Environmental Protection Operations Directorate
Prairie & Northern Region
5019 52nd Street, 4th Floor
P.O. Box 2310
Yellowknife, NT X1A 2P7

ECCC File: 6100 000 010/024
NIRB File: 05MN047

July 5, 2019

via email at: info@nirb.ca

Andrea Omilgoitok
Environmental Administrator
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU X0B 0C0

Dear Andrea Omilgoitok:

RE: 05MN047 – TMAC – Doris North and Phase 2 Hope Bay Belt Project – 2018 Annual Monitoring Report

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Impact Review Board (NIRB) by TMAC (the Proponent) regarding the above-mentioned Annual Monitoring Report and is submitting comments via email. ECCC's specialist advice is provided based on our mandate, in the context of the *Canadian Environmental Protection Act*, and the pollution prevention provisions of the *Fisheries Act*.

The following comments are provided:

1. Passive Sampling

References

- 2018 Annual Report –Appendix C-1 – Section 1
- Air Quality Management Plan – Section B4 and C4

Comment

Section 1 of Appendix C-1 states that passive sampling for NO_2 was discontinued in 2017. The management plan states that "Continuous NO_2 and particulate monitoring will be conducted for a 1-year period during peak construction and for a minimum 1-year period during a time in operations that designates lead up to and during peak operations. In the event that emissions increase due to a change in operations, additional NO_2 monitoring will be conducted". ECCC is of the view that passive NO_2 monitoring during these peak years as

well as during the years without continuous monitoring would be beneficial in tracking the overall NO_2 concentrations of the Project.

Installing a passive sampler near the continuous NO_2 monitor would then allow for comparison of how well the passive is capturing the ambient concentrations.

ECCC Recommendation(s)

ECCC recommends that the Proponent provide justification as to why passive sampling was discontinued in 2017, specifically for NO_2, and that passive NO_2 monitoring continue in conjunction with the planned continuous NO_2 monitoring.

2. NO_2 Monitoring Schedule

References

- Air Quality Management Plan – Module A: Doris

Comment

Section A2.3 of the Air Quality Management Plan states "continuous ambient monitoring for NO_2 will be implemented in 2019 at Station DFA1. The monitor will be housed within the same equipment shelter as the particulate monitors." Unlike Module B and C, Module A does not indicate the NO_2 monitoring schedule for the continuous monitor at DFA1.

ECCC Recommendation(s)

ECCC recommends that the monitoring schedule for the continuous NO_2 monitoring at DFA1 be added for Module A and the continuous monitor at DFA1.

3. Phytoplankton and Tropic Status

References

- Appendix C-4 Doris Project 2018 Aquatic Effects Monitoring Program
    - Section 3.3.9 (Total Phosphorus)
    - Section 3.4 (Phytoplankton

Comment

Using the Canadian Council of the Ministers of the Environment (CCME) phosphorus guidelines, the concentrations of total phosphorus in Doris Lake indicate a trophic status of mesotrophic to eutrophic. However, Reference Lake B has a total phosphorus concentration that is indicative of an ultra-oligotrophic lake. These differences in the two waterbodies are further illustrated by the difference in phytoplankton biomass as assessed using chlorophyll a. In the analysis of the phytoplankton biomass, "*statistical analysis and graphical analysis were used to determine if there were changes in phytoplankton biomass over time*

compared to baseline conditions. Biomass trends were also compared between exposure and reference sites to determine whether a low action level was exceeded according to the Response Framework."

Given the differences in trophic status between the two lakes, it is unclear what potential implications tropic status may have on the analysis of phytoplankton biomass, and potentially other biotic variables. There is no discussion on how the difference in trophic status is managed and/ or accounted for within the study design or any implications this may have going forward.

ECCC Recommendation(s)

ECCC recommends the Proponent:

- Discuss the applicability of Reference Lake B to act as a reference lake for Doris Lake, given the differences in trophic status. This should include a discussion on how differences in trophic status are accounted for within the study design.
- Discuss the comparability of phytoplankton biomass trends between reference and exposure lakes.

4. Seepage Survey Results

References

- Appendix C-5 – 2018 Waste Rock, Quarry and Tailings Monitoring Report –
    - Section 5.2 (Seepage Survey Results)
    - Appendix B – 2018 Doris Waste Rock, Ore and Infrastructure seep monitoring
- 2018 Seep Survey Memo

Comment

The seepage survey monitoring results for the waste rock pile are compared to historical monitoring results as well as the 2015 source terms used in modelling. Monitoring results indicate concentrations exceeding screening criteria for chloride, nitrate, nitrite, ammonia, sulfate, copper, and selenium. Of those that exceed the screening criteria the median concentrations for sulfate, copper, selenium, and nitrate exceed the source term inputs that were used in the 2015 modelling. There is no discussion provided on the implications of these exceedances of source term inputs on the overall mine water management and mine water quality.

ECCC Recommendation(s)

ECCC recommends the Proponent provide a discussion on any implications to water balance and water quality predictions if concentrations in seepage continue to exceed the 2015 source term concentrations.

Please contact Eva Walker at (867) 669-4744 or eva.walker@canada.ca should you require more information.

Sincerely,

[original signed by]

Eva Walker
Environmental Assessment Coordinator

Attachment(s):

cc: Georgina Williston, Head, Environmental Assessment North (NT and NU)