Signal Check: Proposed *Coal Mining Effluent Regulations*

Fall 2018

Overview

- Context
- Key Issues:
  1. Expansions
  2. Total Suspended Solids
  3. Selenium
  4. Nitrate
  5. Reclamation / Closure
  6. Existing Mountain Mines
- Next Steps

Context

- The *Proposed Approach for Coal Mining Effluent Regulations* consultation document was shared with interested parties in November 2017

- Approximately 30 written submissions have been received to date from industry, ENGOs, provinces, other government departments and Indigenous organizations and their representatives

- Purpose of the presentation is to outline the current thinking on key issues and discuss next steps

Regulatory Overview

- A two-pronged approach is being considered:
  1. A general approach that requires collection of all effluent and release through Final Discharge Points (FDPs)

  2. An alternative approach for existing mountain mines that would be challenged to collect all effluent
     - Allows for release of non-point source (diffuse) effluent
     - Mines must apply for, and be issued, an authorization to deposit under this approach
     - Authorization would establish compliance points in the receiving environment
       - Long-term compliance approach for selenium and nitrate, with increasingly stringent limits over time
     - EEM as per the general approach, with potential additional EEM requirements

General Approach

Expansions

What we proposed (November 2017):

- Expansions of an existing mine would refer to new coal preparation or storage facilities, new open pits or underground mines, new mine waste disposal areas including mine waste piles, or new treatment ponds or facilities
- Expansions trigger new mine compliance limits

Expansions

Summary of what we heard:

- The concept introduces the potential for inequities within the coal mining sector, potentially penalizing mines due to spatial constraints and the requirement to construct new infrastructure;
- Mine planning and design takes place for the entire mine, even though not all infrastructure is built up-front;
- There may be an incentive for mines to continue to operate existing Final Discharge Points (FDP) to avoid meeting more stringent limits;
- There are opportunities for alignment between provincial and federal definitions of expansion

Expansions

What we are thinking:

- Expansions would not trigger *new* mine compliance limits

Total Suspended Solids (TSS)

What we proposed (November 2017):

		Existing Mines		*New Mines and Expansions*	
Deleterious Substance	**Unit**	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**
Suspended Solids	mg/L	35	70	35	70

Total Suspended Solids

Summary of what we heard:

- Most provincial permits allow for higher TSS during exceptional flow or precipitation events
- Effluent limits proposed for TSS could:
  - require mines to use chemicals to meet discharge limits
  - cause habitat fragmentation, sediment and nutrient sinks, and sediment disposal issues if mines were to expand existing infrastructure to meet proposed limits

Total Suspended Solids

What we are thinking:

- The limits would remain as proposed in November 2017
- During an exceptional precipitation event, it is proposed that the FDPs are exempt from meeting limits during the event and for up to 48 hours following the end of the event.
  - Mines would be required to submit information to the Department indicating what defines a 1-in-10 year precipitation event at their mine site and during an event, that the event is/has occurred
  - This approach would apply to both existing and new mines

Selenium

What we proposed (November 2017):

- All mines would be required to perform selenium in fish tissue studies
- For existing mines, mines must meet a baseline limit

Existing Mines	***Effluent***				***Fish Tissue***
	Baseline Limit		**Stringent Limit triggered by fish tissue study result**		
Deleterious Substance	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**	**Trigger for reductions from *Baseline Limit* to *Stringent Limit***
Unit	µg/L				µg/g dry weight
Total Selenium	10	20	5	10	6.7 (whole body and muscle); 14.7 (egg/ovary)

- For new mines and expansions, a maximum monthly mean of 5 µg/L; maximum grab of 10 µg/L

Selenium

Summary of what we heard:

- Could create undue stress to vulnerable fish populations
- Limited value when selenium concentrations at FDPs are low
- A reduction in total selenium concentration may not necessarily translate into reduced selenium bioaccumulation
- Site-specificity should be considered
- Could be challenging to achieve using the current best available technology, particularly in areas with large volumes of effluent to be treated

