



7th Floor - 4922 48th Street,
P.O. Box 2130, Yellowknife NT X1A 2P6

Tel: 867-669-0506 Fax: 867-873-6610
www.mvlwb.com

Staff Report

Applicant: De Beers Canada Inc. – Gahcho Kue Project	
Location: Kennady Lake, NT	File Number: MV2005L2-0015
Date Prepared: March 27, 2020	Date of Board Meeting: April 30, 2020
Subject: Aquatic Effects Monitoring Program (AEMP) Response Plan (Version 1) for a Low Action Level – Fish Habitat and Community	

1 Purpose

The purpose of this Report is to present to the Mackenzie Valley Land and Water Board (MVLWB/the Board) Version 1 of an Aquatic Effects Monitoring Program Response Plan (AEMP Response Plan V.1) for Low Action Level Exceedance for Board decision, as submitted by De Beers Canada Inc. (De Beers) for the Gahcho Kue Project (Gahcho Kue) to fulfill Part I, condition 7 of the Water Licence (Licence) MV2005L2-0015.

2 Background

- December 1, 2019 – Notification of Low Action Level Exceedance received;
- February 4, 2020 – AEMP Response Plan (V.1) for Low Action Level received;
- February 25, 2020 – Distributed for review;
- March 17, 2020 – Reviewer comments and recommendations due and received;
- March 26, 2020 – Responses due and received; and
- **April 30, 2020 – AEMP Response Plan (V.1) for Low Action Level presented to the Board for decision.**

3 Discussion

3.1 History of Action Level Exceedances in Fish Habitat and Community

Table 1 provides a summary of the action levels for low, moderate, and high for Fish Habitat and Community. Arctic Grayling (Grayling) was identified as a Valued Component (VC) during the Environmental Assessment and was selected as the fish species for flow indicator. The low action level was first triggered in 2017, and subsequently the moderate action level was triggered in 2018. AEMP Response Plans were submitted and approved by the Board after those action level exceedances in 2017 and 2018. An extended study area was implemented in the 2018 and 2019 field season to expand the search for Grayling. Grayling was not found in 2018, but one adult Grayling was found in 2019 in Stream L1a, which is in the expanded study area.

Table 1 Action Levels Summary

Action Levels	Description	Status
Low	Arctic Grayling adults not moving to spawning areas within the normal spring period (as per baseline information); and	Approved in AEMP Design Plan (Version 5) dated January 2016
	AND Arctic Grayling fry not present in the system and/or not distributed similar to baseline.	
Moderate	Arctic Grayling are absent in a subsequent monitoring year	Approved in AEMP Response Plan (V.2) dated May 1, 2018 for triggering low action level
High	Sustained absence of Arctic Grayling adults moving into spawning areas within the normal spring period, for a period of four consecutive years OR Sustained absence of Arctic grayling Year of Young (YOY) from the KLM watershed for a period of four consecutive years	Approved in AEMP Response Plan (V.3) dated September 12, 2019 for triggering a moderate action level
	AND Northern Pike are not detected for two consecutive years at Area 8 and Stream K5 OR Slimy Sculpin YOY are absent during two consecutive years within the KLM watershed and relative to reference locations OR Slimy Sculpin density shows a statistically significant decreasing temporal trend across a four-year period within the KLM watershed and relative to reference locations	

3.2 Description of AEMP Response – Fish Habitat and Community – Low Action Level

On December 1, 2019, the Board received notification that the low action level had been exceeded during the 2019 sampling program. Although one adult Grayling was found in the expanded study area (Stream L1a), the low action level as shown in Table 1 was triggered.

On February 4, 2020, De Beers submitted an AEMP Response Plan for the low action level exceedance.

Board staff note that De Beers’ AEMP Re-evaluation Report and revised AEMP Design Plan are currently in the review process and will be presented to the Board for decision.

3.3 Regulatory Requirements

AEMP Response Plans require Board approval as per Part I, condition 7 of Licence MV2005L2-0015:

If any Action Level as defined in the approved AEMP Design Plan is exceeded, the Licensee shall:

- (a) Notify the Board within thirty (30) days of when the exceedance is detected; and

- (b) Within ninety (90) days of when the exceedance is detected, submit an AEMP Response Plan that satisfies the requirements of Schedule 6, item 4 to the Board for approval.

