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April 13, 2021

File: MV2005L2-0015

William Liu  
De Beers Canada Inc.  
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Calgary AB T2E 6Z8

Sent by e-mail

Dear William Liu:

**Aquatic Effects Re-evaluation Report (2015-2018) – Approved**  
**AEMP Design Plan Version 6 – Resubmission Required**  
**Conceptual Mitigation Plan – Required**

**De Beers Canada Inc. – Gahcho Kue Mine, NT**

The Mackenzie Valley Land and Water Board (MVLWB or the Board) met on April 8, 2021 to review De Beers' Aquatic Effects Re-evaluation Report and AEMP Design Plan Version 6 (V 6), which was submitted under Part G, Condition 4 and 2 of Licence MV2005L2-0015 respectively.

The Board hereby approves the Aquatic Effects Re-evaluation Report for 2015-2018.

The Board requires that De Beers resubmit the requested changes for AEMP Design Plan in accordance with Board directives, as summarized in Table 1 (attached). Given the substantial changes and complexity of the AEMP, this revised Plan will be distributed for public review prior to Board decision. De Beers shall submit the AEMP Design Plan V 6.1 by **May 13, 2021**. To focus the review on outstanding items on the AEMP Design Plan V 6.1, the Board encourages De Beers to clearly indicate where the revisions have been made in the AEMP Design Plan V 6.1 to address the Board directives in Table 1. Board staff will remind reviewers to comment on the revisions identified in De Beers' concordance table when the AEMP Design Plan V 6.1 is distributed for review.

The Board hereby directs De Beers to submit a **Conceptual Mitigation Plan** for the recovery of Arctic Grayling during post-closure by **July 13, 2021**. The Plan will be distributed for public review prior to Board decision. The Plan shall include the following:

1. The adaptability and resilience of Arctic Grayling to recolonization by modelling their potential response under different recovery scenarios;

2. If result of the modelling exercise it is determined that an assisted recovery is required to meet post-closure objectives, then the Plan will also identify source populations and discuss translocation options;
3. On-going Arctic Grayling monitoring efforts; and
4. Timeline for mitigation and project recovery
5. implementations of assisted recovery activities

If you have any questions or concerns, please contact [Angela Love](#) at (867) 766-7456 or [Jacqueline Ho](#) at (867) 766-7455.

Yours sincerely,



Mavis Cli-Michaud  
Mackenzie Valley Land and Water Board, Chair

BBC'ed to: Distribution List

Attached: Reasons for Decision  
Table 1: Board Directives on the AEMP Design Plan Version 6.1

**Table 1: De Beers – Gahcho Kue Mine, NT – Board Directives on AEMP Design Plan Version 6.1**

Item	Requirements	Review Comment Reference
<b>IR Responses Review Dated March 5, 2021</b>		
a.	De Beers’ commitment to clarify the term “key prey items” in the AEMP Design Plan Version 6.1 by including the following footnote “Benthic invertebrate taxa referred by the term "key prey items" in the benthic invertebrate community action levels for core lakes and Lake D2/D3 include dominant taxa and major taxonomic groups.”	ECCC-1, 2
b.	De Beers to include the non-detect alternative methods for treatment for censored data in AEMP Design Plan Version 6.1, and incorporate responses to Information Response #2, and review comments.	MVWLB-1, 2, 3, ENR-2
c.	De Beers to clarify the pre-treatment of censored data with respect to the exclusion of high non-detect data from normal range calculations and BACI analyses in AEMP Design Plan Version 6.1 and state that “Censored data will be screened to exclude high non-detect data prior to statistical analyses and normal range calculations. Specifically, non-detect values with detection limits that exceed the highest measured concentration in the dataset will be excluded.”.	ENR-3
d.	De Beers to revise the AEMP Design Plan Version 6.1 to note its commitment to evaluation whether a shift to trend analysis is appropriate in the next Aquatic Effects Re-evaluation report, which is due for 2022.	MVLWB-6
e.	De Beers to confirm that a fall survey for YOY slimy sculpin would be triggered for the same open-water season if no YOY slimy sculpin were observed during the summer survey, by including the statement in AEMP Design Plan Version 6.1 that “A provisional fall survey for YOY slimy sculpin would be triggered for the same open-water season if no YOY slimy sculpin are observed during the summer survey”.	ENR-9
f.	De Beers to include the statistical methods for calculating the measures of central tendency by including the statement in the AEMP Design Plan Version 6.1 “When calculating means/medians, the arithmetic mean will be used when the data are determined to be normally distributed based on significance of the Shapiro-Wilk test (P<0.05). The geometric mean will be used to estimate the normal range mean when normality can be achieved by applying a log-transformation to the data. The median will be used to provide an estimate of central tendency in cases where normality cannot be achieved by applying a transformation to the data”.	ENR-11
g.	De Beers to describe the sonar equipment with exact field methodology by including the statement “Lake M3, Lake M4, and Area 8 will be surveyed annually to determine the presence and species composition of large-bodied fish, primarily Northern Pike and Lake Trout. Sonar surveys using a single beam sonar ('CHIRP' sonar with down-scan or side-scan imaging capabilities) will be employed in conjunction with angling and visual surveys (by boat). A systematic transect will be defined that can be repeated annually to compare interannual estimates of density (# large fish / km) and species composition. A minimum of 5 km of transects will be surveyed in each lake, with one transect surveying the shoreline (<4 m depth) between the inlet and outlet, plus additional transects perpendicular to the shoreline transect ensuring one transect crosses deepest section of the lake”	ENR-12
h.	De Beers to include the revised water quality action levels in core lakes for toxicological impairment be included in the AEMP Design Plan Version 6.1 for review.	ENR-13

