



**Department of Justice  
Canada**

**Ministère de la Justice  
Canada**

Security Classification/  
*Classification de sécurité :*

Prairie Region  
300,10423 - 101 Street NW Edmonton  
AB T5H 0E7

Région des Prairies  
10423, rue 101 NO, bureau 300  
Edmonton AB T5H 0E7

Telephone/*Téléphone:*  
Facsimile/*Télécopieur:*  
Email/*Courriel:*

<contact information removed>

Our File/*Notre dossier:* 10238566  
Your file/*Votre dossier:* 80101

May 4, 2020

**VIA ELECTRONIC MAIL: [IAAC.GrassyMountain.AEIC@canada.ca](mailto:IAAC.GrassyMountain.AEIC@canada.ca)**

Joint Review Panel for the Grassy Mountain Coal Project  
c/o Impact Assessment Agency  
160 Elgin Street, 22<sup>nd</sup> Floor, Place Bell Canada  
Ottawa, Ontario K1A 0H3

**Attention: Alex Bolton, Chair**

Dear Sir:

**Re: Grassy Mountain Coal Project - Reference Number: 80101**

---

We write in response to the Panel's invitation of March 19, 2020 to provide comments on the sufficiency and technical merit of the Eleventh Addendum to the Environmental Impact Assessment and to provide recommendations on additional information the Panel should receive before proceeding to a public hearing.

In response to this invitation, please find following responses from the following federal government departments:

- Environment and Climate Change Canada;
- Health Canada;
- Fisheries and Oceans Canada; and
- Natural Resources Canada.

Indigenous Services Canada and the Impact Assessment Agency (in its non-panel role) do not have any comments or recommendations for the Panel's consideration.

Yours truly,

*(Reviewed but not signed)*

**Robert Drummond**  
Senior Counsel  
Prairie Region  
Department of Justice Canada

Encls.

**Canada** 

Environmental Protection Operations Directorate  
Prairie & Northern Region  
9250 49 Street  
Edmonton, AB T6B1K5

ECCC File: 4194-10-3/6188  
IAAC Registry: 80101



May 1, 2020

via email: [CEAA.GrassyMountain.acee@canada.ca](mailto:CEAA.GrassyMountain.acee@canada.ca)

Alex Bolton  
Chair, Joint Review Panel for the Grassy Mountain Coal Project  
c/o Impact Assessment Agency of Canada  
160 Elgin Street, 22<sup>nd</sup> Floor, Ottawa, ON K1A 0H3

Dear Mr. Bolton:

**RE: 80101 – Environment and Climate Change Canada’s Sufficiency and Technical Review of Benga Mining Ltd’s Addendum 11 Responses to the EIA for the Grassy Mountain Coal Mine Project**

On March 19, 2020 the Joint Review Panel (the Panel) reviewing the proposed Grassy Mountain Coal Project invited comments on Benga Mining Limited’s responses to information requests issued by the Panel in determining the sufficiency and technical merit of the Eleventh Addendum to the Environmental Impact Assessment.

Environment and Climate Change Canada (ECCC) has reviewed the material and in deference to the Panel’s requests that participants not submit duplicate comments or recommendations, ECCC has no further information requests.

Based on the information provided in Eleventh Addendum, ECCC has additional advice to offer to the Panel on the Project’s effects and mitigation measures on water quality, and by way of this submission (Attachment 1) provides its comments to the Panel for consideration.

ECCC’s advice is based on our mandate pursuant the *Canadian Environmental Protection Act* and the pollution prevention provisions of the *Fisheries Act*.



Please contact Gillian Brown at <contact information removed>

or <email address removed>

if you need more information.

Sincerely,

<Original signed by>

Andrea McLandress  
Regional Director  
Prairie Northern Region

Attachment: ECCC's Review of Benga Mining Ltd's Eleventh Addendum for the Grassy Mountain Coal Project

cc: Jody Small, A/Head, EA South, EPOD, ECCC  
Gillian Brown, Senior EA Coordinator, EA South, EPOD, ECCC

[Grassy Mountain Coal Project – Registry 80101](#)

Environment and Climate Change Canada’s Technical Review of the Addendum Eleven –  
Benga Mining’s Responses to the Federal Review Team’s Fourth Round of Technical Information Requests (IRs)

