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Elk Valley Water Quality Plan

Annex C.3

Phase 2 Consultation Discussion Guide and  
Feedback Form

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# Elk Valley Water Quality Plan

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Phase 2 Consultation Discussion Guide and Feedback Form  
April 2014



**Teck**

# Elk Valley Water Quality Plan – Phase 2 Consultation (April 9–30, 2014)

## Teck Wants To Hear From You

Teck is working with communities, First Nations and governments to create an Elk Valley Water Quality Plan that will maintain the health of the watershed and ensure continued, sustainable mining in the Elk Valley.

The process to develop the Elk Valley Water Quality Plan includes several rounds of public consultation:

- **Phase 1 – October 28–November 29, 2013 (complete):** The first round of consultation provided information regarding the process to develop the Elk Valley Water Quality Plan and sought input regarding current and potential water treatment and water quality management approaches as well as Teck’s plans for ongoing mitigation strategies and the supporting socio-economic impact analysis. A summary of what we heard in Phase 1 can be found on page 3.
- **Phase 2 – April 9-30, 2014 (current phase):** In this current phase of consultation, Teck is providing an update regarding the progress made in developing the Plan, including information about research into ecologically-protective levels. Teck is also seeking input regarding the short-, medium- and long-term approaches to be included in the Elk Valley Water Quality Plan, and how communities and the public would like to be consulted about the Adaptive Management of the Plan after it has been implemented.

- **Phase 3 – Anticipated Late-May/June 2014:** During this phase, Teck will make draft content from the Elk Valley Water Quality Plan available for public comment.

Input received during consultation will be considered, along with technical and socio-economic information, in the development or refinement of the Elk Valley Water Quality Plan, prior to its submission to the B.C. Ministry of Environment for approval.

You can learn more and provide feedback by:

- **Reading this Discussion Guide and completing the Feedback Form** (page 12)
- **Completing an Online Feedback Form** at [www.teck.com/ElkValley](http://www.teck.com/ElkValley)
- **Attending an Open House** (see schedule below)
- Sending a **written submission**:
  - **Email:** [elk.valley@teck.com](mailto:elk.valley@teck.com)
  - **Mail:** Teck Elk Valley Water Quality Plan  
P.O. Box 1777  
Sparwood, BC  
V0B 2G0

## Public Open House Schedule\*

A presentation will begin at 6:00 p.m. for each open house, followed by a question and answer and open discussion session. Refreshments will be provided.

Community	Date	Time	Location
Fernie	Tuesday, April 22, 2014	5:00–8:00 p.m.	Fernie Seniors Drop-In Centre
Elkford	Wednesday, April 23, 2014	5:00–8:00 p.m.	Elkford Community Conference Centre
Sparwood	Thursday, April 24, 2014	5:00–8:00 p.m.	Sparwood Senior Citizens’ Drop-In Centre

\*Please check [www.teck.com/ElkValley](http://www.teck.com/ElkValley) for any potential revisions to this schedule.

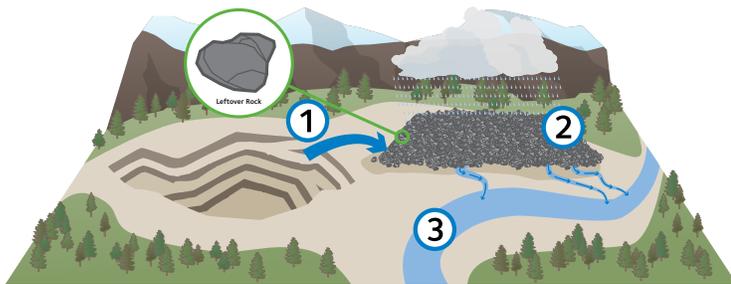
# 1. Background

## Teck in the Elk Valley

Teck operates five mines in the Elk Valley, which directly employ over 4,000 people locally.

To ensure the continuation of mining and to maintain the existing workforce, Teck is currently planning projects at all five mines to allow production to continue. The Elk Valley Water Quality Plan will guide the future of mining and will help to protect water quality.

