



Mr. Noah Johnson
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May 04, 2022

Dear Mr. Johnson:

Aboriginal Consultation: Decision about Whether to Approve the Wildlife Management and Monitoring Plan for the Diavik Diamond Mine

The Government of Northwest Territories (GNWT) Department of Environment and Natural Resources (ENR) acknowledges receipt of the North Slave Métis Alliance (NSMA) correspondence of March 04, 2022 regarding Aboriginal consultation with respect to ENR's pending decision about whether to approve the Wildlife Management and Monitoring Plan (WMMP) for the Diavik Diamond Mine.

ENR would like to provide the following information in response to issues raised by NSMA.

Issue 1: Methods for evaluating the potential effects of dust contaminants on caribou health.

The NSMA raised a concern that industrial contamination may harm caribou health or may reduce meat quality for human consumption, which has the potential to harm the NSMA members rights to harvest caribou. The NSMA is of the view that the current method of monitoring metal concentrations from dust produced by Diavik, which is done by monitoring soil and lichen around the mine, may not be a good proxy for what caribou actually consume. The NSMA therefore recommended that Diavik should be required to study contaminant levels in caribou fecal pellets, in addition to monitoring contaminants in soil and lichen.

In 2010, Golder Associates, on behalf of the Diavik Diamond Mine, undertook a study to investigate metal concentrations in lichen near the mine, versus 30-40 km from the mine and conducted an ecological risk assessment of health impacts to caribou that may consume the lichen, based the results of field sampling (Golder 2011)¹.

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¹ Golder (Golder Associates, Ltd.). 2011. Risk assessment of caribou exposure to metals from dust deposition to lichen. Prepared by Golder Associates, Ltd. for Diavik Diamond Mines Inc., Yellowknife, NWT, Canada.

Although the study found that concentrations of 17 out of 21 metals tested in the samples were higher near the mine site than in areas 30-40 km away (excluding the area around the Ekati diamond mine), of the 17 metals considered in the analysis, only aluminum was found to cause an exposure risk to caribou. The primary source of caribou exposure to aluminum considered in the risk assessment was through lichen ingestion. However, the report concluded that adverse health effects for caribou from aluminum exposure were unlikely. This conclusion was based on the exposure risk calculation which assumed caribou spent 100% of their time foraging in the area of the mine, which is not the case, and the risk assessment was based on a soluble form of aluminum that has a higher toxicity than aluminum oxide (the form of aluminum more common in the environment). Golder evaluated chemical concentrations in lichens and soil again in 2016 and found that they had decreased at the near-mine sample sites relative to concentrations observed in 2010 (Golder 2017)². Diavik has indicated in the November 2021 version of their WMMP that another cycle of the Comprehensive Vegetation and Lichen Monitoring Program was completed in 2021.

Macdonald and Gunn (2004)³ used fecal pellets from barren-ground caribou to assess evidence of exposure to major dust and soil sources of contaminants at sites around the Colomac mine (abandoned) and from 24 sampling locations near the Ekati and Diavik diamond mines. Their findings indicated high rates of soil ingestion (based on ash content in fecal pellets) at lick sites such as the Colomac tailings areas, and in samples from around the Ekati mine, but samples from around the Diavik mine suggested similar or lower levels of soil ingestion compared to samples at off-site control areas, calving grounds, summer range and fall lichen diet (see Figure 3 in MacDonald and Gunn 2004). Concentrations of gold, arsenic, iron, thorium, and bismuth in fecal pellets were similar in the samples from around Ekati and Diavik to samples from the calving grounds, summer plant diet, fall lichen diet, and control sites around the Colomac mine. The authors acknowledge that there is potential for metal exposure in caribou through foraging on lichens and deliberate consumption of tailings (or revegetation on tailings) but highlighted that there is an incomplete understanding about the degree to which metals are absorbed from the gastrointestinal tract by caribou and how the metals may interact with one another. The study was not designed to evaluate the amount of metals absorbed by caribou.

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² Golder. 2017. 2016 Comprehensive vegetation and lichen monitoring program. Submitted to Diavik Diamond Mines (2012) Inc. Yellowknife, NWT, Canada.

