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April 23, 2008

Tawanis Testart
Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board
Box 938, 5102-50th Avenue
Yellowknife NT X1A 2N7

Re: Giant Mine Remediation Project Environmental Assessment

Dear Ms. Testart

Please consider this letter as my response to the April 17, 2008 letter inviting participants to submit evidence they consider relevant to the public registry for this environmental assessment. Yesterday I faxed the form that indicates my interest in participating in this environmental assessment as a "Party".

This letter sets out my initial concerns with the Giant Mine Remediation Project and I trust that I will have additional opportunities during the scoping, information requests, technical sessions (if held) and public hearings to pursue these and other areas of interest.

Preliminary Matter

I wish to raise the issue of participant funding for this environmental assessment. It is my understanding that participant funding is made available for "comprehensive studies" conducted pursuant to the *Canadian Environmental Assessment Act*. While there may not be specific provisions in the *Mackenzie Valley Resource Management Act* for participant funding for the equivalent level of review to comprehensive studies, namely environmental assessments, I would appreciate a response from the Mackenzie Valley Environmental Impact Review Board on whether there is any intention to provide participant funding for this environmental assessment.

Concerns and Issues

My initial concerns with regard to the Giant Mine Remediation Project are outlined below and are also found in the attached February 13, 2008 letter sent to the Mackenzie Valley Land and Water Board as part of its preliminary screening of the water licence application, the Remediation Plan and supporting documents that have now been filed as part of this environmental assessment. My February 13, 2008 is also available electronically at:

<http://www.mvlwb.ca/mv/Registry/2007/MV2007L8-0031/app/MV07L8-31%20Review%20-%20Kevin%20Reilly-%20%20Feb.13-08.pdf>

1. The Plan does not adequately reflect the need to minimize perpetual care requirements.

In my view, the driving principle in developing the Remediation Plan was to minimize costs with some balancing of environmental and human health costs. There was little effort to ensure that the knowledge, technology and capacity exist far into the future, in theory forever, to adequately contain the arsenic trioxide that is currently stored underground.

In my opinion, other options to manage the underground arsenic trioxide did not receive adequate consideration, particularly reprocessing of this material followed by deep disposal of the ferric arsenate.

2. The monitoring plan for the frozen block option for management of the underground arsenic trioxide is not adequate.

Although the Executive Summary of the Remediation Plan claims “A detailed plan for monitoring the site during and after implementation of the Remediation Plan has been developed” (page iv), the only information I could locate regarding monitoring for the frozen block option is set out below.

There are three paragraphs in section 7.7 of the Remediation Plan as follows:

7.7 Frozen Ground Monitoring

A ground temperature monitoring system will be installed along with the ground freezing system. The monitoring components will include thermistors or thermocouples mounted on the freeze pipes as well as additional thermistor or thermocouple strings installed in separate drillholes.

During the period of active freezing, the in-ground monitoring will be supplemented by monitoring of temperatures and pressures in the coolant as it enters and leaves freeze pipes or groups of freeze pipes. This method is commonly used in freezing systems of similar design to ensure that all freeze pipes are functioning correctly.

Once frozen conditions have been established and the active freezing system is converted to passive thermosyphons, the performance of each thermosyphon will be monitored by annual checks of gas pressure and monitoring of heat loss from the radiators. Ground temperatures will continue to be monitored using the thermistors or thermocouples mounted on the freeze pipes and in independent drillholes.

I have also reviewed Document J1 – Conceptual Engineering for Ground Freezing where the following information is found:

5.5 Monitoring and Reporting

It will be necessary to monitor the ground temperature in order to determine the extent of the frozen wall in the vicinity of the chambers and stopes, in particular the bottom and top portions of the chambers and stopes. More effort will be put into monitoring during the early stage of the implementation, in particular in Area AR1 where the first cluster of freeze pipes will be installed.

The information collected during that first stage will be used to confirm or adjust some of the design parameters and provide an opportunity to adjust the design of the subsequent freeze pipe installations.

Temperature can be monitored using thermocouples, thermistors or resistance temperature detectors (RTDs). RTDs are the most reliable and stable of the three. The temperature measuring devices would be installed to monitor the progress of the freezing process around and inside the chambers and stopes. RTD's will be installed along drillholes to provide linear profiles in both vertical and horizontal holes under stopes. Again, the initial construction will likely have a higher density of measurements.