**TABLE 1.0 - SUPPLEMENTARY INFORMATION REQUESTS, ROUND 5**

<u>TOPIC &amp; REFERENCE:</u>	<u>Technical comment (ECCC-01)</u>
<p><b>Topic: Surface Water Quality</b></p> <p>SIR Responses 1 Section A.3.4, Page 96. Proponent responses to AER SIR 102(c) (February 2018).</p> <p>Appendix 10B – Section 7.1 – Blairmore Creek Water Quality</p> <p>Consultant Report #5 – Surface Water Quality (CEAR#42), Section 2.2.2 Water Quality Measurement Endpoints</p> <p>Addendum 8:</p> <ul style="list-style-type: none"> <li>- Appendix C-2: Selenium Attenuation Barrel Trial</li> <li>- Appendix C-3: Risk-Based Evaluation Of Predicted Selenium, Sulphate &amp; Metals</li> </ul> <p>Addendum 10, Package 5: Surface Water Quality, Hydrology, Hydrogeology, Fish and Fish Habitat, Cumulative Effects, Geotechnical, Reclamation, Wildlife, Land Use and EA Methodology</p> <p>Addendum 11, Response Package to JRP IR package 6, Proponent responses to IRs 6.16, 6.17, 6.18, 6.19, 6.20, 6.22, 6.24</p>	<p>The Proponent provided responses to supplementary information requests on selenium mitigation strategies throughout the environmental assessment period and multiple information request addenda. Alberta provincial surface water quality guidelines have been used throughout the environmental assessment process as a means of understanding predicted selenium levels from mine activities.</p> <p>Based on the additional information provided in the Proponent’s response to the supplementary information request, ECCC has concluded that the proposed mitigation measures are not sufficient to prevent the release of selenium to the environment at concentrations that are harmful to receptors. Specifically, ECCC estimates that the project will result in effluent containing selenium entering the aquatic environment at concentrations that will affect aquatic egg-laying vertebrates. Prolonged exposure to high concentrations of selenium produces, amongst other effects, multi-generational effects expressed as deformities in aquatic egg-laying vertebrates. The following technical comment is provided to explain how ECCC has arrived at this conclusion.</p> <p><i>Treatment for selenium in wastewater</i></p> <p>In order for the project to remain within the provincial water quality guidelines of 2 µg/L in surface water, the project mitigation measures for selenium need to achieve 99.7% selenium attenuation. The Proponent provided documentation in response to ECCC IR 6.1.9 (Addendum 11) which demonstrated the ability of the saturated backfill zones to attenuate selenium in wastewater at other coal mines resulting in 90 to 95% attenuation.</p> <p>The efficacy of the proposed saturated backfill zone treatment to attenuate selenium has been tested with barrel trials (as provided in Addendum 8, Appendix C-2) and the rate of attenuation of selenium under optimal conditions was approximately 90%. Achieving 90% attenuation of selenium using the proposed mitigation method is therefore predicted to result in a concentration of 70 µg/L at Blairmore Creek; this is 34 times the provincial guideline. In their project description, the Proponent has stated that 99% percent of attenuation would be achieved although bench scale testing has not been proven to meet that standard.</p>

In response to ECCC IR 6.18 and 6.20, the Proponent provided information on two contingency measures which may be used if the saturated backfill zones prove ineffective: a gravel bed reactor and a chemical cascade treatment.

The Proponent has stated in Addendum 11 that there is adequate space to allow for multiple treatment methods for selenium in the mine footprint. Since ECCC predicts that the saturated backfill zone treatment method alone will not achieve selenium attenuation that is protective of receptors it is recommended that gravel bed reactors be put in place at the time the operational phase of the project begins. Bench scale testing of the gravel bed reactor technology for the treatment of selenium and nitrate under varying operational conditions is currently being conducted by Geosyntec. ECCC recommends that the Joint Review Panel consult the results of the bench scale trials before proceeding to hearings.

A second contingency measure to treat effluent following saturated backfill zone attenuation, prior to releasing mine water into Blairmore Creek is a 'cascade', which is proposed to increase the Oxidation-Reduction Potential and dissolved oxygen in the effluent using hydrogen peroxide and ozone to convert selenium into a more oxidized form. This treatment would also convert a portion of the selenite (SeIV) into selenate (SeVI). To mitigate the effect of hydrogen peroxide and ozone, the Proponent would subsequently use a reducing agent such as sodium bisulfite before effluent discharge. The Proponent has provided no evidence, such as bench scale trials, of the efficacy of the proposed cascade treatment.