Item	Requirements	Review Comment Reference
	1. Lake-wide average concentration above the lake-specific normal range AND 2. Relative difference between the core lake and both reference lakes statistically significant compared to baseline (i.e., significant BACI effect detected) AND 3. Lake-wide average concentration above the annual predicted concentration (based on currently approved water quality model predictions) AND 4. Lake-wide average concentration exceeds 75% of AEMP benchmark	
i.	De Beers to update the Response Framework in AEMP Design Plan Version 6.1 to seek approval of the Effects Threshold through an AEMP Response Plan, instead of the AEMP Annual Report.	MVLWB-10 ENR-15
j.	De Beers to include the revised action level “Continued increasing trends in lake-wide average concentration as indicated by a more than 25% increase in lake-wide concentration compared to the previous monitoring year” in AEMP Design Plan Version 6.1 for review.	ENR-16 MVLWB-11
k.	De Beers to clarify the assessment of the sediment quality action level in AEMP Design Plan Version 6.1 in response to MVLWB-16 and ENR-18.	MVLWB-16 ENR-18
l.	De Beers to clarify the response action statement regarding the effect predictions and revise the statement to “If observed response(s) are outside effect predictions (as presented in Section 2.2 of the AEMP Design Plan), investigate the reason for the deviation(s).”	ENR-19
m.	De Beers to revise the action level statement to “Moderate Action Level in one or more water quality or sediment quality measurement endpoints” for plankton community and benthic invertebrates for toxicology impairment and nutrient enrichment.	ENR-20, 21, 22, 23
n.	De Beers to define “near-surface sample” by adding a footnote to the drinking water quality action level table, which states that Near-surface samples are defined as water samples collected from within the ice hole (up to 0.3 m).	ENR-25
o.	De Beers to include the revised action level for Lake D2/D3 and Lake N14 in AEMP Design Plan V 6.1 for public review and Board decision. De Beers to revise the AEMP Design Plan V 6.1 to submit an AEMP Response Plan, instead of the AEMP Annual Report, for proposing any action levels for Lake N14 in response to exceedances to action levels in Lake D2/D3 or Lake N14	ENR-27, 28
p.	De Beers to include its commitment in response to review comment MVLWB-12 as response framework for nutrient enrichment for water quality in under-ice conditions, and to include the commitment in the action level table: “If concentrations of total nitrogen or total phosphorus during ice-cover are above normal range, or there is a statistically significant relative difference between core and reference lakes compared to baseline, then the causes of the elevated nutrient concentrations will be investigated and reported in the annual report. This investigation will include review of other parameters that could drive increased nutrients during ice-cover (e.g., dissolved oxygen) and other point sources of phosphorus (MVLWB-12).”	MVLWB-12

Item	Requirements	Review Comment Reference
q.	De Beers to revise the moderate action level statement to “Moderate Action Level in one or more water quality or sediment quality endpoints” for the plankton community and benthic invertebrates components	MVLWB-20
r.	De Beers to consider water or sediment quality from the previous year and current year when assessing the moderate action level statement “Moderate Action Level in one or more water quality or sediment quality endpoints” for the plankton community and benthic invertebrates components	MVLWB-19
s.	De Beers to clarify how a 50% reduction in zooplankton biomass is assessed in the AEMP Design Plan Version 6.1.	MVLWB-21
t.	De Beers to include the clarification for assessing the 75% increase and 50% reduction in zooplankton biomass for the high action level for nutrient enrichment in the AEMP Design Plan Version 6.1.	MVLWB-22
u.	De Beers to revise Moderate and High Action Level criteria for toxicological impairment as per the response to MVLWB-23.	MVLWB-23
v.	De Beers to revise the Moderate and High Action Level criteria for nutrient enrichment as per the response to MVLWB-24.	MVLWB-24
w.	De Beers to add footnotes to the Action level tables in the AEMP Design Plan Version 6.1 for fish health and tissue chemistry to clarify “consistent effects” terminology as: "Consistent in this context is defined as a complimentary effect (i.e., in magnitude and/or direction) in one or more other component(s) in a given year linking observed effects to a potential mechanism of action related to the Mine."	MVLWB-27
x.	De Beers to clarify the monitoring for Arctic Grayling in the AEMP Design Plan Version 6.1	MVLWB-28
y.	De Beers to include proposed modifications for monitoring of fish habitat and community in the AEMP Design Plan Version 6.1 for public review prior to Board decision.	MVLWB-34
z.	De Beers to remove the proposal to reduce the extent of the systematic visual surveys for Fish Habitat and Community component in AEMP Design Plan Version 6.1.	MVLWB-35
<b>From Initial Review dated May 20, 2020</b>		
aa.	De Beers to reflect proposed sample collection methods (i.e., discrete from mid-depth if lake is mixed or above and below the thermocline if not mixed) and that the full suite of nitrogen species (i.e., ammonia, nitrate, nitrite, total Kjeldahl nitrogen, and total nitrogen) will be analyzed.	ECCC-4
bb.	De Beers to reflect the AEMP Benchmark of manganese to the new Canadian Drinking Water Quality Guideline and CWQG-PAL.	ECCC-6
cc.	De Beers to reflect the response on data evaluation for grab samples vs. core samples for sediment samples.	ECCC-7
dd.	De Beers to submit the updated Downstream Flow Mitigation Plan	DFO-6
ee.	De Beers to clarify which mean/median is applied to each parameter to avoid confusion in further AEMP data analysis.	ENR-2
ff.	De Beers to update the AEMP Design Plan to reflect the correct information of what was completed in Table 3.2-1’s footnote to list the monitored sites.	ENR-4
gg.	De Beers to include this rationale reflected in response to review comment ENR-5 for removal of Lake M1.	ENR-5

Item	Requirements	Review Comment Reference
hh.	Reflect the Board's decision from 2020 Amendment for AEMP benchmark for pH range.	ENR-11
ii.	De Beers to continue to visually evaluate temporal trends for plankton monitoring in the annual reports.	ENR-35



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### Reasons for Decision

Issued pursuant to section 72.25 of the *Mackenzie Valley Resource Management Act* and  
Section 54 of the *Waters Act*

<b>Water Licence – Aquatic Effects Re-evaluation Report (2015-2018) and Aquatic Effects Monitoring Program (AEMP) Design Plan</b>	
<b>Preliminary Screener</b>	MVLWB
<b>Reference/File Number</b>	MV2005L2-0015
<b>Company</b>	De Beers Canada Inc.
<b>Project</b>	Mining and Milling, Gahcho Kue, NT
<b>Date of Decision</b>	April 8, 2021

These Reasons for Decision set out the Mackenzie Valley Land and Water Board's (the Board or MVLWB) decision on Aquatic Effects Re-evaluation Report (2015-2018) and Aquatic Effects Monitoring Program (AEMP) Design Plan made by De Beers Canada Inc. (De Beers) to the Board on December 13, 2019 for Water Licence (Licence) MV2005L2-0015.

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#### 1.0 Background

The Gahcho Kue Mine is an active diamond mine located about 280 kilometers northeast of Yellowknife and 140 kilometers from Łutsel K'e in the Northwest Territories. Licence MV2005L2-0015 was issued on September 24, 2014, and Permit MV2005C0032 on August 11, 2014. Construction of the required infrastructure began in 2015, the commencement of the processing plant occurred in June 2016, and full production began in September 2016. The three ore bodies, 5032, Hearne, and Tuzo, were delineated by an initial drilling program to establish the optimum pit design for the safe excavation of the ore bodies. On March 10, 2021, the Board issued De Beers' amended Licence MV2005L2-0015 for an updated mine plan after the Minister approved the amendment the same day.