## The Challenge



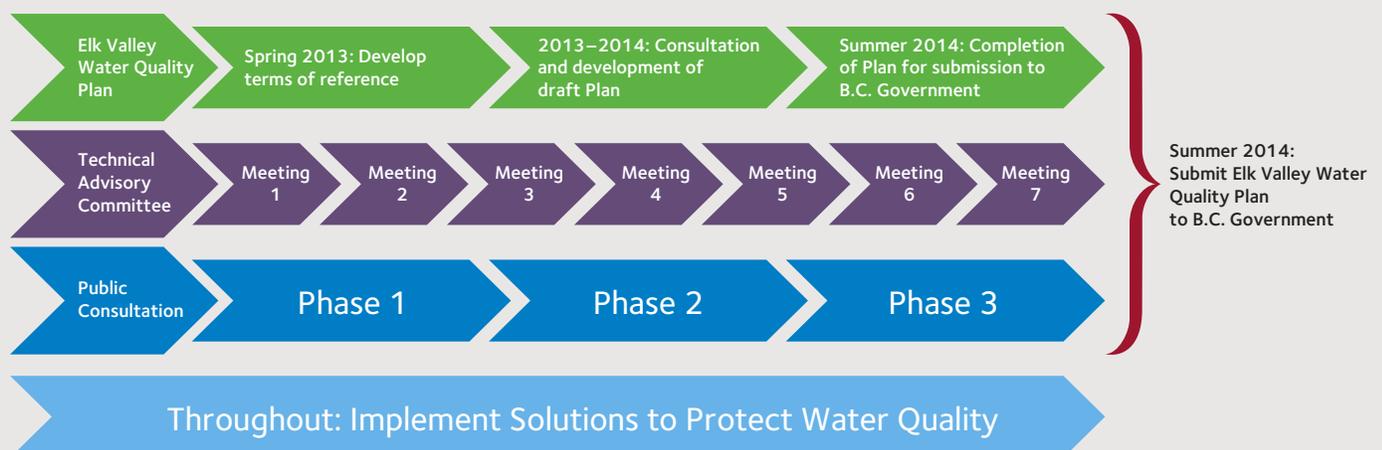
1. Steelmaking coal occurs as layers or seams within rock. To access the coal, large quantities of this rock, referred to as waste rock, are mined and placed in piles within and adjacent to the mine pits.
2. Water from both precipitation and runoff flows through these rock piles and carries selenium and other substances, including cadmium, sulphate and nitrate from blasting residue, into the local watershed.
3. If present in high enough concentrations in the watershed, those substances can adversely affect aquatic health.

## Development of the Elk Valley Water Quality Plan

In April 2013, the Government of B.C. established a process to create an Elk Valley Water Quality Plan, the goal of which is to stabilize and reverse concentrations of selenium, cadmium, nitrate and sulphate, as well as to address evidence of calcite formation. The Plan will establish short-, medium- and long-term targets for improving water quality, as well as targets to manage rates of calcite formation.

Teck is developing the Elk Valley Water Quality Plan in cooperation with governments in Canada and the U.S., First Nations, and the public. The Plan must be submitted to the B.C. Government in the summer of 2014. Once approved by the provincial government, Teck will implement the Plan.

Ministerial Order M113 and the Approved Terms of Reference can be found at [www.teck.com/ElkValley](http://www.teck.com/ElkValley).



Timeline for development of the Elk Valley Water Quality Plan

## How Teck is Protecting Water Quality Now

While the Elk Valley Water Quality Plan is in development, Teck has, and will continue to, take action to protect water quality, including the construction of a water treatment plant as well as ongoing aquatic monitoring, and extensive research and development.

Steps Teck has taken include:

- **Water treatment facilities:** Teck's first water treatment facility is currently under construction at Line Creek Operations and scheduled to begin treating water in 2014. Additional facilities are planned for other operations.
- **Water diversions:** Teck has constructed water diversions at several operations and has proposed construction of additional diversions to keep water clean.
- **Research and Development:** Teck launched an extensive research and development program in 2011 to improve water quality management technologies and techniques.

## 2. What We've Heard To-Date – Phase 1 Consultation

Teck has been providing Elk Valley communities with information regarding the Elk Valley Water Quality Plan since the establishment of the process to develop the Plan in April 2013. Phase 1 consultation regarding the Plan took place from October 28 – November 29, 2013.

During Phase 1 consultation, Teck provided information regarding the process to develop the Elk Valley Water Quality Plan and sought input regarding current and potential water treatment and water quality management approaches, as well as Teck's plan for ongoing mitigation strategies and the supporting socio-economic impact analysis. Input received during Phase 1 consultation was summarized in the Phase 1 Consultation Summary Report, which can be found at [www.teck.com/ElkValley](http://www.teck.com/ElkValley).

