

**Environment and Climate Change Canada,
Proposed Regulatory Framework for Coal Mining,
Consultation Document, January 2017**

National Consultation Report February to April 2017

Summary of Input

**September 2017
Environment and Climate Change Canada**

Acknowledgements

Environment and Climate Change Canada would like to acknowledge the time and effort that many individuals put into the consultations. The thoughtful insights and comments that were provided to us during the consultation sessions and through other feedback mechanisms are much appreciated. In particular, we would like to thank the respected Elders of Indigenous communities who participated in the sessions, for their opening prayers, and for sharing their views with us.

Executive Summary

Environment and Climate Change Canada (ECCC)'s *Proposed Regulatory Framework for Coal Mining* outlines how ECCC plans to regulate coal mining effluent in order to reduce the threats to fish, fish habitat and human health from fish consumption by decreasing the level of harmful substances discharged to surface water.

Over the period of February 21st through March 8th, 2017, ECCC held a series of consultation sessions in four locations across the country and written comments were requested following these sessions. The objectives of these sessions were to provide participants with contextual information and an opportunity to provide feedback on the key elements of the proposed framework.

The consultation sessions targeted a range of interested parties including Indigenous representatives and their organizations, environmental non-governmental organizations (ENGOS), industry and industry associations, and provincial governments. The National Consultation Report presents a summary of the key messages and issues that were raised during the consultation sessions and in written submissions sent to ECCC.

Comments received at the various consultation sessions, and through written submissions, covered a broad range of issues and perspectives. Comments from different participants were similar in some instances but diverged in others. Participants provided insightful feedback and there was general support expressed for the need to protect aquatic life as well as to provide regulatory certainty.

There were mixed comments regarding the application of the proposed regulations. With respect to limiting the discharge of certain deleterious substances being discharged there was a wide spectrum of feedback. While some participants support the development of national effluent baseline limits for the proposed parameters, numerous participants commented on the need to look at regional issues and develop site-specific requirements. A wide range of participants also suggested that other parameters should be considered.

The proposal for mine waste management for new mines and expansion projects was met with mixed reactions. Generally, ENGOS and Indigenous representatives support the proposal while industry members and provincial governments are concerned that the proposal would be difficult to achieve and have unintended consequences.

Some overarching themes emerged; in particular, most participants felt as though there was not enough detail in the framework and have requested that ECCC provide a more detailed proposal for consultation prior to publishing the proposed regulations in *Canada Gazette*, Part I, in 2018. More specifically,

participants of all streams are interested in seeing the complete list of parameters of concern, the proposed limits, as well as the justification for including each substance.

ECCC will consider all feedback received from interested parties to finalize the approach for coal mine effluent. Interested parties will have further opportunity to provide comments. The target for proposed regulations to be published in *Canada Gazette*, Part I, is 2018. Final regulations are targeted for publication in *Canada Gazette*, Part II, in 2019.

Table of Contents

EXECUTIVE SUMMARY	I
INTRODUCTION.....	V
ABOUT THIS REPORT	V
THE CONSULTATION PROCESS	V
<i>Indigenous Representatives and their Organizations</i>	<i>VI</i>
<i>Interested Parties.....</i>	<i>VI</i>
EVALUATION	VII
MOVING FORWARD	VIII
CONTEXT	VIII
CHAPTER 1: PROPOSED REGULATORY FRAMEWORK FOR COAL MINING	1
1.1 APPLICATION.....	1
<i>Indigenous Representatives and their Organizations</i>	<i>1</i>
<i>Industry.....</i>	<i>2</i>
<i>ENGOS</i>	<i>3</i>
<i>Provincial Government</i>	<i>4</i>
1.2 DELETERIOUS SUBSTANCES AND EFFLUENT DISCHARGE LIMITS	5
<i>Indigenous Representatives and their Organizations</i>	<i>5</i>
<i>Industry.....</i>	<i>6</i>
<i>ENGOS</i>	<i>9</i>
<i>Provincial Government</i>	<i>10</i>
1.3 MINE WASTE MANAGEMENT – NEW MINES AND EXPANSION PROJECTS.....	12
<i>Indigenous Representatives and their Organizations</i>	<i>12</i>
<i>Industry.....</i>	<i>12</i>
<i>ENGOS</i>	<i>13</i>
<i>Provincial Government</i>	<i>13</i>
1.4 MINE WASTE MANAGEMENT – EXISTING MOUNTAIN MINES WITH LEGACY ISSUES	15
<i>Indigenous Representatives and their Organizations</i>	<i>16</i>
<i>Industry.....</i>	<i>16</i>
<i>ENGOS</i>	<i>17</i>
<i>Provincial Government</i>	<i>18</i>
1.5 MINE WASTE DISPOSAL AREAS	19
<i>Indigenous Representatives and their Organizations</i>	<i>19</i>
<i>Industry.....</i>	<i>20</i>
<i>ENGOS</i>	<i>20</i>
<i>Provincial Government</i>	<i>21</i>
1.6 ENVIRONMENTAL EFFECTS MONITORING	21
<i>Indigenous Representatives and their Organizations</i>	<i>22</i>
<i>Industry.....</i>	<i>22</i>
<i>ENGOS</i>	<i>23</i>

<i>Provincial Government</i>	23
1.7 REPORTING REQUIREMENTS	24
<i>Indigenous Representatives and their Organizations</i>	24
<i>Industry</i>	24
<i>ENGOs</i>	24
<i>Provincial Government</i>	25
1.8 CLOSURE	25
<i>Indigenous Representatives and their Organizations</i>	25
<i>Industry</i>	25
<i>ENGOs</i>	26
<i>Provincial Government</i>	26
CHAPTER 2: OVERARCHING THEMES	27
2.1 CONSULTATION PROCESS	27
<i>Indigenous Representatives and their Organizations</i>	27
<i>Industry</i>	27
<i>ENGOs</i>	28
<i>Provincial Government</i>	28
CHAPTER 3: NEXT STEPS	30
APPENDIX 1 – LIST OF PARTICIPANTS AT THE CONSULTATION SESSIONS	A-1
APPENDIX 2 – LIST OF WRITTEN SUBMISSIONS	A-3
APPENDIX 3 – ENVIRONMENT AND CLIMATE CHANGE CANADA CONTACT	
INFORMATION	A-4
APPENDIX 4 – PROPOSED REGULATORY FRAMEWORK FOR COAL MINING	A-5

Introduction

Environment and Climate Change Canada (ECCC) is engaged in the development of federal regulations applicable to the coal mining sector. In that regard, ECCC has developed a *Proposed Regulatory Framework for Coal Mining* that outlines how ECCC plans to regulate coal mining effluent in order to reduce the threats to fish, fish habitat and human health from fish consumption by decreasing the level of harmful substances discharged to surface water.

Over the period of February 21st through March 8th, 2017, ECCC held a series of consultation sessions in Nova Scotia, Saskatchewan, Alberta, and British Columbia. Existing coal mine activities are located in these four provinces. The objectives of these sessions were to provide participants with contextual information and an opportunity to provide feedback on the key elements of the proposed framework.

About this Report

This report presents a summary of the key messages and issues that were raised during the consultation sessions and in written submissions sent to ECCC. This report does not attempt to include all specific comments, but aims to reflect the range of comments, concerns, and regional perspectives related to coal mining and the protection of aquatic life. While this report provides an overview of the comments made, it does not attribute these comments to individuals or organizations.

This document summarizes the comments raised that are related to the *Proposed Regulatory Framework for Coal Mining*, more specifically, to the proposed application, deleterious substances and effluent discharge limits, mine waste management, mine waste disposal areas, Environmental Effects Monitoring (EEM), reporting requirements, and closure. In addition, this document includes comments on overarching themes such as the consultation process as a whole.

The Consultation Process

As part of developing this proposed regulation, ECCC is consulting with a broad range of interested parties through a consultation process. In general, as a first step, a proposal is presented to those being consulted, clarification is provided where necessary, and input is sought and received from participants to the process. The input received is carefully considered and this consideration is then reflected in the development of the proposed regulations. Once the proposed coal mining effluent regulations are published in *Canada Gazette*, Part I (CGI),

interested parties will be able to comment as a part of the formal 60-day public consultation period.

The consultation sessions targeted a range of interested parties including Indigenous representatives and their organizations, environmental non-governmental organizations (ENGOS), industry, industry consultants and industry associations (“industry”), and provincial governments. At each session, the same material was presented and discussed; however, different elements were discussed, relating to the specific concerns raised by interested parties.

ECCC based its consultations on its *Proposed Regulatory Framework for Coal Mining*, January 2017, which was provided to participants and other interested parties prior to the sessions. A copy of the above mentioned document has been attached to this report (Appendix 4).

Indigenous Representatives and their Organizations

ECCC organized two separate information sessions with Indigenous representatives and/or their organizations to provide contextual information on the proposed framework and to improve the awareness of environmental and cultural impacts of coal mining on Indigenous rights and communities. These sessions are listed below:

- Edmonton, Alberta (March 1st, 2017)
- Vancouver, British Columbia (March 7th, 2017)

In addition to these sessions, ECCC has reached out to specific communities and organizations and is continuing to engage with Indigenous groups. In Nova Scotia, the terms of reference for the Mi’kmaq-Canada consultation process are being followed to initiate consultations with the 11 of the 13 Nova Scotia Mi’kmaq communities.

Interested Parties

ECCC organized four consultation sessions across Canada in provinces where coal mines are currently operating. Interested parties including Indigenous representatives and their organizations, ENGOS, industry, as well as provincial governments representatives were invited to participate. Multi-stakeholder and Indigenous consultation sessions were held at the locations listed below:

- Truro, Nova Scotia (February 22nd, 2017)
- Saskatoon, Saskatchewan (February 28th, 2017)
- Edmonton, Alberta (March 2nd, 2017)
- Vancouver, British Columbia (March 8th, 2017)

During these sessions, ECCC provided an overview of coal mining and existing environmental management practices in Canada as well as an overview of the *Proposed Regulatory Framework for Coal Mining*. Participants were given the opportunity to discuss the elements of the proposed framework in a small group setting. During the discussion period, interested parties were encouraged to ask questions and provide feedback on the proposed framework.

