

Kivalliq Inuit Association's Mobile Caribou Conservation Measures: 2022 update for the Nunavut Planning Commission

Mobile Caribou Conservation Measures (thence Mobile Measures) are flexible (i.e., follow the caribou), protect caribou within all seasonal ranges, and offer a greater balance between protection of caribou and mineral exploration. Mobile Measures have three components: (i) monitoring, the results of which are compared to pre-assigned thresholds; (ii) thresholds which trigger decisions about the intensity of tiered mitigation; and (iii) mitigation. Mitigation is implemented to avoid or minimize sensory disturbance to caribou. In turn, monitoring can be used to gauge the effectiveness of the mitigation.

The Kivalliq Inuit Association (KivIA) brought Mobile Measures forward as part of their recommendations to the Nunavut Planning Commission (NPC) on the Draft Nunavut land Use Plan (DNLUP) in 2015 and again in 2021. KivIA's approach to Mobile Measures was presented, for example, at the November 2015 NWMB workshop¹. During reviews of the 2021 DNLUP, while the Kitikmeot and Qikiqtani Regional Inuit Associations (RIAs) and Kivalliq Wildlife Board are supportive of Mobile Measures, the 2021 DNLUP did not recommend Mobile Measures as a tool for protecting caribou and their habitat². During the public hearings and commentary phase on the 2021 DNLUP, there was both support for and questioning of Mobile Measures. During conversations with NPC staff, they expressed a willingness to have more information on the Mobile Measures which is provided in the following text.

KivIA's Mobile Measures have been applied to Inuit Owned Lands (IOL) in the Kivalliq Region since 2016. They are an additional level of protection for caribou within Nunavut's integrated regulatory approach to land management which requires that NPC determines whether a land use project will conform with land use plans and be exempt from screening. If a project is not exempt, the Nunavut Impact Review Board (NIRB) screens the land-use activity and through public and land use agency input may include recommendations to protect caribou. NIRB's recommendations in the screening reports are a Nunavut-wide approach to protecting caribou during permitted land use activities, while KivIA's Mobile Measures are more specific conditions applied to exploration on IOL in the Kivalliq Region.

The following text summarizes the KivIA's Mobile Measures as to what they do, how they work, whether they protect caribou habitat, and how they relate to Nunavut's integrated regulatory approach to land use management. We offer a possible pathway forward for Mobile Measures based on concerns raised during the 2021 DNLUP hearings and on the Government of the Northwest Territories (GNWT's) recent framework and implementation guides for Mobile Measures. The pathway will also be included in KivIA's updated final comments on the 2021 DNLUP. We recognize that any wider application of Mobile Measures in other regions will have to be tailored using Inuit Qaujimajatuqangit, community knowledge and technical information for the different caribou herds and their ecology.

1. KivIA's Mobile Caribou Conservation Measures

KivIA's Mobile Measures are a follow-up to the longstanding Caribou Protection Measures in the Kivalliq Region where the Qamanirjuaq caribou herd migrates within the region for calving, post-calving through

¹ <http://www.nwmb.com/en/public-hearings-a-meetings/workshops/november-2015-protecting-caribou-and-their-habitat-workshop#document-mobile-caribou-conservation-measures-eng>

² NPC Options and Recommendations Document- page 71

to the winter. Minimizing or avoiding any impacts of mineral exploration on the caribou has been incrementally developed since the 1970s. Relying on applying protection such as seasonal restrictions to fixed areas (DIAND's original Caribou Protection Measures) was effective unless caribou moved out of the Caribou Protection Area and were not monitored³. Land manager's attention shifted to considering protection that would move with the caribou – mobile measures⁴ - to counter the disadvantages of area-specific protection. The DIAND's original Caribou Protection Measures are still included in the 2000 Keewatin Land Use Plan⁵ which is applicable to Crown land. The Caribou Protection Measures are applied to a fixed area of calving, post-calving and water-crossings mapped in the late 1990s and are typically referenced in NIRB's screening reports for land use projects.

