

MEETING: Giant Mine EEM, October 22, 2015

DISCUSSION: 5th study for Environmental Effects Monitoring (EEM) at Giant Mine

LOCATION: Taiga Boardroom, Nova Coast Plaza, Yellowknife, NWT

Attendees

Golder Associates

Katherine Harris, Hilary Machtans

Aboriginal Affairs and Northern Development Canada

Adrian Paradis

Aaron Braumberger

Katherine Ross

Public Works and Government Services

Chris Doupe

Brad Overton

Environment Canada

Shelly Boss

Purpose of meeting: To discuss details of the next phase of EEM at Giant Mine prior to study design submission.

Facility update (Adrian)

- The Giant Mine EA concluded in 2013 and included 26 measures, including surface design. Do not expect to be entering water license process until 2018/19. There is stakeholder interest in the diversion of Baker Creek off-site and the possibility is being considered.
- The year 2012 was very wet (with correspondingly much more effluent treated) whereas 2013, 2014 and 2015 have been dry years and water levels are down.
- The city required that the houseboats that were moored in the exposure far-field area be moved.
- The Marina has expanded; the Mining Heritage group is doing work to put in a museum right by Baker Creek and the Cruiser Club want to upgrade facilities (dock by marina).
- One train of tanks has been replaced on the ETP this year. When the site goes into remediation, the discharge point will be moved to a diffuser in Great Slave Lake, although the exact location has not yet been identified. Discharge at the new location could be possible by 2020-2022. Some work is being done to increase capacity on the splitter dyke as volume capacity is running low.
- Studies at the site have been ongoing, e.g., Baker Creek alignment; pore water sampling at mouth of Baker Creek; surface water in ephemeral channels into Baker Creek; analyzing otoliths for arsenic.

Review of EEM program steps and recommendations for Giant Mine (Shelly)

- The MMER specifies the types of studies to be done, which are determined based on results of the previous studies. Where previous studies indicate a similar type of effect and magnitude and extent

are known, the next study design should describe the studies that will be used to determine the cause of the effect.

- Chapter 1 of the EEM guidance indicates the level of effort expected for IOC studies based on magnitude of effect. For larger effects, such as seen in the Giant Mine fish studies (e.g., age, weight at age, condition), an IOC would be expected to include field and/or lab studies. However, the IOC can include relevant existing studies and data.

Discussion on possible/proposed approaches to next study (Golder/All)

- It was discussed that it would be reasonable, based on the moderate magnitude of effects observed using the benthic plates, to complete the IOC study for the benthic invertebrate community using existing information. Including the results of the depositional sampling would be helpful in providing context for the benthic plate data.
- The next interpretive report should identify the likely cause(s) of benthic effects to complete the regulatory requirement for IOC. Although possible causes have been outlined in general (e.g., historical contamination; TDS; metals), it would be helpful to present the available evidence for or against the possible causes in a systematic way and then draw conclusions.
- There was discussion on whether there is a way to have efficiencies between EEM and the remediation work, rather than just going back to periodic monitoring after IOC. Were there exemptions from monitoring given the ongoing efforts to remediate, or could the facility submit information or work related to implementing solutions? There are no such exemptions in the MMER. The Pulp and Paper Effluent Regulations include investigation of solutions studies, but the MMER does not and solutions work would be outside of its scope. If solutions work could be clearly linked to investigation of cause, the facility could potentially incorporate such studies into investigation of cause.
- If cause of the fish effects is not determined following the IOC phase (5th study), or if there is other information that would be valuable in refining understanding of cause, consideration could be given to conducting a second phase of IOC for fish (6th study). Otherwise, the mine would return to standard monitoring following the IOC phase.
- Golder felt it would be a challenge to develop a robust IOC around fish effects, and asked whether a desktop approach would be acceptable. The possibility of laboratory growth tests with fish was also mentioned. It was advised that the possible causes be identified to determine what key pieces of information would be needed as evidence for or against the different possible causes. I.e., is there still key information that would be needed but has not yet been collected? Laboratory tests, e.g., fish growth tests, could be useful in addressing current vs historical sources, and would be relevant to investigating the confirmed effects on sculpin growth. Examples of approaches used in other IOCs include fish tissue sampling, caging tests, lab testing or treatments of water and sediment.

Review next steps

Response to comments on previous interpretive report: likely to be submitted next quarter, in tandem with the next study design.

The study design should be submitted no later than 6 months in advance of the study and the next interpretive report is due no later than June 6, 2017.