Phase 1 consultation participants were supportive of Teck developing the Elk Valley Water Quality Plan and were in agreement with the proposed key steps in developing the Plan. Some participants suggested that a broader water use plan be developed for the Elk Valley, which should look at more than Teck's operations.

Some Phase 1 consultation participants were interested to know what considerations have been given to testing well water. Some wanted to know how existing B.C. drinking water guidelines would be factored into the development of targets for the Plan. Phase 1 consultation participants wanted to know more about the water treatment and water quality management options that Teck has proposed, and requested that Teck ensure monitoring and reporting of water quality continue to be updated once the Plan is completed. Participants recognized the importance of Teck's continued investment in research and development of the Plan and were supportive of the proposed mitigation measures.

There was broad recognition of the role Teck plays in providing well paying jobs and supporting community services in the Elk Valley. Participants were in agreement with the proposed scope of the socio-economic impact analysis, suggesting that the Elk Valley watershed be protected to preserve the outdoor recreation economy it supports. Consultation participants requested additional information about the effects of selenium, what treatment is available to reduce selenium and how selenium removed by treatment facilities would be stored long-term.

### 3. Technical Advisory Committee Update

Along with input from three public consultation periods, Teck is receiving science-based technical advice from a Technical Advisory Committee (TAC) in developing the Plan. The TAC is chaired by a B.C. Ministry of Environment representative and is composed of representatives from:

- Government of British Columbia, including:
  - Ministry of Environment (Committee Chair)
  - Ministry of Energy and Mines
  - Environmental Assessment Office
- Ktunaxa Nation Council
- An independent third-party qualified professional scientist
- Government of Canada represented by Environment Canada
- US Federal Government
- Montana State Government
- Teck

As of April 9, 2014, there have been five meetings of the TAC. Information presented and discussed at the TAC meetings is outlined below.

Meeting Dates	Information Presented/Discussed
September 26 and 27, 2013	<ul style="list-style-type: none"> <li>• Background information on water quality issues in the Elk Valley and Teck's current and future planned mining activities</li> <li>• Proposed planning framework for the development of the Plan</li> <li>• Draft guidelines for the TAC, which include a terms of reference and meeting procedures</li> </ul>
October 29 and 30, 2013	<ul style="list-style-type: none"> <li>• Teck's approach to maintaining protection of human health</li> <li>• Methods of assessment of ecological effects for a range of water quality concentrations</li> <li>• Species to be included in the ecological effects assessment and the cause-effect relationships between mining operations and potential effects</li> <li>• Process for documentation of TAC advice</li> </ul>
November 25 and 26, 2013	<ul style="list-style-type: none"> <li>• Site-specific water quality objectives</li> <li>• Teck's water quality planning tool/model to be used in assessment of management strategies that may be considered in the development of the Plan</li> <li>• Mitigation measures that Teck is contemplating for the Plan, including water treatment, water quality management and covers</li> </ul>
February 4–6, 2014	<ul style="list-style-type: none"> <li>• Teck's methodology for assessing the ecological effects of selenium, cadmium, nitrate and sulphate</li> <li>• Rationale for mitigation measures</li> <li>• Teck's approach to developing and monitoring management scenarios</li> <li>• Preliminary results of management scenarios</li> <li>• Approach to considering Elk River and Fording River tributaries in the Plan</li> <li>• Teck's approach to assessing the impacts of calcite formation</li> <li>• Importance of adaptive management as a core element of the Plan</li> </ul>
April 2–4, 2014	<ul style="list-style-type: none"> <li>• Approach on Lake Koochanusa</li> <li>• Approach to address human health</li> <li>• Interaction of ecological effects matrices and management scenarios</li> <li>• Approach to aquatic monitoring</li> <li>• Update on development of ecological effects matrices</li> <li>• Approach to covers within the Plan</li> </ul>

Agendas and meeting notes from TAC meetings are available at [www.elkvalleytac.com](http://www.elkvalleytac.com).

## 4. Water Quality and Aquatic Health: What the Science is Telling Us

Teck has engaged a team of experts to support conducting a wide range of scientific studies to determine what water quality levels are protective of fish and other forms of aquatic life in the Elk Valley.

The results of these studies will be used to help establish the short-, medium- and long-term targets for the constituents outlined in the Elk Valley Water Quality Plan: selenium, nitrate, sulphate and cadmium, the four key water quality constituents associated with coal mining activity in the Elk Valley.

