PRESENTATION FOR

SCOPING HEARING

ON THE

GIANT MINE REMEDIATION PLAN

EA0809-001

Mackenzie Valley Environmental Impact Review Board

July 23, 2008

By
Kevin O'Reilly

Yellowknife NT

Presentation Outline

- Introduction
- Scope of the Development
- Scope of the Assessment
  - Legacy Issues
  - Evaluation Criteria, Options and Alternatives, and Trade-Offs
  - Monitoring and Contingencies
  - Funding Commitments and Ongoing Research and Development
  - Independent Oversight
  - Policy Context and Remediation Standards
  - Local Impacts and Benefits
- Other Outstanding Issues
  - Participant Funding
  - Role of Government
  - Environmental Assessment vs. Environmental Impact Review

Introduction

- Purpose of Hearing
  - Scope issues to be addressed
  - Present concerns about the Remediation Plan and its impacts
- Not a typical Environmental Assessment
  - Not a new undertaking but a plan to lessen existing effects and avoid future impacts

Scope of Development

- Geographic Extent of the Effects of the Giant Mine
  - Never subject of an environmental assessment
  - Began in an era of few environmental controls
  - Effects extend well beyond surface lease
    - effects of roasting operations
    - wind borne tailings
    - aquatic impacts on Baker Creek, Back Bay and Yellowknife Bay
- Cumulative Effects of Mining Operations in the Yellowknife Area
  - Impacts from Burwash, Con, Rycon and Negus mines
  - Aerial and aquatic dispersion and deposition of contaminants

Scope of Development

- Ingraham Trail Rerouting
  - Necessary to accommodate frozen block option for underground arsenic
  - GNWT as developer for the Remediation Plan and the Rerouting
  - Rerouting meets accessory development criteria of dependence, linkage and proximity
- Temporal Scale of Development from at Least 1948 with No End Point (Due to Perpetual Care Requirements)

Scope of Development

- Scope should include all effects from the Giant Mine
- Temporal scope begins in 1948 and has no end point
- Cumulative effects assessment should include all mining development in the Yellowknife area
- Ingraham Trail Rerouting should be considered an accessory development

Scope of Assessment

- Legacy Issues
  - Large body of research on Giant Mine and its impacts but need to compile and understand its limitations
  - Remediation viewed differently
    - Technical and engineering challenge for regulators and consultants
    - Local residents frustrated and angry, have to live with results
    - No government has taken responsibility or apologized
    - Little evidence of lessons learned or improvements to regulatory regime
    - No legislation or regulations would prevent another Giant Mine
  - DIAND has taken different approaches to NWT mine remediation
    - Port Radium and Colomac vs. Giant

Scope of Assessment

- **Legacy Issues (Continued)**
  - **Need a detailed annotated bibliography of the Giant Mine, its effects, relevant regulatory standards and conditions and background information used to prepare the Remediation Plan**
  - **Developer should prepare a cost-benefit analysis of the Giant Mine including lessons learned, how the regulatory regime may have been improved, and remaining changes that are needed**

Scope of Assessment

- Evaluation Criteria, Alternatives and Trade-Offs
  - Plan appears to be driven by lowest cost, other options for underground arsenic not adequately considered
  - Need for explicit evaluation criteria that reflect different values and interests
  - Consider the distribution of costs and benefits amongst different groups and across generations
  - Extra effort into documenting trade-offs amongst various options for underground arsenic
- Adopt a Sustainability Approach for this EA with a focus on evaluation criteria, options and alternatives and trade-offs

Scope of Assessment

- Monitoring and Contingencies (Underground Arsenic)
  - Plan claims that a detailed monitoring program has been developed
  - No evidence to support this claim
  - No details on monitoring locations, frequency, duration, thresholds or triggers, or contingencies
- Need for a detailed monitoring plan including how results will be used and communicated to the public
- Developer should document the worst case scenario and its probability during implementation and afterwards