The KivIA subsequently developed Mobile Caribou Conservation Measures (Mobile Measures) in 2016 for land-use activities such as mineral exploration on IOL within the Kivalliq Region. KivIA's Mobile Measures work through monitoring caribou in the vicinity of a land use site to give early warning for mitigation. The monitoring component is flexible, does not rely on or require aerial monitoring, and can accommodate innovative technologies including drones or ground-based surveillance. The monitoring triggers mitigation based on pre-assigned thresholds (numbers and proximity of caribou to development coupled with seasonal sensitivity and movement rates). The thresholds trigger tiered mitigation applied with increasing intensity as increasing numbers of caribou approach the project, to avoid or minimize any potential sensory disturbance to caribou.

KivIA applies Mobile Measures in conditions attached to Land Use Licenses⁶. KivIA's Schedule B attached to licenses and leases is the guideline to Mobile Measures⁷. Schedule B provides for closure during calving and Mobile Measures for other seasons on calving grounds and for other seasonal ranges including water-crossings. Schedule B provides seasonal thresholds to trigger mitigation and the types of mitigation and for illustration, it is attached here as Appendix A.

Mobile Measures are only applicable to mineral exploration and not for mineral development such as active mine development sites, which are governed by NIRB's terms and conditions. NIRB's terms and conditions are determined during and following an environmental assessment that is part of Nunavut's robust regulatory system. With respect to enforcement of conditions attached to Land Use Licenses, KivIA relies on its land-use inspectors.

2. Mobile Measures and caribou habitat protection

Mobile Measures are designed to avoid and minimize indirect habitat loss by reducing or halting activities that would otherwise displace caribou from their habitat. Mobile Measures themselves do not protect against direct impacts to habitat, however, the KivIA's Mobile Measures are part of Land Use Licenses issued for access to IOL, that include conditions to avoid or minimize direct impacts to habitat from mineral exploration, inspection for compliance and the need for reclamation if habitat was

³ Gunn, A., K.G. Poole, J. Wierzchowski, and M. Campbell. 2007. Assessment of Caribou Protection Measures. Unpublished report submitted to Indian and Northern Affairs Canada, Gatineau, Québec, 45pp.

⁴ Weihs, F.H., and P.J. Usher. 2001. Towards the development of a policy on the management of human activities in caribou calving and post-calving grounds. Contract # 00-0210 for Department of Indian Affairs and Northern Development, Ottawa.

⁵ Keewatin Regional Land Use Plan, NPC Public Registry: <https://lupit.nunavut.ca/portal/registry.php?public=docs>

⁶ <https://www.kivalliqinuit.ca/access-to-inuit-owned-lands-2/>

⁷ <https://www.kivalliqinuit.ca/wp-content/uploads/2022/02/KIA-Land-Use-License-Terms-Conditions.pdf>

damaged. However, Mobile Measures benefit caribou habitat through their role in reducing caribou disturbance which otherwise can limit caribou habitat use.

3. Nunavut's integrated regulatory system for mineral exploration.

Mineral exploration proposals within the Kivalliq Region start with the NPC who determines whether the proposal conforms to the land use plan and whether the proposal is exempt from screening⁸ (typically government activities or small-scale activities only requiring a Class B permit⁹). If the activity is not exempt, the proposal goes to NIRB for screening. NIRB's screening includes public consultation and management agency review which lead to project-specific terms and conditions with monitoring and reporting requirements. NIRB's screening requirements for mineral exploration apply to both Crown lands and IOL. NIRB's screening terms for caribou vary (Table 1) and how they depend on conditions such as the likelihood of caribou exposure or type of mineral exploration activity is not always specified. NIRB's terms in the screening reports for mineral exploration specific to caribou typically include that the proponent should cease activities when caribou (a specified number or sex and age class) are in the vicinity (specified distance) so as to avoid diverting or blocking migration or movements. NIRB's screening recommendations are consistent with the intent of Mobile Measures in the sense that the terms apply to the caribou where they are relative to an exploration site and may be triggered by the approach of caribou within threshold distances (Table 1).