In addition to these sessions, all interested parties were encouraged to provide written comments to ECCC by March 31st, 2017.

Evaluation

The consultation sessions for interested parties were designed to be participative and to enable open discussion and feedback. The consultations did not aim to build consensus on any issues, nor were recommendations voted upon.

ECCC staff presented the *Proposed Regulatory Framework for Coal Mining* and participants were provided an opportunity to seek clarifications through a question and answer period. In addition, participants were invited to submit written comments by March 31st, 2017.

A total of 63 participants attended the consultation sessions across Canada. A full list of participants is included in this report (Appendix 1). In addition, ECCC received written submissions from 26 organizations including Indigenous communities and organizations, ENGOs, industry, and provincial governments; a list of those who made submissions is provided in Appendix 2.

After the consultation sessions, participants were invited to complete an evaluation form on the consultation format and process. For the most part, feedback on the sessions was positive. All participants who responded to the survey indicated that the face-to-face information session improved their understanding of the Proposed Regulatory Framework. Having the opportunity to speak with members of the regulatory development team as well as to hear the views of different parties were reported to be most useful. Most parties indicated that they would prefer to continue to be engaged through face-to-face meetings.

Some suggestions were provided to facilitate improvement in future consultation sessions. For example, it was suggested that ECCC provide the material (i.e. presentation) electronically and ahead of time and that a list of participants be distributed. As for the overall engagement process, it was suggested that ECCC develop a working group that can be consulted as the regulations are developed. In addition, it was suggested that guidelines for participation be developed.

Moving Forward

Through this document, ECCC will provide feedback to participants on “what was heard” at the consultation sessions and in written comments received. ECCC will consider participants’ views and comments in the development of the next steps to propose regulations for coal mining effluent.

The key targets for regulatory development are outlined below:

- Proposed coal mining effluent regulations under the *Fisheries Act* are planned to be published in *Canada Gazette, Part I*, in 2018.
- Interested parties will have the opportunity to provide comments on the proposed regulations during the formal 60-day comment period.
- Final coal mining effluent regulations under the *Fisheries Act* are planned to be published in *Canada Gazette, Part II*, in 2019.

Context

The *Proposed Regulatory Framework for Coal Mining* proposes regulations be developed under the *Fisheries Act* and therefore focusses on coal mine releases to water and their potential negative effects on fish and aquatic life. Most of the provisions of the regulations for coal mining would be modelled after the *Metal Mining Effluent Regulations* (MMER) under the *Fisheries Act*. Other provisions are being considered in acknowledgement of the unique challenges associated with existing mines and the effluent (e.g. runoff) from mine waste rock and overburden.

The elements of the proposed framework include:

- Application
- Deleterious substances and effluent discharge limits
- Mine waste management
- Mine waste disposal areas (i.e. tailings impoundment areas)
- Environmental Effects Monitoring (EEM)
- Reporting requirements
- Closure

Chapter 1: Proposed Regulatory Framework for Coal Mining

1.1 Application

At each session, participants were presented with the following information:

<p>Application</p> <p>Regulations would be applicable to all coal mines in Canada discharging effluent which enters water bodies frequented by fish.</p> <p>Practically this would include any type of coal mine in Canada with a discharge to surface water.</p>
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Participants were asked the following question, which they discussed during the session or submitted written responses/comments to:

“Do you agree with the proposed application of the regulations? If not, please explain what other types of activities should be covered by the proposed regulations.”

Feedback from Participants and Written Submissions

Indigenous Representatives and their Organizations

With regards to the application, one participant was very supportive of the proposal to apply these regulations to all coal mines in Canada discharging effluent which enters water bodies frequented by fish as it has a direct impact on human health through fish consumption. This being said, some participants commented that the application as it is proposed is too limited to avoid potential impacts on Indigenous rights and Title. It was recommended to have further discussions on this subject.

One Indigenous community raised concerns with cooling pond effluent and the effect of the effluent temperature on fish. Additionally, it was suggested that, as these proposed regulations do not apply to abandoned mines, ECCC work with provincial regulators to address environmental issues related to abandoned coal mines.

Industry

In general, due to the current absence of regulations under the *Fisheries Act* for discharge of effluent by coal mines creates uncertainty for the coal mining industry, most participants agreed conceptually with the proposed application of the regulation. It was mentioned that industry is encouraged that ECCC is developing “coal-appropriate” regulations rather than including coal mining in the MMER. However, it was noted by one participant that definitions must be clarified in order to better understand the scope of the proposed regulations.

On the other hand, one participant did not support the proposed application and was of the opinion that the Department needs to understand the differences between different types of coal mining operations in Canada and develop a regulatory framework that takes into account operational and regional differences. It was suggested that consideration be given to unique coal mining practices such as progressive reclamation used in open pit coal mining outside of mountainous operations. In comparison to the MMER, there is concern that the completely reclaimed and revegetated areas, including productive farmland, would be subject to the new federal regulatory requirements.

With regards to the intent that regulations would be applicable to all coal mines in Canada discharging effluent which enters, or may enter, water bodies frequented by fish, industry outlined the importance of clarifying the criteria by which this application would be determined. For example, it was suggested that a threshold distance between the Final Discharge Point (FDP) and a water body frequented by fish be established as some coal mines may have FDPs that can be more than 10 kilometers from water bodies frequented by fish.

In addition, it was recommended that, for the coal mines that only discharge once every few years during high flow events, ECCC establish a volume/day threshold that exempt extreme precipitation events from the general volume/day threshold provision. It was stated that the water being discharged by these particular mines during high flow events has little to no contact with the mining area and poses no more risk to the environment than other run-off from adjacent lands.

One industry representative recommended that discharges to industrial cooling ponds which may contain fish be explicitly exempted from the proposed regulations and suggests that the proposed regulations adopt a similar definition for a FDP as what is used in the MMER.

A need to consider how regulations will be applied to projects that are currently in the planning or environmental assessment process was expressed. In some cases, significant expenditures have been incurred based on plans to adhere and abide by existing regulations and standards. As for existing mines, some participants suggested that ECCC establish an appropriate transitional period

and one participant recommended a minimum three-year coming into force date to allow for operations to seek new approvals and/or modify current practices.

ENGOS

While participants generally agreed that the proposed regulations should apply to all coal mines in Canada discharging effluent which enters, or may enter, or depositing other mine waste or deleterious substances, into waterbodies frequented by fish, it was suggested that the regulations should also apply to activities related to coal mining such as road construction and use, which can contribute significant sediment loads to surrounding waterbodies and increases total suspended solids (TSS).

One participant explicitly agreed that the regulations should apply to all coal mines that deposit effluents, not only in waterbodies frequented by fish, but also any place where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water frequented by fish. The participant also highlighted concerns that substances released into the headwaters of the eastern slopes of the Rocky Mountains have the potential to mobilize into connected waterbodies, even if there are no fish present in the immediate receiving waterbody.

All ENGOS who submitted written comments recommend that the proposed scope of the regulations be applied to all coal mines including orphaned and abandoned mines. One participant commented that there is little or no ongoing monitoring of leaking and leaching mines once they are closed and ignoring these environmental issues is unacceptable. For abandoned mines where the former operator cannot be held accountable, it was suggested that work be funded using the Federal Contaminated Sites Action Plan (FCSAP) process. If these proposed regulations cannot be applied to orphaned or abandoned coal mines, it was suggested that these regulations be developed in a way that prevents the abandonment of future mines. It was also recommended that ECCC consider developing other regulations or an action plan to address effluents released by orphaned and abandoned mines.

In addition, some participants commented that although the draft framework proposes to deal with some important aspects of mine effluent, it does not address other environmental issues related to coal mining such as air pollution or the allowance of mines to be developed in topographically challenging mountain regions that include many ecologically sensitive areas and that contribute to cumulative effects. For example, there is concern that the construction of a coal mine may lead to the loss of ephemeral streams that provide a source of water for trout. ENGOS have expressed concerns with current provincial regulatory regimes and encourage provincial and federal governments to develop a more holistic approach that is protective of the environment.

Provincial Government

In general, provincial government representatives have requested that ECCC provide further clarification to the scope of application of the proposed regulations for coal mining. More specifically, one representative noted that they are unable to provide definitive comments until certain terms and concepts are clarified, such as the operational area of a mine, mine expansion, effluent, as well as discharge and proximity to fish bearing water. It was suggested that ECCC consider the impact of different mining methods and the proximity of effluent discharged from the mines to fish bearing waters be evaluated to determine actual risk to safety, health and the environment. It was mentioned that there are some instances where both prairie and mountain coal mines do not deposit directly to fish frequented water bodies.

One participant commented that it is unclear whether ECCC intends to apply the proposed regulations to coal exploration and/or the extraction of coal bulk samples. Under certain provincial jurisdictions, companies have the opportunity to produce up to a 100,000-tonne sample of coal for testing purposes. To that end, it was recommended that the proposed coal regulations not apply to projects that are exploratory in nature. Similarly, one representative questioned how the proposed regulations would apply to existing mines that are on care and maintenance. It was suggested that a similar timeframe for complying with the regulations for existing mines with legacy issues be given to mines on care and maintenance. Furthermore, one participant suggested that the proposed regulations apply to abandoned sites as well.

Finally, one provincial government commented that they currently have operational permits and corresponding financial assurances for all operating coal mines under their jurisdiction and noted that the proposed regulations would not be necessary as there are no regulatory gaps. This being said, it was suggested to implement a provision for a reciprocal agreement between this particular province and ECCC that would allow the province to be the sole regulator of coal mining. Another participant suggested that the regulations clearly define the federal and provincial jurisdictional boundaries related to their application.

1.2 Deleterious Substances and Effluent Discharge Limits

At each session, participants were presented with the following information:

Deleterious substances and effluent discharge limits

Mines would collect and monitor all effluent originating from mines to be discharged through defined Final Discharge Points (FDPs).

Effluent limits for total selenium, total nitrate and TSS are being considered, as well as a pH range.

For selenium, compliance may be tied to its concentrations in fish tissues and receiving waters.

