

Meeting Report

Main Issue: Water Quality Objectives, EA-0809-002

Meeting date: August 9, 2011 10 AM MST, 1st Floor AANDC Boardroom, Yellowknife

Attendees:

AANDC Robert Jenkins (RJ), Krystal Thompson (KT), Nathen Richea (NR), Karin Taylor (KT), Ramona Sladic (RS), Barry Zajdlik (BZ, by phone) (consultant)

EC Jane Fitzgerald (JF)

DFO Sarah Olivier (SO)

Parks Can. Katherine Cumming (KC, by phone), Mike Sutor (MS, by phone)

DCFN Joe Acorn (consultant)

CZN Dave Harpley (DH), Alan Taylor (AT), John Wilcockson (JW, by phone) (consultant)

Summary of discussion:

Opening

- DH noted that some parties had informed him yesterday that they planned to attend the meeting, and that as he had been without email access all day, he had been unable to provide the meeting documents sent to others previously. DH said that the 2 documents were intended for discussion, and would not be submitted to the Review Board in their current form.
- AT noted that CZN is supporting an MSc study under Heather Jamieson to investigate the natural signature of mineralization within the local waters around Prairie Creek.
- NR noted that the above mentioned study group has collected a number of water samples at the request of AANDC and they hope to get the lab results shortly.

Review of Program

- DH said that CZN had been working on 4 initiatives: mean and RCA value derivation; a desk-based study of process water treatment alternatives; additional water storage; and, predicted receiving water quality in response to the first 3 initiatives and possible water quality objectives.

Progress on Initiatives

- Mean and RCA value derivation
 - o There was some confusion between JW and BZ with regard to sharing the MERA data and SNP data. The MERA data is available from the GS Lord office in Yellowknife (BZ to provide data he has) and the SNP data is still being

- worked on by the Water Resources Division (R. Beaver's work and old Inspector files).
- DH: Sampling upstream of the Mine for ultra-trace mercury and low-level metals was initiated just before the Public Hearing, and has continued on an approximate monthly interval. The intent is to continue this sampling until next summer.
 - DH: said that catchment areas for tributaries would be calculated and used to compute average monthly flows. These could then be used to 'weight' samples for RCA value computation.
 - DH: suggested to the group that because of the above, a final determination of RCA values would only occur after the specified EA closure date.
 - There was some discussion from parties on their thoughts on when some RCA's and SSWQO's should be determined. Specific reference was made to steps of the Path Forward submission provided to the Board.
- Desk-based process water treatment options study
 - DH: A draft of the study was presented. A number of treatment systems were identified and screened. After screening, systems remaining were the current sulphide/lime approach, reverse osmosis (RO) and ion exchange (IX). Capital and operating costs are roughly comparable between these options, although the current system is the cheapest. RO and IX both create waste brine for further treatment. The volume is less with IX. Since RO appears not to have benefits over IX, the current system and IX have been recommended for further evaluation and testing. A test program would take approximately 6 months from initiation.
 - After lunch, AANDC provided a review of the SNC draft report (1 of 2 documents provided by CZN for the meeting) conducted by a consultant working for AANDC. AANDC noted that as this was just in, CZN did not have time to review or prepare any comments. Thus, future follow-up on AANDC's review document was proposed when CZN technical staff are available.
 - Additional water storage
 - DH: CZN has evaluated additional water storage alternatives, primarily to allow more water to be held in storage over the winter which would result in improved receiving water quality over this period, and potentially allowing more stringent objectives to be assumed. One focus of the evaluation is the existing pond. The pond will be rehabilitated to stabilize the backslope by excavating material to reduce the driving force for slope movement, by placing a fill apron and buttress in the pond, and by maintaining a minimum 877 m water level, giving a 3 m range of acceptable water level fluctuation. Options are available to reduce the minimum water level. More material could be excavated from the backslope. Also, trenching of the backslope could be done to truncate the underlying clay layer which is the source of the instability. In addition, the dykes could be raised slightly. If the dykes were raised 1 m and the minimum water level lowered 1 m, the available seasonal storage would increase from approximately 220,000 m³ to 320,000 m³.
 - Another alternative would be to build a second pond to the south of the main site. A conceptual design was submitted to the Review Board. Material excavated from the existing pond area would be used to form the dykes, in addition to the material generated during ground preparation at the proposed site. A second pond would provide considerably more water storage.

- Site investigation work is required at both sites to confirm the alternatives. However, CZN felt that one or both alternatives would be available for selection following further geotechnical assessments.
- Predicted receiving water quality
 - DH: CZN performed a sensitivity analysis consisting of predicted receiving water quality in response to additional water storage and improved process water treatment. Not surprisingly, peak concentrations reduce progressively with both more storage and better effluent quality. This could allow the assumption of more stringent objectives. However, CZN has not decided whether to assume more stringent objectives, because to do so independent of knowing how effluent quality criteria will be established poses risks in terms of meeting objectives consistently. Also, while the analysis showed that progressively more RCA values could be met with more stringent objectives, the values are not final, and not all values can be met.
 - RJ: reiterated AANDC's position that a risk assessment should be conducted on those parameters for which RCA values cannot be met, consistent with the Path Forward document AANDC submitted to the Board.
 - NR: noted that for those parameters where we do not have sufficient information on background/reference conditions (mercury, silver, nitrite, etc.) that AANDC's step process identified the need to perform Risks Assessments to determine what impact would occur from effluent discharge. Mercury was an issue that the DCFN identified as a concern in this EA.
 - DH: said that CZN would consider this approach if the majority of parameters could be addressed at a practical, screening level.
 - JA: commented that the risk assessment work should be done as part of the EA, and noted that if this is not done and the Review Board proceeds to make a determination without the results, there is a risk the report of EA will be rejected.
 - DH noted that, in selecting objectives based on existing toxicity data, CZN had in effect performed a screening level risk assessment. This could be the basis for the Review Board determining whether there will be significant adverse impacts.

Developer commitment(s):

- CZN's intent is to continue sampling upstream of the Mine for ultra-trace mercury and low-level metals until next summer.
- AANDC to provide water quality data from SNP (Inspector Reports) and confirm if there is new data from the R. Beavers paper.
- AANDC to provide the results of the nutrient samples taken by the researcher working with Heather Jamison.
- BZ to provide JW with data files and links to the MERA data.
- BZ and JW to discuss mercury further as new data (sample detections) are available from the most recent sampling program initiated by CZN.

Action Items:

1. CZN: assemble sub-catchment flow calculation data

A tentative date of August 22 was set for the next meeting in Yellowknife with preceding teleconference calls between CZN and AANDC on water treatment and tailings management.

Signature of party representative: _____

Signature of developer representative: _____

Date: _____