KivIA's Mobile Measures are more detailed about seasons and thresholds than NIRB's terms for screening (Table 2). KivIA applies monitoring based on caribou sightings within two concentric zones centered on the exploration site, with surveillance effort to assess the likely arrival or presence of caribou. Monitoring includes Height-of-land surveys, ground observations and collared caribou. An 'Early Warning Zone' varies in size with caribou season (15–45 km radius which begins at the outer extent of the 5 km Zone of Influence [ZOI]). For example, a smaller Early Warning Zone is used during winter when movement rates are generally lower and less directional, and a larger Early Warning Zone is used during spring migration when distances moved daily are generally higher and more directional. The 5 km radius ZOI is the area around a project site where the behaviour and distribution of caribou may change in response to the site's activities. The level of mitigation depends on the caribou numbers and the season.

Both KivIA and NIRB screening have requirements for the proponent to provide annual reports. NIRB's reporting requirements are detailed and include for wildlife a summary of results and mitigation actions, wildlife observations, potential impacts from the project, and an analysis of the effectiveness of mitigation measures for wildlife.

⁸ https://www.nirb.ca/sites/default/files/Integrated_Process_NuPPAA.pdf

⁹ https://www.nunavut.ca/sites/default/files/2020-10-23_revised_conformity_determination_internal_procedure.pdf

Table 1. Examples of Terms recommended in NIRB screening reports (not all Terms would be applied to any one project). We add bold font to emphasize the reference to caribou

The Proponent shall avoid interfering with any paths or crossings known to be frequented by caribou during periods of migration as identified by current land use plans in place and/or by Inuit Qaujimaningit.
The Proponent shall not block or cause any diversion to caribou or muskox migration and shall cease activities likely to interfere with migration such as airborne geophysics surveys drilling or movement of equipment or personnel until such time as the caribou or muskox have passed.
Should pregnant caribou cows, cows with young calves, or groups of 50 or more caribou be observed within one (1) kilometer of project operations at any time, the Proponent shall suspend all operations in the vicinity, including low-level over flights, drilling, blasting/trenching, and use of snow mobiles and all-terrain vehicles outside the immediate vicinity of the camp, until caribou are no longer in the immediate area.
The Proponent shall implement mobile caribou conservation measures and immediately cease activities that may interfere with the migration or calving of caribou or muskox, until the caribou or muskox have passed.
The Proponent shall not construct or operate any camp cache any fuel or conduct blasting within ten (10) kilometers or conduct any drilling operation within five (5) kilometers of any paths or crossings known to be frequented by caribou (e.g., designated caribou crossings), the Proponent shall also suspend all operations in the vicinity including low-level over flights, blasting and use of snow mobiles and all-terrain vehicles until caribou are no longer in the immediate area.
During the period of May 15 to July 15, the Proponent shall suspend all project operations, including low-level over flights, drilling, blasting/trenching, and use of snow mobiles and all-terrain vehicles outside the immediate vicinity of the camp. Should the results of localized monitoring satisfy the Land Use Inspector that project operations may resume without disturbing pregnant caribou cows or cows with young calves , the suspension may be lifted for the period specified.
During the period of May 15 to July 15, the Proponent shall suspend all project operations outside of the . . . Camp, and activities at the . . . Camp are limited to those necessary to maintain the camp for occupation. Restricted activities include, but are not limited to, air and vehicle traffic, loud or repetitive noise or vibration disturbances, low-level overflights, blasting, and use of mobile equipment including snowmobiles and all-terrain vehicles, and personnel walking within sight of the caribou group(s), until the caribou are no longer in the immediate area . Should the results of localized monitoring satisfy the land use inspector the project operations may resume without disturbing pregnant caribou cows or cows with young calves the suspension may be lifted for the periods specified.
The Proponent shall retain independent wildlife monitors provided through the [named] Hunters and Trappers Organizations to undertake monitoring for caribou in proximity to project operations and ensure compliance with associated wildlife protection measures.