The speciation of selenium observed by bench scale trials is essential to support conclusions regarding the reducing and oxidation condition efficiency (i.e. the ability of the cascade to reduce selenium to its elemental form, or convert selenite (SeIV) into selenate (SeVI) for each proposed treatment method. Each of the treatments proposed to mitigate selenium rely on oxidation-reduction principles, and the transformation of selenium species to control solubility. It is therefore recommended that the proportion of each species of selenium should be reported at each step and for each treatment.

*Water quality criterion for selenium*

Alberta Environment and Parks (AEP) updated the surface water guidelines for selenium and in 2018 adopted the guidelines of 2 µg/L established by B.C for the protection of aquatic life. The Proponent proposed a site-specific water quality objective for selenium based on a pre-operation site-specific risk assessment. The risk assessment is based on three different models and sets of calculations (Addendum 8, Appendix C-3; Consultant Report 5):

- 1) A food-web to model accumulation of selenium;
- 2) Application of a mitigation factor to relate sulphate concentration to the bioavailability of selenite; and
- 3) A species-specific estimate of fish egg concentration derived from the concentration of selenium in the whole fish body (using US EPA 2017).

ECCC has concluded that the site-specific risk assessment and its derived water quality objective may not accurately characterize the risk to receptors from exposure to selenium during and following mine operations. The risk assessment incorporates erroneous assumptions about selenium bioavailability (which vary depending on selenium species) and the mistake is compounded at each step of the risk assessment.

- 1) Food web modelling can only be used with the correct selenium speciation ratio, which is expected to change following processing in the mine. This is because the speciation ratio affects the enrichment factor that constitutes the first step in food web modelling. Therefore, basing the food web models on pre-mining conditions introduces uncertainty in the exposure and bioavailability assumptions applied in the model.
- 2) The lack of certainty concerning selenium speciation carries forward into assumptions about selenium bioavailability in effluent from the saturated backfill zones and in Blairmore Creek.
- 3) Sulphate has a mitigating effect on bioavailability of selenate only for its competitive behavior to the absorption of selenate, and has no effect on selenite. Therefore, the presumption that sulphate provides a mitigating effect should not be used as a rationale to justify a higher site-specific water quality objective for selenium.

*Conclusion*

The proposed water quality mitigation measures fail to estimate or measure selenium speciation, which is essential to determine the selenium form that will be available to receptors. Different species of selenium have different behavior in the environment, different toxicity, and different compounds mitigate their bioavailability and bioaccumulation effects. To propose an appropriate site-specific water quality criterion for selenium, it is therefore essential to know what soluble form of selenium is released (selenate or selenite).

The efficacy of the saturated backfilled zone treatment to remove selenium, or of the other contingency treatment measures, have not been demonstrated to the standard committed to by the Proponent (99%), and would not be protective of the environment, unless selenium is able to be attenuated to 99.7%.



Health Canada Santé  
Canada Canada

Director, Environmental Health and Internationally Protected Persons Programs  
Regulatory Operations and Enforcement Branch (ROEB)  
Health Canada / Government of Canada

May 4, 2020

Alex Bolton  
Panel Chair  
Grassy Mountain Coal Project Joint Review Panel

c/o Impact Assessment Agency of Canada  
160 Elgin Street, 22nd Floor, Place Bell Canada  
Ottawa, Ontario  
K1A 0H3

Sent by e-mail to: [iaac.grassymountain.aeic@canada.ca](mailto:iaac.grassymountain.aeic@canada.ca)

**Subject: Health Canada's Review of the Eleventh Addendum to the Environmental Impact Assessment for the Grassy Mountain Coal Project (Reference Number: 80101)**

---

Dear Alex Bolton,

In response to the Joint Review Panel (JRP) public notice invitation dated March 19, 2020 for the Grassy Mountain Coal Project (the Project), Health Canada (HC) is providing comments on the sufficiency and technical merit of the Eleventh Addendum to the Environmental Impact Assessment provided by Benga Mining Limited. HC is participating in the environmental assessment review of the Project as a Federal Authority under Section 20 of the *Canadian Environmental Assessment Act, 2012*.

