

DE BEERS GROUP

November 25, 2021

Angela Love
Mackenzie Valley Land and Water Board
PO Box 2130
Yellowknife, Northwest Territories
X1A 2P6

Re: AEMP Response Plan – Toxicological Impairment and Nutrient Enrichment – Low Action Level Exceedance in 2020 – Update to the AEMP Design Plan Version 6.2

Dear Ms. Love:

De Beers Canada Inc. (De Beers) submitted an Aquatic Effects Monitoring Program (AEMP) Response Plan under Part I of Water Licence MV2005L2-0015 to the Mackenzie Valley Land and Water Board (MVLWB) on June 30, 2021. This Response Plan was required because Low Action Levels were triggered for the Toxicological Impairment and Nutrient Enrichment Impact Hypotheses, based on the results of the 2020 AEMP under the AEMP Design Plan V5. Information requests (IRs) on the AEMP Response Plan were received on July 28, 2021, and De Beers responded by August 11, 2021.

Since the submission of the 2020 AEMP Response Plan, the AEMP Design Plan V6.2 was approved. The MVLWB approved V6.1 as an interim submission on August 24, 2021, with a requirement to submit a revised version (V6.2), which De Beers submitted on September 20, 2021. On September 22, 2021, the MVLWB staff confirmed that the required changes were made and that V6.2 was considered approved.

The MVLWB met on October 7, 2021 to review the 2020 AEMP Response Plan, and approved the Plan as submitted with a Directive for De Beers to submit a standalone document that will be attached to the recently approved AEMP Design Plan V6.2. This standalone document would be an update to the approved AEMP Design Plan V6.2, and was required to be submitted to the MVLWB by October 27, 2021 for approval. The document was requested to include De Beers' proposed triggers to initiate further studies on the spatial and seasonal extent of water with low dissolved oxygen (DO) concentrations per responses to Information Requests (IRs) #2 and #4 from the Government of Northwest Territories, Environment and Natural Resources (GNWT-ENR) on their review of the 2020 AEMP Response Plan. The MVLWB staff recommended this document be provided to allow reviewers to comment on the proposed triggers, and to allow these triggers to be added to the newly approved AEMP Design Plan V6.2 for use in future AEMP evaluations.

A version of this standalone document was submitted on October 27, 2021, and consisted of the responses to GNWT-ENR IRs #2 and #4. However, upon review of the document, Board staff requested clarification on November 17, 2021 as to where the new text from the responses to the GNWT-ENR IRs would be added to the AEMP Design Plan V6.2. This led to a discussion between De Beers and Board staff on the content and intent of the document, and both parties agreed that a revised document should be provided to include greater clarity regarding the proposed update to the AEMP Design Plan V6.2.

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The original IR recommendations and responses are provided below:

GNWT-ENR #2 Recommendation:

ENR recommends that De Beers include the development of a special study as a response action in future evaluations. The special study should evaluate the spatial and temporal extent of reduced dissolved oxygen (DO) concentrations in Lake N11 and Area 8, including information on the likelihood of mining activities to reduce DO concentrations via hydrological changes (e.g., isolation of Area 8) and nutrient enrichment.

De Beers Response:

De Beers agrees that if low under-ice DO is confirmed as a Mine-related effect in Area 8, a special study could be developed as a response action in future evaluations. However, this special study would focus on Area 8 not Lake N11, as it is Area 8, not Lake N11, where low under-ice DO is a potential contributor to adverse effects on benthos.

GNWT-ENR #4 Recommendation:

ENR recommends that De Beers clarify the criteria and/or triggers that would need to be met to initiate further studies on the spatial and seasonal extent of water with low DO.

De Beers Response:

Further studies on the spatial and seasonal extent of low DO in Area 8 would be considered if one of the following is met:

- *Analysis of DO data collected 0.5 m above lake bottom confirms that there is sustained reduction in DO, and benthos richness remains reduced relative to reference lakes as indicated by BACI analysis results, or*
- *data review suggests the amount of fish habitat is decreasing, or there is potential for effects to the fish community.*

The purpose of the special study is to support additional analysis of low under-ice DO as a potential cause for the apparent reduction in benthos richness.

The MVLWB Directive for the update to the AEMP Design Plan is:

De Beers to submit the proposed action level triggers for a low dissolved oxygen special study and confirm initiation of this special study as a possible Low Action Level response in an AEMP Design Plan update submitted for Board approval by October 27, 2021.

This letter is provided to the MVLWB to satisfy this Directive.

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In consideration of the IR recommendations and our responses, and to provide clarity for application of the AEMP Design Plan, the following text will be added to Section 8.4.1.3 in the approved AEMP Design Plan V6.2, as a separate bullet under “Low Action Level Exceedances”:

- if the Low Action Level for benthos richness is exceeded in Area 8, then as suggested in the review of the 2020 AEMP Response Plan (De Beers 2021, MVLWB 2021¹), a special study on the spatial and temporal extent of low under-ice DO in Area 8 will be considered if one of the following is met:
 - Analysis of DO data collected 0.5 m above lake bottom confirms that there is sustained reduction in DO, and benthos richness remains reduced relative to reference lakes as indicated by *before-after control-impact* (BACI) analysis results, or
 - data review suggests the amount of fish habitat is decreasing, or there is potential for effects to the fish community.

No changes or additions are proposed to the Action Levels in the approved AEMP Design Plan V6.2. The Low Action Level related to toxicological impairment of benthic invertebrates, as stated in Table 8.4-2 of the approved AEMP Design Plan V6.2, will continue to be applied. The exact wording of the approved Low Action Level is: *1a. Lake-wide average value for total density, richness, or the densities of dominant taxa below the regional normal range or 1b. Lake-wide average value for total density, richness, or the densities of dominant taxa below the regional mean/median and trending toward the lower bound of the regional normal range over a period of three surveys AND 2. A significant decreasing BACI effect detected in total density, richness, or the densities of dominant taxa.* The lake-wide average value is defined as either the mean or median value, depending on the underlying statistical distribution, as discussed in Section 6.5.3.4 of the AEMP Design Plan V6.2.

Should you have any questions or concerns, please feel free to contact me by phone at (867) 445-1485 or by email at william.liu@debeersgroup.com.

Sincerely,



William Liu
Regulatory Specialist
De Beers Canada Inc.

¹ De Beers (De Beers Canada Inc.). 2021. Gahcho Kué Mine 2020 Aquatic Effects Monitoring Program Response Plan for Toxicological Impairment and Nutrient Enrichment. Submitted to the Mackenzie Valley Land and Water Board, Yellowknife, NT, Canada. 66 pp. June 2021.
MVLWB (Mackenzie Valley Land and Water Board). 2021. Staff Report – AEMP Response Plan – Toxicological Impairment and Nutrient Enrichment. Prepared October 1, 2021 for the Mackenzie Valley Land and Water Board (MVLWB) by MVLWB Staff, Yellowknife, NT, Canada. 113 pp.