Table 2. Seasons, zone sizes and thresholds of caribou numbers counted in the Early Warning Zone (EWZ) and Zone of Influence (ZOI) to trigger corresponding mitigation actions (from Schedule B¹⁰, KivIA land access license applicable to IOL) Analysis of movement rates and local input are needed to refine the dates and number of seasons for other regions.

Season	Timing	Suggested zone radii (km)		Threshold number of collars/adult caribou		Summarized mitigation actions if thresholds passed in the ZOI
		EWZ ²	ZOI	EWZ	ZOI ⁵	
Within designated calving grounds						
Calving / Post-calving	1 May – 31 Jul	N/A	N/A	N/A	N/A	Closed
Summer	1 Aug – 30 Sep	30	5	1/25	25	Immediately suspend drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes); Suspend ground operations and camp closure.
Fall/winter	1 Oct – 15 Apr	30	2.5	1/50	50	immediately reduce above-ground activities that have the potential to disturb caribou, including non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes).
Spring migration (pre-calving)	16 Apr – 30 Apr	50	5	1/25	25	Immediately suspend drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes); Suspend ground operations and camp closure.
Other seasonal ranges (outside of designated calving grounds)						
Calving / Post-calving	1 Jun – 15 Jul	50	5	1/10	10	Immediately suspend drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes); Suspend ground operations and camp closure.
Summer	16 Jul – 30 Sep	30	5	1/25	25	Immediately suspend drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes) and camp closure.

¹⁰ <https://www.kivalliqinuit.ca/wp-content/uploads/2022/02/KIA-Land-Use-License-Terms-Conditions.pdf>

Season	Timing	Suggested zone radii (km)		Threshold number of collars/adult caribou		Summarized mitigation actions if thresholds passed in the ZOI
		EWZ ²	ZOI	EWZ	ZOI ⁵	
Fall/winter	1 Oct – 15 Apr	30	2.5	1/50	50	immediately reduce above-ground activities that have the potential to disturb caribou, including non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes).
Spring migration (pre-calving)	16 Apr – 31 May	50	5	1/25	25	Immediately suspend drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes); Suspend ground operations and camp closure.

¹ Dates provided for the Qamanirjuaq herd from Caslys (2016). The actual dates will differ among herds.

² The Early Warning Zone radius begins at the outer extent of the 5 km radius Zone of Influence.

³ Proposed numbers based on differences in relative risk among seasons. Caribou thresholds (generally collared individuals or incidental sightings) within the Early Warning Zone would justify notice to the exploration manager and the land use inspector of a potential suspension of flights and operations should caribou enter the Zone of Influence, and would trigger monitoring surveys within the Zone of Influence (generally ground observations or incidental aerial observations).

⁴ xx/yy represent thresholds of number of collared/observed caribou within the Early Warning Zone. The lower value of the collars or caribou will trigger a response. Thresholds triggered within the Early Warning Zone trigger increased monitoring.

⁵ yy represent thresholds of number of observed caribou within the Zone of Influence to trigger main sets of mitigation responses.

4. Mobile Measures and GNWT's Bathurst Caribou Range Plan

KivIA was developing Mobile Measures in 2016, and by 2018 Mobile Measures were also being developed as a requirement for the Bathurst Caribou Range Plan (Range Plan)¹¹. The Range Plan was co-developed by Indigenous governments and organizations, GNWT, Government of Nunavut (GN) and industry partners. Between 2018 and 2020, GNWT led a collaboration to develop Mobile Measures¹² built on the KivIA's measures and updated with minimum standards of monitoring and mitigation. Minimum standards were also a recommendation from GN's draft 2016 review of KivIA's Mobile Measures¹³.

Developing Mobile Measures for the Bathurst caribou herd included a framework document and considerable implementation detail, especially on government and the land use permit operator's roles and responsibilities, as well as reporting templates. The NWT government will provide mapping and advice to land use permit operators, but the costs of site monitoring and mitigation are borne by land use permit operator. COVID-19 limiting testing of the Range Plan Mobile Measures to desktop exercises but the intent is to implement the measures in 2022 (K. Clark, GNWT, pers. comm. 2022).