Selenium

What we are thinking:

- The following effluent limits would apply:

		Existing Mines		*New Mines*	
Deleterious Substance	**Unit**	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**
Total Selenium	µg/L	10	20	5	10

- Selenium in fish tissue studies would be conducted through Environmental Effects Monitoring – no longer a compliance mechanism

Nitrate

What we proposed (November 2017):

		Existing Mines		*New Mines and Expansions*	
Deleterious Substance	**Unit**	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**
Total Nitrate	mg-N/L	10	20	3	6

Nitrate

Summary of what we heard:

- The proposed limits for existing mines are higher than limits in other jurisdictions.
- The proposed limits for new mines are extremely low, given that the Canadian Water Quality Guideline for the Protection of Aquatic Life is 3 mg-N/L for long-term exposure.
- The nutrient impacts of nitrate must be considered in relation to other nutrients that cause eutrophication.
- Mines that do not use blasting should not be required to monitor for nitrate.

Nitrate

What we are thinking:

		Existing Mines		*New Mines*	
Deleterious Substance	**Unit**	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**	**Maximum Authorized Monthly Mean Concentration**	**Maximum Authorized Concentration in a Grab Sample**
Total Nitrate	mg-N/L	10	20	5	10

Reclamation and Closure

What we proposed (November 2017):

- Reclaimed areas of strip mines be eligible to be excluded from the regulations
- For areas that become reclaimed after publication, in order to become excluded from the regulations, a mine would be required to:
  - provide written notice of the intention for the reclaimed area to become excluded from the regulations while identifying the reclaimed area
  - provide written notice that revegetation of the reclaimed area has been completed, and
  - cease depositing effluent for a continuous period of 3 years
- Once the reclaimed area becomes excluded from the regulations, it would lose its authorization to deposit effluent
- Effluent management infrastructure (e.g., sedimentation ponds, end pit lakes) not eligible for exclusion from the regulations

Reclamation and Closure

Summary of what we heard:

- Effluent management infrastructure (e.g., end pit lakes, sedimentation ponds) may remain at a mine site even after an area has been reclaimed.
- Mines that do not meet the current definition of strip mines also undergo progressive reclamation.
- Some reclaimed areas, as opposed to being revegetated, are leased or sold for subsequent land use, e.g., agriculture, industrial uses.