The Licence MV2005L2-0015 requires an Aquatic Effects Re-evaluation Report on July 31, 2019 and a revised AEMP Design Plan on September 30, 2019. On May 28, 2019, De Beers submitted a request to extend the submission date for the AEMP submissions as more time is required to incorporate the 2018 monitoring data in addition to 2015 to 2017 dataset (attached). On July 18, 2019, the Board approved De Beers' extension request to submit the AEMP submissions on December 13, 2019 (attached).

On December 13, 2019, the AEMP submissions were received by the Board (attached). The AEMP submissions were distributed for review on December 18, 2019. The review comment and proponent response due dates were extended multiple times due to complexity of the AEMP submissions and the COVID-19 pandemic. Ultimately, the review of the AEMP submissions concluded on April 3, 2020.

On March 19, 2020, De Beers submitted an application to amend Licence MV2005L2-0015, which the Board approved on March 10, 2021. The 2020 amendment application included proposed changes to Effluent Quality Criteria (EQC) and site-specific water quality objectives (SSWQOs), which could have implications for AEMP benchmarks in the AEMP Design Plan. A Technical Session for the 2020 amendment application was held from July 7, 2020 to July 9, 2020. After the Technical Session, Board staff determined further discussion required regarding the AEMP submissions. As per the *MVLWB/GNWT Guidelines for Aquatic Effects Monitoring Programs* (AEMP Guidelines), the review process may include technical workshops, in addition to normal written comments and recommendations from parties. The outstanding concerns of the AEMP submissions include the following:

- Including 2015 and 2016 monitoring data as baseline data;
- Proposed changes to action levels;
- Updated EIS predictions including qualitative predictions for Raised Lakes D2/D3; and
- Implications of 2020 amendment application on AEMP Design Plan.

On July 22, 2020, Board staff notified De Beers and Parties that an AEMP Technical Workshop will be held to discuss outstanding questions on the AEMP submissions (attached). On October 27, 2020, Board staff distributed the agenda for the AEMP Technical Workshop (attached). On November 17-19, 2020, the AEMP Technical Workshop was held, and 12 Information Requests (IR) generated from the workshop was sent to De Beers on November 20, 2020 (attached). On January 11, 2021, De Beers submitted the response to the IRs (attached).

The AEMP submissions are required to fulfill Part I, Condition 2 and 4 of Licence MV2005L2-0015. The AEMP submissions are also required to be in accordance with the Board's AEMP Guidelines.

## **2.0 Public Review**

By February 5, 2020, comments and recommendations on the AEMP Design Plan Version 6 and Aquatic Effects Re-evaluation Report were received from three Parties and Board staff:

- Environment and Climate Change Canada (ECCC)
- Fisheries and Oceans Canada (DFO)
- The Government of the Northwest Territories – Department of Environment and Natural Resources (GNWT-ENR)

De Beers responded by March 20, 2020. The Review Summary and Attachments (attached) presents the concerns identified through this review.

By February 10, 2021, comments and recommendations on the responses to IR from the AEMP Technical Workshop were received from four Parties and Board staff:

- ECCC
- DFO
- GNWT-ENR
- Ni Hadi Xa

De Beers responded by March 5, 2021. The Review Summary and Attachments (attached) presents the concerns identified through this review.

Ni Hadi Xa submitted a letter indicating that the responses to the IRs are satisfactory.

### **3.0 Decision**

The Board has provided its reasons for decision for the outstanding items as reflected in the information requests generated during the AEMP Technical Workshop as this represented the most succinct record of outstanding issues before the Board.

#### **IR 1 – Non-Detect Data:**

IR 1 is regarding the treatment of values in a dataset that are below detection limit (non-detect data), which is the lowest concentration that can be reliably quantified in the laboratory analysis. In response to IR 1, De Beers investigated whether an alternative approach could be used allow for the incorporation of additional non-detect data into the baseline dataset for normal range calculation and the before-after control-impact (BACI) analysis. De Beers determined that its proposed methods for treating the non-detect data would improve the BACI analysis and result in minimal changes to the normal ranges.

During the review, ENR indicated that De Beers' proposed methods for treatment for censored data be accepted for use in the AEMP, and recommended De Beers to clarify the treatment of high non-detect data from normal range calculation and BACI analysis in the AEMP Design Plan V 6.1 (ENR-1, 2). Board staff also requested De Beers to clarify and justify excluding parameters where more than 50% of the values are non-detect values (MVLWB 1, 2). In response, De Beers committed to providing clarification for treatments of high non-detect data, provided justifications for its method, and included the results from consultation with an Accredited Professional Statistician that the proposed treatment is the most appropriate compared to other methods available. De Beers also pointed out that parameters with a large number of non-detect values are less likely to pose a potential risk to the receiving environment.

The Board is of the opinion that De Beers adequately responded to comments and provided sufficient justification for the alternative methods for non-detect data and treatment of high non-detect data. The Board hereby accept De Beers' proposed approach for managing non-detect data for normal range calculation and BACI analysis. The Board has included De Beers' commitment to clarify the treatment of high non-detect dataset as a Board directive in the decision letter.

## **IR 2 – BACI Contrast:**

De Beers proposed to include 2015 and 2016 construction data as “before” data in the BACI analysis because De Beers has limited baseline data. IR 2 was generated to require De Beers to re-evaluate whether it is appropriate to include 2015 and 2016 construction data as “before” data in the BACI analysis. De Beers’ response to IR 2 included an evaluation for each AEMP component including water quality, sediment quality, plankton community, benthic invertebrates. De Beers concluded that it would be beneficial to include 2015 and 2016 construction data as “before” dataset in the BACI analysis.

During the review, ENR recommended that 2015 and 2016 construction data be included in the baseline dataset because there is not sufficient evidence that the construction data were significantly influenced by the construction activities (ENR-4). Board staff requested De Beers to clarify when it intends to switch to trend analysis once there is sufficient data collected instead of conducting BACI analysis (MVLWB-6, 7). In response, De Beers committed to evaluate whether shifting to trend analysis is appropriate in the next Aquatic Effects Re-evaluation Report.

The Board is of the opinion that De Beers adequately responded to review comment regarding inclusion of 2015 and 2016 construction data as baseline data. The Board agrees with ENR and De Beers that 2015 and 2016 construction data could be included as “before” data to improve the BACI analysis. The Board hereby accepts De Beers’ proposal to include 2015 and 2016 construction data as “before” data.