HC is of the opinion that the information provided is not sufficient to proceed to a hearing and therefore provides information requests to the JRP (attached). These information requests are related to the specialist or expert information or knowledge that HC possesses, and pertain to the human health risk assessment and drinking water quality.

Should you have any questions, please contact Brenda Woo, Regional Manager Environmental Health Program in Alberta at <contact information removed> or <email address removed>. Please copy Robert Drummond, counsel with Justice Canada, at <email address removed> on any correspondence with HC.

We appreciate the opportunity to provide comments to the JRP.

Canada



Health Canada Santé  
Canada Canada

Sincerely,

<Original signed by>

Chantal Roberge  
Director, Environmental Health and Internationally Protected Persons Programs  
Health Canada / Government of Canada

cc: Suzanne Leppinen, Director, Chemicals and Environmental Health Management  
Bureau (CEHMB), HECSB, HC  
Brenda Woo, Regional Manager, Environmental Health Program, EHPD, ROEB,  
HC  
Kathleen Buset, Manager, Environmental Assessment and Contaminated Sites  
Division, CEHMB, HECSB, HC

Attachment: Proposed Information Requests on the Sufficiency and Technical Merit of  
the Environmental Assessment

Canada 



## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

**Participant:** Health Canada

**Organization (if applicable):** Health Canada

## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

Information Request #	Information Source <i>(section or page# of EIS, Addenda, Responses to Requests for Information, etc.)</i>	Rationale	Proposed Information Request
HC-1	Addendum 11, Information Request 6.27, Pages 271-273.  Appendix 6.27-1: Human Health Risk Assessment (HHRA) – Addendum 1	<p><b>Monitoring contaminant levels in the environment is needed to confirm the predictions of the HHRA and inform adaptive management to keep risks to human health as low as possible.</b></p> <p>Health Canada recommends monitoring key contaminants identified in the application case as exceeding health based targets in the HHRA during all project phases to determine the accuracy of the HHRA predictions. Environmental media to be monitored include but are not limited to: air, water, soil and sediment. If concentrations in environmental media are shown to increase significantly, country foods should also be analyzed (as appropriate) to re-assess the potential risk to human health. Monitoring will verify whether the HHRA assumptions used were appropriate, and assist with implementing or modifying mitigation measures (i.e., adaptive management). Monitoring activities may be part of a follow-up program to validate that the predictions made during the assessment are accurate and/or to determine the effectiveness of the mitigation measures.</p>	Provide details on a monitoring program that will be used to verify HHRA predictions by monitoring key contaminants identified as exceeding health based targets in the HHRA in relevant environmental media (i.e., air, water, soil, sediment, and subsequently country foods, as appropriate) during all project phases. Provide details on how the results of this monitoring program would inform adaptive management measures.

## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

Information Request #	Information Source <i>(section or page# of EIS, Addenda, Responses to Requests for Information, etc.)</i>	Rationale	Proposed Information Request
HC-2	Addendum 11, Information Request 6.27  Appendix 6.27-1: Human Health Risk Assessment (HHRA) – Addendum 1, Section 9, Page 31	<p><b>Details are missing on the way contaminant levels in the end-pit lake will be monitored and how potential risks to human health from drinking water will be evaluated during mine closure and decommissioning.</b></p> <p>The updated HHRA in Appendix 6.27-1 states:</p> <p><i>“Predicted risks for the end-pit lake (EPL) were within acceptable limits in most cases; however, HQs associated with the Project’s contributions from end pit high walls to surface water were a substantial contributor to the application HQ results. [...] management considerations of the EPL are warranted and actual measured concentrations at the time of EPL creation should be used to revisit the HHRA assessment.” [...] “Surface water concentrations within the EPL should be assessed and monitored as a component of the mine closure strategy to assure measured concentrations are not of human health concern.”</i></p> <p>In the context of the Guidelines for Canadian Drinking Water Quality (GCDWQ) (Health Canada 2019a), it is recommended that during the mine closure phase, the source water of the EPL be characterized in order to determine the required frequency of monitoring and the specific parameters to be monitored. From a human health perspective, the frequency of monitoring should increase when parameters of interest are found at levels approaching or exceeding federal drinking water guidelines or provincial drinking water standards (or environmental benchmarks that may be more conservative).</p>	<p>Provide a plan for the EPL to evaluate potential risks to human health via the drinking water exposure pathway during the mine closure and decommissioning phase; explain how the plan will be modified to accommodate for flexibility in the frequency of monitoring, based on measured results.</p> <p>Results should be compared against the most up-to-date GCDWQ.</p>

## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

Information Request #	Information Source <i>(section or page# of EIS, Addenda, Responses to Requests for Information, etc.)</i>	Rationale	Proposed Information Request
		<p>If measured concentrations approach or exceed the maximum acceptable concentration (MAC) from the GCDWQ, the frequency of measurements should be increased along with additional mitigation measures until the MAC are reduced below the GCDWQ or the more conservative environmental benchmark (e.g. for protection of aquatic life) if applicable.</p> <p>Reference: Health Canada 2019a. Guidelines for Canadian Drinking Water Quality - Summary Table. Available here: <a href="https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html">https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html</a></p>	
HC-3	<p>Addendum 11, Information Request 6.27</p> <p>Appendix 6.27-1, Section 7.2.1.1, Page 21 (pdf 1264)</p>	<p><b>Updated information is available on potential risks to human health from exposure to aluminum in drinking water.</b></p> <p>In the updated HHRA (Addendum 11), there is a reference to Health Canada’s current guidance for aluminum in drinking water indicating:</p> <p style="text-align: center;"><i>“no consistent, convincing evidence that aluminum in drinking water causes adverse health effects in humans”</i></p> <p>This comment is consistent with the current 1998 dated guideline; however, a proposed updated guideline by Health Canada lists a MAC of 2.9 mg/L for total aluminum in drinking water, based on neurological effects.</p>	<p>Use the most up-to-date guideline for aluminum in drinking water to characterise human health effects. This updated guideline should also be considered for all drinking water quality monitoring programs such as the one recommended in HC-2 for the end-pit lake.</p>

## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

Information Request #	Information Source <i>(section or page# of EIS, Addenda, Responses to Requests for Information, etc.)</i>	Rationale	Proposed Information Request
		Reference: Health Canada 2019b. Aluminum in drinking water: Guideline technical document for consultation. Available here: <a href="https://www.canada.ca/en/health-canada/programs/consultation-aluminum-drinking-water/document.html">https://www.canada.ca/en/health-canada/programs/consultation-aluminum-drinking-water/document.html</a>	



Fish and Fish Habitat Protection Program  
Fisheries and Oceans Canada  
Central and Arctic Region  
1028 Parsons Rd SW  
Edmonton, Alberta  
T6X 0J4

Programme de Protection du poisson et de son habitat  
Pêches et Océans Canada  
Région du Centre et de l'Arctique  
1028 rue Parsons Sud-Ouest  
Edmonton, AB  
T6X 0J4

*Your file    Votre référence*  
80101

*Our file            Notre référence*  
14-HCAA-00788

Alex Bolton – Chair, Joint Review Panel  
c/o Canadian Environment Assessment Agency  
160 Elgin Street, 22<sup>nd</sup> floor  
Ottawa ON K1A 0H3

**Subject: Fisheries and Oceans Canada's review comments regarding the sufficiency of additional information on the Grassy Mountain Coal Project (the Project), Reference Number: 80101**

---

Dear Mr. Bolton,

In response to the Joint Review Panel (JRP) public notice invitation dated March 19<sup>th</sup>, 2020, Fisheries and Oceans Canada is providing comments to the JRP in relation to its mandate and area of expertise on the adequacy of the additional information that Benga Mining Ltd. (the proponent) issued in response to the JRP's supplemental information request.

For matters relating to our mandate and area of expertise, Fisheries and Oceans Canada has reviewed and evaluated the Proponent's responses to the panel's information requests and provides a table detailing rationale and proposed additional information requests.

Thank you for the opportunity to comment on the sufficiency of information available on the Grassy Mountain Coal Project. If there are questions regarding DFO's sufficiency review, please contact Laura Phalen at <email address removed>. Please copy Robert Drummond, counsel with Justice Canada, at <email address removed> on correspondence to the department.