The AEMP Design Plan, referred to in the above condition, was most recently approved on January 29, 2016 (Version 5, attached). The Licence required De Beers to evaluate the AEMP Design Plan and submit a revised AEMP Design Plan (V.6) by September 30, 2019.

4 Public Review

By March 17, 2020, comments and recommendations on the AEMP Response Plan (V.1) were received from 2 reviewers:

- Fisheries and Oceans Canada (DFO); and
- Government of Northwest Territories – Environment and Natural Resources (ENR).

De Beers responded by March 26, 2020. The Review Summary and Attachments (attached) present the concerns identified through this review.

DFO's letter indicated it was satisfied with the proposed changes to the Downstream Flow Mitigation Plan and the 2020 monitoring season efforts.

4.1 Main Issues Raised during the Review

During the review, ENR commented that finding a single adult fish is still of high concern from a population perspective given how the population has strayed from baseline conditions. ENR recommended the moderate action level be revised for 2020 to something biologically meaningful for Arctic Grayling recovery. In response, De Beers provided rationale for why the moderate action level is biologically meaningful. De Beers noted that the absence of Grayling in 2017 and 2018 resulted in response action to adjust the downstream flow mitigation to ensure there is unrestricted flow for the passage of fish. In 2019, an adult Grayling was found in the expanded study area. De Beers believes if Grayling are found in the future, it would indicate the flow conditions are allowing the Grayling to access the streams, and potentially recolonize the streams. If year of young Grayling are found in the future, then it shows spawning has occurred. De Beers noted that the low action level would still be triggered as the Grayling population is not sustained.

Board staff are of the opinion that the Board approved action levels are appropriate given De Beers' continuous monitoring efforts. DFO also indicated it was satisfied with the expansion of the 2020 monitoring efforts. Board staff note the low action level will continue to trigger until the Grayling population returns to baseline conditions. De Beers will continue to report the Grayling monitoring results each year. If the mitigative measures are effective in future monitoring, then action levels could be adjusted accordingly. If the mitigative measure are not effective, then De Beers will be required to provide additional response actions.

In De Beers' AEMP Response Plan, it stated that "Expanded monitoring completed in 2019 did not detect Arctic Grayling in the N watershed or at the outlet of Lake 410 in 2019..." ENR requested more details on sampling of Grayling in the N watershed. In response, De Beers responded that the N watershed was not sampled or in the expanded study area in 2019. Board staff note that there is a typo in De Beers' AEMP

Response Plan, where the N watershed should have been M watershed instead. Board staff recommend the Board require De Beers to update the AEMP Response Plan to current the typo.

5 Conclusion

Board staff conclude that the AEMP Response Plan, as submitted, is in conformity with the Board's AEMP Guidelines and the requirements of Licence MV2005L2-0015 and can be approved pending the correction of the typo.

6 Recommendation

Board staff recommend the Board **make a motion to approve the AEMP Response Plan as required by and Water Licence MV2005L2-0015.**

A draft decision letter is attached. Board staff recommend the Board include the following sentence to direct De Beers to correct the typo as shown in ENR's review comment ID-2.

"The Board requires De Beers to submit a revised AEMP Response Plan to correct the typo in relation to ENR's review comment ID-2, and revise "N watershed" to "M watershed". The revised AEMP Response Plan shall be submitted by **June 1st, 2020.**"

7 Attachments

- [AEMP Response Plan \(Version 1\) – Low Action Level Exceedance](#)
- Review Summary and Attachments
- Draft Decision Letter from the Board