For TSS, exceptions for extreme precipitation or high flow events may be established for some mines.

Effluent would be required to be non-acutely lethal to fish (e.g., rainbow trout) and invertebrates (e.g., *Daphnia magna*).

Participants were asked the following question, which they discussed during the session or submitted written response/comments to:

“Do you agree with the proposal to regulate selenium, nitrate, and total suspended solids (TSS) with national minimum baseline standards? Please provide information that would be helpful in establishing such limits”

Feedback from Participants and Written Submissions

Indigenous Representatives and their Organizations

Some organizations have commented that they are in general agreement with the proposal to limit the discharge of certain substances; however, it was suggested that they should be established using site-specific data for site-specific plans that are developed in partnership with Indigenous organizations. One participant commented that individual permits issued by the province are not

sufficient and does not allow for enough federal review. They would like to participate in the development of a region wide water quality and quantity plan and noted that this would help account for cumulative effects. In addition, to concerns with cumulative impacts, a need to assess specific issues such as acid rock drainage, sulphate, cadmium, nitrate, and selenium has been expressed.

One Indigenous representative raised concerns with the feasibility of collecting all effluent (e.g. in ditches during freshet) and suggested that ECCC be more prescriptive. Another participant stated that management should be focused on source control, rather than management of effluent. There is concern that industry will be timing releases of effluent during high flow events to reduce concentrations [of deleterious substances].

For selenium, there is concern that waste rock from mining operations is a major contributor of selenium releases and it was stated that natural releases are vastly minute in comparison. As for regulating total selenium, there is concern that it is not the best approach and it was recommended that selenium speciation be considered as well as the receiving environment (lentic or lotic) as the sensitivity to selenium species may vary.

It was also noted that the selection of fish species for fish tissue sampling is important for evaluating compliance as different fish species have varying responses to selenium accumulation. It was recommended that the most protective fish species be used. That being said, there is concern on how the sampling of fish will impact sensitive fish populations.

Industry

Generally, industry members commented that they are unable to agree with the proposal to limit certain substances with a national baseline without knowing what the proposed limits would be. Industry also indicated that they are unable to provide input on other substances that are not disclosed and it was recommended that the substances of concern remain TSS, selenium, and nitrate.

In addition, it was recommended that ECCC share how the proposed limits are being developed and how the receiving environment is being considered. Should ECCC propose limits for additional substances, it was recommended that industry be given sufficient time to review and comment on the proposal prior to being finalized.

FDPs

Some participants commented that, although it is industry best practice, it would be uneconomic and unrealistic for current and future mines to collect all the surface run-off, underground seepage, and effluent for discharge through final discharge points. That being said, one participant recommended that, with the

exception of acute lethality testing, the regulatory approach proposed for existing mountain mines with legacy (i.e. historical mining) issues be applied consistently to all mines, where compliance is tied to the receiving environment. Another participant recommended that compliance not be tied to FDP limits as FDPs are not reflective of the operational reality of current and future mining operations.

Effluent Limits

Generally, industry commented that they do not recommend a “one-size-fits-all” approach as there are operational and regional differences between coal mines in Canada. Some participants indicated that the proposed framework document did not include an adequate description of the current regulatory requirements in all provinces which may lead readers to believe that there is a lack of regulatory oversight by provincial jurisdictions. Others commented that the site-specific management plans that are currently in place under the provincial jurisdiction are sufficient to monitor and address impacts of TSS and nitrates. Industry advocated for the alignment between Federal and Provincial requirements and noted that national baseline effluent limits should not be more stringent than the site-specific provincial requirements.

It was suggested that effluent limits should be informed by regional data, background levels, and sound science and that socio-economic impacts should be considered as the application of unattainable water quality standards could cause drastic financial harm to the regulated community which would likely lead to job losses. In addition, industry recommended that the proposed regulations provide mechanisms similar to those in the MMER to allow for the exclusions or reductions in testing requirements for parameters that are demonstrated to be present at levels consistently below maximum authorized limits.

Nitrate

Some participants indicated that site-specific influences and the receiving environment should be considered when developing a limit for nitrate. It was recommended that other modifying parameters, such as low phosphorous concentrations, should be considered. It was also suggested that the approach considered for nitrate in the MMER should be reflected in the coal regulations.

Selenium

Some participants indicated that selenium is not an issue and others indicated that, although selenium exceeds the threshold in the Elk Valley receiving environment, they are not aware of any environments in Canada in which selenium in the environment is having “immediate or long-term harmful effects on the environment or its biological diversity.” It was suggested that, if monitoring indicates that there are no concerns, flexibility be built into the regulations to exempt or provide a lower level of requirements for areas where selenium is not considered to be a significant environmental concern. Industry expressed concern that resources will be spent on the management of a substance that is a non-issue instead of focused on relevant parameters.

Industry also expressed concern that a national baseline effluent standard for selenium would not account for regional differences in background levels. One participant suggested that a tiered approach be developed where a national water quality guideline and fish tissue concentration be used as a threshold and if this threshold is exceeded, a subsequent site-specific water quality guideline and fish tissue concentration could be developed. Industry noted that focusing on selenium concentrations in fish tissue, and preferably in reproductive tissues, would represent the effect on aquatic organisms caused by this bio accumulative element; however, a guideline should inform and lead to further investigation, but not necessarily result in management actions.

Industry also commented that the existing “Canadian Council of Ministers of Environment (CCME) Water Quality Guidelines for the Protection of Aquatic Life” (CWQGs) for selenium of 1 µg/L is severely outdated and that it should be replaced by a more “scientifically-defensible” guideline that would account for actual effects and/or impacts observed in biota in the receiving aquatic environment.

In addition, there were mixed comments regarding Best Available Technology Economically Achievable (BATEA) for selenium. Some participants commented that BATEA is currently unavailable and suggested that the proposed regulatory framework consider alternative means of evaluating compliance that includes receiving environment concentrations and flexibility in compliance limits to account for natural occurrences. Another participant noted that there has been much innovation in the water treatment sector in the past years and encouraged ECCC to engage suppliers of water treatment technologies to obtain the most up-to-date information regarding available technologies and cost.

Finally, industry commented that more detailed discussions are required to ensure that the proposed regulatory mechanism for selenium is workable and to clarify how the location for compliance with fish tissue or receiving water based limits would be fairly established between sites.

Total Suspended Solids

There was a general acceptance with the concept of a national baseline limit for TSS and with the proposal to allow for a flexibility mechanism that accounts for exceptional precipitation or high flow events; however, industry commented that more detail is needed to understand what the mechanism would be and how it would be applied. However, one participant recommends that ECCC collect and analyze regional data to evaluate the need to regulate TSS in addition to what the provinces have in place.

Acute Lethality Testing

One participant did not agree with the proposal that effluent be required to be non-acutely lethal to *Daphnia magna* and suggested that *Daphnia magna* be

incorporated as a monitoring requirement. If ECCC remains with the current proposal, it was recommended by the participant that ECCC consider the Alberta model in which 70-90% survival requires investigation/discussion and survival below 70% is considered to be a failed test. It was stated that in Alberta, there is a further caveat that this does not apply during storm events unless a flocculent is used.

ENGOS

ENGOS generally agreed with limiting the deposit of nitrate, selenium, and TSS; however, there were concerns that limiting deleterious substances in the effluent would not take into account cumulative impacts. To that end, it was suggested that monitoring and providing limits for [deleterious] substances in the receiving environment be applicable to all mines, not just mines with legacy issues. It was also recommended that the proposed regulations do not allow for site-specific/case-by-case deviations based on the naturally occurring levels of the substances of concern in the surrounding environments. Limits should be science-based that reflect potential ecosystem impacts.

In addition, ENGOS are concerned with other issues such as calcification of stream beds causing detrimental effects to fish habitat which can be accelerated by water draining through coal mine waste rock which can be supersaturated with carbon dioxide (CO₂) and calcium species before being deposited [as calcite] in water bodies. It was recommended that ECCC implement discharge limits for dissolved CO₂ and calcium species at FDPs and receiving waterbodies.

Furthermore, it was recommended that the use of toxic flocculants used in tailing ponds releasing effluent be prohibited and that ECCC establish limits for the release of flocculants as there is a concern that flocculants released in coal mining effluent will combine with nitrate, negatively affecting fish and fish habitat. ENGOS encourage ECCC to evaluate and consider all substances that are identified in monitoring data for coal mines during both regular operations and during accidental spill events to evaluate potential substances of concern such as mercury, PAHs, cadmium, sulphate, arsenic, and more. It was suggested that ECCC should provide a means to update the regulations if other substances of concern are identified in the future.

Participants mentioned that selenium is an important issue as it is known to bioaccumulate and cause reproductive failure in fish. One participant outlined that it is imperative to consider selenium speciation in all aspects of the proposed regulations, especially as it relates to evaluating BATEA. It was also suggested that ECCC consider the national criterion for selenium in fresh water established by the United States Environmental Protection Agency (EPA).

As for TSS, one participant suggested that ECCC consider the guidelines for the protection of aquatic life as described in British Columbia's 1997 Technical Appendix: *Ambient Water Quality Guidelines (Criteria) for Turbidity, Suspended and Benthic Sediments* where maximum induced suspended sediments should not increase by more than i) 5mg/L long-term when the background level is ≤ 25 mg/L, ii) 25mg/L when the background level is 25mg/L to 250mg/L, and iii) not more than 10 percent of the background level when it is ≥ 250 mg/L. In addition, some participants did not agree with the proposal to allow exceptions for TSS in high flow and exceptional precipitation events as mines must plan and prepare for such events.

Provincial Government

In terms of the proposed requirement that mines collect and monitor all effluent originating from the mine and discharge it through FDPs, one representative noted that, although new mines could be better designed for enhanced seepage capture, it is unlikely that all seepage could be captured in most situations; therefore, it was recommended that the regulations be worded to realistically reflect the potential for seepage bypass.