Monitoring, scientific studies and research to-date have indicated that current levels of these substances in the Elk River, Fording River and Lake Koochanusa are at levels that are not expected to adversely affect the overall health of the aquatic ecosystem. These studies have also identified that selenium and nitrate levels in the upper Fording River are potentially approaching levels where mitigation will be required to prevent adverse effects from occurring.

Aquatic monitoring programs have identified some localized effects to sensitive aquatic insects in some tributaries near mining operations. During implementation of the Plan, water quality in these tributaries will be further evaluated and specific management plans developed.

### **What the Science Tells Us: How Selenium Gets Into Aquatic Organisms**

Selenium is taken up – absorbed into animal tissue – from water by algae and bacteria that naturally occur in rivers and lakes. The selenium is then transferred to aquatic insects, fish and other aquatic animals through the food they eat.

Selenium is an essential element, at low concentrations, in fish and other aquatic organisms. At higher concentrations, it can negatively affect reproduction. Two key factors determine the effect of selenium on an organism:

1. The rate at which it is taken up by aquatic organisms; and
2. The sensitivity of the organism to selenium.

These factors vary by the type of organism and the environment in which they live. Fish are generally the most sensitive aquatic organisms to selenium; therefore, targets that are protective of fish would also be protective of other aquatic organisms.

Fish take up selenium to a much lesser extent in flowing rivers than in still lakes. For example, if you had the same species of fish living in a river and in a lake at the same selenium water concentration, the fish living in the river would likely have lower selenium levels in its body than the fish living in the lake.

### **B.C. Water Quality Guideline for Aquatic Health**

The B.C. Water Quality Guideline for selenium has been set at a level that is protective of all aquatic life for all B.C. aquatic environments. However, there are sometimes factors specific to a location that may require a different level of assessment and the development of a site-specific value. For the Elk and Fording rivers, for example, the draft site-specific benchmarks to protect fish and other sensitive aquatic organisms (see page 6) are higher than the B.C. Water Quality Guideline for selenium of 2 µg/L (micrograms per litre, or parts per billion). The target level for Lake Koochanusa will be set at the B.C. Water Quality Guideline of 2 µg/L because it is an environment that may be more sensitive to selenium. The US EPA national recommended selenium water quality criterion for the protection of aquatic life is 5 µg/L.

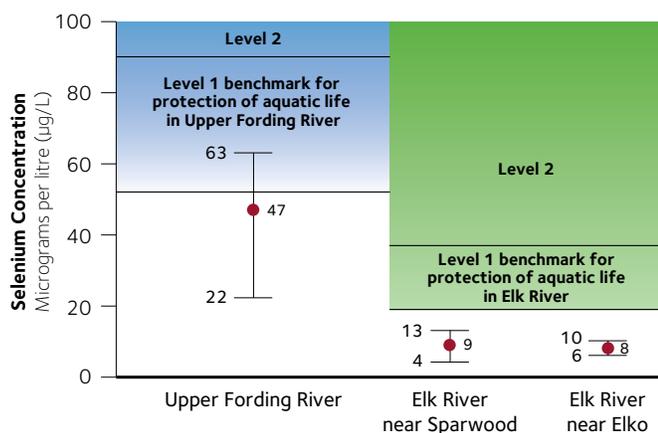
## What the Science Tells Us: Assessing the Effects of Selenium Levels

Teck has been compiling and analyzing results of studies conducted to determine threshold levels of selenium in fish that can negatively affect their reproduction. As part of this work, Teck has studied selenium effects levels for sensitive fish species that occur in different parts of the Elk and Fording River watershed and has defined draft site-specific selenium benchmarks to protect aquatic life.

- In the upper Fording River, upstream of Josephine Falls, Teck used effects levels for Westslope cutthroat trout because this is the only fish species that lives in this area. The scientific studies allow us to define two selenium benchmarks: a Level 1 benchmark of 52 µg/L, below which no effects are expected to the population, and a level 2 benchmark of 90 µg/L, below which effects are not expected to be meaningful or measurable.
- Following advice from the TAC, effects levels for the most sensitive fish species that has been tested, which is brown trout, were used to identify effects levels in the Elk River where more fish species are present. The benchmark selenium concentrations to protect fish populations in the Elk River watershed are 19 µg/L (Level 1) and 38 µg/L (Level 2).

The experts retained by Teck are working with the Technical Advisory Committee to finalize site specific selenium benchmarks that are protective of aquatic life in the Elk and Fording rivers and to review monitoring, scientific studies and research to date.