Sincerely,

<Original signed by>

Brandi Mogge  
Team Leader - Mining, Oil, & Gas - South

CC:  
Laura Phalen – Fisheries and Oceans Canada

## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

**Participant:** Laura Phalen

**Organization (if applicable):** Fisheries and Oceans Canada

**General Comments:** Fisheries and Oceans Canada (DFO) acknowledges that responses to Information Requests 6.13 and 6.15 have outcomes that impact the assessment of impacts to fish and fish habitat. DFO cannot comment on the sufficiency and technical merit of the modelling used to update instream flow assessment predictions, or the predictions associated with flow, mixing, and temperatures changes due to the discharge of the Project’s water management features into Blairmore and Gold Creeks. However, DFO does note that verification of the predictions, and active monitoring of source, discharge, and instream temperatures will be required in the regulatory phase, should the project be approved. This will ensure adaptive management measures are implemented expeditiously to avoid and mitigate impacts to Westslope Cutthroat Trout (WSCT), as predicted and committed to by the proponent.

## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

Information Source <i>(section or page# of EIS, Addenda, Responses to Requests for Information, etc.)</i>	Rationale	Proposed Information Request
<i>Information request 6.14 and associated references; Response to information request 6.14 part b.</i>	<p>Although there is merit to the hypothesis that specific spawning locations may change from year to year due to the dynamic nature of the system, the proponent does not have data to support the conclusion; location of mature fish during the spawning period and associated habitat assessments are only reported for one year. Therefore, it remains unclear whether spawning habitat is likely to be present consistently in the specific reaches referenced by the Joint Review Panel during the timeframe of proposed sediment pond discharge, or shift dynamically throughout the reach as the proponent suggests.</p> <p>Due to this uncertainty and considering the sensitivity of the species to sedimentation and temperature, avoidance and mitigation measures to minimize temperature changes and sediment release into WSCT habitat at the source, including a robust monitoring program with actionable thresholds for</p>	No information request is proposed.

## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

Information Source <i>(section or page# of EIS, Addenda, Responses to Requests for Information, etc.)</i>	Rationale	Proposed Information Request
	<p>adaptive management, is likely the most technically certain approach to avoiding any impacts to WSCT, including on spawning, regardless of discharge locations.</p>	
<p><i>Information request 6.23 and associated references;            Response to information request 6.23;            Eleventh Addendum Appendix 6.23 – Aquatic Monitoring Plan, Draft, Section 4.0 6.2,6.6,6.7, 7.0</i></p>	<p>Although these sections contain information on environmental components that will be monitored as well as sampling locations (in some cases conceptual) and sampling frequency, they lack detail on how results of these measurements will be used to inform thresholds that provide indications of discrepancies between expected effects and additional stress.</p> <p>Some examples include:</p> <p>Section 6.6.2.3 indicates that the “target of this monitoring is to ensure the persistence and recovery of WSCT populations during Project operations, decommissioning and closure within natural variation.” However, there is no quantitative threshold for what is defined as natural variation, nor is there a framework for data analysis provided to understand how that determination will be made in the future.</p> <p>Section 6.7.2.4.1.1.3 speaks to fish condition calculations and generally accepted ideal ranges, but does not indicate a threshold at which fish condition data would trigger an adaptive management action for this Project.</p> <p>Section 6.7.2.6 indicates methods that will be used to compare impacted sites to reference sites, but does not expand on when discrepancies would trigger an adaptive management action.</p> <p>DFO understands that in some cases, additional data collection may be required to determine a quantitative threshold at which adaptive</p>	<p>Restate portions of question 6.23 including:</p> <p>a) iii ...associated pre-discharge (and pre-disturbance) mitigation performance indicators to be used in order to confirm the effectiveness of mitigation;</p> <p>iv – details on receiving environment monitoring stressor indicators and effects indicators, including sampling location, frequency, and supporting information;</p> <p>vi – “methods to be used to develop thresholds that would trigger implementation of mitigation measures or adaptive management measures (e.g., a series of risk-based thresholds ranging from triggering confirmation of exceedance of guidelines, to confirming cause/effect, to triggering deployment of alternate or additional mitigation);</p> <p>b) Provide details on sampling design, including how the baseline dataset will be established and used during monitoring;</p> <p>d) Provide a description of how long-term aquatic trends associated with construction, operation, decommissioning and reclamation of the mine will be identified and mitigated; with</p>



## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

Information Source <i>(section or page# of EIS, Addenda, Responses to Requests for Information, etc.)</i>	Rationale	Proposed Information Request
	<p>management actions should be triggered, but also stresses the importance of pre-determined thresholds that will trigger action in order to prevent lag time in responding to unexpected impacts. Some components, such as certain water quality criteria, have clearly defined thresholds which have been identified in the Aquatic Monitoring Plan. However, other components may need project and site-specific development of thresholds including but not limited to changes in WSCT food supply, indicators of changes to tributary and mainstem aquatic and/or riparian habitat, and changes to WSCT population as identified in Figure 4.0-1.</p> <p>Section 7.1-1 states that “...if a monitoring and mitigation effectiveness evaluation identify that adverse environmental effects are greater than predicted, Benga will then evaluate whether they result in changes to the conclusions presented in the effects assessment.”</p> <p>DFO questions whether this general statement adequately responds to the Panel’s information request, given the specific wording of the request provided in 6.23.</p>	<p>consideration of year to year variability within the aquatic ecosystems in Gold and Blairmore Creeks.</p> <p>This is particularly applicable to those environmental components that do not have already established thresholds and triggers. Incorporate the updated information into the Aquatic Monitoring Plan.</p>
<p><i>Information request 6.23 and associated references; Response to information request 6.23; Eleventh Addendum Appendix 6.23 – Aquatic Monitoring Plan, Draft, section 7.0</i></p>	<p>Table 7.5-1 describes potential project effects, mitigation objectives, economic or technically feasible adaptive management options, and likelihood of adaptive management effectiveness. Several of the potential project effects have “Implementation of additional fish offsetting measures” as an adaptive management option.</p> <p>Although it is typical for DFO to require contingency planning to account for uncertainty in offsetting plans, it is inappropriate to consider offsetting as an adaptive management strategy. The reason for this is that factors considered when determining the adequacy of an offsetting plan, and whether it is appropriate to issue an Authorization under Section 35 of the <i>Fisheries Act</i> and section 73 of the <i>Species at Risk Act</i>, take into account the magnitude of impacts and how they will affect the local population.</p>	<p>Update the appropriate adaptive management portions of the Aquatic Monitoring Plan to reflect feasible adaptive management measures that can be implemented, or a process for determining those measures, for each potential project effect.</p>

## Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

Information Source <i>(section or page# of EIS, Addenda, Responses to Requests for Information, etc.)</i>	Rationale	Proposed Information Request
	<p>The predicted impacts are based on models, which inherently have some uncertainty associated with them. Consequently, ensuring predictions are verified through robust monitoring programs is critical. Adaptive management measures should be aimed at identifying and further mitigating impacts rather than proposing offsetting, especially given the sensitivity and status of the affected WSCT populations. For example, if changes in water temperature are beyond predictions and established thresholds, appropriate adaptive management measures should be focused on operational changes that can be made to mitigate the increase in temperature vs. allowing impacts to continue that could effectively reduce habitat suitability for WSCT and contribute to jeopardizing survival and recovery of the species. Additional offsetting should only be considered as a last resort contingency measure should adaptive management completely fail.</p>	



May 4, 2020

CIAR #: 80101

Review Panel Manager  
Grassy Mountain Coal Project  
Impact Assessment Agency of Canada  
[IAAC.GrassyMountain.AEIC@canada.ca](mailto:IAAC.GrassyMountain.AEIC@canada.ca)

**Subject: Natural Resources Canada's Review of the Eleventh Addendum of the Environmental Impact Statement for the Grassy Mountain Coal Project**

---

On March 19<sup>th</sup>, the Joint Review Panel (the Panel) for the Grassy Mountain Coal Project (the Project) invited participants to provide comments on the sufficiency and technical merit of the Eleventh Addendum to the Environmental Impact Statement (Registry #313) provided by Benga Mining Ltd (the Proponent). The Panel also invited participants to make recommendations on additional information that is required prior to proceeding to the public hearing phase of the assessment process.

**Natural Resources Canada's role in the Environmental Assessment:**

Natural Resources Canada (NRCan) is participating in the environmental assessment as a Federal Authority in possession of specialist or expert information with respect to the Project pursuant to the *Canadian Environmental Assessment Act, 2012*. To date, NRCan has provided expertise to the Impact Assessment Agency of Canada in the following areas:

- Surficial geology and terrain hazards
- Seismicity
- Hydrogeology and groundwater

In addition, through its role in the administration of the *Explosives Act* and its regulations, NRCan has confirmed that it may issue a licence for the manufacture and storage of explosives for the Project and has been reviewing information pertaining to this role throughout the process.