5. Future application of Mobile Measures in Nunavut

Future application of Mobile Measures across Nunavut to avoid and minimize impacts of mineral exploration on caribou will draw on the existing KivIA's Mobile Measures, the GNWT framework and implementation guidelines, and NIRB's conditions applied to screening reports. The outcome will be a relatively standardized but adaptable conditions for land use permits and licenses applicable to barren-ground caribou seasonal ranges on IOL and Crown lands. The updated Mobile Measures would be applied as a condition, for example, within NPC's Conditional Use Areas.

Coordination among government, RIAs and land use operators will be essential to successfully implement Mobile Measures (Table 3). Land use operators will be provided with Mobile Measures documentation early in their planning to be aware that they will be expected follow the intent of the Mobile Measures to avoid disturbance to caribou. The land use operator is responsible for understanding the Mobile Measures as they apply to their proposed land use activity, to implement monitoring and mitigation actions, and to annually report on caribou protection.

¹¹ Government of the Northwest Territories (GNWT). 2019. Bathurst Caribou Range Plan. August 2019. Environment and Natural Resources, Government of the Northwest Territories, Yellowknife, NT. 86 + iii pp.

¹² Government of the Northwest Territories (GNWT). 2022a. An Implementation Framework for Mobile Caribou Conservation Measures on the Bathurst Caribou Range. Environment and Natural Resources, February 2022.

Government of the Northwest Territories (GNWT). 2022b. Mobile Caribou Conservation Measures – Operational Guidance. Environment and Natural Resources, February 2022.

¹³ Atkinson, S. 2016. Implementing Mobile Protection Measures for Caribou in Nunavut: Challenges, Costs and Effectiveness. Prepared for the Department of Environment, Government of Nunavut. September 2016 (draft v3). 90 pp.

Table 3. Suggested progression of activities for a land use operation using Mobile Caribou Conservation Measures within Nunavut caribou range.

	Task	Land Agency and NIRB	Land Use Operator
1	Planning	CIRNAC (Crown lands) and RIAs (on IOL) publicizes the need for Mobile Measures through Chamber of Mines, Mining Records Office, NIRB website, RIAs, etc.	Land use operator is made aware of requirements for Mobile Measures through Chamber of Mines, Mining Records Office, NIRB website, RIAs, etc.
2	Planning	CIRNAC/RIAs has point of contact for Mobile Measures oversight.	Land use operator contacts CIRNAC (or RIA on IOL).
3	Planning	CIRNAC/RIAs provides and discusses Operational Guidance document and clarifies expectations/requirements.	Discusses Operational Guidance document and clarifies expectations/requirements.
4	Planning	Discusses and determines location relative to range assessment area and season of proposed operation.	Discusses and determines location relative to range assessment area and season of proposed operation.
5	Planning	Summary of expected seasonal caribou abundance and residency provided in Operational Guidance document.	Reviews caribou information and responds with proposed schedule of operations.
6	Planning	Size of Early Warning Zone and trigger levels of caribou are discussed and understood.	Size of Early Warning Zone and trigger levels of caribou are discussed and understood.
7	Planning	Reviews and agrees upon suggested list of tiered mitigations.	Provides potential list of tiered mitigations based on mineral cycle stage and type of activity.
8	Planning	Ensures project site contact information is received for information sharing.	Provides project site contact information to CIRNAC/RIAs for information sharing (e.g., emailing collar location maps).
9	Operations	CIRNAC/RIAs provides timely emails with maps of collar locations relative to Early Warning Zone, Zone of Influence and project site.	Receives emails with maps of collar locations relative to Early Warning Zone, Zone of Influence and project site.
10	Operations	CIRNAC/RIAs available to respond to any questions or concerns during operations.	Monitors collar locations in the Early Warning Zone; ground or aerial observations.
11	Operations	CIRNAC/RIAs expects the operator to implement mitigation, and is available to respond to any questions and concerns during operations.	If caribou threshold exceeded, the land use operator will implement mitigation; monitoring within the Zone of Influence is advised.
12	Operations	CIRNAC/RIAs available to respond to any questions concerns during operations.	Continued monitoring and mitigation until caribou move out of the Early Warning Zone.
13	Reporting	CIRNAC/RIAs to provide an annual report on Mobile Measures-related activities within caribou ranges.	Land user to provide an annual report on Mobile Measures-related activities.
14	Review	Assess the effectiveness of the Mobile Measures including consideration of costs,	Assess the effectiveness of the Mobile Measures including actions taken, costs,