## **IR 3 – Alternative Approach(es):**

IR 3 was intended for an alternative approach if IR 1 and IR 2 did not support the inclusion of 2015 and 2016 construction data as baseline data. De Beers did not provide any alternative approach since they determined that 2015 and 2016 construction data should be included as baseline data.

During the review, ENR agreed that no alternative approach is required.

Given the Board’s decision for IR 1 and IR 2, the Board also agrees that no alternative approach is required.

## **IR 4 – EIS Predictions – Action Level:**

Environmental Impact Statement (EIS) predictions are the water quality that was predicted in the most recently water quality models. For a low action level assessment for water quality in the core lakes, De Beers is required to compare the maximum predicted water quality concentrations with the lake-wide average concentration. During the AEMP Technical Workshop, ENR recommended De Beers include a year-to-year comparison of the outputs of the water quality model with the monitoring data. IR 4 was generated for De Beers to consider ENR’s recommendation. In the IR response, De Beers provided rationale why they believed that the request is not possible or reasonable due to inputs to the model and logistics for submission timeline.

During the review, Board staff indicated that the intention of for the “year-to-year” comparison is only to add the water quality monitoring data to the current model predictions to validate the model, which is

different and less onerous than updating the entire model prediction, which is normally required for the Aquatic Effects Re-evaluation Report (MVLWB-8). Board staff requested De Beers to confirm whether the monitoring data would be compared with the current model predictions as part of the low action level assessment. ENR reiterated its purpose for recommending the incorporation of annual model outputs is to trigger unexpected cases where the monitoring data does not match the existing model prediction. ENR agreed that the lake-specific normal range exceedance does not need to be in the action level because if the water quality maximum prediction is exceeded, the normal range would also be exceeded. Therefore, the normal range assessment is not necessary (ENR-13). ENR maintained its recommendation for including the results of annual water quality model results into the low action level (ENR-6). In response, De Beers agreed to accept ENR's recommendation and proposed revised action levels, which incorporates ENR's recommendation (ENR-13). The Board's decision is summarized in Table 1.

Table 1 Board Decision on Low Action Level for Water Quality – Toxicological Impairment

ENR Recommendation	De Beers Response	Board Decision
<p><i>Relative difference between the core lake and both reference lakes statistically significant compared to baseline (i.e., significant BACI effect detected)</i></p> <p style="text-align: center;">AND</p> <p>Lake-wide average concentration above the <u>annual water quality model prediction</u></p> <p style="text-align: center;">AND</p> <p>Lake-wide average concentration exceeds 75% of AEMP benchmark</p>	<p>1. Lake-wide average concentration above the lake-specific normal range</p> <p style="text-align: center;">AND</p> <p>2. <i>Relative difference between the core lake and both reference lakes statistically significant compared to baseline (i.e., significant BACI effect detected)</i></p> <p style="text-align: center;">AND</p> <p>3. Lake-wide average concentration above the <u>annual predicted concentration (based on currently approved water quality model predictions)</u></p> <p style="text-align: center;">AND</p> <p>4. <i>Lake-wide average concentration exceeds 75% of AEMP benchmark</i></p>	<p>ENR commented that statement #1 is not necessary because exceedance in annual prediction concentration (statement #3) would mean the that normal range is also exceeded. In response, De Beers insisted including statement #1 because it is important to ensure the changes in concentration is outside the range of baseline dataset.</p> <p>The Board agrees with De Beers that the normal range assessment would be beneficial to ensure that any changes to monitoring data is in fact outside the normal range for triggering this low action level. Therefore, the Board accepts De Beers proposed action level statement #1 to assess the monitoring data against normal range.</p> <p>De Beers accepted ENR’s recommendation to assess the monitoring data against the annual water quality model prediction. The Board is of the opinion that the revised wording is adequate, and suggest the hereby accepts De Beers’ proposed action level statement on the water quality model predictions action level statement.</p>

\*Underlined text indicates the proposed changes

\*\*Grey italicized text indicates no proposed changes

## **IR 5 – Water Quality Drinking Water – Action Levels – Under Ice**

In response to IR 5, De Beers proposed action levels for drinking water quality for under-ice conditions. There were no main concerns identified with the proposed action level other than some clarification questions (ENR-24, 25). De Beers committed to include those clarifications in the AEMP Design Plan V 6.1. The Board is of the opinion that De Beers adequately addressed reviewers' comments. Therefore, the Board accepts De Beers' proposed action level for drinking water quality under ice as shown in the IR Response #5.

## **IR 6 – Conceptual Mitigation Plan – Fish Habitat and Community**

Arctic Grayling has been absent downstream of Gahcho Kue Mine and the action levels set for the Fish Habitat and Community component have been triggering since 2017. De Beers has been submitting AEMP Responses Plans to address the Fish Habitat and Community action level exceedances. During the AEMP Workshop, De Beers proposed to submit a Conceptual Mitigation Plan for the recovery of Arctic Grayling for the post-closure period. In the IR Response, De Beers requested the Board to confirm the conclusion that Arctic Grayling would not return during operations and for De Beers to focus the priority for recovery of Grayling during post-closure. De Beers proposed to submit the Conceptual Mitigation Plan three months after the approval of the proposed action levels for Fish Habitat and Community Component. The Plan would describe the following:

- The adaptability and resilience of Arctic Grayling to recolonization by modelling their potential response under different recovery scenarios;
- If result of the modelling exercise it is determined that an assisted recovery is required to meet post-closure objectives, then the Plan will also identify source populations and discuss translocation options;
- On-going Arctic Grayling monitoring efforts; and
- Timeline for mitigation and project recovery
  - implementations of assisted recovery activities will not take place until the refill and reconnection of the Kennady Lake.

During the review, DFO commented that the proposed scope of the Conceptual Mitigation Plan is reasonable (DFO-1). ENR commented that De Beers' request for the Board to accept the conclusion that Arctic Grayling would not return during operations, and that recovery during the post-closure period is the priority is not warranted and should not affect whether a Conceptual Mitigation Plan is required (ENR-8). ENR also recommended De Beers' proposed scope be accepted for inclusion in the Conceptual Mitigation Plan. Board staff requested clarification on the logistics and mechanism for the approval the Conceptual Mitigation Plan (MVLWB-31). In response, De Beers clarified that if the Board decides to approve the Action Levels proposed in the to IR Response as part of the Aquatic Effects Re-evaluation Report, De Beers will submit the Conceptual Mitigation Plan within three months after the approval. De Beers requested that the approval of the Aquatic Effects Re-evaluation Report and AEMP Design Plan would not be contingent on the submission or acceptance of the Conceptual Mitigation Plan. In response to Board staff's review comment on the monitoring efforts to support the Conceptual Mitigation Plan

(MVLWB-35), De Beers committed to continue monitoring at the expanded geographic extent to inform the Conceptual Mitigation Plan.

