk of the year was observed on 14 May and many other individuals were observed through to October. Bald Eagles were occasionally recorded between July and September, and one Snowy Owl was observed along the Vault Haul Road on 09 October. Bald Eagle, Peregrine Falcon, and Rough-legged Hawk were observed during AWAR surveys.

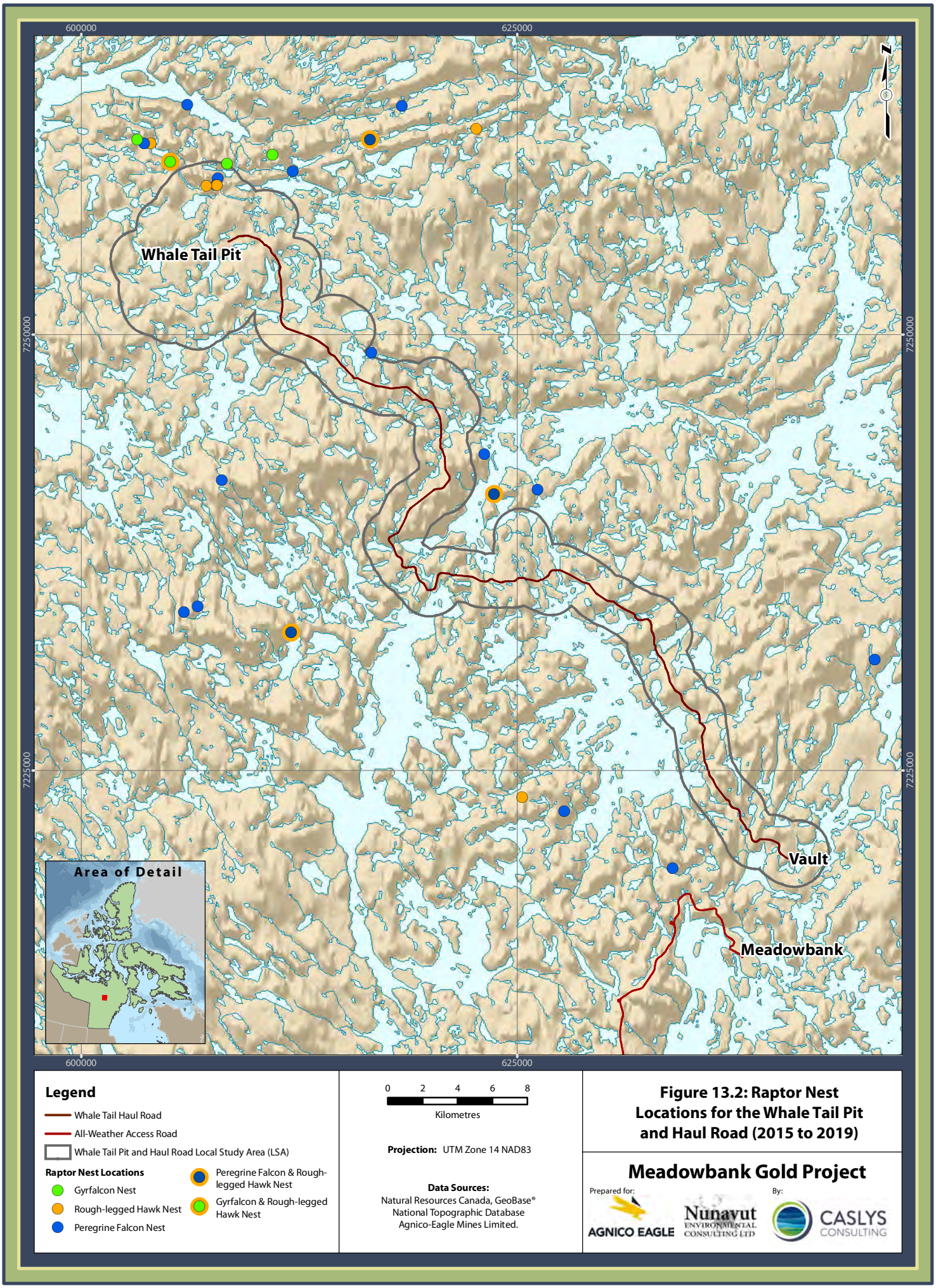


Figure 13.2: Raptor Nest Locations for the Whale Tail Pit and Haul Road (2015 to 2019)

Meadowbank Gold Project

Prepared for: AGNICO EAGLE

By: Nunavut Environmental Consulting Ltd; CASLYS CONSULTING

Table 13.1: Record of Peregrine Falcon and Nesting (Yes) along the AWAR and in the Meadowbank LSA between 2009 and 2019.