Respectfully submitted,



Jacqueline Ho
Regulatory Specialist



Angela Love
Regulatory Specialist

Review Comment Table

Board:	MVLWB
Review Item:	De Beers Canada Inc.- Gahcho Kue - AEMP Response Plan (MV2005L2-0015)
File(s):	MV2005L2-0015
Proponent:	De Beers Canada Inc - Gahcho Kue
Document(s):	AEMP Response Plan (833 kb)
Item For Review Distributed On:	Feb 25 at 13:30 Distribution List
Reviewer Comments Due By:	Mar 17, 2020
Proponent Responses Due By:	Mar 24, 2020
Item Description:	<p>De Beers Canada Inc. (De Beers) submitted Version 1 of its Aquatic Effects Monitoring Program (AEMP) Response Plan on February 4, 2020. This Plan is required by Licence MV2005L2-0015, Part I, Condition 7. The Response Plan addresses a Low Action Level trigger for Fish Habitat and Community.</p> <p>Using the Online Review System (ORS), reviewers are invited to submit comments and recommendations on the documents linked below by the review comment deadline specified. Reviewers may also wish to consider providing an overarching recommendation regarding whether the Board should approve the submission, to provide context for the comments and recommendations and assist the Board with its decision. If reviewers seek clarification on the submission, they are encouraged to correspond directly with the Applicant prior to submitting comments and recommendations.</p> <p>All documents that have been uploaded to this review are also available on our public Registry. If you have any questions or comments about the ORS or this review, please contact Board staff identified below.</p>
Contact Information:	Angela Love 867-766-7456 Jacqueline Ho 867-766-7455

Comment Summary

Fisheries and Oceans Canada: Olivia Sroka				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
1	General File	Comment (doc) DFO Cover Letter Recommendation		Board staff note DFO is satisfied with the proposed changes to the Downstream Flow Mitigation Plan and the 2020 monitoring season efforts.

GNWT - ENR - EAM (Environmental Assessment and Monitoring): Central Email GNWT

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Analysis
4	General File	Comment (doc) ENR Letter with Comments and Recommendations Recommendation		
1	Topic: Section 3 "Size Selectivity"	<p>Comment In Section 3, De Beers states that ""The evidence suggests that the remaining population of Arctic Grayling downstream of Kennady Lake are either at such low numbers that the possibility of detection is low, or have been restricted to deeper, cooler waters in the interconnected lakes within the KLM watersheds and have avoided detection or are currently absent from the KLM watersheds." ENR notes that it isn't clear if the size selectivity of the gear (e.g. gillnets) has been specifically assessed and evaluated within the project area. Given that younger/immature size fish likely do not have the same catchability as larger/mature fish, it's possible that the remaining population of Arctic Grayling (if present) downstream of Kennady are simply not large/old enough to be susceptible to the gear (e.g. gillnetting) in lakes, and are not mature enough to make spawning migrations into the streams where they would be detected by the fish fence.</p> <p>Recommendation 1) ENR recommends that De Beers provide additional information on the following: "Assessment and evaluation of the Arctic Grayling size selectivity of the gillnets in the project area. " The likely proportion of the Arctic Grayling population not susceptible to the fish-out gear (e.g. gillnets) due to size. " The likelihood of a younger/immature population of Arctic Grayling remaining downstream of Kennady that is not old enough to be susceptible to gillnetting, and not mature</p>	<p>Mar 26: ? No gillnetting is conducted as part of the annual AEMP Fish Habitat and Community sampling. ? Multi-mesh sized gill nets with panels having mesh sizes of 13, 19, 25, 32 and 38 mm were used throughout the Phase I (2014) and Phase II (2015) Fish-Out (De Beers 2015). The majority of the size classes caught in both phases ranged between 100 to 400 mm in fork length (see Figure 3-11 in De Beers 2015). The report also presented that most of these fish were Age 2+ fish. It is likely that some of the Age 0 YOYs and Age 1+ fish remained after the completion of the Fish Out in 2015. However, these areas were isolated from Area 8 and the downstream study area by the construction of Dyke A between Area 7 and Area 8 in 2014, and were dewatered in 2015 and 2016. ? Visual observations and backpack electrofishing have been demonstrated as highly effective, and sufficient enough, to document both YOY and juvenile Arctic Grayling within the study area streams. In addition, underwater video, boat, and shoreline observations are made annually within the larger lakes, which are able to support overwintering and cooler water temperatures. Visual detection limits and survey efficiency in the deeper part of the lakes continue to limit the documentation of Arctic Grayling that may utilize these habitats. Reference: De Beers. 2015. Gahcho Kue Mine. Lue T'e Halye. Fish-Out Annual Report 2015.</p>	