The Board agrees with Parties that the proposed scope of the Conceptual Mitigation Plan is adequate. The Board also agrees with ENR that it is not necessary for the Board to accept De Beers' conclusion that Arctic Grayling will not return during operation, and to focus on the recovery for post-closure, in order to require De Beers to submit the Conceptual Mitigation Plan. The Board hereby directs De Beers to submit the Conceptual Mitigation Plan for the recovery of Arctic Grayling during post-closure and accepts De Beers' proposed scope of the Conceptual Mitigation Plan as described in the response to IR 6. The Board has directed De Beers to submit the Conceptual Mitigation Plan in the decision letter for the Board approval.

#### **IR 11 – Revision to Action Levels:**

At the AEMP Workshop, De Beers committed to revising action levels based on Parties' inputs. In response IR 11, De Beers proposed revised Action Levels for various AEMP component including water quality, sediment quality, plankton community, benthic invertebrates, raised Lake D2/D3, streams downstream of Area 8, and fish habitat and community. The Board has laid out the decisions based on the categories listed below:

##### *Water Quality – Ecological Function in Core Lakes:*

There were three major concerns for action levels proposed for water quality component under toxicological impairment and nutrient enrichment in the Core Lakes.

##### a) Effects Threshold

For water quality – toxicological impairment component, De Beers proposed developing parameter-specific Effects Threshold in response to a low action level exceedance. In the IR Response, De Beers defined that Effects Threshold as “low-effect level on sensitive representative species”. De Beers proposed to use either toxicological data through site specific toxicity testing or review of toxicity data from the literature. The Effects Threshold would be used to assess a moderate action level statement once developed.

During the review, ENR and Board staff requested clarification on the mechanism on seeking Board approval of the Effects Threshold (ENR-15, MVLWB-9, 10). De Beers responded that the proposed Effects Threshold would be provided in the AEMP Annual Report, which is submitted in May each year for Board approval. De Beers committed to including a footnote in the AEMP Design Plan V6.1 to clarify the process as follows:

For example, if a Low Action Level was triggered for a particular parameter in the 2022 AEMP, then an Effects Threshold would be developed as part of the 2022 AEMP Annual Report preparation, and applied to the 2023 AEMP action level assessment.

The Board's AEMP Guidelines no longer require AEMP Response Plans for low action level exceedances because they are meant to be early warning system to detect low level changes from the baseline. Although De Beers' Water Licence MV2005L2-0015 still requires an AEMP Response Plan for low action level exceedances, De Beers has proposed to follow the Board's latest AEMP Guidelines to only report it under the AEMP Annual Report. The Board is of the opinion that it is reasonable for typical low action levels to be reported through AEMP Annual Report because the response framework generally triggers straight forward response action such as confirmatory sampling where it is unnecessary to require an AEMP Response Plan. In this case, De Beers has proposed a response action to develop parameter-specific Effects Threshold in response to a low action level exceedance, which is a process that requires public review and Board approval. As per the Board's AEMP Guidelines, AEMP Annual Reports are not intended to approve any proposed changes to the AEMP Design Plan. The proposed changes to the AEMP Design Plan need to be requested in a separate approval process. Approvals of the Effects Threshold could be conducted through AEMP Response Plan or updates to the AEMP Design Plan. The Board is of the opinion that it is more appropriate to seek approve of the Effects Threshold through an AEMP Response Plan, instead of through AEMP Annual Reports or AEMP Design Plan for the following reasons:

- (1) Multiple iterations and reviews may be required if the proposed Effects Threshold is not approved in the first round of review;
- (2) AEMP Response Plan is more focused on specific topics and easier to review;
- (3) AEMP Annual Reports or Design Plan are massive documents that includes all AEMP components, and resubmission of those AEMP documents to seek approval of Effects Threshold can be onerous and cumbersome; and
- (4) AEMP Response Plan would be the most straight forward and efficient way to seek approval of Effects Threshold given De Beers' proposed timeline to use the approved Effects Threshold to assess the moderate action level the subsequent year after low action level exceedance.

Therefore, the Board has decided the following:

- (1) The Board accepts De Beers' proposal to report low action level exceedances in the AEMP Annual Report in accordance with the *MVLWB/GNWT Guidelines for Aquatic Effects Monitoring Programs*; and
- (2) The Board directs De Beers to update the Response Framework in AEMP Design Plan Version 6.1 to seek approval of the Effects Threshold through an AEMP Response Plan, instead of the AEMP Annual Report.

b) Toxicological Impairment – High Action Level

During the review, ENR recommended changes to the wording of the high action level for water quality -toxicological impairment to clarify how it would be evaluated by including a timeline (ENR-16). In response, De Beers agreed with ENR and proposed new wording to clarify the action level as shown in Table 2 below.

Table 2 Board Decision on High Action Level for Water Quality – Toxicological Impairment

ENR Recommendation	De Beers Response	Board Decision
<p>Continued increasing trends in lake-wide average concentration <u>comparing year x to year x – 1.</u></p> <p style="text-align: center;"><i>AND</i></p> <p><i>Confirmed sublethal toxic effects to more than one test species in edge-of-mixing-zone samples(g)</i></p>	<p>Continued increasing trends in lake-wide average concentration <u>as indicated by a more than 25% increase in lake-wide concentration compared to the previous monitoring year.</u></p> <p style="text-align: center;"><i>AND</i></p> <p><i>Confirmed sublethal toxic effects to more than one test species in edge-of-mixing-zone samples(g)</i></p>	<p>The Board is of the opinion that proposed action level is appropriate. The proposed wording should be reviewed to ensure ENR and other Parties are satisfied with the revised wording. The Board directs De Beers to include the revised high action level statement in the AEMP Design Plan V6.1 for public review prior to Board decision.</p>

\*Underlined text indicates the proposed changes

\*\*Grey italicized text indicates no proposed changes

c) Nutrient Enrichment

De Beers has proposed action levels for water quality – nutrient enrichment to only apply to open water, and not under ice conditions. De Beers’ rationales are:

- (1) there is lack of algal growth during the ice-cover season; and
- (2) the AEMP benchmarks are based on open-water data, and not relevant to ice-cover conditions.