Quarry	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Comments
1	No	No	No	No	No	No	No	No	No	No	No	No raptor activity observed
2	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No	No	No	**Yes**	No	Extensive whitewash; possible presence
3	No	**Yes**	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	One adult observed regularly and two chicks seen in August
4 to 6	No	No	No	No	No	No	No	No	No	No	No	No raptor activity observed
7	No	No	No	No	No	No	No	**Yes**	**Yes**	No	No	Pair of adults observed on two occasions
8	No	No	No	No	No	No	No	No	**Yes**	No	No	Pair of adults observed on one occasion
9	No	No	No	No	No	No	No	No	No	No	**Yes**	One to two adults seen regularly and one egg noted in June
10 to 14	No	No	No	No	No	No	No	No	No	No	No	No raptor activity observed
15	No	No	No	No	No	No	No	No	No	No	No	Extensive whitewash; possible presence
16	No	No	No	No	No	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	One to two adults seen regularly and three eggs noted in June and July
17	No	No	No	No	No	No	No	No	**Yes**	No	No	No raptor activity observed
18	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**	**Yes**	**Yes**	Pair of adults seen on three occasions; aggressive on other occasions suggesting nest presence
19	**Yes**	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	No	No raptor activity observed
20	No	No	No	No	No	No	No	No	No	No	No	No raptor activity observed
21	No	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	One to two adults seen regularly and four eggs noted in early July
22	No	No	No	No	No	No	No	No	**Yes**	**Yes**	**Yes**	One to two adults seen regularly and four eggs noted in mid-June
Portage	No	No	No	**Yes**	**Yes**	No	No	No	No	No	No	No raptor activity observed
Vault	NA	NA	NA	NA	No	No	No	No	No	No	No	Two adults flying circling above pit and landing on north wall in early June
Goose	NA	NA	No	No	No	No	No	**Yes**	No	No	No	No raptor activity observed

Table 13.2: Raptor Nests Identified and Monitored at the Mine Site and along the AWAR between Baker Lake and the Meadowbank Mine Site in 2019.

Quarry or Pit Location	GN Site #[1]	Species	Location (UTM)	2019 Observation Date	Observations	Mitigation Actions Taken
3	4004	Peregrine Falcon	14W 0638009 7156419	07 June	1 falcon observed	No other mining-related activity permitted within quarry; closets activity is traffic on AWAR; birds are not approached on foot
				27 June	1 falcon observed	
				08 July	2 eggs in nest	
				19 July	1 falcon observed	
				04 August	1 falcon and 2 chicks	
9		Peregrine Falcon	14W 0628555 7171894	07 June	2 falcons observed	No other mining-related activity permitted within quarry; closets activity is traffic on AWAR; birds are not approached on foot
				15 June	1 falcon observed	
				18 June	2 falcons and 1 egg in nest	
				19 July	1 falcon observed	
				04 August	1 falcon observed	
16	4007	Peregrine Falcon	14W 0627212 7193129	28 May	2 falcons observed	No other mining-related activity permitted within quarry; closets activity is traffic on AWAR; birds are not approached on foot
				07 June	1 falcon observed	
				18 June	2 falcons and 3 eggs in nest	
				27 June	1 falcon observed	
				05 July	2 falcons and 3 eggs in nest	
				19 July	1 falcon observed	
18		Peregrine Falcon	14W 0627321 7202148	07 June	2 falcons observed	No other mining-related activity permitted within quarry; closets activity is traffic on AWAR; birds are not approached on foot
				05 July	2 falcons and nest observed but very difficult access to assess nest	
				19 July	2 falcons observed and apparently guarding nest	

Table 13.2: Continued.

