

MEMORANDUM

DATE: 25 January 2021

TO: Luis Manzo, Director of Lands, Kivalliq Inuit Association (KivIA)

CC: Jeff Tulugak, KivIA; Richard Nesbitt, HESL, Alan Sexton, GeoVector; Michel Groleau, Agnico Eagle Mines; Dan Coulton and Corey De La Mare, Golder; NIRB

FROM: Kim Poole, Aurora Wildlife Research, and Anne Gunn, on behalf of the Kivalliq Inuit Association

SUBJECT: **Comments on Collar Caribou Meliadine AWAR Interactions, Golder 8 January 2021**

The Nunavut Impact Review Board (NIRB) held virtual technical meetings for Agnico Eagle's Saline Effluent Discharge to Marine Environment project on 11-12 January 2021. On the Friday prior to the technical meeting Golder submitted a technical memorandum to Agnico Eagle and NIRB titled "Collared caribou Meliadine AWAR interactions" (8 January 2021). The report was Agnico Eagle's historical annual summary of collared caribou interactions with the All-Weather Access Road (AWAR) in response to a question from Sayisi Dene First Nation.

There was little time for interveners to review this document prior to the technical meeting and no time to discuss the document during the meeting. The Kivalliq Inuit Association (KivIA) is disappointed in a) the late document submission, and b) the lack of time to discuss the memo during the technical meeting.

The report essentially concluded that anywhere from 81–98% of caribou encountering the AWAR crossed the road, and that the overall deflection rate since road operation was 1.8%. KivIA finds the conclusions premature and based on a partial analysis which lacks insight into caribou behaviour:

1. Zone of Influence: The Golder report considered only those caribou which encountered the Local Study Area (LSA) 1.5 km radius buffer around the AWAR, Meliadine Mine and proposed Discovery Road as having potential to interact with the AWAR and associated mining infrastructure. Given that analysis of caribou crossing of the Meadowbank-Whale Tail roads observed movement zones of influence (ZOI) of 16–17 km (Boulanger et al. 2020¹) and that strong barrier effects of mining roads were observed in northern Quebec (Plante et al. 2018²), we suggest that use of such a small zone for consideration of

¹ Boulanger, J., R. Kite, M. Campbell, J. Shaw and D.S. Lee. 2020. Analysis of Caribou Movements Relative to the Meadowbank Mine and Roads During Spring Migration. Government of Nunavut, Department of Environment, Technical Report Series – No:01-2020. 31 July 2020.

² Plante, S., C. Dussault, J. H. Richard, and S. D. Côté. 2018. Human disturbance effects and cumulative habitat loss in endangered migratory caribou. *Biological Conservation* 224:129–143.

movement to be unrealistic. Many caribou are likely making decisions about whether and where to cross the AWAR much further out than 1.5 km.

2. Definitions of deflection and no crossing potential: The Golder report had only a narrow definition of whether a caribou deflected: “*if their path moved toward the AWAR but exhibited an approximately 90 degree turn or larger and did not move closer to the AWAR again*”. This is an odd definition and its basis on caribou behaviour is unknown as it does not take into account paralleling behaviour. The rationale why 90 degrees was chosen is unknown; a series of 60-degree turns would also turn caribou away from the road. Caribou moving parallel to the road were not considered deflected (or had any crossing potential), even though this behaviour may mean they are disturbed enough to not cross and continue to parallel the road looking for an appropriate crossing area. In 2017 many caribou paralleled much of the length of the road before crossing close to Rankin Inlet; these were labelled as individuals with no crossing potential (Fig. 4). Why these individuals were not considered as deflected around the road system is unclear. The elimination of caribou deemed to have “*no crossing potential*” artificially inflated the proportion of animals that were classified as successfully crossing the road.

3. Insect harassment and exposure: The extent of insect activity affects caribou behaviour, with high insect harassment leading them to be more tolerant of areas near human activity (Skarin et al. 2004³). But the Golder report did not describe how biting insects influence caribou behaviour including the likelihood of crossing roads. Insect harassment typically increases group size which affects crossing success but the analysis does not consider whether collared caribou were likely in the same group (based on crossing times) which inflates the apparent crossing success. Regardless whether caribou cross the road or not, an annually variable number of collars are within the LSA and exposed to the project. If insect harassment is low, will those caribou still cross the road? In other words, caribou exposure to the road and covered waterline is high.

4. Other comments:

- **Duty cycle:** The report should state the fix rate on these collars (presumably 4 hours?) as the time between locations will influence the degree in which responses to roads could be detected.
- **Mapping:** It would have been useful for readers if direction arrows had been added to the walk lines on the figures.
- **Annual variation:** An indication of the high annual variation in the pathways relative to the number of crossings should be addressed in the reporting.

5. Conclusions

Contrary to what is stated the Golder memo, we do not find this to be “*precautionary analysis of collared Qamaniruaq caribou*”. Instead, we found this to be a preliminary analysis. More reporting and analysis are needed about annual differences in daily insect harassment and traffic levels as well as more rigorous approach to defining deflection and availability of caribou with the potential to encounter the AWAR (use of the LSA is far too restrictive). While KivIA is aware that the analysis was done

³ Skarin, A., Ö. Danell, R. Bergström, and J. Moen. 2004. Insect avoidance may override human disturbances in reindeer habitat selection. *Rangifer* 24:95–103.

relatively quickly in response to a question prior to Christmas, KivIA is concerned about the preliminary nature of the conclusions. However, KivIA remains committed to a collaborative approach and is available to work with Agnico Eagle and their consultants to ensure that these types of analyses consider caribou behaviour and other factors such as traffic and insect levels that influence caribou road crossing.

5. Recommendations:

- 1) AEM should consult with interested parties about how to define deflection using both IQ and technical criteria.
- 2) The preliminary analyses presented in the Golder report should be replaced by a more comprehensive analysis at appropriate spatial and temporal scales and including relevant variables (e.g., insect harassment and daily traffic levels) to ensure that the conclusions are rigorous.