During the review, ENR recommended the action level for phosphorus be applied during under-ice as well as open water to ensure the increases in phosphorus concentrations under-ice are responded to. ENR’s recommendation is quoted below:

- 1) Do not result in increases in algal productivity relative to the reference condition (i.e., nutrient enrichment), especially in the early spring where solar irradiation under ice increases quickly as snow begins to melt (Kalff 2002; Willemse et al. 2004; Bondarenko et al. 2020); and
- 2) Prevent greater extents (both temporally and spatially) of suboxic or anoxic conditions that stems from respiration and the breakdown and decay of organic matter under ice (i.e., with little to no oxygen flux into the lake) (ENR-17).

Board staff also requested clarification of what De Beers will do if the under-ice water quality is considerably higher than the AEMP benchmark if there are no response framework (MVLWB-12). In response, De Beers reiterated that the proposed action levels are not appropriate for ice-cover season, and that the AEMP benchmark for phosphorus is based on open-water monitoring data. De Beers explained that the total phosphorus concentrations reach or exceed the AEMP benchmark during ice-cover season because of cryoconcentration and mobilization from the sediment. De Beers

also understood Parties concerns that without an action level trigger, investigation would not be conducted to determine the cause and effects. Therefore, De Beers proposed to include the following in the AEMP Design Plan V 6.1:

If concentrations of total nitrogen or total phosphorus during ice-cover are above normal range, or there is a statistically significant relative difference between core and reference lakes compared to baseline, then the causes of the elevated nutrient concentrations will be investigated and reported in the annual report. This investigation will include review of other parameters that could drive increased nutrients during ice-cover (e.g., dissolved oxygen) and other point sources of phosphorus (MVLWB-12).

In response to review comment from Board staff asking if De Beers has considered proposing action levels for under-ice conditions, De Beers responded that assessment of nutrient enrichment is most appropriate using open-water monitoring data (MVLWB-13).

The Board agrees with De Beers that the AEMP benchmark derived from open water monitoring data may not be suitable for assessing under-ice water quality. However, the understands Parties' concerns with the lack of response framework for nutrient enrichment of water quality under ice. Although De Beers insisted that action levels for under-ice is not appropriate for assessing nutrient enrichment, De Beers has committed to include an investigation any elevated nutrients under-ice and report results in the AEMP Annual Report in response to review comment MVLWB-12. The Board notes that is essentially the mechanism of a response framework for a low action level. The Board believes De Beers' commitment in response to review comment MVLWB-12 addresses the concerns regarding a lack of response framework for increased nutrient under-ice. The Board is unclear of De Beers' rationale for refusing to include the commitment as part of the response framework. In conclusion, the Board accepts De Beers' proposal that the AEMP benchmark for total phosphorus only apply to open water monitoring data. The Board hereby directs De Beers to include its commitment in response to review comment MVLWB-12 as response framework for nutrient enrichment for water quality in under-ice conditions, and to include the commitment in the action level table.

#### *Plankton Community and Benthic Invertebrates:*

Under the plankton community and benthic invertebrates components, the main concern is related to the years of monitoring data used to assess of the action levels to determine if "Mine-related exposure conditions have the potential to cause the observed effect."

During the review, ENR commented that De Beers' proposed moderate action level statement "Mine-related exposure conditions have the potential to cause the observed effect" is not clearly defined (ENR-20). ENR recommended De Beers revise the statement to "Moderate Action Level in one or more water quality or sediment quality endpoints". In response, De Beers agreed to revise the statement if the Board agrees with ENR. Board staff requested De Beers to clarify if water quality or sediment quality monitoring data from previous years would be used to assess the action level in order to capture the delayed biological responses (MVLWB-19). In response, De Beers indicated that only the current year's data would

be assessed because the AEMP Annual Report is focused on reporting on the current AEMP year. De Beers justified only analyzing the current year's monitoring data because delayed effects occur when the concentration reach effects threshold. De Beers also indicated that using the current year is consistent with previous assessment and other northern mines. De Beers also indicated that data from previous year may be considered in the interpretation of the results.

The Board agrees with ENR that "Moderate Action Level in one or more water quality or sediment quality endpoints" is better defined. The Board directs De Beers to revise the moderate action level statement to "Moderate Action Level in one or more water quality or sediment quality endpoints" for the plankton community and benthic invertebrate components in the AEMP Design Plan V 6.1.

The Board notes that moderate action level exceedances require a submission of AEMP Response Plan, thus De Beer's rationale that AEMP Annual Report only focus on the current year is not valid. Although the Board understands De Beers' explanation that plankton and benthos respond to the existing exposure conditions, the Board is of the opinion that De Beers' response did not address the fact that biological response can be delayed, where the exposure condition from previous years could cause a biological response in the current year. These proposed action levels are new and the previous action levels did not link a biological response with the exposure response, thus De Beers' rationale that using the current year's data is consistent with previous AEMP reports and other northern mines is not valid. The Board agrees with De Beers that data from previous years should be considered in the interpretation of results, but the Board believes the data from previous years should also be analyzed to assess the moderate action level and described in an AEMP Response Plan. The Board hereby requires De Beers to consider water or sediment quality from the previous year and current year when assessing the moderate action level statement "Moderate Action Level in one or more water quality or sediment quality endpoints" for the plankton community and benthic invertebrate components.

*Raised Lake D2/D3 and Lake N14:*

De Beers proposed new action levels for Raised Lake D2/D3 in the Aquatic Effects Re-evaluation Report given the observed changes to the water quality in Lake D2/D3 since Dyke F was constructed in 2016. Lake N14 is downstream from Lake D2/D3 and where water could flow if Lake D2/D3 was full. In the IR Response, De Beers proposed revised action levels for Lake D2/D3 and Lake N14 to incorporate Parties' inputs.

During the review, ENR recommended De Beers proposed significant threshold for Lake N14 to be the same as the Core Lakes, which is Ecological function is not maintained (i.e., inadequate food for fish; fish unable to survive, grow, or reproduce; and/or sustained absence of a fish species)" if there is a hydrological connection between Lake D2/D3 and Lake N14 (ENR-27). In response, De Beers committed to developing action level for Lake N14 if a low action level is triggered in Lake D2/D3, and provide the proposed action level in AEMP Annual Report. De Beers indicated its expectations that the proposed action levels will undergo public review and Board decision. De Beers noted that it is reasonable to apply the same significant threshold of the Cores Lakes to Lake N14. ENR also recommended that De Beers develop action levels for Lake N14 if there is a hydrological connected between Lake D2/D3, not if there's

a low action level triggered in Lake D2/D3 (ENR-28). In response, De Beers proposed changes to the action levels for Lake D2/D3 and Lake N14 as shown in Table 3.