Quarry or Pit Location	GN Site #[1]	Species	Location (UTM)	2019 Observation Date	Observations	Mitigation Actions Taken
21	4009	Peregrine Falcon	14W 0630781 7211705	07 June	2 falcons observed	No other mining-related activity permitted within quarry; closets activity is traffic on AWAR; birds are not approached on foot
				27 June	1 falcon observed	
				05 July	2 falcons and 4 eggs in nest	
				19 July	2 falcons observed	
				25 July	1 falcon observed	
22	2017C[2]	Peregrine Falcon	14W 0633625 7216088	07 June	2 falcons observed	No remediation of contaminated soils when falcons are present and nesting; no other mining-related activity permitted within quarry; birds are not approached on foot
				18 June	2 falcons and 4 eggs in nest	
				27 June	1 falcon observed	
				05 July	1 falcon observed	

[1] Government of Nunavut (GN) Raptor Database site number

[2] Unique nest identifier (awaiting GN Raptor Database site number)

13.6.2 Whale Tail Pit and Haul Road

Active raptor nests were monitored within the Whale Tail Pit and Haul Road LSA in June 2019; however, no nests were disturbed by project activities. For the four nest sites within 1.5 km of project facilities, management recommendations were provided (**Appendix L**). Except for Rough-legged Hawks, occupancy rates were the same as in 2017 (i.e., 23 of 41 known Peregrine Falcon nests occupied; 2 of 4 known Gyrfalcon nests occupied). For Rough-legged Hawks, occupancy rates declined from 16 of 21 known nests in 2017 to 7 of 21 in 2019.

Raptor species recorded along the Whale Tail Haul Road between May and September, included Bald Eagle, Peregrine Falcon, Rough-legged Hawk, and Snowy Owl (see **Appendix E**). One Short-eared Owl was seen on 03 September along the Whale Tail Haul road near the Amaruq site.

13.7 ACCURACY OF IMPACT PREDICTIONS

A summary of the impact predictions identified in the TEMP (Agnico Eagle 2019) is provided in **Table 13.3**. The 2019 raptor monitoring data were compared to the impact prediction thresholds to evaluate adherence to impact predictions and provision of adaptive management, as either a necessary or proactive measure. No thresholds were surpassed in 2019.

Table 13.3: Accuracy of Impact Predictions – Disturbance to Nesting Raptors for the AWAR and Mine Site, and Raptor Mortality.

Potential Effect	Threshold	Threshold Exceeded (2019)	Adaptive Management Implemented	Status
Disturbance to Nesting Raptors	Raptor nest failures will not be caused by mine-related activities. Threshold is one nest failure per year.	NO (note – limited data on nesting success)	NO (all mine-related activity is already restricted at active sites)	AWAR and haul road surveys Dedicated raptor nest surveys Daily and weekly systematic pit and mine site ground surveys
Raptor Mortality	One (1) individual	NO	NO	AWAR and haul road surveys Daily and weekly systematic pit and mine site ground surveys Incident and vehicle encounter reports

13.8 MANAGEMENT RECOMMENDATIONS

Quarrying activities along the AWAR corridor have created moderate to high suitability Peregrine Falcon nesting habitat. Falcons are expected to continue to use select quarries for the foreseeable future, which may necessitate the implementation of a raptor nest management plan for nests where mine-related activity is unavoidable; however, this was not necessary in 2019.

In 2020, Agnico Eagle will be conducting a comprehensive raptor nest survey of the Meadowbank and Whale Tail sites, including areas along the Whale Tail Haul Road.

Agnico Eagle will continue to:

- Conduct raptor nest surveys annually at each of the quarries along the AWAR early in the nesting season (mid- to late June) to confirm the status of previously confirmed raptor nests, assess the presence of new raptor nests, and determine the need, if any, for a raptor nest management plan;
- Monitor active raptor nests regularly in the breeding season to confirm nest success or failure;
- Ensure that environmental personnel maintain accurate records of nesting activity and success for all active nests for the duration of these surveys;
- Monitor pits and waste rock piles at the mine site to avert nesting attempts by raptors. If a nest is established, the Peregrine Falcon Management and Protection Plan will be followed;
- Monitor the Whale Tail Pit and Haul Road areas during many of its field programs (e.g., freshet monitoring, HOL surveys etc.) to determine whether active nests area present. If a nest is in close proximity to project facilities and is at risk of disturbance, the Peregrine Falcon Management and Protection Plan will be followed; and
- Further discussions will be held within the TAG and with Alistair Franke regarding the feasibility of conducting statistically powerful surveys that can distinguish between mine and natural effects on nesting success.