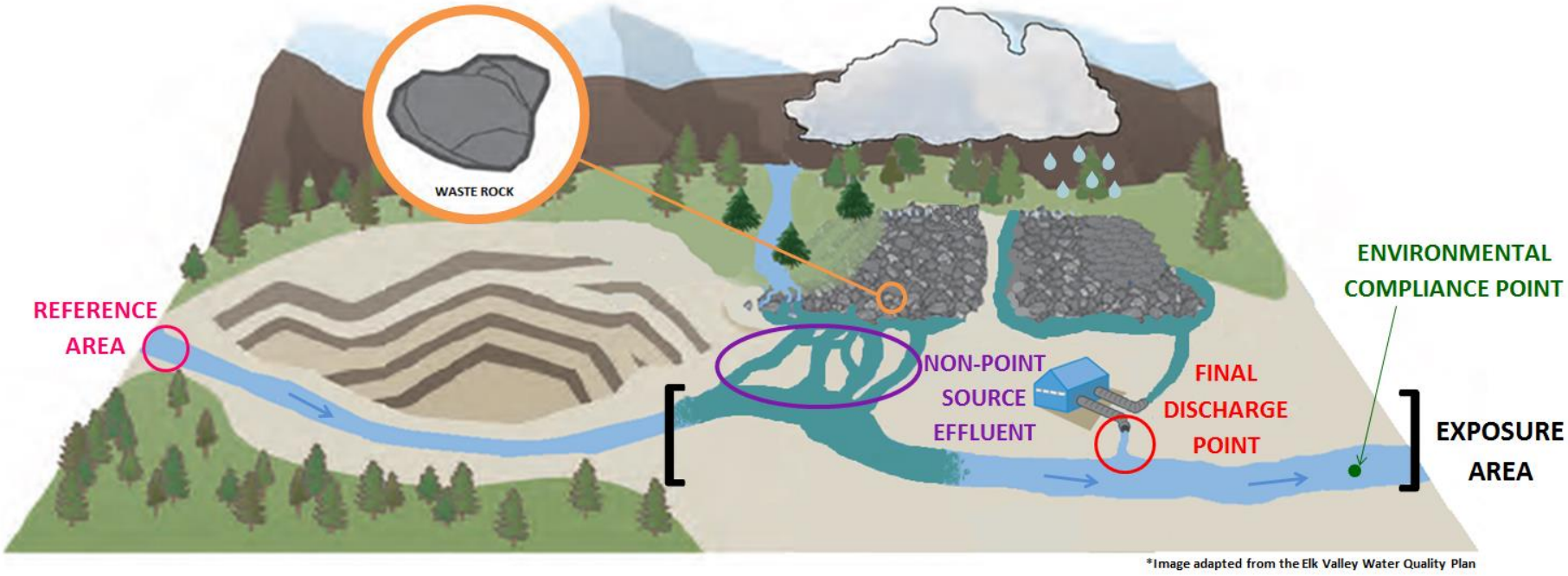
Reclamation and Closure

What we are thinking:

- Reclaimed Areas would not be covered by the regulations
- Provisions would apply to all mines under the general approach

Alternative Approach: Existing Mountain Mines with Non-Point Source Discharge

Alternative Approach for Existing Mountain Mines with Non-Point Source Discharge



Expansions

What we proposed (November 2017)

- Expansions of an existing mine would refer to new coal preparation or storage facilities, new open pits or underground mines, new mine waste disposal areas including mine waste piles, or new treatment ponds or facilities
- All effluent to be collected and discharged through defined FDPs
- Expansions subject to effluent limits for new mines

Expansions

Summary of what we heard

- Implementation of two separate regulatory regimes for the existing mine and for the expansion is not practical, particularly where treatment facilities have been designed to meet effluent limits at an established Environmental Compliance Point (ECP).
- Meeting separate limits could be challenging where characteristics from legacy mining remain influencers of effluent discharge for an expansion area.
- The definition of 'Expansion' should not include new mine waste disposal areas since new waste rock should not be placed into water bodies frequented by fish

Expansions

What we are thinking

- Maintain provisions for expansions at existing mountain mines authorized to discharge non-point source effluent.
- Narrow the definition of 'Expansion' to remove treatment facilities
- All effluent to be collected and discharged through defined FDPs

Total Suspended Solids

What we proposed (November 2017)

- Effluent discharged through FDPs must comply with the FDP limit proposed for all mines under the general approach
- In addition, a mine would be required to meet a TSS limit at all ECPs:
  - TSS at the ECP would not exceed a 10% change above the TSS concentration in the reference area of a mine at any time

Total Suspended Solids

Summary of what we heard:

- TSS limit should not be applied at ECPs
- TSS limits that include a percent increase above Reference Area may not be feasible; consideration should be given to a percent increase above baseline TSS concentrations instead
- The proposed ECP limit would require mines to visit the Reference Area on a weekly basis. This may prove challenging in remote areas or areas with limited year-round access.