### Selenium Concentrations and Draft Site-Specific Selenium Benchmarks for the Protection of Aquatic Life in the Elk and Fording Rivers



Current (2013) selenium concentration ranges (monthly max-average-min) at locations in the Fording and Elk rivers

The graph at the bottom of the page shows current selenium concentrations in the Upper Fording and Elk rivers, and the corresponding selenium benchmarks for protection of the most sensitive fish species in each area.

The scientific studies will allow us to develop site-specific water quality targets for selenium that will be protective of aquatic life in the Elk River and Fording River. To ensure that selenium levels in Lake Koochanusa remain at levels that are protective of fish and other sensitive aquatic organisms, the Elk Valley Water Quality Plan will adopt the B.C. Water Quality Guideline for Lake Koochanusa as the long-term target.

## What the Science Tells Us: Sulphate, Cadmium and Nitrate Concentrations

In addition to selenium, nitrate, sulphate and cadmium are other water quality constituents that occur at higher concentrations in the Elk and Fording river watersheds and are included in the Elk Valley Water Quality Plan. At elevated concentrations, these constituents can also affect aquatic organisms.

- **Cadmium and sulphate:** Levels of cadmium and sulphate are currently below B.C. Water Quality Guidelines and protective levels for aquatic life and other water uses throughout the Fording and Elk rivers and in Lake Koochanusa. Scientific evaluation of trends in these constituents over time indicate that concentrations of these constituents are likely to remain below water quality guidelines. Teck will continue to monitor and evaluate trends for cadmium and sulphate to confirm that concentrations remain at levels that are protective.
- **Nitrate:** Nitrate levels are currently above the B.C. Water Quality Guideline in the Fording River and in one section of Elk River between the Fording River and Michel Creek. Nitrate levels in the lower Elk River (downstream of Michel Creek), the upper Elk River (upstream of Fording River) and in Lake Koochanusa are below the water quality guideline.

## What the Science Tells Us: Assessing the Effects of Sulphate, Cadmium and Nitrate

To develop water quality targets for nitrate and sulphate that are protective in the Elk and Fording rivers, water quality experts have compiled and analyzed the available scientific studies, and have collected and tested water from the Elk and Fording rivers to evaluate the sensitivity of aquatic organisms. Collectively, this information is being used to develop site-specific water quality targets for nitrate that are protective of aquatic organisms and other water uses in the Elk and Fording River watersheds. The B.C. Water Quality Guideline for aquatic life will be adopted as the long-term water quality target for sulphate in the Elk and Fording rivers. For Lake Koochanusa, Teck will adopt the water quality guidelines for nitrate and sulphate as the target level for the Plan.

The B.C. Ministry of Environment is currently updating the water quality guideline for cadmium. The Canadian Council of Ministers of the Environment (CCME) recently released an updated cadmium guideline, which was increased to more biologically-relevant concentrations. A proposed long-term water quality target derived to be protective of aquatic life will be used as the long-term Plan target for cadmium in the Elk and Fording Rivers, and Lake Koochanusa until the updated B.C. Water Quality Guideline for cadmium is available. The proposed long-term cadmium target is similar to but slightly lower than the new Canadian water quality guideline.

2013 Average Concentrations of Selenium, Nitrate, Sulphate, Cadmium							
Upper Fording River		Elk River near Sparwood		Elk River near Elko		Lake Koochanusa – Canada	
Substance	Concentration	Substance	Concentration	Substance	Concentration	Substance	Concentration
Selenium	47 µg/L	Selenium	9 µg/L	Selenium	8 µg/L	Selenium	1.13 µg/L
Nitrate	11 mg/L as N	Nitrate	2 mg/L as N	Nitrate	2 mg/L as N	Nitrate	0.21 mg/L as N
Sulphate	195 mg/L	Sulphate	62 mg/L	Sulphate	59 mg/L	Sulphate	24.1 mg/L
Cadmium	0.07 µg/L	Cadmium	0.05 µg/L	Cadmium	0.04 µg/L	Cadmium	0.011 µg/L

B.C. Water Quality Guidelines for Aquatic Health	
Substance	Guideline concentration
Selenium	2 µg/L
Nitrate	3 mg/L as N
Sulphate	309 – 429 mg/L
Cadmium	0.23 µg/L*

\* This is the new Canadian Water Quality Guideline for Cadmium that was released by the Canadian Council of Ministers of the Environment in 2014. The current B.C. Water Quality Guideline for cadmium is based on an old version of the Canadian guideline, and the B.C. Ministry of Environment is currently updating its cadmium guideline.