With respect to the proposal for deleterious substances and effluent discharge limits, one provincial government representative suggested that the methodology used to derive the national limits be shared and that background levels be considered in the process. In addition, it was noted by one participant that the proposal should be further clarified and additional deleterious substances of concern should be identified in order to receive more definitive comments. One participant commented that the effluent limits should be considered on a province-by-province basis and recommended that ECCC considers the CCME guidelines for the protection of both freshwater and marine aquatic life.

One representative acknowledged that selenium, nitrate, and TSS are a concern at some coal mines; however, it was noted that these parameters do not represent a holistic view of potential water quality issues of substances of concern associated with coal mining and it was recommended that the Department also considers sulphate and acid rock drainage. It was recommended that the parameters regulated for both metal and coal mines be similar, as both have the potential for a range of water quality issues spanning acidic to neutral drainage conditions.

For selenium, one representative recommended that fish tissue monitoring should be required if water quality guidelines are exceeded, and action is required if fish tissue guidelines are exceeded. It was recommended that the required action include the submission of a management plan that would ensure reduction of selenium in the water to levels that would ensure that the fish tissue

guideline is met. This being said, it was suggested that this aspect of the regulations could be delegated to the province.

As for the monitoring of fish tissue for selenium, one representative noted the importance of establishing the best fish species at a specific site as many species are highly mobile and won't accurately reflect the selenium levels immediately downstream of a mine. It was also mentioned that the different types of receiving environment should be considered and lentic and lotic environments tend to have differing selenium bioaccumulation rates. For these reasons, it was recommended that fish be collected from all habitat types that may be influenced by mining effluent.

For TSS, one Ministry recommended that ECCC establish a BATEA-based limit of 50 mg/L. For flows that exceed a 1 in 10 year high flow event, it was recommended that the input of TSS should not exceed a change from background of more than 10% when background is greater than 100 mg/L at any time during high flows or in turbid waters. There is concern that if more stringent requirements are set, significant upgrading of sedimentation ponds or other constructions may be required to meet the effluent limit and it was noted that some mining operations have limited space for such construction.

In addition, it was mentioned that some First Nations communities have expressed to provincial regulators that they are more concerned with the negative impacts of disturbing habitat with sediment ponds to control TSS, rather than with the TSS levels themselves. To that end, it was suggested that the trade-offs between the effects from TSS and habitat loss should be considered when setting TSS limits.

1.3 Mine Waste Management – New Mines and Expansion Projects

At each session, participants were presented with the following information:

Mine Waste Management – New Mines and Expansion Projects

A requirement to segregate mine wastes containing elevated levels of selenium would be established for new mines and expansion projects.

Participants were asked the following questions, which they discussed during the session or submitted written responses/comments to:

“Do you agree with the proposal for new mines and expansion projects? If not, please explain the challenges associated with this proposal and propose alternative approaches”

Feedback from Participants and Written Submissions

Indigenous Representatives and their Organizations

With regards to the proposal for mine waste management for new mines and expansion projects, one participant indicated that they fully support the proposal and noted that the prevention of selenium mobilization by managing the rock containing elevated levels of selenium would be a big step in the right direction.

Industry

Industry recommended that ECCC provide more details on the definition of a new mine as well as more information on the requirements of mine waste segregation and on the transition into the new regulations.

It was stated that current strip mining practices in prairie coal mines do not include long-term storage of overburden as they utilize a progressive reclamation process and overburden is replaced into the pit as soon as the coal is recovered. For this reason, a clarification of mine waste is needed.

Industry expressed concerns with how the proposal for new mines and expansion projects will impact projects that are currently in the planning and environmental assessment stages and stated that it would be unfair and very costly to require such projects to be re-designed at this late stage. It was mentioned that a transition period of three years would not be sufficient.

In addition, industry is concerned that these requirements will contradict the provincial requirements and negatively impact Canada's competitiveness in the global market while creating unnecessary burden. Industry stated that the proposal to segregate mine waste containing selenium is unnecessarily prescriptive as the main intent of the proposal is to regulate the effluent limits. Some participants indicated that in some areas, there are negligible differences of selenium releases between waste rock piles and segregation would not be possible. Instead, it was suggested by one participant that a site-specific approach be taken while others suggested that best practices and guidelines be developed to encourage management of mine waste to reduce the mobilization of constituents of concern and that the approach to legacy mines outlined in the proposed framework be extended to all mines such that compliance is measured within the receiving environment.

Furthermore, some participants suggested that this proposal may have unintended consequences, as blending of mine waste is a method of managing and minimizing the risk of acid mine drainage. Therefore, the requirement to segregate one type of waste rock to reduce the potential for selenium release could lead to acidic drainage from a different stream of waste rock.

ENGOS

All ENGOS who provided written feedback fully support the proposal for new mines and expansion projects to be required to segregate mine waste containing elevated levels of selenium. It was suggested by one participant that existing mines should also begin to segregate waste with elevated selenium levels.

Provincial Government

In general, provincial government representatives recommended that the Department provide further clarification and details on the proposed requirements for new mines and expansion projects. For example, clarification was requested for the definition of mine waste containing elevated levels of selenium. Although one representative agreed that source control is the preferred way to manage waste, especially for selenium, it was mentioned that waste segregation presents specific challenges. For example, it was noted that in certain geographical areas, the segregation of high selenium bearing waste would be impractical as there may not be specific strata that would be amenable to segregation and specific handling practices. Secondly, there is concern that prescribing the segregation of mine waste containing high levels of selenium may result in other significant

effluent issues such as elevated metal leaching and acid rock drainage. It was recommended that measures be established on a site-specific basis rather than within the proposed regulations prescribing a specific mitigation.

Furthermore, one representative recommended that the definition of a contained area be clarified. It was mentioned that some coal mines currently contain waste in rock dumps, tailings storage facilities, backfilled open pits, and in underground mined out areas and there is concern with the limitations to the amount of backfilling that is possible in certain areas. In addition, it was noted that it is unclear what mitigation measures would be supported by the proposed regulations once the waste is segregated. It was mentioned that the availability of cover materials with sufficiently reduced hydraulic conductivities to minimize leaching is a key limitation at many sites. Prescribing such an approach could limit the application of other beneficial mitigation strategies such as mine backfill in a saturated state which would prevent further leaching. It was recommended that ECCC rely on existing guidance and mine review processes (EA and permitting) instead of prescribing specific mine waste management and/or water quality mitigation strategies.

1.4 Mine Waste Management – Existing Mountain Mines with Legacy Issues

At each session, participants were presented with the following information:

Mine Waste Management – Existing Mountain Mines with Legacy Issues

For existing mines for which it may not be feasible to collect all effluent and release it through defined FDPs, requirements for water quality in the receiving environment would be considered.

A long-term approach is proposed to manage selenium releases from mines with legacy issues.

Mines with elevated releases of selenium to the environment would be required to measure selenium concentrations in fish tissue.

Release reductions required specifically for selenium would be tied to the concentration of selenium in fish tissue in the exposure area.

Interim compliance targets may be used to facilitate progressive reductions towards a final compliance limit.

Participants were asked the following questions, which they discussed during the session or submitted written responses/comments to:

“Given the long-term challenges associated with legacy issues, do you agree with the proposal for long-term reductions? If so, how far into the future do you feel is appropriate to allow mines with legacy issues to come into compliance with a final compliance limit? If not, please explain why and propose alternative approaches.”

Feedback from Participants and Written Submissions

Indigenous Representatives and their Organizations

In general, Indigenous representatives and their organizations commented that the term “legacy” must be clarified. One participant noted that they fully support the proposal for long term selenium reductions and recommends that ECCC establish a “fairly aggressive” timeline in order to start reductions. Another community commented that specific timelines should be established for specific substances with the ultimate goal of returning the lands to its original state. On the other hand, one organization suggested that more discussions are needed to understand how historical mining and mine waste management issues will be addressed when it is not feasible to collect all effluent and discharge it through a final discharge point.

Concerns have been expressed regarding legacy mining practices where mountain mines have buried valley streams and tributaries with waste rock and, more specifically, with the environmental impacts caused by the continuation of selenium loading from these waste deposits. There is also concern that, although the proposal will limit additional loading to the environment, it will not reduce the selenium in the receiving environment.

With regards to sampling fish tissue for compliance, one participant questioned the lag-time between selenium accumulation in fish tissue and loading concentrations in water.

Industry

Industry provided very few comments on the proposal for mine waste management for existing mines with legacy issues and commented that more discussion is required to understand how legacy will be defined and how such a mechanism would work. It was recommended to not include abandoned mines in the definition of mines with legacy issues.

Some participants indicated that they support the proposal to incorporate a long-term approach to managing selenium releases associated with mines having legacy issues and re-iterated that release reductions required specifically for selenium should be tied to the concentration of selenium in fish tissue in the exposure area. It was also suggested by one participant that ECCC develop a site-specific transitional approach that contemplates long-term selenium reductions toward a final, long-term compliance limit.

Also, as mentioned in Chapter 1.2, one participant suggested that, given the practicality of achieving a final discharge point as well as the importance of the relative flow rates of the effluent and receiving environment, compliance limits

based on the receiving environment would be more appropriate limits to apply to all mines (notwithstanding acute toxicity limits on effluent).

ENGOS

In general, ENGOS expressed support for the proposal for long-term selenium reductions for existing mines for which it may not be feasible to collect all effluent and release it through defined FDPs. That being said, one participant commented that there should be no site-specific considerations when developing the fish-tissue concentration trigger that will be tied to release reductions. As for interim compliance targets, it was recommended by one participant that ECCC implement a “polluter pays” tax or fee until mines are able to achieve the long-term compliance limits. This would create financial incentive for the company to achieve the limit as quickly as possible and funds could be used to restore the environment.

It was suggested by one participant that existing mines should be in compliance within three years of the regulations coming into force and that these mines should be required to immediately begin segregating their waste containing elevated levels of selenium. It was also recommended that existing mines with legacy issues must also not be allowed to continue to operate using historical practices that contribute to unmanageable effluent releases that contribute to cumulative effects. Furthermore, ENGOS raised concerns with mines obtaining the closed mine status when legacy issues are still present.

