Figure 9.2-16
Caribou Detected on Cameras Located in the Northern Portion of the Regional Study Area, 2012 to 2015

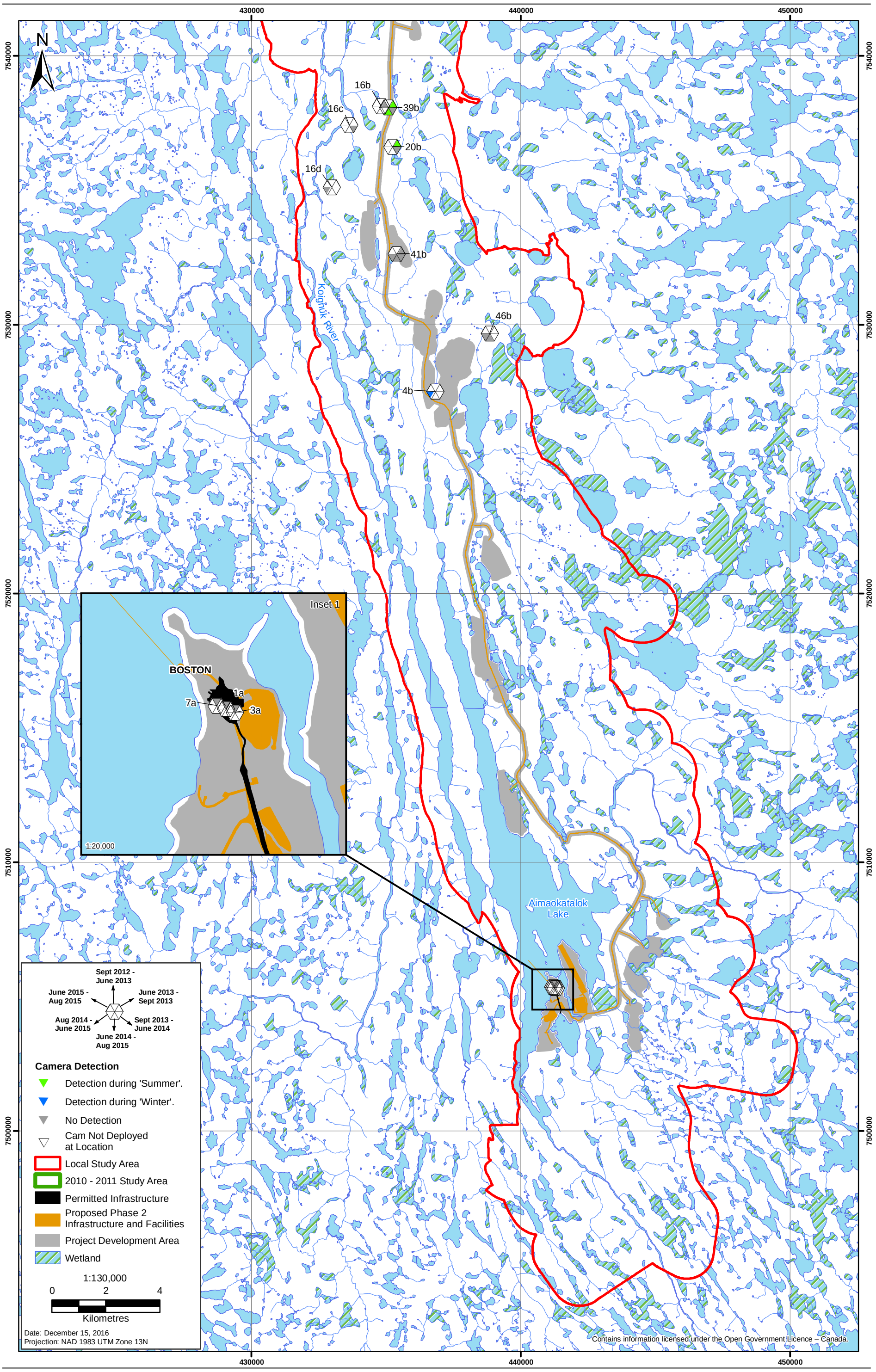

Table 9.2-10. Caribou Observations from the Wildlife Sightings Log Standardized by Number of Personnel on Site, 2009 to 2015