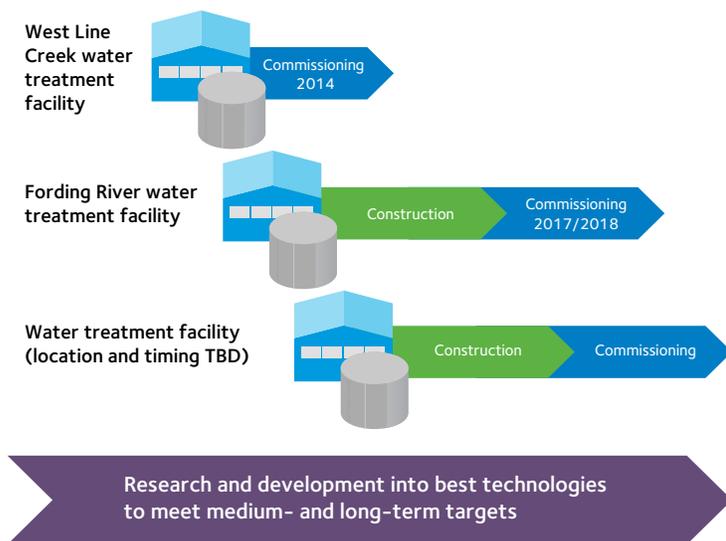
## 5. Managing Water Quality in the Short-, Medium- and Long-Term – Consultation Topic

As part of the Elk Valley Water Quality Plan, Teck will set out an implementation program for achieving the short-, medium- and long-term water quality targets that will be established in the Plan.

As outlined in Phase 1 consultation, Teck has considered a range of mitigation options for achieving water quality targets, including various water treatment technologies, diversions and other potentially-viable techniques such as covers for waste rock piles.

Teck's primary focus is implementing proven measures that will have the most significant benefit for water quality, based on our current understanding of the ecosystem. Active water treatment facilities are the most effective way to quickly address water quality.

In the medium- and long-term, Teck will continue research and development of new mitigation technologies and techniques. These mitigation approaches are expected to evolve as the understanding of the system improves and new and improved mitigation measures are developed by Teck's research and development and technology evaluation programs. Much of the research being undertaken as part of this process is in early stages, and will require significant time to develop, test and confirm its effectiveness.



Timeline for proposed short-term approach

The following outlines Teck's proposed short-, medium- and long-term approaches:

### Short-Term Approach

In the short-term, Teck will stabilize water quality conditions by implementing proven measures that will have the most significant impact on water quality. These include:

- Completion of the water quality treatment facility at Line Creek Operations, using proven biological treatment technology (commissioning in 2014)
  - Construction cost: \$105 million
  - Volume treated: 7,500 cubic metres/day
  - Selenium removed: 1.8 kg/day
- Construction of a new water diversion at Line Creek Operations (anticipated to begin diverting water to reduce concentrations of selenium and other constituents in 2015)
- Construction of a water treatment facility at Fording River Operations, using the same proven biological treatment technology as Line Creek (anticipated commissioning 2017/2018)
- Begin construction of an additional water treatment facility (location and timing to be determined)

### Medium-Term Approach

In the medium-term, Teck will demonstrate progress in achieving targets set out in the Plan through the following measures:

- Construction of water treatment facilities, as required, based on ongoing monitoring
- Construction of water diversions, as required
- Ongoing piloting of treatment technologies
- Potential changes to blasting practices to reduce nitrates

### Long-Term Approach (more than 20 years)

Teck will select the most appropriate long-term mitigation based on research and development currently underway and analysis of economic factors, including:

- In situ treatment of water saturated waste rock fills
- Improved water treatment technologies
- Use of covers for waste rock piles