ENGOS generally expressed support for the proposal for water quality monitoring and limits in the receiving environment; however, it was suggested that existing mines with legacy issues be held to a higher standard of monitoring (e.g. daily monitoring) because they are relatively uncontrolled and presumably at a higher risk of affecting fish habitat than new mines. This would create a greater incentive to control effluents. In addition, if concentrations of deleterious substances in the receiving environment are found to be in excess of a set trigger, the mine should be required to take immediate action to reduce releases of the substance(s). There is concern that mines may benefit from the provision that collection of effluent “may not be feasible”. One participant also suggested that, in addition to sampling surface water and fish tissue, existing mines should test groundwater for seepage as an additional way of identifying risks.

Finally, it was suggested that ECCC work closely with the provincial authorities to resolve legacy issues before reclamation certificates are issued as one participant commented that past reclamation of coal mines has shown that the lands and water have historically not been returned to their original productive capacity. For example, one concern is the diversion streams which can result in permanent loss of the channels, displacing kilometers of fish habitat.

Provincial Government

One provincial government representative agreed that mines with legacy issues should be treated differently as it would be extremely difficult and cost prohibitive to re-engineer operations to collect all effluent. Although participants generally agreed with the proposal, it was mentioned that a single approach for dealing with all existing mines would not be the most appropriate, due to site-specific conditions. One participant recommended that the setting of targets (numerical thresholds and timing) be based on risk, be site-specific, be science-based, and take into consideration factors such as quality of the effluent, the nature of the receiving environment and its resources and the ability to achieve reductions in concentrations of contaminants based on technically and economically achievable technologies.

In terms of timelines, it was suggested that a similar approach to the Wastewater Systems Effluent Regulations be taken, where there are phased-in timelines for coming into compliance. It was noted that reasonable timeframes may vary for different mines, depending on the volume of waste rock already in place, the amount of selenium that needs to be reduced, the number of discharge sources to be managed, the number of treatment systems required, and the number of receiving environments impacted.

Furthermore, it was recommended that key definitions be clarified, such as legacy mining and legacy issues as well as mountain mining and whether an underground coal mine in a mountainous area would be considered a mountain mine.

Additionally, there concern was expressed regarding the high potential of duplication and overlap of provincial regulatory requirements and it was mentioned that clarification is needed on how the proposed regulations will take into consideration existing management plans and provincial permits. It was recommended that consideration be given to streamlining federal requirements and/or mechanisms to reduce or eliminate duplication with provincial requirements. It was also recommended that equivalency to the provincial regulatory approach be considered.

1.5 Mine Waste Disposal Areas

At each session, participants were presented with the following information:

Mine Waste Disposal Areas (i.e. Tailing Impoundment Areas)

Mine wastes include tailings (coal rejects), waste rock, overburden, and refuse.

Disposal of mine wastes into water bodies frequented by fish would be allowed under certain conditions, but only if it is shown to be the best option for disposal, taking into account environmental, technical, socio-economic and economic factors.

Proponents seeking to dispose of mine wastes into natural water bodies frequented by fish would be required to conduct an assessment of alternatives, public and Indigenous consultations, a fish habitat compensation plan, as well as an offset plan.

Feedback from Participants and Written Submissions

Indigenous Representatives and their Organizations

Indigenous representatives and organizations outlined the importance of Indigenous engagement during discussions related to mine waste disposal areas. One participant suggested that the consideration of Indigenous rights should not be included under “socio-economic factors” but instead, should be outlined and accentuated.

In addition, one participant raised concern that economic and technical factors may out-weigh environmental factors in decision making. It was recommended that significant discussion continue with Indigenous peoples to determine whether the proposed regulations would achieve the desired outcome, particularly for the offset of fish habitat.

Industry

Industry commented that they are unclear on how terms such as mine waste disposal area, overburden, and refuse are distinguished from each other and reflect operational realities. In addition, industry expressed concerns about the absence of details that addresses how projects currently in an environmental assessment process will be regulated and conversely how existing waste disposal areas may be regulated. It was recommended that there be continued engagement with industry and other stakeholders to align understanding of proposed definitions to enable effective implementation.

Industry also raised concerns regarding timelines for recognizing a mine waste disposal area. Industry commented that if a similar process to amending Schedule 2 of the MMER is adopted for the coal mining sector, delays will become unmanageable and may require decisions related to work force reductions and delayed economic activity in communities that support operations. Industry stated that delays may also potentially impact agreements between proponents and First Nations partners that are designed toward anticipatory regulatory benchmarks. In that regard, industry suggested that ECCC consider an alternative option like incorporating a mechanism similar to an authorization issued under section 35(2) of the *Fisheries Act* and to issue this authorization in a manner that could be made publically available and could require informal inputs.

ENGOS

Some participants expressed support for the proposal to allow disposal of mine wastes into water bodies frequented by fish under certain conditions; however, it was recommended that these conditions be very specific and strenuous and that exemptions should not be easily granted or obtained.

There were also concerns that fish habitat compensation plans in Canada may be ineffective and that non-compliance with the requirements may be an issue. For these reasons, it was recommended that the ratio of compensated habitat to impacted habitat be set at a level that accounts for the success rate of conserving habitat productivity. Secondly, it was recommended that the compensated habitat be funded and implemented before the affected habitat is impacted.

Although there was some conditional support for the proposal, one participant commented that the disposal of mine wastes into waterbodies designated as critical habitat or frequented by species at risk is unacceptable, while another commented that mine waste disposal into any natural water bodies that create aquatic habitat must be prohibited. Concerns were expressed regarding the justification for destroying natural water bodies is far too broad and would allow

for the destruction of water bodies under most scenarios where a mine company finds this mine waste disposal option to be most economic.

In addition, ENGOs outlined a concern regarding the potential for spills, including failures of disposal areas and overflows during precipitation events, caused by the design and construction of the waste disposal areas. For this reason participants encouraged ECCC to look at the possibility of prescribing construction standards within the regulations or outside these regulations.

Provincial Government

ECCC did not receive comments from provincial governments regarding mine waste disposal areas.

1.6 Environmental Effects Monitoring

At each session, participants were presented with the following information:

Environmental Effects Monitoring

Effluent and water quality monitoring studies, as well as biological monitoring studies would be required. These would include:

- effluent characterization;
- sub-lethal toxicity testing of effluent;
- water quality characterization of reference and exposure areas.
- site characterization;
- fish population studies;
- fish tissue studies; and
- benthic invertebrate community studies.

Other studies may be considered.

Feedback from Participants and Written Submissions

Indigenous Representatives and their Organizations

Generally, Indigenous representatives and their organizations expressed support for EEM; however, it was mentioned during the consultation sessions that the scope of EEM should be broadened to not only look at environmental impacts but to look at cultural impacts to the people who harvest, fish and hunt duck and geese, or who rely on a traditional diet. It was recommended that EEM look at a wide range of substances and most representatives also mentioned the need to relay the impacts to the affected communities so that First Nations are aware of what they are consuming.

It was recommended that a pre-industrial baseline be required to accurately assess the impacts of coal mines. It was also mentioned that EEM should look at cumulative effects in the receiving environment.

In terms of the range of studies required under EEM, it was suggested that local traditional knowledge be included. This could be done by including and engaging with Elders and members of the local communities; however, one organization mentioned that more information on EEM is needed to determine how they can be involved. Indigenous representatives also suggested that communities be involved in monitoring and that samples should be sent to a third party laboratory as there is concern with the integrity of the data collected.

Industry

In general, industry commented on the need to align the monitoring and reporting requirements with those in the provinces to avoid duplication and to minimize regulatory burden. Industry expressed support for the consideration that existing aquatic effects monitoring programs required by provincial permits may inform EEM requirements to meet the goal of efficient reporting and to avoid over sampling, particularly in the case of fish collection for population studies and fish tissue sampling. In addition, industry members were encouraged by the suggestion that the transitional provisions for EEM developed for diamond mines under the proposed MMER amendments may be adopted under the proposed regulations for coal mining.

Industry commented on how most provincial regulatory programs recognize regional variations in environmental conditions and suggested that ECCC develops monitoring requirements that can be specifically tailored to site-specific conditions. It was recommended that, for prairie coal mines, a mechanism for exemption be put in place as they discharge infrequently and often in locations distant from water bodies. Industry commented that the current EEM

requirements in the MMER does not allow for that flexibility. It was recommended that the EEM requirements be scaled to reflect the size of operations, mine life, as well as the sensitivity of and identified impacts to the receiving waters. Furthermore, industry recommended that ECCC provide additional details with respect to the proposed EEM requirements for coal mines, including examples of other studies that may be considered beyond those that are listed.

ENGOS

One participant suggested that EEM requirements should be used to monitor cumulative effects when multiple mines are on the same watershed. It was recommended that in addition to monitoring the immediate receiving environment, downstream waterbodies should also be monitored for environmental effects. During the consultation sessions, one participant outlined the importance of determining the monitoring location within the receiving environment. That being said, participants also re-iterated concerns with monitoring fish tissue in sensitive fish populations.

In addition to the suggestion to limit the deposit of CO₂ and calcium species, which, as mentioned in Chapter 1.2, contributes to the calcification of stream beds, one participant recommended that streambed calcification be monitored during the proposed benthic invertebrate community studies.

During the consultation sessions, one participant recommended that EEM requirements include investigation of solutions. Finally, one participant outlined the potential for data gaps due to the monitoring and reporting cycle of EEM which does not adequately represent the life cycle of a coal mine. Concerns were expressed regarding these data gaps which may result in environmental effects not being detected.

Provincial Government

For selenium, it was suggested that benthic invertebrate tissue may help understand the selenium bioaccumulation at sites, and help inform the risk of selenium toxicity to other egg-laying invertebrates (e.g., amphibians and birds) that use the invertebrates as a primary food source.

1.7 Reporting Requirements

At each session, participants were presented with the following information:

Reporting Requirements

Reporting requirements and the frequency of reporting to ECCC would be established for:

- regulated parameters (i.e., deleterious substances, acute lethality results, pH, etc.);
- substances monitored under the EEM requirements; and
- biological monitoring studies conducted under the EEM requirements.

