Environment Canada Environnement Canada

Canada

Environment Canada's Presentation to Mackenzie Valley Environmental Impact Review Board Regarding De Beers Canada Inc. Snap Lake Mine Project June 5th 2014

MVEIRB Public Hearing
Yellowknife NT.

Context

- The scope of the current EA, EA1314-02, includes TDS and all its constituents including, but not limited to: nitrite, nitrate, chloride, fluoride, and sulphate.

- The specifics of EC's issues are outlined in this presentation:
  - Proposed SSWQO and EQC for Total Dissolved Solids;
  - TDS Treatment Systems Pilot Testing Program;
  - TDS in North Pile and WMP Seepages; and
  - Potential Stratification of Snap Lake

Proposed SSWQO and EQC for Total Dissolved Solids

- EC is concerned that some of the effluent parameters are already above the Canadian Environmental Quality Guidelines recommended by the Canadian Council of Ministers of the Environment (CCME) and that the long term effect of increasing TDS concentration and the concentrations of other parameters in Snap Lake is not clearly understood at this time.

Proposed SSWQO and EQC for Total Dissolved Solids

- EC recommends that:
  - If there is the potential for a deleterious substance to be deposited, Best Available Technology Economically Achievable (BATEA) be applied to achieve end-of-pipe concentrations that will not result in harm to aquatic life in receiving waters.

TDS Treatment Systems Pilot Testing Program

- Long term effect of increasing TDS concentration and other parameters in Snap Lake is not clearly understood at this time.
- Knowledge of the capability of the pilot tested treatment processes to reduce the concentration of TDS and other parameters of concern in Snap Lake is important for the continuing protection of the health of the lake.

TDS Treatment Systems Pilot Testing Program

- EC recommends that:
  - De Beers provides regular updates to the MVEIRB/MVLWB on their treatment system pilot testing program in order that the Boards can have an understanding of what end-of-pipe limits could be achieved by treating a given volume of effluent.

TDS in North Pile and WMP Seepages

- The main contribution of the high TDS appears to be from the development of the footwall but targeted footwall treatment is not practicable under current mine operating conditions.
- Both the North Pile and the Water Management Pond have seepages going to Snap Lake. EC is concerned that these seepages are adding to the increase of TDS into Snap Lake.

TDS in North Pile and WMP Seepages

- EC recommends that:
  - De Beers assess the seepages from the North Pile and the Water Management Pond and quantify the amount of TDS and chloride that are entering Snap Lake from these seepages.

Potential Stratification of Snap Lake

- Increased chloride in surface water has been linked to reducing the vertical mixing of surface waters by way of changing the density gradient in lakes. This phenomenon is referred to as meromixis.

- TDS, including chloride, in Snap Lake is increasing faster than predicted in the EA Report.

- EC is concerned that there is a potential for stratification in Snap Lake as a result of the increase in TDS and chloride load.

Potential Stratification of Snap Lake

- EC recommends that:
  - De Beers monitor water quality parameters, such as, temperature, pH, specific conductance, dissolved oxygen, and any other parameters that would help to identify water quality conditions related to the potential for stratification of Snap Lake, and that De Beers develop contingency mitigation measures which can be implemented in the event this is observed.

Conclusion

- EC would like to thank MVEIRB for the opportunity to comment on De Beer's Snap Lake Mine Water Licence Amendment Application, and hopes that these technical comments and recommendations will assist the Review Board in making environmental assessment decisions on the proposed project.