SECTION 14 • WATERBIRD NEST MONITORING

14.1 OVERVIEW

The Whale Tail expansion requires the construction of two dikes within Whale Tail Lake to divert water from the proposed pit to surrounding lakes and tributaries, resulting in flooding that will elevate water levels by 4 m and inundate approximately 157 ha of tundra during the active bird nesting window. To investigate mitigation options for minimizing flooding-related impacts to birds, Trent University, in collaboration with Environment and Climate Change Canada and Agnico Eagle, conducted active bird nest surveys and experimented with deterrent options in summer 2018 and 2019 at the Whale Tail site.

14.2 OBJECTIVES

The purpose of the research is to assess the degree of risk posed to migratory birds by mining-induced flooding during the nesting period, and to determine the most effective bird deterrents and how they should be applied. The specific study objectives are:

1) Determine breeding densities and timing of bird nest initiation at the study site;
2) Investigate the relationship between nesting phenology and timing of snowmelt;
3) Understand the degree to which deterrents can reduce nesting densities in specific areas;
4) Document individual behavioural responses to deterrent applications and changes in response over time; and
5) Assess the dispersal distance of deterred/impacted birds, to understand whether birds displaced from flooded areas nest nearby.

14.3 DURATION

The study was initiated in 2018 and will continue until 2020.

14.4 METHODOLOGY

Detailed methods are outlined in the '2019 Migratory Bird Protection Report' (Agnico Eagle 2020) (see **Appendix M**).

14.5 2019 RESULTS

14.5.1 Survey Results

During the flooding, six (6) nests of three (3) species were lost due to direct impacts of the high water. Overall an average loss of 3.8 nests per km^2 was estimated by taking the number of nests observed to be lost and dividing it by the total proposed flood zone of Whale Tail Lake (1.575 km^2). The species that lost nests were Lapland Longspur (4), Semipalmated Sandpiper (1) and Herring Gull (1). Despite nest loss due to flooding and significant habitat loss, nests in the proposed flood zone had an estimated success rate of 56% (Agnico Eagle 2020). Further discussion is provided in **Appendix M**.

14.5.2 Effectiveness of Deterrents

Complete results describing the effectiveness of the tested deterrents will be provided upon study completion; however, results to date demonstrate that deterrents were not effective at deterring birds from nesting. In addition, deployment and maintenance of the deterrents was extremely time consuming. As a result, the study authors do not recommend the use of the tested deterrents for mitigating nest loss due to disturbance such as flooding. Further discussion of the effectiveness, cost and practicality of deterrents is provided in **Appendix M**.

14.5.3 Next Steps

In 2020, the study will continue to determine whether re-colonisation occurs in the flooded areas around Whale Tail Lake as the flood waters recede. The study will require monitoring of the 16 plots within the flood zone surrounding Whale Tail Lake. The purpose of the study is to understand how nesting birds react to the elimination of previously suitable habitat, whether bird densities change between years as the water line moves, and the role elevation has in the selection of nest sites.

SECTION 15 • BREEDING BIRD MONITORING

15.1 OVERVIEW

The breeding bird PRISM (Program for Regional and International Shorebird Monitoring) plot and bird transect monitoring programs were designed to evaluate potential project-related changes in breeding bird species abundance, richness, and diversity over time. The program is one component of the larger monitoring strategy to evaluate the success of mitigation measures implemented to minimize the amount of vegetation (i.e., bird habitat) removed or degraded (e.g., dust fall) by the project, and whether certain mine activities such as the mine site or AWAR have resulted in reduced or compromised habitat function or effectiveness (i.e., zone of influence) for breeding birds.

For the breeding bird transects, data analysis in 2011 and 2015 indicated that no road-related effects had occurred to date, and thresholds had not been exceeded; therefore, annual transect surveys were permanently suspended after 2015.

15.2 OBJECTIVE

The objective of the breeding bird plot monitoring program is to confirm that a mine-related change of 20% function, determined by an increase or decrease in local breeding bird abundance, richness, and diversity, has not occurred. The program uses the widely accepted Canadian Wildlife Service's (CWS) PRISM protocols (CWS 2005). A secondary objective of the monitoring program is to determine more effective ways to prevent disturbance to nesting birds based on feedback from mitigation measures and observations.