Scope of Assessment

- Funding Commitments and Ongoing Research and Development
  - No information available in the Plan
  - Funding process for implementation unclear
  - No details on ongoing research and development
  - Need for periodic reassessment
- Developer should provide details on funding process for Plan implementation and commitments to ongoing research and development
- Developer should provide details on how the Plan should be reassessed periodically

Scope of Assessment

- Independent Oversight
  - No ongoing role specified for Giant Mine Community Alliance (not independent or inclusive)
  - DIAND responsible for managing Plan, inspections and enforcement, Minister will receive EA recommendations and sign off on a water licence
  - Potential conflict in roles and too much power in one agency over this development

- Developer should review various oversight models and experiences and how these will be applied to this development

Scope of Assessment

- Policy Context and Remediation Standards
  - Closure criteria not specific enough and do not meet DIAND's own mine closure policy
  - Contaminated soils to be remediated to an 'industrial' standard
  - Site is used for recreation and there are plans for residential and other uses
- Developer should show how the Plan complies with existing mine closure regime and overall best practices
- Developer should provide full justification for selected remediation standards and how this reflects local interests and values

Scope of Assessment

- **Local Impacts and Benefits**
  - **Concerns with non-payment of municipal taxes, use of municipal infrastructure, potential for higher electricity costs for consumers**
  - **Unclear how developer will maximize economic benefits for NWT residents and Aboriginal peoples**
  - **Unclear if the operational knowledge of former mine employees was used in the Plan**
- **Developer should identify and document effects on municipal taxes, local infrastructure and electricity rates**
- **Developer should indicate policies and practices that will maximize local benefits and how the knowledge of former employees will be used**

Other Outstanding Issues

- **Participant Funding**
  - **Issue raised with MVEIRB in April and June, no response to date**
  - **DIAND has provided funding for environmental assessments in Nunavut but not NWT**
  - **Governments likely to restrict their participation in this EA so limited access to expert opinion**
- **Board and the developer should indicate their positions on participant funding for this EA as soon as possible, in advance of Developer's Assessment Report**

Other Outstanding Issues

- Role of Government
  - Unclear who 'responsible ministers' may be and what role DIAND and GNWT will play
  - Other parties to this EA deserve to know what roles government will play
- Board should consider retaining its own expert consultants for this EA
- Board should formally request that federal and territorial government departments indicate what role they intend to play and whether they should be considered 'responsible ministers'

Other Outstanding Issues

- Environmental Assessment vs. Environmental Impact Review
  - Advantages of EIR vs. EA
    - Need to examine the purpose of the development
    - Careful review of alternatives required
    - Monitoring and follow-up are critical for perpetual care
    - May provide access to participant funding
  - Determination of EIR must be based on a finding of significant adverse impacts and/or significant public concern

Other Outstanding Issues

- EA vs. EIR (continued)
  - Already evidence of significant impacts and public concern
    - Close proximity of development to the largest community in the NWT and the potable water supply for the City of Yellowknife
    - Risks involved in a catastrophic failure for underground arsenic
    - Scale and duration (forever) for management of underground arsenic
    - Use of frozen block method in a new setting
    - Public concern resulted in first ever referral by a municipal government
    - Yellowknives Dene First Nation has requested an EIR
- Board should conclude that the Plan be referred to an EIR now, based on potential for significant adverse environmental impacts and significant public concern

SUBMISSION TO

THE MACKENZIE VALLEY ENVIRONMENTAL

IMPACT REVIEW BOARD

FOR THE SCOPING HEARING

ON THE

GIANT MINE REMEDIATION PLAN

EA0809-001

By
Kevin O'Reilly
Yellowknife NT

July 15, 2008

GIANT MINE REMEDIATION PLAN SCOPING HEARING SUBMISSION

1.0 Personal Background

I am a 22-year resident of Yellowknife that has served in a variety of positions with federal, territorial and Aboriginal governments, and with non-governmental organizations. I served nine years on Yellowknife City Council from 1997 to 2006 including the period where the Giant Mine went into receivership.

I have had extensive involvement for my previous employers or as a private citizen on the Giant Mine and the development of the Remediation Plan, with a particular interest in the underground arsenic trioxide dust storage. Most recently, I participated in the Scoping Workshop conducted by your staff on June 17, 2008.