Water movement is a critical aspect for ground freezing and pressure measuring devices will be installed at selected locations to monitor the pore pressure, within the arsenic dust, the mine workings and/or the bedrock mass. The requirement for measuring the pore pressure inside the dust and in the vicinity of the chambers and stopes will disappear in the long-term with the creation of the "frozen block".

Ground movement measuring devices will be installed at various locations with a higher density of measuring points in the areas where stability is a concern. This information will be important for all stages of the ground freezing exercise and would be maintained in the long-term until the "frozen block" is fully developed. The potential for ground movement at that time will be negligible since the entire rock mass and the dust will be bonded with ice. It will be necessary to use data loggers and implement a database system to manage the data and facilitate its distribution.

5.6 Contingency Measures

A failure of the freezing system during the initial stage of the project would simply delay the freezing process. The magnitude of the delay will depend on the time required to repair or replace the defective portions of the system.

The contingency measures available in cases of failures or poor performance, either during initial freezing or in the long term, include replacing defective components, installing additional freeze pipes, and/or extending the duration of active or hybrid freezing. As a final contingency, the minewater level can again be drawn down below the frozen blocks simply by restarting the dewatering system if required.

Once the chambers and stopes are completely frozen, the time to repair the damaged freezing system will not be critical. As shown in Section 3.3, it would take eight years or longer before the temperatures in the dust would reach critical levels.

I do not consider this information adequate for an environmental assessment. This is not a detailed plan and does not include locations, frequency, duration, tiered thresholds or triggers for management responses or contingencies, or other necessary aspects of a proper monitoring program for such a crucial part of the Remediation Plan. The lack of detail instills little public confidence that this perpetual care methodology has really been thought through carefully.

3. No commitment to ongoing research and development for improved management of the underground arsenic trioxide.

I could not locate any information on financial security that should be required of this development to ensure that it is actually carried out in a timely and coordinated fashion. There is a reference in the Executive Summary (page v) to the need for federal Treasury Board approval to secure funding for this development. Given this uncertainty and lack of detail around financial security, it is unclear how the public can be assured that this project will actually be carried out.

There is no commitment I could locate in the documentation submitted, that clearly indicates an interest in, let alone any plans for any sort of ongoing research and development for improved management of the underground arsenic trioxide. I have characterized the frozen block option as the ‘freeze it and forget it’ method. Without a clear commitment to ongoing research and development, this scenario will become reality. I recommend that should the frozen block method be approved, that a separately administered trust fund be set aside to support ongoing research and development.

4. Need for independent oversight of implementation of the Remediation Plan.

Although there is a Giant Mine Community Alliance (GMCA) in place, the Remediation Plan does not articulate any ongoing role for this body during implementation and monitoring. In my view, the GMCA is not inclusive or independent and is not an appropriate model for community oversight of this very significant development. It is simply a communications liaison body. The monitoring agencies for the diamond mines in the NWT provide a much more appropriate model for oversight for a development or undertaking like the implementation of an approved Remediation Plan for the Giant Mine.

To support the consideration of an independent oversight body for the Giant Mine Remediation Project, I attach a copy of the Environmental Agreement for the BHP Billiton Ekati diamond mine where Article 4 establishes such a body (see http://www.monitoringagency.net/Portals/0/pdf/key_documents/BHP%20Environmental%20Agreement1997.pdf). I would like this document filed on the public registry for this environmental assessment. I will be submitting further information on independent oversight for the public registry.

5. Other concerns with the Remediation Plan.

Development of the Giant Mine Remediation Plan

The Department of Indian Affairs and Northern Development (DIAND) has adopted different approaches to the clean-up of contaminated sites across the NWT. For example, the Port Radium mine clean-up involved a cooperative and collaborative review of issues that resulted in a detailed Action Plan that was largely driven by community interests (see http://www.ainc-inac.gc.ca/ps/nap/consit/cdut/cdutpdf_e.pdf).

A similar approach was adopted with the Colomac mine remediation where DIAND worked collaboratively with the Tlicho communities. I have not located a good review of this process but intend to file review of that process in the future.

I am of the view that DIAND did not approach the Giant Mine remediation with the same spirit and practice of cooperation and collaboration as was adopted with the Port Radium and Colomac projects. I will submit additional evidence in this regard during the environmental assessment.