Table 3 Board Decision on Proposed Action Levels for Raised Lake D2/D3 and Lake N14

Component	ENR Recommendation	De Beers Response – Action Level Developed?		Board Decision
		Lake D2/D3	Lake N14	
Water Quality	ENR recommended action levels for sediment, plankton, and benthos in Lake N14 be developed that are consistent with the core lakes in the event that a hydrological connection is formed between Lake D2/D3 and Lake N14.	Yes	Developed if a Low Action Level is triggered for water quality in Lake D2/D3	Adequate.
Sediment Quality		Yes	Developed if a Low Action Level is triggered for sediment quality in Lake D2/D3	
Plankton Community		Eliminated	Developed if a Low Action Level is triggered for water quality in Lake N14.	De Beers did not adopt ENR’s recommendation, but revised the approach to develop action levels for the components. The Board is of the opinion that De Beers’ revised approach is reasonable.
Benthic Invertebrates		Eliminated		

De Beers’ proposed new wording for the raised Lake D2/D3 and downstream Lake N14 in response to ENR’s recommendation. The Board is unclear if De Beers’ revised wording has satisfied or provided justification for not adopting ENR’s recommendation in response to review comment ENR-28. Although it is recognized that Lake N14 may not be consistently hydrologically connected to Lake D2/D3, the Board’s AEMP Guidelines do require action levels to be developed for low, moderate and high tiers. The Board believes the revised wording for the action level should be included in the AEMP Design Plan Version 6.1 for public review prior to Board decision. The Board hereby directs De Beers to:

- 1) Include the revised action level for Lake D2/D3 and Lake N14 in AEMP Design Plan Version 6.1 for public review and Board decision; and
- 2) Similarly to the De Beers’ mechanism to seek approval of Effects Threshold for water quality component in the AEMP Annual Report, De Beers shall revise the AEMP Design Plan Version 6.1 to submit an AEMP Response Plan, instead of the AEMP Annual Report, for proposing any action levels for Lake N14 in response to exceedances to action levels in Lake D2/D3 or Lake N14.

*Fish Habitat and Community:*

De Beers proposed revised action levels in the IR Response to incorporate Parties’ inputs. De Beers shifted the focus of the action levels from Arctic Grayling to Northern Pike and Slimy Sculpin given De Beers’ conclusion on Arctic Grayling not returning to downstream of Area 8 during operations.

During the review, DFO agreed with De Beers' proposal to remove focus on presence of Arctic Grayling, and expand to Slimy Sculpin and Northern Pike, and has no further comments on the action levels (DFO-3). ENR provided comments on the proposed action level, which is summarized in Table 4. Board staff and DFO also requested clarification on whether De Beers has proposed changes to the geographic extent for monitoring Arctic Grayling (DFO-2; MVLWB-34). In response, De Beers indicated that monitoring of Arctic Grayling will still be a priority, and proposed some modifications to the monitoring with rationale in response to review comment MVLWB-34.

The Board believes De Beers has proposed reasonable action levels for the Fish Habitat and Community. The Board accepts De Beers' proposed action level for Fish Habitat and Community.

Table 4 Board Decision on Action Levels for Fish Habitat and Community

Action Level	Proposed for AEMP Version 6.1	ENR Recommendation (ENR-29, 30)	De Beers Responses	Board Decision
Low	<p><i>During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.4 m<sup>3</sup>/s for 90% (d) of the full spring migration (defined as 14 consecutive days following ice out)</i></p> <p style="text-align: center;"><i>OR</i></p> <p>During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.1 m<sup>3</sup>/s for 90% (d) of the duration of the open-water season</p> <p style="text-align: center;"><i>OR</i></p> <p><i>No evidence of Arctic Grayling adults or YOY utilizing the system (as per baseline information)</i></p>	N/A	<p>1. <i>During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.4 m<sup>3</sup>/s for 90% (a) of the full spring migration (defined as 14 consecutive days following ice out)</i></p> <p style="text-align: center;"><i>OR</i></p> <p>2. During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.1 m<sup>3</sup>/s for 90% (a) of the early summer period <u>overlapping with egg incubation and larval outmigration stages through to end of August</u></p> <p style="text-align: center;"><i>OR</i></p> <p>3. <i>No evidence of Arctic Grayling adults or YOY utilizing the system (as per baseline information)</i></p>	<p>De Beers updated the second statement to clarify that “augmented flow is provided as necessary to maintain target flow up to the end of August.” The Board believes the clarification is appropriate.</p>
Moderate	<p>1a. During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.4 m<sup>3</sup>/s for 70% of the spring migration period (defined as a minimum of 14 consecutive days following the ice out),</p> <p style="text-align: center;"><i>OR</i></p>	<p>a) During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.4 m<sup>3</sup>/s for a portion of the spring migration period <u>(defined as a minimum of ten consecutive days following the ice out)</u>.</p> <p style="text-align: center;"><i>OR</i></p>	<p>1a. During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.4 m<sup>3</sup>/s for 70% of the spring migration period (defined as a minimum of 14 consecutive days following the ice out),</p> <p style="text-align: center;"><i>OR</i></p>	<p>De Beers is of the opinion that ENR’s recommended action level changes do not allow for operational flexibility where there may be pauses in flow augmentation incurred by routine maintenance and potential mechanical failure while pumping during the challenges presented by freshet conditions and unpredictable weather in early June.</p> <p>The Board agrees that operational flexibility should be considered for the flow assessment statements.</p>

Action Level	Proposed for AEMP Version 6.1	ENR Recommendation (ENR-29, 30)	De Beers Responses	Board Decision
	<p>1b. During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.1 m3/s for 70% of the early summer period overlapping with egg incubation and larval outmigration stages through to end of August.</p> <p style="text-align: center;">AND</p> <p>2a. Slimy Sculpin YOY are not detected during one year within the KLM watersheds and Slimy Sculpin densities shows a statistically significant decreasing temporal annual trend across a two-year period within the KLM watersheds and exceeding the decline (if any) observed at reference locations;</p> <p style="text-align: center;">OR</p> <p>2b. Northern Pike are not detected at Area 8 and Stream K5</p>	<p>b) During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.1 m3/s for the early summer period overlapping with egg incubation and larval outmigration stages (<u>defined as a minimum of 45 consecutive days following ice out</u>).</p> <p style="text-align: center;"><u>OR</u></p> <p>c) Slimy Sculpin YOY are not detected during one year within the KLM watersheds and Slimy Sculpin densities shows a statistically significant decreasing temporal annual trend across a two-year period within the KLM watersheds and exceeding the decline (if any) observed at reference locations.</p> <p style="text-align: center;">OR</p> <p>d) Northern Pike are not detected at Area 8 and Stream K5.</p>	<p>1b. During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.1 m3/s for 70% of the early summer period overlapping with egg incubation and larval outmigration stages through to end of August.</p> <p style="text-align: center;">AND</p> <p>2a. Slimy Sculpin YOY are not detected during one year within the KLM watersheds and Slimy Sculpin densities shows a statistically significant decreasing temporal annual trend across a two-year period within the KLM watersheds and exceeding the decline (if any) observed at reference locations;</p> <p style="text-align: center;">OR</p> <p>2b. Northern Pike are not detected at Area 8 and Stream K5</p>	<p>ENR recommended using “AND”, and not “OR” because the downstream flow mitigation period is specific to Arctic Grayling, and not specific to slimy sculpin. In response, De Beers disagreed and insist that “AND” should be used because the augmented flow is needed to maintain fish habitat, and the biological indicator of Slimy Sculpin and Northern Pike are indicators for whether the downstream flow mitigation working.</p> <p>The Board agrees with De Beers that it is reasonable for the flow statement to be linked with biological indicator using “AND”.</p>