Year	Month	Number of Observations		Monthly Average of Personnel on Site	Observations/Personnel*	
		No. Individuals	No. Records		No. Individuals	No. Records
2009	Jan	0	0	69	0	0
	Feb	0	0	84	0	0
	Mar	0	0	94	0	0
	Apr	141	3	102	1.38	0.03
	May	114	7	102	1.12	0.07
	Jun	10	2	103	0.1	0.02
	Jul	21	6	113	0.19	0.05
	Aug	0	0	109	0	0
	Sep	14	1	98	0.14	0.01
	Oct	0	0	66	0	0
	Nov	0	0	16	0	0
	Dec	0	0	14	0	0
2010	Jan	0	0	83	0	0
	Feb	0	0	106	0	0
	Mar	1	1	131	0.01	0.01
	Apr	16	1	172	0.09	0.01
	May	148	16**	182	0.81	0.09
	Jun	1	1	200	0.01	0.01
	Jul	9	4	220	0.04	0.02
	Aug	2	2	205	0.01	0.01
	Sept	0	0	484	0	0
	Oct	0	0	332	0	0
	Nov	0	0	147	0	0
	Dec	0	0	108	0	0
2011	Jan	0	0	214	0	0
	Feb	0	0	250	0	0
	Mar	0	0	265	0	0
	Apr	24	4	278	0.09	0.01
	May	43	5	274	0.16	0.02
	Jun	9	2	280	0.03	0.01
	Jul	4	2	284	0.01	0.01
	Aug	0	0	277	0	0
	Sept	0	0	277	0	0
	Oct	0	0	270	0	0
	Nov	0	0	252	0	0
2012	Jan	0	0	183	0	0
	Feb	0	0	193	0	0
	Mar	0	0	180	0	0
	Apr	7	1	127	0.06	0.01
	May	28	6	90	0.31	0.07
	Jun	0	0	103	0	0
	Jul	2	2	90	0.02	0.02

Year	Month	Number of Observations		Monthly Average of Personnel on Site	Observations/Personnel*	
		No. Individuals	No. Records		No. Individuals	No. Records
	Aug	1	1	93	0.01	0.01
2013	Mar	0	0	3	0	0
	Apr	0	0	13	0	0
	May	6	2	20	0.3	0.1
	Jun	4	4	44	0.09	0.09
	Jul	5	4	61	0.08	0.07
	Aug	5	4	59	0.08	0.07
	Sept	0	0	54	0	0
	Oct	0	0	49	0	0
	Nov	0	0	19	0	0
	Dec	0	0	8	0	0
2014	Jan	0	0	7	0	0
	Feb	0	0	7	0	0
	Mar	0	0	8	0	0
	Apr	10	1	14	0.71	0.07
	May	3	1	63	0.05	0.02
	Jun	11	5	71	0.15	0.07
	Jul	23	13	77	0.3	0.17
	Aug	0	0	79	0	0
	Sept	0	0	73	0	0
	Oct	0	0	79	0	0
	Nov	0	0	44	0	0
	Dec	10	1	7	1.43	0.14
2015	Jan	0	0	13	0	0
	Feb	6	1	16	0.38	0.06
	Mar	0	0	30	0	0
	Apr	0	0	28	0	0
	May	34	3	32	1.06	0.09
	Jun	9	3	41	0.22	0.07
	Jul	2	2	46	0.04	0.04
	Aug	10	7	84	0.12	0.08
	Sept	0	0	105	0	0
	Oct	0	0	114	0	0
	Nov	44	5	93	0.47	0.05
	Dec	66	4	89	0.74	0.04

**Whether or not wildlife are recorded can vary by factors other than number of personnel on site, e.g.; the type of animal, multiple reporting of same individuals by different observers, work activities (indoor vs outdoor; site-based vs field-based), number of daylight hours, visibility, novelty of the sighting, observer reporting enthusiasm, ability to identify animal, etc. **Personnel were on site in all months between 2009 and December 2015 except October - December 2012. Personnel totals do not include personnel at Boston Site.*

*** Includes one record where group size not specified.*

Habitat suitability models were developed for each of the seasons when caribou may interact with the RSA, including summer and fall (Beverly/Ahiak caribou) and winter (Dolphin and Union caribou). Habitat suitability modeling was conducted for caribou across the RSA. Individual herds are not

assessed separately as it is assumed that habitat requirements are similar, if not identical, for all individuals by season (Gustine et al. 2012).

Habitat selection for each season was developed from literature searches, local knowledge, previous wildlife surveys, and Hope Bay Project-specific habitat assessments. A summary of the seasonal life requisites applied to the Habitat Suitability Ratings (HSR) is provided in Table 9.2-11.

Table 9.2-11. Seasonal Life Requisites of Caribou

Season	Date	Life Requisite	Habitat Preference
Summer	July 16 to August 31 (summer)	Living	Caribou use eskers for insect and heat relief, lakes for predator avoidance, insect, and heat relief, eat green plants from riparian and sedge communities. Cows require high quality forage to replenish fat reserves.
Fall (Rut)	September 1 to October 31	Living, Reproduction, and Travel	Caribou travel to southern rutting areas selecting habitat for ease of travel, predator avoidance, and late season forage.
Winter	November 1 to April 15	Living	Caribou rely on lichens in winter because they provide digestible carbohydrates and are generally abundant. Caribou concentrate in areas that provide foraging opportunities with limited snow depths.