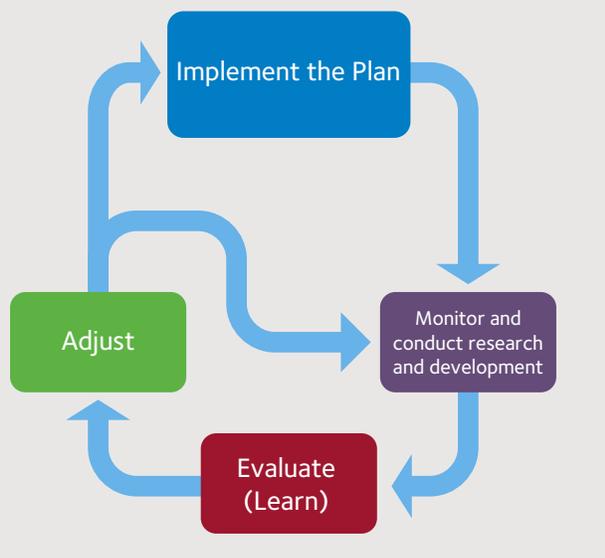
*Teck is seeking feedback regarding the short-, medium- and long-term approaches outlined in this section. Please see pages 12 – 13 in the feedback form to answer questions regarding this topic.*

## 6. Ongoing Monitoring and Adaptive Management – Consultation Topic

Once water quality targets are established under a B.C. government-approved plan, Teck's responsibility is to implement the plan to meet the targets.

As discussed in section 5, Teck has a short-term strategy of bringing three water treatment plants on-line within seven years. While treatment plants are in development, Teck will be looking to the medium- and long-term to determine the best available technologies and approaches to meet water quality targets. During that time, Teck will continue to commission research, consult with experts, and keep communities, First Nations and stakeholders informed.

As part of the development of the Elk Valley Water Quality Plan, Teck is including a forward-looking process to adapt the Plan to changing circumstances once it is put into action. This process will include monitoring of progress, coordination with other management plans, and updating of the Plan itself to reflect new research and technology.



The Adaptive Management flowchart

### Monitoring

In collaboration with the B.C. Ministry of Environment and the Ktunaxa First Nation, Teck has developed a comprehensive Regional Aquatic Effects Monitoring Program to monitor and assess water quality and aquatic biota in the Elk Valley and in Lake Koochanusa. This comprehensive monitoring program builds on years of existing water quality and selenium-focused biological monitoring. The first full cycle of monitoring under the Regional Aquatic Effects Monitoring Program occurred in 2012 and 2013. The Regional Aquatic Effects Monitoring Program will be a core component of monitoring the effectiveness of the Elk Valley Water Quality Plan.

### Research and Development

In 2011, Teck initiated a comprehensive applied research and development program to develop new and improved technologies for managing water quality. A core focus area is on developing in situ methods for controlling selenium and other water quality constituents at their source to reduce reliance on active water treatment over time and to improve the long-term sustainability of the Elk Valley Water Quality Plan.

### Evaluate and Adapt

The essence of adaptive management is to use the results of ongoing monitoring, assessment and research and development to evaluate and adapt the Elk Valley Water Quality Plan to improve it over time.

### Keeping You Informed

The Elk Valley Water Quality Plan will establish a process to ensure the public and key stakeholders are provided with information on the progress of implementation of the Plan.

*Teck is seeking feedback regarding how you would like to be notified and consulted about the Adaptive Management of the Elk Valley Water Quality Plan. Please see page 14 in the feedback form to answer questions regarding this topic.*

## 7. Frequently Asked Questions

### 1. Is the drinking water in the Elk Valley safe?

Yes. Levels of selenium and other constituents related to mining in municipal drinking water sources in the Elk Valley are currently below Health Canada and B.C. drinking water guidelines and are not a concern for human health.

It should be noted that the current Health Canada guideline for selenium (10 µg/L) is very conservative. The guideline for selenium in use by the World Health Organization is four times higher, and the US Environmental Protection Agency (EPA) guideline is five times higher. Health Canada is currently considering increasing the guideline to the same as the EPA.

### 2. What has happened with Sparwood's well water?

One of Sparwood's three wells was temporarily taken offline due to a seasonal elevation in selenium levels to slightly above the Health Canada guideline, though still significantly lower than the World Health Organization and US EPA guidelines. The supply of water for Sparwood is unaffected, and drinking water in that community remains within water quality guidelines for selenium.

Teck and the District of Sparwood are working together to develop a replacement well that will support the community's growth while also ensuring continued water quality for residents.

### 3. What about private wells in the Elk Valley?

Teck has been conducting a well water testing program in key areas in the Elk Valley as part of our work to develop the Elk Valley Water Quality Plan.

The goal of the program is to improve the understanding of regional groundwater and how it may be influenced by mining-related constituents, such as selenium.

Anyone interested in participating in the well testing program can contact Teck at [well.screening@teck.com](mailto:well.screening@teck.com).