	Task	Land Agency and NIRB	Land Use Operator
		personnel requirements and achievement of desired outcomes.	personnel requirements and consequences to operations.

The current experience of NIRB's screening recommendations and KivIA's Mobile Measures have not revealed problems (although COVID-19 reduced activities over the past 2 years). However, overall review of terms and their effectiveness would increase confidence in the applicability of Mobile Measures. Questions about monitoring requirements and capacity are addressed through reliance on the land use proponent rather than needing to establish costly herd level monitoring programs including an expansion of existing, government-led GPS collaring programs. Mobile Measures are already part of existing land use regulatory systems with their existing enforcement potential, which addresses concerns about compliance. In summary, Mobile Measures are a flexible tool to reduce the potential impacts to caribou of industrial activity associated with exploration sites. Mobile Measures are a component of a regulatory system that also has provisions to protect caribou habitat.

Prepared for Kivalliq Inuit Association

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APPENDIX A.

Schedule B is part of <https://www.kivalliqinuit.ca/wp-content/uploads/2022/02/KIA-Land-Use-License-Terms-Conditions.pdf>

Schedule “B”

MOBILE CONSERVATION MEASURES GUIDELINES

Introduction

The Tenant shall comply with the measures set out herein. The Tenant shall immediately report to the Landlord any deviation from these measures, including the reason for the deviation.

The Landlord reserves the right, based on the presence of caribou within the area of the Land in any year, to vary the dates set out herein and shall provide notice to the Tenant of any such variation.

Wildlife Monitoring Personnel

The Tenant shall have wildlife monitoring personnel present at the Property during any season when caribou are reasonably expected to be present. The names of such personnel shall be sent to the Landlord and they shall maintain communication at all reasonable times. The Tenant shall monitor and immediately report the presence of caribou to the Landlord in accordance with the following directives. The report shall specify the location and estimated numbers.

A. IOL within designated calving grounds

Section 1. On IOL within designated calving grounds (as designated by the Government of Nunavut) between May 1st and July 31st (the closure period):

- 1) No activities shall occur except as authorized by the Landlord.

Section 2. On IOL within designated calving grounds between August 1st and September 30th, the Tenant shall conduct monitoring and mitigation as follows:

- 2i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou observed within the thirty (30) km early warning zone from the boundary of the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, remote camera surveys).

2ii) If monitoring indicates that there are twenty-five (25) or more caribou within five (5) km of the Property boundary, then the Tenant shall monitor within a five (5) km buffer zone around the Property on a daily basis, and shall immediately suspend work that has the potential to disturb caribou, including suspension of drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), suspension of all ground operations and camp closure, until caribou numbers are below the threshold within the buffer zone.

Section 3. On IOL within designated calving grounds between October 1st and April 15th, the Tenant shall conduct monitoring and mitigation as follows:

- (3i) If collar data or observations indicate that there are one (1) or more collared caribou or fifty (50) or more caribou observed within thirty (30) km of the boundary of the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, remote camera surveys).
- (3ii) If monitoring indicates that there are fifty (50) or more caribou within two and a half (2.5) km of the Property, then the Tenant shall immediately reduce above-ground activities that have the potential to disturb caribou, including non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), until caribou numbers are below the threshold within the buffer zone.

Section 4. On IOL within designated calving grounds between April 16th and April 30th, the Tenant shall conduct monitoring and mitigation as follows:

(4i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou within fifty (50) km of the boundary of the Property that appear to be moving in the direction of the activities, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, snow track counts (if appropriate), remote camera surveys).