A habitat suitability model was developed for caribou within the Local Study Area (LSA), in conjunction with ecosystem mapping studies (Appendix V4-9A) (Rescan 2011h). The caribou habitat suitability model was developed by adapting the BC Resources Information Standards Committee (RISC) standards for wildlife habitat suitability modeling (RIC 1999a, 1999b) for Nunavut. The suitability model identifies areas which, in their current condition, provide suitable (i.e., functioning) habitat for caribou. Suitable habitat generally means that the physical attributes (e.g., elevation, slope, aspect, soil texture, and geographical location) and the biological components (e.g., vegetation species composition, structure, and age) of an area are likely appropriate for caribou. Suitability mapping does not imply that caribou actually use these areas, simply that they have the correct physical and vegetation characteristics to be used by caribou if they chose to do so.

Within the LSA, local scale Ecosystem Mapping (EM) described in Volume 4, Section 8 (Vegetation and Special Landscape Features) was used to identify vegetation ecosystems. However, the LSA mapped for habitat suitability modelling is slightly smaller (~56,277 ha) than the LSA defined for the EIS (56,340 ha), thus a small amount of habitat within LSA used for wildlife in the EIS could not be classified. The exception is for caribou fall habitat where models were adjusted for the EIS as fall habitat within the habitat suitability modelling boundary was not classified previously.

The West Kitikmeot / Slave Study (WKSS) ecosystem mapping was used to identify ecosystem units within the RSA (Matthews, Epp, and Smith 2001). A wildlife habitat suitability rating (WHR) was then assigned to each ecosystem unit, based on the characteristics of the vegetation community and season and caribou's requirements for food, security, and thermal protection. The WHRs developed for the Hope Bay Project were ranked according to a four-class (high, moderate, low, nil) system. Field surveys were conducted within the LSA in conjunction with ecosystem and soils mapping (see Section 8, Vegetation and Special Landscape Features) to verify the literature-based predictions of habitat values. Model adjustments were subsequently applied where necessary and sometimes a few iterations were made prior to the final development of the Habitat Suitability Ratings (HSRs). Final HSR values were used to rank each ecosystem polygon by a weighted average of the decile values (percent of a polygon

classified as a given ecosystem unit) of the representative composition of each polygon. Details of these rankings are reported in the 2010 Wildlife Habitat Suitability Baseline Report (Rescan 2011h).

The EM based habitat suitability mapping was used in the LSA to calculate habitat loss (Section 9.6) because it was the best available data; the EM data is not visually portrayed on maps. Maps are presented in this section for caribou (and all other VECs) that depicts the WHRs assigned to the WKSS data throughout the RSA to allow visual comparison of the LSA and RSA.

Results

Habitat suitability modeling indicates that the RSA and LSA contain vegetation communities that are suitable for use by caribou in summer, fall and winter seasons. It should be noted that this type of habitat mapping identifies vegetation communities that meet the characteristics listed in the scientific literature as preferred during various seasons by caribou. This mapping does not suggest that caribou are actively using this habitat. Use of habitat is likely governed at broader scales than the local vegetation communities, such as the presence of aggregations of higher quality vegetation, insect relief, movement corridors and predation risk.

Habitat suitability modeling based on EM data indicates that the LSA contains the highest proportions of summer habitat (34.9%) relative to other seasonal habitat. Lower amounts of high value fall (2.4%) and winter habitat (14.7%) occur in the LSA (Table 9.2-12). High value summer habitat in the LSA is relatively well distributed throughout the LSA, while high value fall and winter habitat are more dispersed and found in smaller patches within the LSA (Figures 9.2-17, 9.2-18 and 9.2-19).

Table 9.2-12. Area and Percentage of Seasonal Habitat within the Local Study Area and Regional Study Area for Caribou

		Local Study Area[1]		Regional Study Area[2]	
Season	**Suitability Rating**	**Area (ha)**	**Percent (%)**	**Area (ha)**	**Percent (%)**
Summer					
	High	19,640.0	34.9	116,846.7	23.7
	Moderate	28,086.3	49.9	308,912.7	62.8
	Low	7,746.2	13.7	5,623.1	1.1
	Nil	804.5	1.4	55,597.7	11.3
Fall					
	High	1,375.2	2.4	234,640.9	47.7
	Moderate	12,956.6	23.0	96,897.3	19.7
	Low	40,152.6	71.3	99,844.2	20.3
	Nil	1,855.6	3.3	55,597.7	11.3
Winter					
	High	8,283.4	14.7	32,166.6	6.5
	Moderate	11,495.5	20.4	196,454.3	39.9
	Low	25,313.9	44.9	197,138.5	40.1
	Nil	11,184.2	19.9	61,220.8	12.4

[1] *LSA = 56,340 ha. Habitat Suitability data in the LSA is based on the TEM data (see Section 9.2.3.10). With the exception of Fall habitat, approximately 63 ha (0.1% of the LSA) of habitat within the LSA were not classified due to differences in the LSA used for the habitat suitability baseline work (Rescan 2011) and that used for the EIS.*

[2] *RSA = 491,823.9 ha. Habitat Suitability data in the RSA is based on the WKSS ecosystem mapping data (see Section 9.2.3.10). A total of 4,843.7 ha (1.0% of RSA) were categorized as unclassified likely due to coverage of the imagery by cloud cover.*