15.3 DURATION

The breeding bird plot monitoring program is to continue every year during the construction period and for at least the first three full years of mine operation (2010 to 2012) in accordance with the TEMP (Cumberland 2006). The last PRISM plot survey was conducted in 2015.

15.4 RECOMMENDATIONS

For the breeding bird PRISM plots, data analysis in 2015 showed that most bird community indices were variable with little difference in overall trends between mine and control plots. Thresholds had not been exceeded and no additional management or mitigation considerations were necessary.

In 2019, the Canadian Wildlife Service requested a detailed analysis of all PRISM and bird transect data to date and a comprehensive report outlining protocols and analytical results. If no effects are evident, bird monitoring can be shifted to: 1) PRISM plots randomly selected by CWS staff; and 2) a Breeding Bird Survey (BBS) as per standard BBS protocols. Agnico Eagle is planning on conducting the analysis and submitting the report in 2020.

SECTION 16 • INVASIVE PLANTS

16.1 OVERVIEW

In 2019, Agnico Eagle initiated a non-native plant monitoring study to assess and monitor the potential introduction of non-native plant species, including weeds or invasive species (see Golder 2020c).

16.2 OBJECTIVE

The primary objective of the invasive plant survey was to assess and monitor the potential introduction of non-native plant species in areas where colonization was most likely (e.g., disturbed areas). The non-native plant information collected provides an understanding of the presence or spread of non-native plant species and informs on the efficacy of current cleaning and protection measures on site as per the TEMP. The results may serve as a basis for the development of a non-native plant management plan (if needed).

16.3 DURATION

The distribution of invasive plants is monitored on an annual basis through site inspections.

16.4 METHODOLOGY

Surveys at the Meadowbank Complex were conducted by a Golder Ecologist between August 9 to 16 2019 and focused on 14 non-native vascular plant species (see Golder 2020c; **Appendix N**). Due to the large extent of the Meadowbank Complex area, non-native plant surveys were executed as targeted surveys focused within high-priority or potential areas. High-potential areas were surveyed, including highly trafficked areas (e.g., fuel station, wastewater discharge area, areas surrounding buildings, shipping containers, and the dump). Due to time constraints, the AWAR was surveyed from the Meadowbank Mine site to KM 70 only at slow speed, while observing for weed infestations along road margins. Periodic stops were undertaken to complete meanders in areas with high potential (i.e., pull-outs, work areas, etc.). Observers looked for obvious signs of non-native plant occurrences such as showy inflorescence, fruiting structures, and other key characteristics that distinguished non-native species from endemic plant species.

When non-native or invasive plant species were encountered, the following information was recorded: site ID; surveyor name; GPS coordinates; photos of the occurrence / infestation; species name; estimated area of infestation; estimated number of plants (e.g., <10, 10 to 100, 100 to 1,000, >1,000) of each species; estimated cover of bare ground; growth stage (i.e., seedling, in bud, seed set, expired); recommended action for each species; and record of any hand pulling completed.

16.5 RESULTS

A total of 107 locations were surveyed (Golder 2020c; **Appendix N**). No non-native plants (i.e., in Canada) were recorded along the Whale Tail Haul Road and AWAR, and within the Whale Tail and Meadowbank Mine footprints; however, populations of Flixweed (*Descurainia sophia*) and Scentless Chamomile (*Matricaria perforata*), both non-endemic to the Arctic, were observed within the surveyed locations.

A single stem of Scentless Chamomile, a species of concern listed as Secondary Noxious and Noxious in the Canadian Weed Seeds Order (*Seeds Act* 2016) was observed near a building close to the water at the Meadowbank Mine site (see Golder 2020c). The plant was hand pulled and disposed of safely by an Agnico Eagle employee on 15 August 2019.

Flixweed, an introduced agricultural weed (ABMI 2019) that is not native to Nunavut, was observed on the Meadowbank Mine site at a number of locations but particularly along the perimeter of the airstrip (e.g., southwest border; exceeding 1,000 individuals), and the southwest edge of the Meadowbank Mine site around the workshop and shipping container storage areas. Observed Flixweed populations have not encroached onto the tundra and all observations were limited to disturbed areas.