Total Suspended Solids

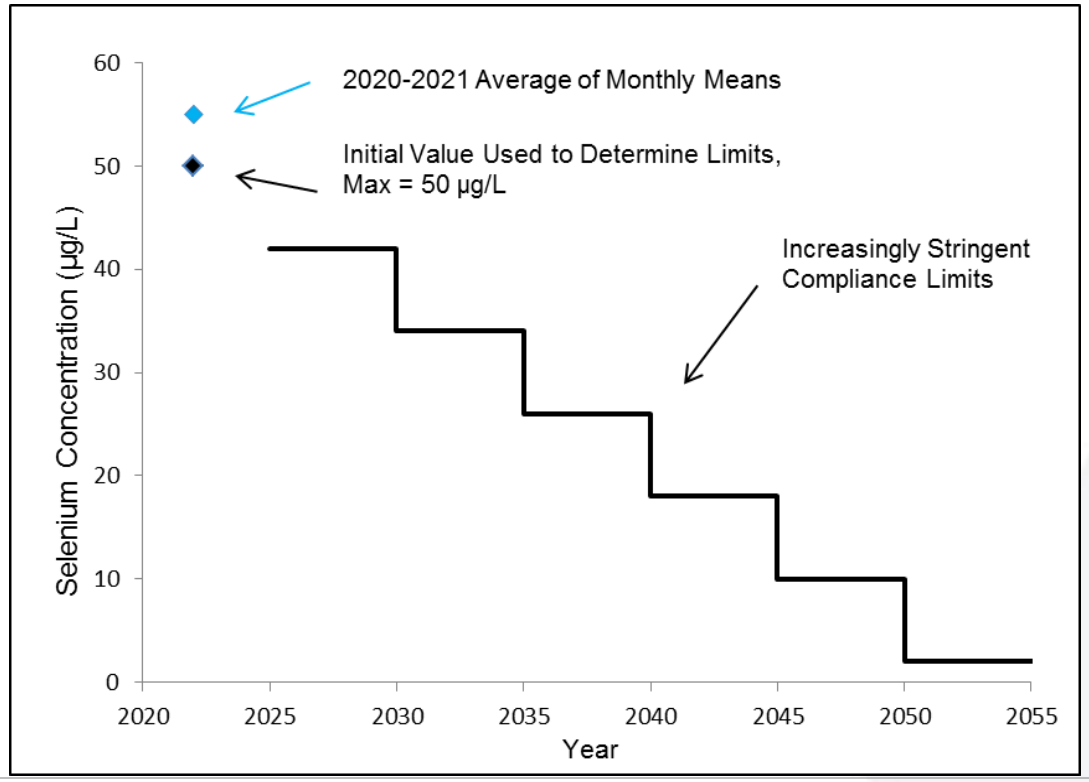
What we are thinking:

- TSS compliance only at FDPs
- A provision to exempt from TSS limits at FDPs for 48hr following a 1-in-10 year precipitation event

Selenium and Nitrate

What we proposed (November 2017)

- Selenium and nitrate reductions to a protective limit in the receiving environment by 2050, e.g., selenium:



Selenium and Nitrate

Summary of what we heard:

- The proposed approach for selenium does not reflect the state of current science:
  - Fish tissue concentrations are the most appropriate method to evaluate and monitor potential effects from selenium.
  - When a water concentration is needed, it should be back calculated from tissue effects concentrations to ensure that the water quality limit is protective of the species of a specific waterbody.
- It may be easier to achieve selenium and nitrate reductions when starting from high concentrations than to reduce when starting from low concentrations.
- An approach that reduces concentrations in main stem receiver does not protect water quality or other aquatic receptors in the tributaries.
- In some areas, there is a lag time of approximately 15 years from the time of deposition of waste rock into receiving waters and the reporting of releases

Selenium and Nitrate

What we are thinking (Selenium):