Action Level	Proposed for AEMP Version 6.1	ENR Recommendation (ENR-29, 30)	De Beers Responses	Board Decision
High	<p>1. During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.4 m<sup>3</sup>/s for a portion of the spring migration period (defined as a minimum of seven consecutive days following the ice out)</p> <p style="text-align: center;">OR</p> <p>above a target 0.1 m<sup>3</sup>/s for the early summer period overlapping with egg incubation and larval outmigration stages (defined as a minimum of 45 consecutive days following ice out) for two consecutive years</p> <p style="text-align: center;">AND</p> <p><i>2a. Northern Pike are not detected for two consecutive years at Area 8 and Stream K5 or for the current year within the KLM watersheds</i></p> <p style="text-align: center;">OR</p> <p><i>2b. Slimy Sculpin YOY are absent during two consecutive years within the KLM watersheds</i> OR <i>2c. Slimy Sculpin densities shows a statistically significant decreasing temporal annual trend across a four-year period within the KLM</i></p>	<p>a) During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.4 m<sup>3</sup>/s for a portion of the spring migration period (defined as a minimum of seven consecutive days following the ice out).</p> <p style="text-align: center;">OR</p> <p>b) During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.1 m<sup>3</sup>/s for the early summer period overlapping with egg incubation and larval outmigration stages (defined as a minimum of 45 consecutive days following ice out) for two consecutive years .</p> <p style="text-align: center;">OR</p> <p><i>d) Northern Pike are not detected for two consecutive years at Area 8 and Stream K5 or for the current year within the KLM watersheds.</i></p> <p style="text-align: center;">OR</p> <p><i>c) Slimy Sculpin YOY are absent during two consecutive years within the KLM watersheds,</i> OR <i>Slimy Sculpin densities shows a statistically significant decreasing temporal annual trend across a four-year period within the KLM watersheds and exceeding the decline (if any) observed at reference locations.</i></p>	<p>1a. During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.4 m<sup>3</sup>/s for <u>70%</u> of the spring migration period <u>(defined as 14 consecutive days following the ice out) for two consecutive years;</u></p> <p style="text-align: center;">OR</p> <p>1b. During operations, for the years when flow mitigation is provided, downstream flows at Stream K5 are not maintained above a target 0.1 m<sup>3</sup>/s for <u>70%</u> of the early summer period overlapping with egg incubation and larval outmigration stages through <u>to end of August</u> for two consecutive years</p> <p style="text-align: center;">AND</p> <p><i>2a. Northern Pike are not detected for two consecutive years at Area 8 and Stream K5 or for the current year within the KLM watersheds;</i></p> <p style="text-align: center;">OR,</p> <p><i>2b. Slimy Sculpin YOY are absent during two consecutive years within the KLM watersheds;</i> OR, <i>2c. Slimy Sculpin densities shows a statistically significant decreasing temporal annual trend across a four-year period within the KLM</i></p>	<p>Adequate response.</p> <p>Adequate response.</p> <p>The Board agrees with De Beers that it is reasonable for the flow statement to be linked with biological indicator using “AND”.</p>

Action Level	Proposed for AEMP Version 6.1	ENR Recommendation (ENR-29, 30)	De Beers Responses	Board Decision
	<i>watersheds and exceeding the decline (if any) observed at reference locations</i>		<i>watersheds and exceeding the decline (if any) observed at reference locations</i>	

\*Underlined text indicates the proposed changes

\*\*Grey italicized text indicates no proposed changes

*Commitments and Outstanding items:*

Throughout the review, De Beers made various commitments in response to reviewer comments from the initial review dated March 20 2020, and review of IR Responses dated March 5, 2021. The Board has summarized those commitments in the decision letter.

To focus the review on outstanding items on the AEMP Design Plan V 6.1, the Board encourages De Beers to clearly indicate where the revisions have been made in the AEMP Design Plan V 6.1 to address the Board directives. The Board has directed Board staff to remind reviewers to comment on the revisions identified in De Beers' concordance table when the AEMP Design Plan V 6.1 is distributed for review.

**4.0 Conclusion**

After reviewing the submission of the Company, the written comments received by the Board and the Staff Report prepared for the Board, the Board, having due regard to the facts, circumstances, the merits of the submissions made to it, and to the purpose, scope, and intent of the MVRMA and *Waters Act* and Regulations made thereunder, has determined that:

The Aquatic Effects Re-evaluation Report adequately fulfills the requirements of the Licence. For this reason, the Board has decided to approve the Aquatic Effects Re-evaluation Report.

The AEMP Design Plan Version 6 need to be revised to incorporated changes as indicated in these Reasons for Decision and the decision letter. At this time, the Board has decided to deny the AEMP Design Plan Version 6, and require its revision and resubmission. ...

De Beers shall adhere to the commitments made in their responses to reviewer comments dated March 20, 2020, and March 5, 2021, until the AEMP Design Plan is subsequently revised. The Board requires De Beers to submit the next revision of the AEMP Design Pan (Version 6.1) by **May 13, 2021**, for Board decision. The revised AEMP Design Plan (Version 6.1) shall be in accordance with these Reasons for Decision and the Board's decision letter.

Water Licence MV2005L2-0015 contains provisions that the Board deems necessary to ensure and monitor compliance with the MVRMA and the *Waters Act* and the Regulations made thereunder, and to provide appropriate safeguards in respect of Company's use of the waters and deposit of waste. The Board will provide additional referenced material or documents if requested in writing to do so.

SIGNATURE

Mackenzie Valley Land and Water Board



\_\_\_\_\_  
Mavis Cli-Michaud, Chair

April 8, 2021

\_\_\_\_\_  
Date