		<p>enough to make spawning migrations into the streams where they would be detected by the fish fence.</p>		
2	<p>Topic: Section 3 "Sampling Methodology"</p>	<p>Comment In Section 3, De Beers states that "Expanded monitoring completed in 2019 did not detect Arctic Grayling in the N watershed or at the outlet of Lake 410 in 2019, which may result in a further delay in recolonization if the source population for recolonization of Arctic Grayling is located further downstream in the Kirk Lake watershed." ENR notes that there are a number of details related to sampling methodology that isn't clear. These details will assist in understanding the recolonization potential and regional trends in the Arctic Grayling population. Recommendation 1) ENR recommends that De Beers provide additional detail on the following: "Specific reaches of the N Watershed that were sampled for Arctic Grayling in 2019. How and when these reaches were sampled in 2019. Whether or not these reaches were sampled in other years, and if so, how and when? Whether or not these reaches were outside of an area of mine influence (i.e., the loss of Kennady Lake Arctic Grayling population has no migratory or spawning linkages to the N watershed reaches). De Beers™ certainty that these reaches are outside of an area of mine influence."</p>	<p>Mar 26: The N Watershed was not part of the expanded study area for the AEMP in 2019. No Arctic Grayling were detected in the M watershed in 2018 or 2019. Arctic Grayling were also not detected at the outlet of Lake 410 in 2019; however, they were confirmed at this location in 2018. The comment in the response plan was an indication that there is the potential that recolonization may need to come from a further downstream population (i.e., beyond Lake 410) if the observation result in 2019 is an indication that Arctic Grayling are potentially absent or in very low numbers in Lake 410.</p>	
3	<p>Topic: Section 4.3 "Projection of Environmental Responses"</p>	<p>Comment In Section 4.3, De Beers states that "Provided adequate flow conditions occur, recolonization of Arctic Grayling within the KLM watersheds is possible, as suggested by the presence of a single large adult Arctic Grayling in Stream L1a in the summer of 2019." As a result of</p>	<p>Mar 26: The Approved Low, Moderate, and High Action level criteria are biologically meaningful for Arctic Grayling: ? The Low Action level criteria remains a suitable trigger to monitor a self-sustaining Arctic Grayling population as it is focussed on successful spawning and</p>	

		<p>the capture of a single Arctic Grayling, the moderate action level criterion was not triggered. This trigger is proposed to be retained with no additional revisions for 2020. ENR notes that from a biological perspective, the presence of a single fish is still of high concern from a population perspective given the documented loss from baseline conditions. The moderate action level triggers should be biologically meaningful and therefore should be refined for 2020. ENR made a similar comment (#58) regarding high action levels during review of the AEMP Design Plan and Aquatic Effects Re-evaluation Report Version 6 (February 6, 2020). In that review, ENR recommended that the high action levels be reviewed to be biologically/ecologically meaningful for Arctic Grayling recovery as recruitment of 1 YOY Arctic Grayling (for example) is still a population level concern that should trigger a response. While comment #58 was specific to high action level triggers, the same principles apply. Triggers should be reviewed and refined to be biologically and ecologically meaningful for Arctic Grayling recovery.</p> <p>Recommendation 1) ENR recommends that the moderate action level trigger be refined for 2020 to ensure that it is biologically meaningful for Arctic Grayling recovery.</p>	<p>recruitment in the KLM system. Having the low action level triggers maintain focus on the Arctic Grayling recovery in a meaningful way would require a suitable response plan (i.e., identify the likely causes and identify mitigation options). ? The Moderate Action level criteria triggers in the absence of Arctic Grayling over two consecutive years, and also helps to determine if there is a potential for recolonization. Arctic Grayling absence or recruitment failure in natural systems can occur 1 in 4 years, without the observation being considered adverse; a second consecutive year of absence is a suitable and biologically meaningful indication that additional mitigation may be necessary. The absence of Arctic Grayling for two years (2017-2018) resulted in the changes to the flow mitigation pumping targets and objectives that were implemented in 2019, to allow for unrestricted fish passage regardless of the hydrologic conditions for each year. The success of this change in mitigation resulted in the observation of the first adult Arctic Grayling in the original study area (i.e., Stream L1a in the summer of 2019), since 2016. If one adult Arctic Grayling was found, then the physical conditions required for it to access the streams were met. Furthermore, other adults, juveniles, and YOYs, whether lake resident, or located downstream of the study area, therefore have the ability to reach the study area and potentially recolonize the streams. In addition, if one Arctic Grayling YOY is documented within the KLM watershed in future years, this will confirm successful spawning has taken place and that recruitment and recolonization is possible. The low action level criteria will still trigger if the</p>	
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			<p>population is not sustained. The Moderate Action trigger remains biologically meaningful and is linked to the mitigation of providing the physical conditions that will allow Arctic Grayling to access and recolonize the habitats within the KLM system. ? The High Action level criteria trigger occurs only when absence of Arctic Grayling is sustained consecutively beyond four years, and there is a concurrent documented decline of one of two other species (Northern Pike and Slimy Sculpin - which are both ecologically linked to Arctic Grayling in northern streams). This trigger is biologically meaningful in that the sustained absence of Arctic Grayling over a four year period means that natural re-colonization is not viable under the flow and habitat conditions provided during operations. This would mean that there could be a risk that the natural recolonization of Arctic Grayling in post-closure would require the need for alternate strategies (e.g., physical relocation) to be considered. If other fish species in the downstream fish community are impacted, further contingencies to sustain the downstream fish community may also be required. Both the low and moderate Action level criteria will remain in place to monitor the populations at each level and will continue to require response plans and adaptive management as the monitoring years continue through operations, closure and post-closure.</p>	
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March 17, 2020