Feedback from Participants and Written Submissions

Indigenous Representatives and their Organizations

In general, Indigenous representatives commented on the importance of informing First Nations and their communities of any contaminants they may be consuming while exercising their rights in areas impacted by coal mining effluent. It was suggested that the reported data be made public and accessible. It was mentioned that some communities may not be aware or have access to this type of information and therefore, it was suggested that mines and/or ECCC be responsible to engage and send information to these communities.

Industry

In general, industry suggested that the proposed regulations establish an annual reporting cycle for regulated parameters and other environmental monitoring data that aligns with the provincial regulatory programs in order to reduce burden.

ENGOS

Some participants outlined the importance of transparency and suggested that the reports be publically accessible. It was also recommended that companies use a consistent and comparable reporting template. That being said, one

participant raised concern with allowing industry to self-monitor and report and therefore recommends more oversight and enforcement.

Provincial Government

ECCC has not received any written comments from provincial government representatives regarding the proposed reporting requirements. This being said, during the consultation sessions, one participant commented on the need to align reporting requirements between ECCC and the provinces in order to avoid duplication.

1.8 Closure

At each session, participants were presented with the following information:

Closure

- Requirements would be established for mines intending to cease commercial operation, and would include conducting final biological monitoring studies for EEM.

Feedback from Participants and Written Submissions

Indigenous Representatives and their Organizations

Indigenous representatives and their organizations have not provided any written comments regarding the proposal for mine closure. However, it was mentioned during the sessions that there is concern with ongoing environmental issues with abandoned and orphaned mines and it was suggested that ECCC include provisions to ensure that currently operating mines plan for proper reclamation to eliminate environmental impacts once the mine is closed.

Industry

With regards to the proposal for mine closure, one participant commented that the expectations and criteria for long term monitoring or water quality and biological systems after mine closure must be clearly defined.

ENGOS

In general, ENGOS raised concern with mines obtaining the closed mine status when legacy issues are still present and noted that mines should be closed in a manner that does not leave the public responsible for restoration or monitoring costs. To that end, it was recommended that the regulations include provisions to require mines to plan far enough into the future to account for long term consequences of their operations.

Provincial Government

Provincial government representatives have not provided comments regarding the proposal for mine closure.

Chapter 2: Overarching Themes

2.1 Consultation Process

Indigenous Representatives and their Organizations

For the Indigenous representatives and organizations that were able to attend the face-to-face sessions, ECCC has generally received positive feedback. However, one participant noted that there was short notice and voiced concern that, due to the timelines, the engagement with Indigenous groups was (or would not be) meaningful.

Numerous Indigenous representatives and organizations have requested that ECCC continue discussions with First Nations by organizing separate engagement sessions, preferably in person.

Industry

In general, industry, industry consultants, and their associations appreciated the opportunity to participate in face-to-face consultation sessions and to comment on the proposed regulatory framework. It was mentioned that the presentation, participation and discussions during the sessions provided a constructive start to the process.

Concerns regarding the limited detail in the proposed framework have been a recurring comment. Industry commented that there is not enough information to be able to properly comment and are uncertain how the discussion points will be reflected in the proposed regulations. To that end, it was suggested that ECCC maintain open lines of communication with stakeholders and technical experts to provide a mechanism for ongoing, informal discussion and feedback. It was also proposed that ECCC initiate a second round of in-person consultations with a more detailed draft of the proposal, prior to the publication of the proposed regulations in *Canada Gazette*, Part I, in 2018.

More specifically, industry would like to have more discussions on deleterious substances of concern, on proposed limits, and on the rationale for regulating specific substances. It was mentioned that extending the list of regulated parameters beyond TSS, nitrate, and selenium without consultation would be unfair. In addition, industry would like to further discuss how waste management requirements would apply as well as key definitions that need to be clarified. One organization offered to provide a tour of a prairie coal mine and suggested that ECCC participate in separate foothills/alpine and prairie consultation sessions.

Industry would like to further discuss socio-economic impacts of the proposed regulations. It was noted that coal mining contributes to the Canadian economy

and provides jobs for Canadians. It was also mentioned that the proposed regulations may impact some companies' ability to remain competitive in the global world of mining and mineral exploration.

Furthermore, a need to obtain critical regional baseline information to successfully develop and implement the regulations was expressed. It was suggested that ECCC implement a working group to facilitate cooperative interactions and contributions during the drafting process. It was recommended that this group include participants and technical experts representing different types of coal mines, including prairie, mountainous, and underground mines as well as thermal and metallurgical coal mines. The working group members could provide comments on technical and operational issues as well as provide data that may inform limits and monitoring requirements.

That being said, some industry members commented on the need for discussions to unfold in a manner that does not result in significant delays in the overall timelines proposed by ECCC.

ENGOS

Generally, ENGOS have commented that they found the consultation sessions very useful. One participant commented that the proposed regulatory framework was well presented and that the sessions were generally well organized.

During the consultation sessions, some participants indicated that there is not enough detail in the proposed regulatory framework and that more discussions are needed prior to putting forward limits for deleterious substances. It was suggested that ECCC share a summary of the data analysis used to outline parameters of concern and develop proposed limits.

One participant outlined the importance of having multi-stakeholder decision making and indicated that the working group model conducted under the MMER 10-year review is a good model to follow. It was suggested by one participant that ECCC hold a national consultation session in Ottawa.

There is concern that experts are not being consulted in a meaningful way and that smaller ENGOS do not have sufficient funds to build capacity and to provide comments in the allocated timeframe. One participant would appreciate a reassurance that the government is not having side discussions with industry members prior to having discussions with the public as there is concern that industry has a bigger platform to discuss proposed limits separately.

Provincial Government

In general, representatives from provincial governments noted that the *Proposed Regulatory Framework for Coal Mining* presented is high level and does not

provide many details. Given this, and the potential significant implications for various provincial regulatory agencies and the coal mining industry as a whole, it was recommended that additional opportunities for engagement and discussion on the proposed content of the regulations (including limits and timeframes) be held prior to the publication of the proposed regulations in 2018.

Chapter 3: Next Steps

ECCC wishes to sincerely thank all those who participated in this phase of the consultation process focused on ECCC's *Proposed Regulatory Framework for Coal Mining*.

An abundant variety of thoughts, ideas, suggestions, comments and requests for clarification were provided by participants attending one of the four sessions held across the country with Indigenous communities and their organizations, ENGOs, industry and provincial governments.

ECCC will consider all of the feedback received while developing the next steps to propose regulations for coal mining effluent. The target for proposed regulations to be published in *Canada Gazette*, Part I, is 2018. Final regulations are targeted for publication in *Canada Gazette*, Part II, in 2019.

Appendix 1 – List of Participants at the Consultation Sessions

Name	Organization / Community
Truro, Nova Scotia	
Malcolm MacNeil	Nova Scotia Environment
Sarah Jadot	Nova Scotia Environment
Sheila Cole	Nova Scotia Environmental Network
Alex Martell	Pioneer Coal
Gretchen Fitzgerald	Sierra Club Canada
Saskatoon, Saskatchewan	
Kelly Wells	CanNorth
Brad Sigurdson	Saskatchewan Mining Association
Kim Davis	Saskatchewan Ministry of Environment
Neil Worsley	SaskPower
Xianghui Nie	SaskPower
Meera Bawa	Teck Resources Limited
Emily Jepson	Westmoreland Coal Company
Edmonton, Alberta	
Chris Teichreb	Alberta Energy Regulator
Tim Arciszewski	Alberta Energy Regulator
Jana Tondou	Alberta Environment and Parks
Kim Wescott	Alberta Environment and Parks
Steve Bradbury	Alberta Environment and Parks
Andrea Johancsik	Alberta Wilderness Association
Nick Pink	Alberta Wilderness Association
Brian Deheer	Athabasca Watershed Council
Jason Ponto	Athabasca Watershed Council
Sarah Skinner	Battle River Watershed Alliance
Shelly Boss	Canadian Environmental Assessment Agency
Tracy Utting	Canadian Environmental Assessment Agency
Reise O'Hara	Coal Association of Canada
Rosio Campbell	Coal Association of Canada
Curtis Brinker	Coalspur Mines
Kieran Broderick	Horse Lake First Nation
Marie Bay Breiner	Keepers of the Athabasca
Paul A-J Bélanger	Keepers of the Athabasca
Kimberley Young	Millennium EMS Solutions
Mike Bartlett	Millennium EMS Solutions
Charles Dumaresq	Mining Association of Canada
Thomas Cook	Navigator Environmental
Lloyd Saulteau (Elder)	Paul First Nation

Name	Organization / Community
Percy Rain	Paul First Nation
Raymond Cardinal	Paul First Nation
Elizabeth Doams (Elder)	Paul First Nation
Cal Clark	Riversdale Resources/Benga Mining Ltd
Kaylyn Buffalo	Samson Cree Nation
Robert Cameron	South Peace Environment Association
Lisa Mariafox	Sustainability Resources
Meenalcsi Kakkar	Sustainability Resources
Greg Milne	TransAlta
Vancouver, British Columbia	
Cole Rheaume	BC First Nations Energy and Mining Council
Kim Bellefontaine	BC Ministry of Energy and Mines
Peter Wijkamp	BC Ministry of Energy and Mines
Chris Jenkins	BC Ministry of Environment
Doug Hill	BC Ministry of Environment
Jennifer McGuire	BC Ministry of Environment
Arie Ross	Dogwood
Matthew While	Glencore
Jody Shimkus	HD Mining Intl
Norm Johnson	HD Mining Intl
Jennifer Trowell	Hemmera
Sébastien Fekete	Mikisew Cree First Nation GIR
Wei Qu	National Research Council
Malcolm Man	Saltworks
Christina James	SRK Consulting
Meera Bawa	Teck Resources Limited
Troy Jones	Teck Resources Limited
Angela Waterman	Telkwa Coal
Neda Tabrizi	Telkwa Coal
Ryland Nelson	Wildsight