### 4. Is it safe to swim in the local rivers?

Yes. Selenium levels do not present any health risk for swimming.

### 5. Are fish being impacted by selenium or other constituents now?

Monitoring and scientific studies show that selenium is below levels that would affect populations of fish and other sensitive animals and plants in the main stem of the Elk River and the Fording River below Josephine Falls.

Monitoring does indicate some localized effects to sensitive insect larvae that live on stream bottoms, mainly in the tributaries closest to the mines, but overall larval insect communities throughout most of the Elk Valley are healthy and diverse.

Preliminary results from a multi-year study also indicate that the population of Westslope cutthroat trout in the upper Fording River are physically healthy and robust.

The experts retained by Teck are working with the Technical Advisory Committee to review monitoring, scientific studies and research to date.

### 6. Is there any risk from eating fish caught in the Elk or Fording rivers?

Our monitoring of fish from the Elk River and lower Fording River show that there is no consumption concern related to selenium or other mining-related constituents.

Monitoring indicates that, while there are elevated levels of selenium in some fish, the average selenium level in fish fillets from the Elk River and lower Fording River is below B.C. Fish Consumption Screening Values. The screening values are protective of frequent fish consumers – a person who eats one serving of fish per day.

**7. At what selenium concentration levels would we start to see effects in fish?**

There is a large range of factors that can influence this. For example, fish take up selenium to a much greater extent in lakes than in flowing rivers. So a fish living in a lake and a fish living in a river would likely have different selenium levels in their bodies, even if concentrations of selenium were the same in the water.

More information on effect levels for aquatic life can be found on pages 5 and 6 of this guide.

**8. Are there health concerns associated with other constituents such as cadmium, sulphate, nitrate and calcite in the river?**

No. Levels of those constituents are low and do not pose any health concern related to recreating in the rivers.

**9. Will the targets be comparable with the B.C. Water Quality Guidelines for Aquatic Health?**

The B.C. Water Quality Guideline for selenium has been set at a level that is protective of all aquatic life for all B.C. aquatic environments. However, there are sometimes factors specific to a location that may require a different level of assessment and the development of a site-specific value. For the Elk and Fording rivers, for example, the draft site-specific benchmarks to protect fish and other sensitive aquatic organisms are higher than the B.C. Water Quality Guideline.

The goal of the Elk Valley Water Quality Plan is to establish targets that will be protective of aquatic life in the specific environments found in the Elk Valley, while also allowing for continued, sustainable mining.

**10. How will public input received during consultation be considered?**

Input received during consultation will be considered, along with technical and socio-economic information, in the development or refinement of the Elk Valley Water Quality Plan, prior to its submission to the B.C. Ministry of Environment for approval. Teck will outline how input was considered in the development of the Plan in a Consideration Memo appended to the Plan.

**11. What is the role of the Technical Advisory Committee?**

The role of the Technical Advisory Committee (TAC) for the Elk Valley Water Quality Plan is to provide technical, science-based advice to Teck and to the public during development of the Plan.

For more about the information about the TAC, including topics of discussion at the five meetings held to-date, please see page 4.

**12. What happens next? Who reviews the Plan, and will we have an opportunity to see it before it is submitted?**

Following Phase 2 consultation, Teck will incorporate feedback into the draft Plan. Phase 3 consultation will take place later this spring, where you will have an opportunity to review and provide comment on the content of the Plan.

Teck will submit the Plan to the B.C. Ministry of Environment in summer 2014 for review and approval.







## How Input Will Be Used

Input received during this consultation will be considered, along with technical and socio-economic information, for the Elk Valley Water Quality Plan.

## Contact Information

Please provide your contact information (optional):

Name:

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Mailing Address:

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Organization (if applicable):

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Role in Organization (if applicable):

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Postal Code:

Phone:

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Email:

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*Personal information collected relates directly to the consultation process for the development of the Elk Valley Water Quality Plan and will not be shared for any other purpose. If you have questions about the consultation process or the information collected, please contact Teck by telephone at 1-855-806-6854 or by email to [elk.valley@teck.com](mailto:elk.valley@teck.com).*

**Please return your feedback form by April 30, 2014.**

**Online:** [www.teck.com/ElkValley](http://www.teck.com/ElkValley)

**Email:** [elk.valley@teck.com](mailto:elk.valley@teck.com)

**Mail:** Teck Elk Valley Water Quality Plan

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