Jacqueline Ho
Regulatory Specialist
Mackenzie Valley Land and Water Board
7th Floor – 4910 50th Avenue
P.O. Box 2130
Yellowknife, NT
X1A 2P6

Dear Ms. Ho,

**Re: DeBeers - Gahcho Kue
Water Licence – MV2005L2-0015
AEMP Response Plan – LAL Trigger for Fish Habitat and Community
Request for Comment**

The Department of Environment and Natural Resources (ENR), Government of the Northwest Territories has reviewed the plan at reference based on its mandated responsibilities under the *Environmental Protection Act*, the *Forest Management Act*, the *Forest Protection Act*, the *Species at Risk (NWT) Act*, the *Waters Act* and the *Wildlife Act* and provides the following comments and recommendations for the consideration of the Board.

Topic 1: Section 3 –Size Selectivity

Comment(s):

In Section 3, De Beers states that ““The evidence suggests that the remaining population of Arctic Grayling downstream of Kennady Lake are either at such low numbers that the possibility of detection is low, or have been restricted to deeper, cooler waters in the interconnected lakes within the KLM watersheds and have avoided detection or are currently absent from the KLM watersheds.”

ENR notes that it isn’t clear if the size selectivity of the gear (e.g. gillnets) has been specifically assessed and evaluated within the project area. Given that younger/immature size fish likely do not have the same catchability as larger/mature fish, it’s possible that the remaining population of Arctic Grayling (if present) downstream of Kennady are simply not large/old enough to be susceptible

to the gear (e.g. gillnetting) in lakes, and are not mature enough to make spawning migrations into the streams where they would be detected by the fish fence.

Recommendation(s):

1) ENR recommends that De Beers provide additional information on the following:

- Assessment and evaluation of the Arctic Grayling size selectivity of the gillnets in the project area.
- The likely proportion of the Arctic Grayling population not susceptible to the fish-out gear (e.g. gillnets) due to size.
- The likelihood of a younger/immature population of Arctic Grayling remaining downstream of Kennady that is not old enough to be susceptible to gillnetting, and not mature enough to make spawning migrations into the streams where they would be detected by the fish fence.

Topic 2: Section 3 –Sampling Methodology

Comment(s):

In Section 3, De Beers states that “Expanded monitoring completed in 2019 did not detect Arctic Grayling in the N watershed or at the outlet of Lake 410 in 2019, which may result in a further delay in recolonization if the source population for recolonization of Arctic Grayling is located further downstream in the Kirk Lake watershed.”

ENR notes that there are a number of details related to sampling methodology that isn’t clear. These details will assist in understanding the recolonization potential and regional trends in the Arctic Grayling population.