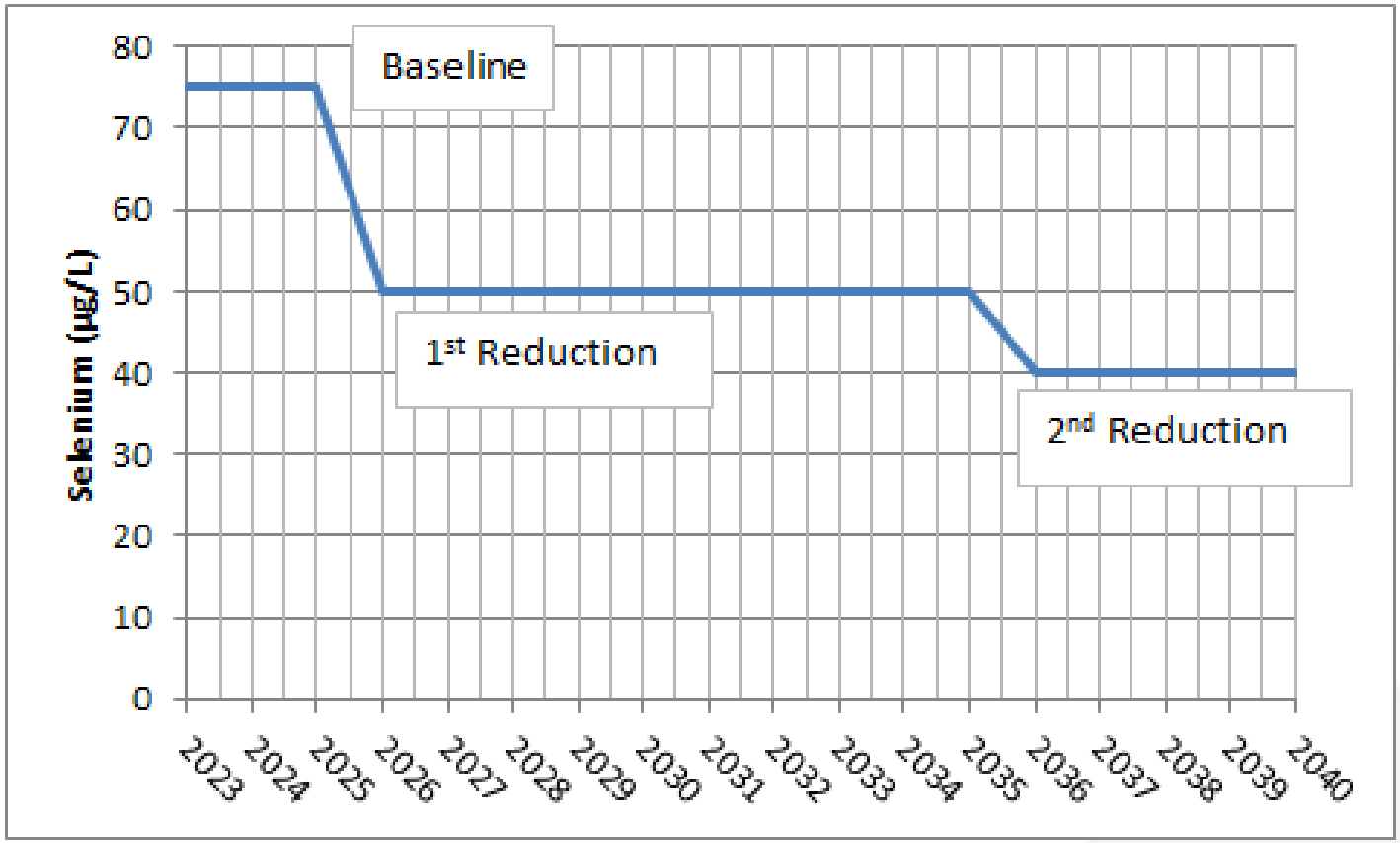
- A receiver-based compliance approach is being considered for selenium at each ECP
- This approach would include a series of increasingly stringent compliance limits every 10 years until 2036:

2021	CGII Publication
2022-2023	Gather baseline at ECP(s)
2024-2025	Maintain baseline at ECP(s)
2026-2035	lesser of: 50µg/L or 20% reduction off baseline
2036+	lesser of: 40µg/L or 20% reduction off limit established for 2026-2035

- Using adaptive management approach, review EEM results and advancements in mitigation measures to assess effectiveness and appropriateness of compliance limits for selenium

Selenium

What we are thinking (continued):



Next Steps

- Consider any feedback on the current thinking

- 2019/early 2020
  - Finalize regulatory package

- Spring/Fall 2020
  - Target to publish proposed regulations in *Canada Gazette*, Part I

- Spring/Fall 2021
  - Target to publish final *Coal Mining Effluent Regulations* in *Canada Gazette*, Part II