**NRCan's January and October 2019 Information Requests:**

In NRCan's January 21, 2019 submission to the Panel (Registry #167), we concluded that the Proponent's information in the areas of surficial geology, terrain hazards and seismicity were sufficient to proceed to the public hearing stage of the process. However, NRCan did recommend at that time that additional information on mine pit dewatering, base flow rates and the groundwater numerical model be provided. The Proponent responded on January 31, 2019 (Registry #191) to NRCan's request, stating that "no further information is required regarding hydrogeology and groundwater" and "all groundwater models contain some uncertainty"

and noted that the Alberta Energy Regulator, requires the proponent to “develop for approval a comprehensive and robust groundwater monitoring plan as part of its EPEA approval”.

Additional hydrogeology-related concerns were raised by the Panel and the Tsuu’tina Nation in August 2019 (Registry #220). NRCan reviewed the Proponent’s responses to these issues in the tenth addendum and noted in October 2019 (Registry #283) that effective adaptive management and the use of a well-designed Groundwater Monitoring Plan could address the degree of uncertainty associated with the Project.

**NRCan’s review of the Eleventh Addendum (March 2020):**

Additional concerns raised by the Tsuu’tina Nation regarding hydrogeological aspects of the Project that were presented in Addendums nine and ten, were submitted to the Proponent through the *Joint Review Panel Information Request #6* (Registry #295) on November 28<sup>th</sup>, 2019. This included requests on the effectiveness of seepage capture options and other adaptive management techniques, such as, downgradient contamination monitoring and upgradient receptor-based monitoring to mitigate potential impacts of the Project on groundwater.

NRCan has reviewed the Proponent’s responses to Information Request #6.12 presented in the Eleventh Addendum to the Environmental Impact Statement (Registry #313) submitted on March 13, 2020. Specifically, the Panel requested information on the proposed seepage capture options, including an analysis with supporting evidence of their effectiveness by referencing case studies from other mines with similar characteristics to the Project. As noted in the attached table, NRCan has identified additional questions for the proponent related to the proposed seepage mitigation measures that may provide useful information for the Panel’s analysis.

In closing, if you require any clarification or additional information, please contact Jessica Coulson (Team Leader, Office of the Chief Scientist) by e-mail at <email address removed> , or by phone at <contact information removed> . It is also requested that any further correspondence to NRCan be copied to the Department’s Justice Canada representative, Robert Drummond (<email address removed> ).

Sincerely,

<Original signed by>

---

John Clarke, Director  
Impact Assessment Division  
Office of the Chief Scientist

cc: Eva Walker (Environment and Climate Change Canada)

## Appendix: Proposed Information Requests on the Sufficiency and Technical Merit of the Environmental Assessment

**Participant:** Natural Resources Canada

<b>Information Source</b> <i>(section or page# of EIS, Addenda, Responses to Requests for Information, etc.)</i>	<b>Rationale</b>	<b>Proposed Information Request</b>
<p><b>Document:</b>  <b><i>Joint Review Panel Request for Additional Information – Response Package to JRP IR Package 6 – Addendum 11</i></b></p> <p>Section:  <i>Hydrogeology – IR 6.12 B (Effectiveness of proposed seepage capture options)</i></p>	<p>In the Eleventh Addendum, the Proponent states:  “Where bedrock is exposed, Benga will assess whether open fractures can be sealed with cement or chemical grout, by adopting contact grouting procedures commonly utilized for water retaining dams...” and “This assessment will consider factors including safety of the proposed operation, total number of features detected in the SBZ, and the technical feasibility of the sealing procedure.”</p> <p>Groundwater flow occurs in the downgradient direction. Considering this fact, grouting is commonly utilized to reduce/stop seepage in water retaining dams. A grout curtain usually consists of a row of vertical or inclined boreholes filled with pressurized grout.</p>	<ol style="list-style-type: none"> <li>1. What metrics will be used to evaluate factors such as the safety of the proposed operation when deciding to implement grouting?</li> <li>2. Why is the total number of fractures considered as an assessment factor of whether to proceed with grouting?</li> <li>3. What metrics will be used to evaluate factors such as the technical feasibility when deciding to implement grouting?</li> <li>4. Why have grouting curtains not been considered as an option to reduce/stop seepage?</li> </ol>