³ Macdonald, C. and A. Gunn. 2004. Analysis of the ash weight and elemental composition in caribou (*Rangifer tarandus*) fecal pellets collected at Colomac and other sites in the NWT. Resources, Wildlife and Economic Development. Government of the Northwest Territories. Manuscript Report No. 159. 61pp. Available at: www.enr.gov.nt.ca/node/1147

While analysis of contaminant levels within caribou fecal pellets can provide an indicator of exposure to contaminants, it does not provide an indication of body burden or organ concentrations, and thus the impacts to caribou health. Monitoring to assess health risks to caribou, and risk to people that consume caribou, is typically based on analysis of tissue samples collected from harvested caribou or caribou carcasses collected after other sources of mortality.

To ENR's knowledge, there are no studies published yet that evaluate the correlation between contaminant concentrations in fecal pellets and those in animal tissues. As part of the CIRNAC-led Northern Contaminants Program⁴, contaminants are monitored annually in the Porcupine caribou herd (since the early 1990s) and in the Qamanirjuaq herd (since 2006), and samples from other barren-ground caribou herds have been submitted as part of this program in previous years⁵. The program's webpage states that, "Overall, contaminant levels in caribou are low and caribou meat remains a healthy and nutritious food choice". The 2019/2020 Synopsis Report from this program⁶ outlines the results of analysis of samples collected in 2018/2019, which included samples from the Bathurst caribou herd. A more detailed report on these results is provided in Gamberg et al. (2020)⁷. This report concluded that levels of contaminants measured in caribou kidneys were not of toxicological concern, although renal mercury and cadmium concentrations could be a human health concern depending on the quantity of organs consumed. For example, in the Yukon, it is recommended that a maximum of 25 Porcupine caribou kidneys a year be consumed. The report states that caribou meat (muscle) does not accumulate high levels of contaminants and is a healthy food choice. There is currently no health advisory for the consumption of caribou in the NWT^{8,9,10}.

Based on its review and assessment of available information, ENR is of the view that Diavik's monitoring of contaminant levels in lichens and soil will provide an indicator of exposure risk to caribou and will not require monitoring of contaminant levels in fecal pellets.

If the NSMA members remain concerned about the potential health effects of caribou foraging near the diamond mines, ENR is willing to have discussions with the NSMA to consider opportunities to monitor contaminant levels in caribou harvested legally in the area of the mine.

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⁴ https://science.gc.ca/eic/site/063.nsf/eng/h_7A463DBA.html

⁵ www.northerncaribou.ca/threats/contaminants/

⁶ www.northerncaribou.ca/resources/contaminants-in-arctic-caribou-synopsis-report-2019-20/

⁷ Gamberg, M., I. Pratte, J. Brammer, C. Cuyler, B. Elkin, K. Gurney, S. Kutz, N.C. Larter, D. Muir, C. Wang and J.F. Provencher. 2020. Renal trace elements in barren-ground caribou subpopulations: Temporal trends and differing effects of sex, age and season. *Science of The Total Environment*, 724, p.138305.

⁸ www.hss.gov.nt.ca/en/services/contaminants-environnementaux/caribou

⁹ www.hss.gov.nt.ca/en/services/environmental-contaminants

¹⁰ www.hss.gov.nt.ca/sites/hss/files/resources/contaminants-fact-sheets-caribou.pdf

Issue 2: Ownership and storage of data relating to s.35 wildlife harvesting rights and the s.35 right to be consulted on wildlife management decisions.

ENR agrees with NSMA that it would be beneficial for Diavik, and other developers, to submit their wildlife monitoring data to a central repository where it can be archived and made available to other parties upon request and subject to data sharing agreements with the data owner. Section 5.3.1 of ENR's WMMP and Content Guidelines¹¹ state that developers are required to submit their wildlife sighting data and WMMP monitoring program data to ENR's Wildlife Management Information System (WMIS). ENR will include a recommendation in the approval decision letter for the Diavik WMMP to encourage Diavik to submit its historic wildlife monitoring data, and any new data collected under the WMMP, to WMIS.. ENR is of the view that access to raw wildlife data collected by a private corporate entity is not a rights-based issue.

Should NSMA have any follow-up questions or concerns in response to this letter, please contact Mr. James Hodson, Manager, Habitat and Environmental Assessment at James.Hodson@gov.nt.ca.

Sincerely,



Erin Kelly, Ph.D.
Deputy Minister
Environment and Natural Resources

c. Honourable Caroline Cochrane
Premier

Vice-President Marc Whitford
North Slave Métis Alliance

Honourable Shane Thompson
Minister
Environment and Natural Resources

Shaleen Woodward
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¹¹ www.enr.gov.nt.ca/en/node/18861/

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