Policy Context for Mine Closure and Reclamation and Lessons Learned from Giant Mine

I am concerned that there has been insufficient regard by the federal and territorial governments to lessons learned from the Giant Mine. There has been little if any documentation on this important matter as it relates to issues such as whether there was any net benefit from the mining of gold at Giant or what needs to be done to prevent this situation from ever happening again.

In general, the closure criteria specified in the Giant Mine Remediation Plan for various mine components are not nearly specific enough for a third party to verify compliance or success. In my view, it is questionable whether DIAND has met its own mine site reclamation guidelines in the Giant Mine Remediation Plan. There should be clear descriptions of all monitoring programs including locations for sampling and the rationale for selection, methodology to be employed, and triggers or thresholds for management responses need to be spelled out in action plans subject to public review and approval, prior to work being initiated.

I have concerns whether the arsenic remediation guidelines developed by the Government of the Northwest Territories adequately address human and environmental health and intend to file additional information in the future.

On the current regulatory and policy regime for mine closure and reclamation and its sufficiency, I would like to submit the following documents (see attachments) for the public registry:

Government of the Northwest Territories. *Environmental Guideline for Contaminated Site Remediation*. November 2003.

<http://www.enr.gov.nt.ca/library/pdf/eps/siteremediation.pdf>

Mine Site Reclamation Guidelines for the Northwest Territories. Indian and Northern Affairs Canada. Yellowknife, NWT. January 2007 Version.

Mine Site Reclamation Policy for the NWT. 2002. Department of Indian Affairs and Northern Development.

http://www.ainc-inac.gc.ca/ps/nap/recpolnwt_e.pdf

Wenig, M. and K. O'Reilly. 2005. *The Mining Reclamation Regime in the Northwest Territories: A Comparison with Selected Canadian and U.S.*

Jurisdictions. Canadian Institute of Resources Law and Canadian Arctic Resources Committee.

<http://www.carc.org/2005/mining49.NWTMiningReclam%20final%20-21Jan05.pdf>

The remediation of contaminated soils is to be undertaken to “industrial” standards according to the Giant Mine Remediation Plan even though portions of the mine site are currently used for recreational purposes and have a high potential for residential use as shown in the documents below. I am of the view that these areas should be remediated to allow for the planned future uses and not to simply save money or pass along the costs to future users.

The following attached documents set out the City of Yellowknife’s demonstrated interest in the future land and water use at the mine site, which the Giant Mine Remediation Plan does little to facilitate:

Giant Mine Lease Area Land/Water Use Plan. City of Yellowknife. Revision 4 – June 2006.

http://www.yellowknife.ca/City_Hall/Committees/Municipal_Services_Committee/MSCAgendas2007/Giant_Mine_Lease_Area_Land_and_Water_Use_Plan.html

Giant Mine Abandonment and Restoration: Preliminary Identification Of The Issues And Potential Impacts On The City Of Yellowknife. Final Report. Prepared By Dr. Andy Swiderski, Terriplan Consultants. March 30, 2007.

http://www.yellowknife.ca/_shared/assets/Giant_Mine_Abandonment_and_Restoration_-_Preliminary_Identification_of_the_Issue_and_Impacts_on_the_City_of_Yellowknife5786.pdf

Thank you for the opportunity to submit my initial concerns and issues with the Giant Mine Remediation Project and documents that I believe should be filed on the public registry for this environmental assessment.

Sincerely,



Kevin O'Reilly

Attachments

1. Letter from Kevin O'Reilly to MVLWB on February 13, 2008.
2. Environmental Agreement for the BHP Billiton Ekati Diamond Mine.
3. Action Plan for the Clean-up of the Port Radium Mine.

4. GNWT Environmental Guideline for Contaminated Site Remediation.
5. Mine Site Reclamation Guidelines for the Northwest Territories. January 2007.
6. Mine Site Reclamation Policy for the NWT.

7. The Mining Reclamation Regime in the Northwest Territories: A Comparison with Selected Canadian and U.S. Jurisdictions.
8. Giant Mine Lease Area Land/Water Use Plan. Revision 4 – June 2006.
9. Giant Mine Abandonment and Restoration: Preliminary Identification Of The Issues And Potential Impacts On The City Of Yellowknife.