Appendix 2 – List of Written Submissions

- Alberta Wilderness Association
- British Columbia Ministry of Energy and Mines & Ministry of Environment
- Borealis Environmental Consulting Inc.
- Chapema Environmental Strategies
- Coal Association of Canada
- Coalspur Mines (Operations) Ltd.
- Glencore Coal Assets Canada
- Kameron Collieries ULC
- Keepers of the Athabasca Watershed Alliance Society
- Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO)
- Ktunaxa Nation Council
- Member of the Public
- Mining Association of Canada
- Nova Scotia Environment
- Pioneer Coal Limited
- Saltworks Technologies Inc.
- Saskatchewan Mining Association
- Saskatchewan Ministry of Environment
- SaskPower
- Saulteau First Nation
- Sierra Club Canada Foundation
- SRK (Consulting) Canada Inc.
- Teck Resources Canada
- TransAlta
- Westmoreland Coal Company
- Wildsight

Appendix 3 – Environment and Climate Change Canada Contact Information

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Appendix 4 – Proposed Regulatory Framework for Coal Mining

Proposed Regulatory Framework for Coal Mining

Consultation Document

January 2017

Proposed Regulatory Framework for Coal Mining

1. Introduction

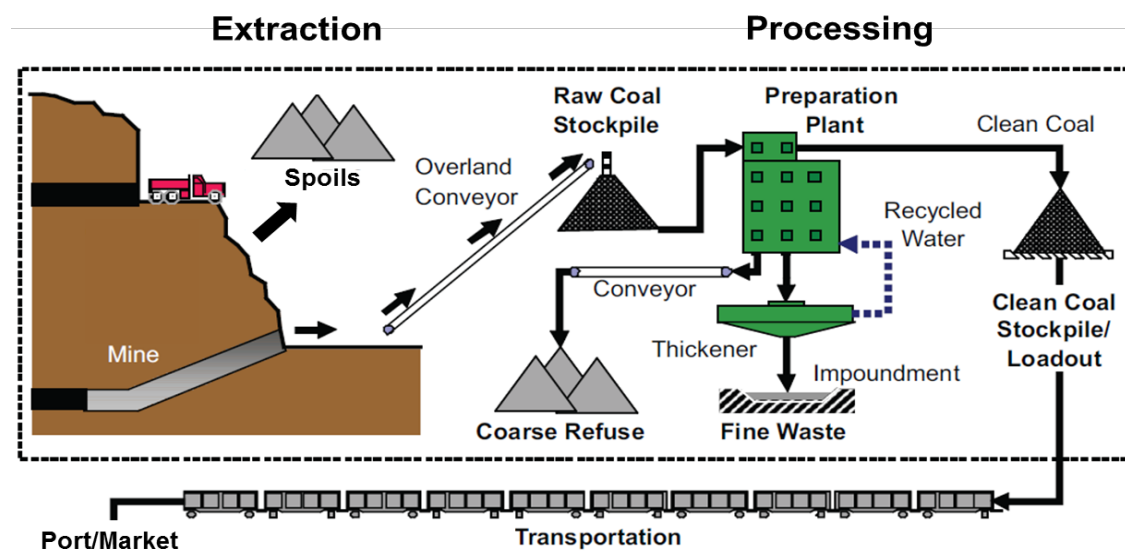
Environment and Climate Change Canada (ECCC) has prepared this consultation document to inform interested parties and solicit feedback on the key elements of the proposed framework for a new regulation for the coal mining sector. Interested parties may comment in writing by mail or e-mail (see Section 5 for details).

2. Context

2.1. Background

Canada is a mid-size producer of coal, ranking 12th among global coal producing countries. In 2015, Canadian mines produced 62 million tonnes of coal. Canadian coal mines produce metallurgical coal (used in steelmaking), as well as thermal coal (used to generate power). There are two types of mining methods used in Canada: underground and surface mining. The majority of coal mines are surface mines, which include strip mines and mountain mines.

Coal mining involves extraction and processing operations. Extracted coal is sent to preparation plants for processing, while mine wastes generated from extraction are placed in spoils. Effluent is generated from both extraction (e.g. due to precipitation and runoff) and processing operations (e.g. tailings impoundments). Most effluent treatment at coal mining operations in Canada is done by conventional means, i.e., diversion, settling, and sedimentation, and the treated effluent is then discharged into the receiving environment. Effluent from coal processing operations can also be recycled. A general overview of coal mining operations¹ is presented in Figure 1.



¹ Figure 1. Overview of coal mining operations (adapted from Virginia Center for Coal and Energy Research; Virginia Polytechnic Institute and State University, 2009).

Local and regional water quality may be affected by mining activity at coal mines. After being removed to access the coal, waste rock and overburden can be placed in spoil piles or pits. The material stored in spoil piles is exposed to the natural elements. Such exposure can lead to the leaching of contaminants into surface waters through runoff from rain or snow, or through groundwater. Coal mining can also generate air emissions, including fine particulate matter, from the extraction (e.g., drilling, blasting, hauling, collection, transportation and fugitive releases) and processing (e.g., crushing, pulverizing, drying) operations.

2.2. Issue

Coal mining operations can generate mine waste including effluent, tailings (coal rejects) and solid wastes (e.g., waste rock, overburden and fine particulates). The environmental effects of coal mining have been well documented in scientific literature. Effects can be categorized on the basis of the media impacted (i.e., surface water, groundwater, soils, sediments, airsheds), biological systems impacted (i.e., human health and ecological), and geographic scale (i.e., on site, adjacent to site, downstream surface waters, groundwaters and airsheds). The impact of these releases on the environment varies according to the mining method used as well as the local geology, climate, and rainfall. This document focusses on coal mine releases to water and their potential negative effects on fish and aquatic life.

2.2.1. Substances of Concern

Selenium, nitrate and total suspended solids are typically the substances of concern related to coal mining effluent, although there may be others that are associated with localized geology.

2.2.1.1. Selenium

Selenium has been identified as an issue for coal mining operations in certain regions in Canada, namely north and southeastern B.C. and western Alberta. Selenium is known to be a bioaccumulative element, and its effect on aquatic organisms can be related to their internal body concentrations. The most severe effect resulting from long-term exposure to elevated concentrations of selenium in the food web is reproductive failure in egg-laying vertebrates (fish, waterbirds and amphibians).² In fish, excess selenium may accumulate in fish eggs and affect developing embryos and larvae, while adults appear to be less affected. Field studies conducted in Canada and other regions of North America have demonstrated the hazards and reproductive effects of selenium on birds and fish when present at sufficiently high concentrations in the food web, as well as its potential impacts on fish populations and biodiversity, all of which affect the integrity of various ecosystems. Effects to aquatic life from selenium are best predicted from concentrations in fish tissues, especially fish eggs and ovaries.

The draft screening assessment report published in July 2015 by Environment and Climate Change Canada (ECCC) and Health Canada in *Canada Gazette*, Part I proposed to conclude that selenium and its compounds meet the criteria under paragraph 64(a) and 64(c) of the *Canadian Environmental Protection Act, 1999* (CEPA 1999) as they are entering or may enter the environment in a quantity or a concentration or under conditions that have or may have an

² Environment Canada. (2015). *Draft Screening Assessment: Selenium and its compounds*. Environment Canada and Health Canada. <http://www.ec.gc.ca/ese-ees/default.asp?lang=En&n=301B5115-1>

immediate or long-term harmful effect on the environment or its biological diversity, and constitute or may constitute a danger in Canada to human life or health. The report also concluded that selenium and its compounds meet the criteria for persistence and bioaccumulation, as defined in the *Persistence and Bioaccumulation Regulations* made under CEPA 1999. The coal mining sector was identified as posing a risk to the aquatic environment due to releases of selenium. The publication of the final Screening Assessment Report is expected in 2017.

2.2.1.2. Nitrate

Nitrate in coal mine effluents is typically associated with the use of explosives in blasting operations. Coal mining may require blasting to remove rock or overburden, resulting in the release of some nitrate from ammonium nitrate blasting powder. While much coal mining is done by equipment which can rip the softer rock matrix without the need for blasting, certain types of coal mining operations, such as mountainous coal mining operations, require a significant amount of blasting. As a result, nitrate is likely entering the environment from coal mining activities.

2.2.1.3. Total Suspended Solids

Total suspended solids (TSS) are solid materials, both mineral and organic, that have been moved from their place of origin by air, water, ice, or gravity. TSS from coal mining are generated following the removal of vegetation, blasting of overburden and the use of heavy equipment, all of which create erosion and introduce sediment into streams. Sediment loads are particularly high in coal mining operations located in mountainous and hilly terrains due to increased erosion rates. Suspended solids reduce light penetration in water and alter a waterway's temperature. Fish production and spawning grounds are often affected by high TSS loadings due to smothering. Furthermore, TSS may act as a carrier for other pollutants such as heavy metals, although TSS from coal mining more commonly consists of sand, silt and clay.

2.2.2. Legacy Mining and Waste Management

Coal mining has occurred in certain areas (e.g., the Elk River valley of British Columbia) for over 100 years. In the Elk River valley, underground mining began in the late nineteenth century. However, since the late 1960's, coal mining has been by surface mining methods from five mountain mines in the valley. Operating coal mines are also located in other areas of British Columbia as well as Alberta, Saskatchewan and Nova Scotia, some of which are located in historical mining areas.

Mountain mining involves removing large quantities of geological material (overburden and waste rock) in order to reach coal seams which may be much deeper under the surface than at strip mines. Mine waste from mountainous areas is often placed in valleys due to spatial constraints. Generally, mountain mines occupy large footprints, with mine waste piles often reaching hundreds of metres in height and many square kilometres around the base.

Mine waste (e.g., waste rock) can pose significant challenges depending upon its composition and reactivity with the surrounding environment. In some mining areas, particularly in western Canada, selenium tends to be found in similar geological environments as coal. Waste rock that

was previously thought to be inert has been placed in large piles that are exposed to the elements. Water from seasonal or intermittent streams, pre-existing streams/ivers, precipitation and runoff can infiltrate these waste rock piles and can carry selenium and other contaminants into local water bodies if it is not controlled and/or treated. Recent studies have found that the generation of waste rock associated with mining increases selenium releases.

