Kitikmeot Inuit Association

Summary of Technical Issues

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Technical Overview

This presentation provides an overview of concerns & recommendations made by the KIA during the review, with regard to:

- Water Quality & Load Balance
- Wildlife
- Fisheries
- Hydrogeology




Water Quality (KIA-1,9)

A. Concern:

- Will the TIA have sufficient capacity for Madrid/Boston projects?
- How will future projects affect water quality in Robert's Bay?

B. Recommendation:

- TMAC should provide an assessment re: capacity of TIA for future projects & should include these project in the CEA.
- TMAC should provide a discussion on how CCME water quality criteria in Robert's Bay will be met after Phase 2 starts.

C. TMAC Response:

Additional studies for TIA & Robert's Bay will be addressed in the Phase 2 DEIS.

Wildlife
(KIA-2,3)

A. Concern:

Attraction to & consumption of tails or vegetation impacted by tailing leachates by wildlife.

B. Recommendation:

An adaptive management program several details including details on frequency, thresholds & methods.

C. TMAC Response:

TMAC has agreed to develop a monitoring plan to detect wildlife attraction & feeding in/near TIA, in combination with other monitoring. Based on results, will conduct a risk assessment & implement wildlifedeterrents as necessary.

Water Quality (KIA-4,11C)

A. Concern:

Water & load balance model uses median values to predict water quality & loadings which may underestimate potential effects to surface water.

B. Recommendation:

Use 75th percentile concentrations as input values into model to consider “enriched” conditions.

C. TMAC Response:

TMAC agreed to run a sensitivity analysis of the water & load balance using the 75th percentile for background concentrations & other input source terms.

Water Quality (KIA-5)

A. Concern:

The proposed 0.3 m depth of quarry rock cap for the tailings beach upon closure is not sufficient.

B. Recommendation:

Use 75th percentile leach as input values into model when predicting containment release from the TIA.

C. TMAC Response:

TMAC has agreed to recalculate the tailings beach source terms using the 75th percentile leach rates from the humidity cell tests. Results of new model will be used to justify cover thickness.

Wildlife
(KIA-6)

A. Concern:

Roberts Bay hosts 9 waterfowl & at least 2 mammal spp. That feed on benthic food items like bivalves. Update AEMP in Roberts Bay to protect wildlife.

B. Recommendation:

AEMP changes should include increased sampling locations and frequency for diffuser outfall.

C. TMAC Response:

TMAC is open to considering additional sampling as part of the working group discussions proposed for March, 2016.

Water Quality (KIA-7)

A. Concern:

Saline groundwater & water from TIA have the potential to interact with marine environment. Concern re: the variability of TIA discharge, salinity levels, & chemical differences between saline groundwater & seawater.

B. Recommendation:

Variance in water discharge, chemical differences & the potential impact on seawater should be addressed in further detail.

C. TMAC Response:

TMAC provided information on groundwater quality; however we need further information to clarify their response.

Water Quality
(KIA-8)

A. Concern:

The methods used to predict water quality in Roberts Bay does not determine the size & properties of the mixing zone where water quality will be above the CCME guidelines.

B. Recommendations:

The size & shape of the mixing zone, where water quality will be above CCME guidelines should be modeled & presented, using 75th percentile concentrations.

C. TMAC Response:

TMAC will use three-dimensional hydrodynamic modelling to simulate mixing zones, plume movement, & predict water quality concentrations (CCME) using 75th percentile concentrations.

Hydrogeology (KIA-10)

A. Concern:

There was little discussion on how groundwater inflow (@ 3,000m^3/d) will be handled, including post closure.

B. Recommendation:

Provide additional details regarding:

- the variance in the volume & quality of groundwater to be managed; &
- management of ground water inflows during mining operations to provide assurance that dewatering rates would effectively handle groundwater inflows

C. TMAC Response:

TMAC provided the requested information to our satisfaction.

Water Quality (KIA-11A)

A. Concern:

The water quality modeling does not consider the effects of climate change & varying hydrological conditions.

B. Recommendation:

Update site water quality model to include climate change as per the latest IPPCC. Define hydrological conditions modeled & how that will affect the water load balance

C. TMAC Response:

TMAC has run variable hydrology models based on 1953 to 2014 data. Water quality results of this sensitivity analysis will be presented at these technical meetings.

Water Quality
(KIA-11C)

A. Concern:

The model did not predict cyanide, mercury & selenium in TIA, & mercury in the effluent discharging to Roberts Bay from the Marine Outfall Box due to high detection limits or lack of data.

B. Recommendation:

- Complete additional analysis for mercury & selenium using low-level detection limits.
- Obtain additional information to predict cyanide concentrations in the source terms.

C. TMAC Response:

TMAC has updated the modelling to include cyanide, selenium, & mercury in the TIA & point of discharge to Robert's Bay. Results of analysis will be presented at these technical meetings.

Water Quality
(KIA-12)

A. Concern:

A water quality model is needed to determine the concentrations of nitrate in the mixing zone & between deep & surface layers. Enriched nitrate in the surface layer may cause excessive algal growth.

B. Recommendation:

Update site water quality model to include:

- Mixing zone modeling in Robert's bay that predicts the concentrations of nitrate & other parameters in the mixing zone, deep layer & surface layers

C. TMAC Response:

TMAC has provided additional information on plume size, shape, & concentration in Roberts Bay & Melville Sound. This will be evaluated with the additional hydrodynamic modeling being conducted.

Fisheries (KIA-13)

A. Concern:

Groundwater inflow will affect Doris Lake water levels. Potential effects on fisheries, in particular spawning habitat & egg incubation, are currently unknown (KIA-13).

B. Recommendation:

Additional work was completed in 2015 to characterise the fish habitat around Doris Lake. It is recommend that this baseline information be presented, & used to update the effects assessment & guide mitigation & monitoring plans, as needed.

C. TMAC Response:

TMAC has completed additional data collection to quantify effects to fish & fish habitat in Doris Lake. This information will be reviewed & assessed.

Wildlife (KIA-14)

A. Concern:

The WMMP design is currently unable to determine whether wildlife avoid or are attracted to the mine (KIA-14).

B. Recommendation:

We have recommended improvements to the WMMP camera monitoring program. A statistician, the KIA, TMAC, & ERM will be meeting to improve the design such that it can achieve its original objective.

C. TMAC Response:

TMAC has agreed to meet with the KIA & work collaboratively to improve the camera modelling program. TMAC acknowledges a need for improved power. We disagree, however, that the program effectively manages detection probability.