(4ii) If monitoring indicates that there are an estimated twenty-five (25) or more caribou within the five (5) km buffer zone for the Property, then the Tenant shall conduct monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including suspension of drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), suspension of all ground operations, and camp closure, until caribou numbers are below the threshold within the buffer zone.

B. IOL within other seasonal caribou ranges

Section 5. On IOL between June 1st and July 15th outside of designated calving grounds, the Tenant shall conduct monitoring and mitigation as follows:

(5i) If collar data or observations indicate that there are one (1) or more collared caribou or ten (10) or more caribou observed within the fifty (50) km early warning zone for the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land, road surveys, snow track counts (if appropriate), remote camera surveys).

(5ii) If monitoring indicates that there are an estimated ten (10) or more caribou within the five (5) km buffer zone for the Property, then the Tenant shall conduct monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including suspension of drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), suspension of all ground operations and camp closure until caribou numbers are below the threshold within the buffer zone.

Section 6. On IOL between July 16th and September 30th outside of designated calving grounds, the Tenant shall conduct monitoring and mitigation as follows:

(6i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou observed within thirty (30) km of the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, snow track counts (if appropriate), remote camera surveys).

(6ii) If monitoring indicates that there are twenty-five (25) or more caribou within five (5) km of the boundary of the Property, then the Tenant shall conduct monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including suspension of drill operations, blasting activities, non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), and camp closure until caribou numbers are below the threshold within the buffer zone.

Section 7. On IOL between October 1st and April 15th outside of designated calving grounds, the Tenant shall conduct monitoring and mitigation as follows:

(7i) If collar data or observations indicate that there are one (1) or more collared caribou or fifty (50) or more caribou observed within thirty (30) km of the boundary of the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, remote camera surveys).

(7ii) If monitoring indicates that there are fifty (50) or more caribou within 2.5 km of the boundary of the Property, then the Tenant shall immediately reduce aboveground operations that have the potential to disturb caribou, including non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for

emergency purposes), and suspension of above ground operations, until caribou numbers are below the threshold within the buffer zone.

Section 8. On IOL between April 16th and May 31st, the Tenant shall conduct monitoring and mitigation as follows:

(8i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou observed within fifty (50) km of the boundary of the Property that appear to be moving in the direction of the activities, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, snow track counts (if appropriate), remote camera surveys).

(8ii) If monitoring indicates that there are an estimated twenty-five (25) or more caribou within the five (5) km buffer zone for the Property, then then the Tenant shall conduct monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), suspension of all ground operations and camp closure, until caribou numbers are below the threshold within the buffer zone.

C. Freshwater crossings

Section 9. On IOL between May 15th and September 30th, the Tenant will not construct camps or other permanent structures or conduct blasting within ten (10) km of designated caribou freshwater water crossings. Exploration activities will not be permitted within five (5) km of water-crossings between May 15th and September 30th. Between May 15th and September 30th, the Tenant shall conduct monitoring and mitigation as follows:

(9i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou observed within twenty-five (25) km of the boundary of the Property that appear to be moving in the direction of the activities, then monitoring within a five (5) km buffer zone around the water crossing shall be conducted every second day (e.g., height of land surveys, remote camera surveys).

(9ii) If monitoring indicates that there are fifty (50) or more caribou within five (5) km of the boundary of the Property that appear to be moving in the direction of the water crossing, then the Tenant shall conduct monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including suspension of drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), suspension of all ground operations,

camp closure, and removal of all non-essential personnel, until caribou numbers are below the threshold within the buffer zone.

D. Aircraft

Section 10. The Tenant shall ensure that aircraft (fixed-wing and helicopter) flights over occupied calving and post-calving areas shall be at least 610 m above ground level and avoid areas of known caribou concentrations (subject to pilot discretion regarding aircraft and human safety). In other seasons aircraft shall be at least 300 m above ground level.