Elk Valley Water Quality Plan
Technical Advisory Committee – Meeting #2 Notes - FINAL

October 29-30, 2013 – Cranbrook, BC

Meeting Summary

- The Technical Advisory Committee (TAC) reviewed and discussed a summary of the proposed TAC work packages and proposed priority areas for TAC input.
- The TAC briefly discussed and provided guidance on Teck's approach for maintaining the protection of human health, which will be presented to the TAC at their fourth meeting in early February.
- The TAC reviewed and provided advice to Teck on Work Package #2a - Methods for the Assessment of Ecological Effects for a Range of Water Quality Concentrations (explained in more detail below). The TAC's specific technical advice on this work package are summarized in two separate appendices[1], which are appended onto the Meeting Summary.
- The TAC reviewed the species that will be included in Teck's ecological effects assessment and the cause-effect relationships between Teck's mining operations and potential effects on these species.
- The TAC discussed the process by which TAC advice will be documented during the development of the Elk Valley Water Quality Plan (the "Plan") and agreed to a process, which will be evaluated and refined as necessary at their next meeting.

Meeting Agenda

October 29, 2013

8:30 Overview and Update

9:15 Review and discuss TAC work packages and priority areas for TAC Advice

10:30 General Overview – Values and Components for the protection of the aquatic ecosystem, human health, and groundwater

11:00 Overview of Teck's Proposed Ecological Effects Approach

12:00 Lunch

1:00 Ecological Effects Assessment – Selenium Work Plan

5:00 Adjourn

October 30, 2013

8:00 Overview and Review from Day 1

9:00 Ecological Effects Assessment – Nitrate and Sulphate Work Plan

12:00 Lunch

1:00 Ecological Effects Assessment – Cadmium Work Plan

3:00 TAC Work Plan and Next Steps

4:00 Adjourn

[1] *Appendix A – TAC Technical Advice Received at TAC Meeting #2* **and** *Appendix B – TAC "Technical Advice" Received After TAC Meeting #2.*

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Meeting Participants

At least one representative from each TAC member agency was present. The nine TAC members are:

- Teck;
- the Ministry of Environment (BC);
- the Ministry of Energy and Mines (BC);
- the Environmental Assessment Office (BC);
- the Government of Canada represented by Environment Canada (EC);
- the US Federal Government represented by US Geological Survey (USGS);
- Montana State Government represented by Department of Environmental Quality (DEQ);
- the Ktunaxa Nation Council (KNC);
- an independent third-party qualified professional scientist.

Methods for the Assessment of Ecological Effects for a Range of Water Quality Concentrations

TAC Meeting #2 was focused on reviewing Work Package #2a – Methods for the Assessment of Ecological Effects for a Range of Water Quality Concentrations. This work package includes the proposed methods for estimating the effects to ecological receptors (species) of a range of water quality concentrations for selenium, cadmium, sulphate and nitrate.

The work package describes the methods by which environmental consultants retained by Teck will construct ecological effects matrices. An ecological effects matrix will be developed for selenium, nitrate, sulphate and cadmium. The matrices will show the estimated ecological effects of a range of concentrations for these constituents in the Fording River and Elk River, with concentrations ranging in increasing increments starting from BC water quality guidelines levels (for the protection of the aquatic life) to higher concentrations up to some upper bound (which is meant as a reference point for context).

The TAC reviewed the following four lines of evidence that Teck is drawing on to develop these ecological effects matrices:

1. Literature Review of available published and unpublished toxicological information;
2. Site-Specific Toxicity Testing (for nitrate, sulphate and mixture effects);
3. Modeling and profiling to account for toxicity modifying factors, including:
    - Biotic ligand model to account for toxicity modifying factors for cadmium effects;
    - Selenium bioaccumulation model to translate tissue-based benchmarks to water column concentrations;
    - Hardness and ionic composition for assessing potential effects of nitrate and sulphate as appropriate; and,
4. Ecological Characterization: – Characterization of local biology and habitats, including, for example, the use and importance of lotic (flowing water) and lentic (slow moving or still water) habitats in the Elk and Fording rivers for effects of selenium on different ecological receptors.