16.6 RECOMMENDATIONS

Although not listed as a non-native plant by the Canadian Endangered Species Conservation Council (CESCC), the presence of the noxious weed, Scentless Chamomile, should be continually monitored to prevent further infestations. Although Flixweed has not migrated from disturbed areas, it should be controlled to contain the infestation and prevent spread north to new locations.

Continued and thorough cleaning of equipment and materials prior to entering the site, as per the TEMP, will prevent seed of non-native species from being introduced. Surveys for the 14 non-native plant species identified by CESCC and other non-native species should be completed annually. The procedure, NU-PRO- ENV- Invasive Species Inspection Prior to Loading onto Shipping Vessel, is also being followed.

Mechanical control, such as mowing or hand pulling, is recommended for any identified non-native plant species. If hand pulling with a shovel, the plant material can be collected in bags and disposed of at an offsite location or incinerated.

SECTION 17 • SUMMARY

The 2019 Wildlife Monitoring Summary Report describes the data collected to date from the various monitoring programs and describes natural and mine-related variability, and potential mine-related effects within wildlife populations.

In 2019, monitoring efforts focused on areas immediately around the mine site and along the AWAR, Vault Haul Road, and Whale Tail Haul Road. Survey and monitoring emphasis was on evaluating current habitat losses, monitoring nesting success of raptors, and monitoring and managing wildlife presence, particularly Caribou, near the mine facilities and infrastructure. Regional-scale monitoring efforts focused on Caribou movement through ongoing satellite-collaring studies. A summary of potential project effects, threshold levels, and the 2019 monitoring results is provided in **Table 17.1**.

Collared Caribou and large herds crossed the AWAR, Vault Haul Road, and Whale Tail Haul Road during the 2019 spring and fall migrations. Overall very high Caribou numbers were recorded along project roads during surveys in 2019 with numbers in April higher than in any other previous year. Mitigation measures (e.g., convoying, reduced speed limits, limiting vehicle volumes, and road closures) for Caribou along the roads appeared to facilitate passage of Caribou across the roads as compared to what was observed in 2018. Of note, is that Caribou movements in 2018 may have been affected by a satellite-collaring program in late April and early May.

Further studies by Agnico Eagle and the GN are underway to understand different and/or additional mitigation triggers, and the effects of the mine roads on fine-scale Caribou movement and timing of Caribou reaching calving grounds and successfully calving. The Baker Lake HTO, GN personnel, and other stakeholders will meet within the Terrestrial Advisory Group (TAG) in 2020 to discuss the effectiveness of targeted monitoring of Caribou movement around mine facilities. By the end of 2019, 31 collars remained active, which provides excellent data for monitoring Baker Lake herds in 2019. Another deployment planned for April 2020 may be affected by the Covid-19 crisis.

In 2019, one Wolverine was euthanized under authorization of the GN Conservation Officer; however, the threshold level for mine site or road-related mortalities for Predatory Mammals (i.e., Grizzly Bear Wolverine and Wolf) of two [2] individuals) was not exceeded. Grizzly Bears were observed near mine facilities in 2019 but no deterrence was required. Numerous closures of the AWAR and Whale Tail Haul Road were required in 2019 to permit safe passage of migrating Caribou, and no road or mine-related mortality of Caribou occurred.

Six active Peregrine Falcon nests were observed and monitored at quarry sites along the AWAR in 2019, with successful nesting confirmed at one nest. Raptor nests were also monitored along the Whale Tail Haul Road and in the vicinity of the Whale Tail Pit in 2019 but no nests were affected by project activities or required detailed management plans. Bird studies in the flooding zone at Whale Tail by Trent University researchers found that visual deterrents were not successful in preventing birds from nesting. A small number of nests (i.e., 6) of three species were inundated by rising waters during flooding activities.

Monitoring programs will continue to evolve throughout the life of the mine, contingent on data quality objectives and the need for adaptive management strategy implementation and subsequent effectiveness monitoring. Adjustments to the intensity and frequency of monitoring, and the extent of analyses will vary between years depending on observed trends to date, data gap analysis, and determinations of effect.