The effective management of mine effluent (including seepage and run-off) as well as other mine waste represents a key aspect of the management of coal mining facilities. The large quantity of annual precipitation and snowmelt in some areas of Canada poses a challenge for the effective environmental management of many Canadian coal mines. These challenges require a thorough understanding of the hydrological regime, topography and watershed boundaries within the mine area. Collecting effluent that leaches from mine waste may be technologically challenging in regions where, in particular, mountain mining occurs, due to the historical deposition of mine waste in and near water bodies.

More recent coal mine developments generally go through or have gone through much more rigorous environmental assessments prior to start-up than mines that commenced operations long ago. Based on more recent scientific understanding of the issues that can arise from coal mining, newer mines tend to be designed in such a way as to reduce or mitigate the extent of environmental impacts that can occur. By comparison, those mines that commenced operations long ago did not have the benefit of our current knowledge and were not necessarily designed to minimize or mitigate environmental impacts. Some of these mines are still currently operational and now must consider the environmental impacts of historic mining practices.

Cumulative environmental impacts of legacy issues can increase over time if not managed properly. Several current operations in Canada have been showing negative impacts. This has been the case for selenium and nitrate in the Elk River valley and elsewhere across other provinces where coal mining occurs. TSS have also been shown to be released at high concentrations from coal mines across the country. Other parameters such as arsenic and sulphate have shown negative impacts in localized areas such as Long Lake near the Quinsam Mine on Vancouver Island, however these parameters are not generally at concentrations of concern from effluents at most coal mines.³

Geochemical studies of waste rock piles in the Elk River valley indicate that they will continue to release selenium for a very long period of time. Waste rock placed decades ago continues to release selenium at a steady rate today, and is expected to continue doing so far into the future.⁴ Historical mining practices are also contributing to environmental impacts in areas outside the Elk River valley.

2.3. Existing Environmental Management in Canada

The management of coal mining and, in particular, coal mining effluent has been a topic of discussion in many fora for a number of years involving all jurisdictions in Canada. Interested parties have consistently indicated the need for regulatory clarity and for all levels of government to work cooperatively.

³ Stantec. (2011). *Study on Canadian Coal Mining Effluents: Final Report*. Stantec Consulting Limited.

⁴ Teck. (2014). *Elk Valley Water Quality Plan*. Teck (Teck Coal Limited).

2.3.1. Provincial Requirements

Provincial regulatory requirements include effluent quality standards that are established through provincial permitting processes. Many provinces have established processes whereby the standards for effluent quality are established on a site-specific/case-by-case basis. The number of contaminants of concern to provincial regulators for coal mining operations has been increasing in recent years – most existing effluent discharge permits include limits for TSS, pH, floating solids, visible foam, oil or other substances, and general toxicity as represented by acute lethality testing using rainbow trout³ and *Daphnia magna*. Measures targeted at specific contaminants such as selenium include effluent and receiving environment-based compliance limits as well as site-specific Selenium Management Plans.

In British Columbia, Ministerial Order No. M113 (Order) was issued in April 2013, requiring Teck Coal Limited to prepare an Area Based Management Plan for the Elk River valley to remediate water quality effects of coal mining operations and to guide future development. The goal of the Elk Valley Water Quality Plan is to stabilize and reverse the increasing trend of selenium, nitrate and other substances to ensure the ongoing health of the watershed, while at the same time allowing for continued sustainable mining in the region. The plan was approved by the British Columbia provincial Minister on November 18, 2014, and a provincial permit was subsequently issued. The permit incorporated the short, medium and long-term targets for selenium (and other contaminants) outlined in the plan.

Provincial governments in Alberta and British Columbia have also required some mines to submit and implement Selenium Management Plans as a condition of issued permits. These plans can include identification of best management practices or technologies that will achieve a reduction of selenium releases to the environment within a given timeframe (usually over several years), as well as requirements to submit periodic progress reports. Selenium Management Plans have been required for the following mines: Cardinal River Operations (Luscar and Cheviot mines) and Grande Cache mine in Alberta; and Willow Creek, Trend (including the Roman expansion), Brule and Wolverine (Perry Creek) mines in British Columbia.

2.3.2. Federal Requirements

Effluent from coal mining in Canada must comply with all applicable federal legislation including the *Canadian Environmental Protection Act, 1999* (CEPA 1999) and the *Fisheries Act*, as well as applicable provincial permits and licenses. The Minister of the Environment and Climate Change is responsible for the administration and enforcement of the pollution prevention provisions of the *Fisheries Act*. Subsection 36(3) of the *Fisheries Act* prohibits anyone from depositing or permitting the deposit of a deleterious substance of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water. The *Fisheries Act* allows for the establishment of federal regulations that would authorize the discharge of deleterious substances under conditions set out in the regulations.

3. Proposed Regulatory Framework for Coal Mining

3.1. Objective

The objective of the regulations under consideration would be to reduce the threats to fish, fish habitat and human health from fish consumption by decreasing the level of harmful substances discharged to surface water from coal mine effluent.

3.2. Elements of the Proposed Regulations

Most of the provisions of the regulations for coal mining would be modelled after the *Metal Mining Effluent Regulations* under the *Fisheries Act*. Other provisions are being considered in acknowledgement of the unique challenges associated with existing mines and the effluent (e.g. runoff) from mine waste rock and overburden.

3.2.1. Application

The regulations would apply to all coal mines in Canada discharging effluent which enters, or depositing other mine waste into, water bodies frequented by fish.

Focus question:

Do you agree with the proposed application of the regulations? If not, please explain what other types of activities should be covered by the proposed regulation.

3.2.2. Deleterious substances and effluent discharge limits

Mines would collect and monitor all effluent originating from mines to be discharged through defined Final Discharge Points (FDP). Effluent limits for total selenium, total nitrate and TSS are being considered. For selenium, compliance may be tied to concentrations of selenium in fish tissues and receiving waters. For TSS, a flexibility mechanism that accounts for exceptional precipitation or high flow events may be established for some mines. Additional deleterious substances may be considered for the establishment of effluent compliance limits. The pH of effluent would be within a specified range. Effluent would be required to be non-acutely lethal to fish (e.g., rainbow trout) and invertebrates (e.g., *Daphnia magna*).

Focus question:

Do you agree with the proposal to regulate selenium, nitrate and TSS with national minimum baseline standards? Please provide information that would be helpful in establishing such limits.

3.2.3. Mine waste management

3.2.3.1. New mines and expansion projects

A requirement to segregate mine wastes containing elevated levels of selenium would be established for new mines and expansion projects. Placing mine wastes such as waste rock and overburden in contained areas designed to prevent weathering and mobilization of deleterious substances will reduce selenium releases.

Focus question:

Do you agree with the proposal for new mines and expansion projects? If not, please explain the challenges associated with this proposal and propose alternative approaches.

3.2.3.2. Existing mountain mines with legacy issues

3.2.3.2.1. Receiver-Based Compliance Limits

It is recognized that for some existing mines it may not be feasible to collect all effluent and release it through defined FDPs due to historical mine design and practices. In these cases, requirements for water quality in the receiving environment would be considered.

3.2.3.2.2. Long-Term Selenium Reductions

ECCC is proposing to incorporate a long-term approach to managing selenium releases associated with mines having legacy issues, as described in Section 2. Release reductions required specifically for selenium would be tied to the concentration of selenium in fish tissue in the exposure area. Mines with elevated releases of selenium to the environment would be required to measure selenium concentrations in fish tissue. If the concentration of selenium in fish tissue is above a set trigger, releases of selenium from the mine would need to be reduced. Interim compliance targets may be used to facilitate progressive selenium reductions towards a final, long-term, compliance limit.

Focus question:

Given the long-term challenges associated with legacy issues, do you agree with the proposal for long-term reductions?

- If so, how far into the future do you feel is appropriate to allow mines with legacy issues to come into compliance with a final compliance limit?
- If not, please explain why and propose alternative approaches.

3.2.4. Mine Waste Disposal Areas (i.e., Tailings Impoundment Areas)

Disposal of mine wastes into water bodies frequented by fish would be allowed under certain conditions, but only if it is shown to be the best option for disposal, taking into account environmental, technical, socio-economic and economic factors. Mine wastes include tailings (coal rejects), waste rock, overburden, and refuse. Proponents seeking to dispose of mine wastes into natural water bodies frequented by fish would be required to conduct an assessment of alternatives that conforms to section 2 of the *Guidelines for the Assessment of Alternatives for Mine Waste Disposal*⁵, as amended from time to time by ECCC. A fish habitat compensation plan would also be required.

3.2.5. Environmental Effects Monitoring (EEM)

Effluent and water quality monitoring studies, as well as biological monitoring studies would be required. These would include:

⁵ Environment Canada. (2011). *Guidelines for the Assessment of Alternatives for Mine Waste Disposal*. Mining and Processing Division. <http://ec.gc.ca/Publications/default.asp?lang=En&xml=5ECBCE8B-7E50-49E3-B7AD-8C21A575E873>

- effluent characterization;
- sub-lethal toxicity testing of effluent;
- water quality characterization of reference and exposure areas .
- site characterization;
- fish population studies;
- fish tissue studies; and
- benthic invertebrate community studies.

Other studies may be considered.

3.2.6. Reporting requirements

Reporting requirements and the frequency of reporting to ECCC would be established for:

- regulated parameters (i.e., deleterious substances, acute lethality results, pH, etc.);
- substances monitored under the EEM requirements; and
- biological monitoring studies conducted under the EEM requirements.

3.2.7. Closure

Requirements would be established for mines intending to cease commercial operation, and would include conducting final biological monitoring studies for EEM.

4. Next Steps

The key targets for regulatory development are outlined below:

March 31, 2017	Interested parties are welcome to provide feedback on the <i>Proposed Regulatory Framework for Coal Mining</i> to ECCC by March 31, 2017 (refer to the additional information below about providing feedback).
2018	Proposed coal mining effluent regulations under the <i>Fisheries Act</i> published in <i>Canada Gazette</i> Part I for a 60-day comment period.
2019	Final coal mining effluent regulations under the <i>Fisheries Act</i> published in <i>Canada Gazette</i> Part II.

5. Providing Feedback

We would like to invite all interested parties to provide comments and feedback on the proposed coal mining regulations framework as discussed in this document. Please send your feedback in writing to:

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