Recommendation(s):

1) ENR recommends that De Beers provide additional detail on the following:

- Specific reaches of the N Watershed that were sampled for Arctic Grayling in 2019.
- How and when these reaches were sampled in 2019.
- Whether or not these reaches were sampled in other years, and if so, how and when?
- Whether or not these reaches were outside of an area of mine influence (i.e., the loss of Kennady Lake Arctic Grayling population has no migratory or spawning linkages to the N watershed reaches).

- De Beers' certainty that these reaches are outside of an area of mine influence.

Topic 3: Section 4.3 – Projection of Environmental Responses

Comment(s):

In Section 4.3, De Beers states that “Provided adequate flow conditions occur, recolonization of Arctic Grayling within the KLM watersheds is possible, as suggested by the presence of a single large adult Arctic Grayling in Stream L1a in the summer of 2019.”

As a result of the capture of a single Arctic Grayling, the moderate action level criterion was not triggered. This trigger is proposed to be retained with no additional revisions for 2020.

ENR notes that from a biological perspective, the presence of a single fish is still of high concern from a population perspective given the documented loss from baseline conditions. The moderate action level triggers should be biologically meaningful and therefore should be refined for 2020.

ENR made a similar comment (#58) regarding high action levels during review of the AEMP Design Plan and Aquatic Effects Re-evaluation Report Version 6 (February 6, 2020). In that review, ENR recommended that the high action levels be reviewed to be biologically/ecologically meaningful for Arctic Grayling recovery as recruitment of 1 YOY Arctic Grayling (for example) is still a population level concern that should trigger a response.

While comment #58 was specific to high action level triggers, the same principles apply. Triggers should be reviewed and refined to be biologically and ecologically meaningful for Arctic Grayling recovery.

Recommendation(s):

- 1) ENR recommends that the moderate action level trigger be refined for 2020 to ensure that it is biologically meaningful for Arctic Grayling recovery.

Comments and recommendations were provided by ENR technical experts in the Water Management and Monitoring Division and the North Slave Region and were coordinated and collated by the Environmental Assessment and Monitoring Section (EAM), Environmental Stewardship and Climate Change Division.

Should you have any questions or concerns, please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst at (867) 767-9233 Ext: 53096 or email patrick.clancy@gov.nt.ca.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Clancy', written in a cursive style.

Patrick Clancy
Environmental Regulatory Analyst
Environmental Assessment and Monitoring Section
Environmental Stewardship and Climate Change Division
Department of Environment and Natural Resources
Government of the Northwest Territories



Suite 301, 5204 50th Avenue
Yellowknife, NT
X1A 1E2

March 17, 2020

Your files Votre référence
MV2005L2-0015

Our file Notre référence
03-HCAA-CA6-00057

Mackenzie Valley Land and Water Board
Attention: Angela Love
7th Floor, 4922 48th St.
P.O. Box 2130
Yellowknife, NT X1A 2P6

Dear Angela Love,

Subject: De Beers Gahcho Kue - AEMP Response Plan – Fish Habitat and Community (MV2005L2-0015)

The Fish and Fish Habitat Protection Program of Fisheries and Oceans Canada (DFO-FFHPP) would like to thank the Mackenzie Valley Land and Water Board for the opportunity to provide comments on De Beers' (the Proponent) AEMP Response Plan – Fish Habitat and Community.

As outlined in your request, reviewers are invited to submit comments and recommendations to the MVLWB by March 17, 2020.

DFO-FFHPP has reviewed De Beers' AEMP Response Plan – Fish Habitat and Community in regards to its mandate, i.e. the management, protection and conservation of fish and their habitats. DFO-FFHPP's is satisfied with the proposed changes to the Downstream Flow Mitigation Plan as previously mentioned in the most recent Aquatic Effects Re-Evaluation, as well as the expansion of the 2020 monitoring season efforts. DFO-FFHPP has no further recommendations at this time.

If you or any other parties have any questions, please contact Olivia Sroka at 867-445-3782, or by email at Olivia.Sroka@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Dan Coombs
Senior Fisheries Protection Biologist
Fish and Fish Habitat Protection Program