Table 17.1: Potential Project Effects, Thresholds, and Results of Monitoring in 2019.

Potential Effect	Thresholds	Monitoring Methods	Frequency	Completed in 2019	Threshold Exceeded (2019)
Vegetation (Wildlife Habitat)					
Habitat Loss (Compared to Permitted Areas)	Meadowbank = 1,532 ha AWAR = 348 ha Whale Tail = 1,473 ha Threshold is >5% habitat loss of permitted area	Ground Surveys; Mapping and GIS analyses – ELC habitat mapping	Every three years	NO	**NA**
Habitat Reclamation following Mine Closure	NA	Ground Surveys; Mapping and GIS analyses – ELC habitat mapping	Every three years to 11 years post-closure	NO	**NA**
Ungulates					
Habitat Loss and Degradation (Compared to Permitted Areas)	Meadowbank Growing = 531 ha Winter = 407 ha Whale Tail Growing = 76 ha Winter = 602 ha	Ground Surveys; Mapping and GIS analyses – ELC habitat mapping	Every three years	NO	**NA**
Sensory Disturbance	No threshold but Decisions Trees followed when Caribou are seen near mine facilities	AWAR, Vault Haul Road, and Whale Tail Haul Road surveys; Satellite-collaring data; HOL surveys; Daily and weekly pit and mine-site ground surveys; Incidental wildlife reporting; Motion sensing cameras	Daily / weekly	YES	**NA**
Project-related Mortality - Vehicle Collisions	2 individuals (cumulative across mine)	AWAR, Vault Haul Road, and Whale Tail Haul Road surveys; Daily and weekly pit and mine-site ground surveys; Collision reporting system	Mine site – daily AWAR and haul roads – up to every two days at peak migration	YES	**NO**

Table 17.1: Continued.

Potential Effect	Thresholds	Monitoring Methods	Frequency	Completed in 2019	Threshold Exceeded (2019)
Hunting by Baker Lake Residents	20% Change in Harvest Patterns in RSA from Historic	Hunter Harvest Study	Yearly	YES	**NO.** Harvest rates in RSA below baseline levels
Other Mine-related Mortality	2 individual (cumulative across mine)	Daily and weekly pit and mine-site ground surveys; Collision reporting system	Daily	YES	**NO**
Predatory Mammals					
Disturbance to denning predators	1 den failure	Den site surveys	As required	Not required	**NO**
Project-related Mortality	2 individuals (cumulative across mine)	AWAR, Vault Haul Road, and Whale Tail Haul Road surveys; Daily and weekly pit and mine-site ground surveys; Collision reporting system	Mine site – daily AWAR and haul roads – up to every two days at peak migration	YES	**NO.** One (1) Wolverine dispatched in 2019
Raptors					
Disturbance of Nesting Raptors	1 Nest Failure	Daily and weekly pit and mine-site ground surveys; Incidental wildlife reporting; Dedicated raptor nest surveys; AWAR, Vault Haul Road, and Whale Tail Haul Road surveys	Nests within 200 m - daily Nests from 200 to 1000 m - weekly	YES	**NO**
Project-related Mortality	1 individual (cumulative across mine)	AWAR, Vault Haul Road, and Whale Tail Haul Road surveys; Daily and weekly pit and mine-site ground surveys; Collision reporting system	Mine site – daily AWAR and haul roads – up to every two days at peak migration	YES	**NO**

Table 17.1: Continued.

Potential Effect	Thresholds	Monitoring Methods	Frequency	Completed in 2019	Threshold Exceeded (2019)
Waterbirds					
Disturbance of Nesting Waterfowl	1 Nest Failure	Daily and weekly pit and mine-site ground surveys; Waterbird nest surveys	Yearly - for active nests within 200 m	YES	**NO**
Project-related Mortality	1 individual (cumulative across mine)	AWAR, Vault Haul Road, and Whale Tail Haul Road surveys; Collision reporting system	Mine site – daily AWAR and haul roads – up to every two days at peak migration	YES	**NO**
Other Breeding Birds					
Changes in Breeding Bird Populations	20% Change from Natural	Breeding Bird PRISM Plots and Transects	PRISM – every three years Transects - suspended	NO	**NA**

SECTION 18 • LITERATURE CITED

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