I have reviewed the water licence application for the Giant Mine Remediation Plan and some of the background information submitted by the applicants and would like to use this opportunity to present my thoughts on the scope of the development, scope of the assessment, and some other issues including participant funding and the role of governments in this process.

2.0 Introduction

The purpose of the hearing is set out in the June 3, 2008 invitation letter from the Mackenzie Valley Environmental Impact Review Board:

> to scope the issues that should be addressed during the environmental assessment…
>
> to present directly to the Review Board members their concerns regarding the Giant Mine Remediation Plan and its potential impacts on the people and environment of the Mackenzie Valley.

This is not a typical environmental assessment where a new development or undertaking is proposed, its effects studied, and recommendations are made to mitigate effects. This environmental assessment will review a remediation and management plan that is supposed to lessen existing and avoid potential future impacts. This development also proposes a perpetual care situation where the frozen block option must be maintained and monitored forever.

This is a very complex development attempting to avoid a catastrophic failure, involving evaluation of many alternatives, the need for a rigorous monitoring program, and with issues around remediation standards and the role of government.

3.0 Scope of Development

It will be necessary for the Board to have some understanding of the geographic extent of the environmental and socio-economic effects of the Giant Mine. This mine was never the subject of a

proper environmental assessment or review and began operations at a time before there was much if any environmental regulation.

The effects of the mine obviously extend well beyond the surface lease for the mining operation and should include consideration of the effects of the mine from the gold-roasting operation, wind borne movements of tailings, and aquatic impacts on Baker Creek, Back Bay and Yellowknife Bay. The human health effects of the mine potentially extend to the entire population of the City of Yellowknife and the Yellowknives Dene First Nation communities of N'dilo and Dettah.

The cumulative effects of all mining operations in the Yellowknife should be included in the scope of the assessment. This will by necessity include the impacts from the Burwash, Con, Rycon, and Negus mines and the effects they had on the people of the Yellowknife area and its environment, including the aerial and aquatic dispersion and deposition of contaminants into soil and water. It will be important to develop and consider a proper baseline for environmental and human health conditions before mineral development started. The Traditional Knowledge of the Yellowknives Dene First Nation will be essential for this work.

The Board will have to grapple with the legacy of this mining operation and a proper assessment of its impacts in determining whether the Remediation Plan actually addresses all of the significant effects from the mine now and into the future, and indeed forever, as the preferred remediation option requires perpetual care.

During the scoping workshop held on June 17, 2008 there was some discussion about whether the rerouting of the Ingraham Trail around the Giant Mine site should be considered part of the development. For the developer to proceed with the frozen block alternative for the underground arsenic trioxide, it will be necessary for the highway to be rerouted to accommodate the active freezing system and the forest of thermosyphons that will be required over the longer term. The same developer, namely the Government of the NWT is involved in both the rerouting and the Remediation Plan. I am of the view that the rerouting of the Ingraham Trail meets the three accessory development criteria in the Board's *Guidelines for Environmental Impact Assessment*— dependence, linkage and proximity (see pg. 28 of the *Guidelines*). There are obvious benefits for the City of Yellowknife in opening up new lands for development depending on the specific routing and there may be impacts as at least one of the possible routes would divide Fred Henne Territorial Park and adversely affect recreational opportunities. The effects of the rerouting should be considered as part of this environmental assessment. The Board may also find it necessary to request additional details on the rerouting.

Recommendation 1.

The scope of the development should include all of the environmental and socio-economic effects of the Giant mine, including those off the surface lease such as aerial and aquatic dispersion and deposition of contaminants. The temporal scope should begin with the development of the Giant mine with no end point as the developer has proposed a perpetual care option for the management of the underground arsenic.

Recommendation 2.

The consideration of cumulative effects should include the environmental and socio-economic effects of mining in the Yellowknife area from the Burwash, Con, Rycon, Negus and other mining activity.

Recommendation 3.

The scope of the assessment should include the rerouting of the Ingraham Trail as an accessory development and the impacts of various alternatives.

