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August 15, 2008

Mr. Richard Edjericon
Chairperson
Mackenzie Valley Environmental Impact Review Board
200 Scotia Centre
P.O. Box 938, 5102 – 50th Avenue
Yellowknife, NT X1A 2N7

Re: EA0809-001 - Giant Mine Remediation – Mackenzie Valley Environmental Impact Review Board (“MVEIRB”) Scoping Hearing, July 22nd and 23rd, 2008 – Undertaking #1.

During the environmental assessment scoping hearing for the Giant Mine Remediation Project, The Department of Indian and Northern Affairs Canada (INAC) agreed to outline the reasons for the freeze optimization study and why it should be excluded from environmental assessment.

The ground freezing concept is outlined in the Remediation Plan and additional details including modelling of the conceptual design of the ground freezing are provided in Supporting Document J. The freeze optimization study has not however been included in the Remediation Plan, as in INAC's view, it is necessary to conduct this study prior to commencing the Remediation. If the freeze optimization study is allowed to proceed as soon as possible, INAC will be able to incorporate the results into the engineering designs early on, which will both serve to inform the regulatory process and avoid significant delays in implementation.

Overview of the Proposed Freeze Optimization Study

The proposed freeze optimization study would involve the installation of a number of test freeze pipes, some using an active system and some being hybrid thermosyphons at a different location from the test thermosyphon, at an actual arsenic trioxide storage chamber. The optimization study would include both active and hybrid freezing systems, in order to confirm the advantages and disadvantages of each approach. Because of existing site considerations, Chamber 14 is the only possible location for the freeze optimization study that would involve the installation of a number of freeze pipes along the west and north margins of the chamber to partially freeze the chamber.

Discussion of Reasons Why the Study should be Scoped Out

Over the past 8 years, INAC has completed many site assessment studies and investigations that have shaped the Remediation Plan. The freeze optimization study is considered to be a further component of the site assessment in that the study will improve the quality of the final engineering design for the ground freezing. It will provide confirmation of the modelling and conceptual design as outlined in the Remediation Plan (Supporting Document J). Having this information as soon as possible will also enable the project to proceed to implementation as soon as the assessment and regulatory processes are complete.

There is already one test thermosyphon on site that was installed in 2002 and from which pertinent performance information has been used in thermal modelling calculations. While this information has been important in the development of the conceptual engineering for the ground freezing, INAC believes that in order to advance the engineering to the implementation stage, it is necessary to supplement this test with the freeze optimization study.

In addition, the optimization study is necessary to provide confirmation that the theoretical parameters such as predicted rates of freezing utilized in the conceptual design for freezing the arsenic chambers and surrounding rock are correct and can be substantiated by the actual field study using an existing arsenic storage chamber.

Specifically the freeze optimization study would:

- establish the actual freezing performance in comparison to the predicted rates of freeze front progression in rock away from the freeze pipes by observation and measurements obtained from monitoring instrumentation installed in the rock as part of the optimization study;
- establish the actual freezing performance in comparison to the predicted rates of freezing of the arsenic trioxide dust using instrumentation installed for monitoring purposes;
- confirm that the modelled spacing of freeze holes is optimum to ensure complete freezing of the rock under and around the chambers;
- establish the actual power consumption in comparison to predicted power requirements for active and hybrid thermosyphon systems of freezing;
- establish the relative efficiency of an active freeze system;
- establish the relative efficiency of a freeze system using hybrid thermosyphons;
- clarify advantages and disadvantages of using active versus hybrid thermosyphon freeze systems.

The freeze optimization study will also serve to uncover any design or construction challenges related to any of the components of the ground freezing including: site access, drilling and drill hole deviation, installation and welding techniques for the freeze pipes, circulation of the freeze coolant through the pipes, electrical requirements, installation of instrumentation in and around the arsenic chambers and any constraints related to existing conditions at the site, including climatic conditions, health and safety and environmental protection.

INAC believes that, like the other site assessment and investigations completed, the freeze optimization study may also inform the regulatory process, particularly in regard to the development of an appropriate monitoring system for the frozen ground. The study would also provide a confirmation of cost estimates for the supply and installation as well as operation and maintenance of all components of the freeze system work including power requirements. This information will be necessary to provide the level of accuracy of cost information required by Treasury Board.

Conclusion

For the above noted reasons, INAC requests that the MVEIRB scope out the freeze optimization study from the present EA.

As stated in the EA scoping hearing, the engineering parameters and precise design of the optimization study have not yet been finalized. Once this determination has been made, INAC will apply for any applicable permitting/licensing that may be required. INAC intends to keep the Review Board apprised of developments in this regard.

Sincerely,

A handwritten signature in black ink, appearing to read "W. S. Mitchell". The signature is written in a cursive, flowing style.

W. S. Mitchell
Manager, Giant Mine Remediation Project