4.0 Scope of the Assessment

Section 117(2) of the *Mackenzie Valley Resource Management Act* (*MVRMA*) sets out the factors to be considered in environmental assessments:

> (*a*) the impact of the development on the environment, including the impact of malfunctions or accidents that may occur in connection with the development and any cumulative impact that is likely to result from the development in combination with other developments;
>
> (*b*) the significance of any such impact;
>
> (*c*) any comments submitted by members of the public in accordance with the regulations or the rules of practice and procedure of the Review Board;
>
> (*d*) where the development is likely to have a significant adverse impact on the environment, the need for mitigative or remedial measures; and
>
> (*e*) any other matter, such as the need for the development and any available alternatives to it, that the Review Board or any responsible minister, after consulting the Review Board, determines to be relevant.

It is important to note that additional factors are to be considered during an environmental impact review as follows (s. 117(3) of the *MVRMA*):

> (*a*) the purpose of the development;
>
> (*b*) alternative means, if any, of carrying out the development that are technically and economically feasible, and the impact on the environment of such alternative means;
>
> (*c*) the need for any follow-up program and the requirements of such a program; and
>
> (*d*) the capacity of any renewable resources that are likely to be significantly affected by the development to meet existing and future needs.

This submission will focus on the key issues and considerations that should be included in the scope of this environmental assessment and will present a case for the Board to move this development forward to an environmental impact review as the additional factors in s. 117(3) are essential for an effective review of the Giant Mine Remediation Plan and there is already sufficient evidence of the potential for adverse environmental impacts and significant public concern.

4.1 Legacy Issues

There has been a large body of research over the years into the Giant Mine and its environmental impacts. This includes airborne emissions, risk assessments, soil contamination studies, aquatic research and more. It will be important for the Board and interested parties to have access to this work and to understand its limitations.

Remediation of the Giant Mine is viewed very differently. The regulators (the Department of Indian Affairs and Northern Development and the Government of the Northwest Territories) and their consultants see this development as a technical and engineering challenge. With all due respect, many of these people will not have to live with the consequences of their advice or decisions.

The Giant mine is viewed with frustration and even anger by local residents due to the questionable environmental management and tragic labour dispute that rocked this community. No one has ever taken responsibility for the environmental mess at Giant and there has never been a formal apology.

Even worse, there is little evidence that there have been any lessons learned or that legally binding improvements have been made to mine closure practices and basic regulatory regimes. More specifically, the *Northwest Territories Waters Act*, *Commissioners Lands Act* and other legislation and regulations governing mine closure have not been changed in any substantive way for decades (see Wenig and O'Reilly 2005, already filed as part of this environmental assessment). There is no legislative or regulatory prohibitions that would prevent Giant mine from happening again. There has been little if any attempt to quantify or document the true costs and benefits of the Giant mine and the distribution of its effects across local populations and the environment.

For a start, I would like to see senior officials from the federal and territorial make a public apology for what happened at Giant with a clear commitment to improve the environmental management and closure requirements for mine closure. Only then can we begin the healing process and start to work together is a true spirit of cooperation and collaboration.

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* (already filed on the public registry) that was largely driven by community interests.

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 a 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.

Recommendation 4.

The developer should be directed to prepare and submit a detailed and comprehensive annotated bibliography on the Giant mine, its impacts, relevant regulatory standards and decisions (including the 1978 Canadian Public Health Association Arsenic Task Force), and background information used in putting together the Remediation Plan.

Recommendation 5.

The developer should be required to conduct a cost-benefit analysis of the Giant Mine that also considers the distribution of costs and benefits. As part of this analysis, there should be a section on the lessons learned from the Giant Mine and how mine closure practices and the regulatory regime for such closures has been improved, and the remaining changes that are still required with a timetable for implementation.

4.2 Focus on Evaluation Criteria, Options and Alternatives, and Trade-Offs in a Sustainability Framework

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.

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.

This environmental assessment is not a simple exercise to find the greatest good for residents of the Yellowknife area. This assessment should focus on carefully developing explicit criteria (that should reflect different values and interests) for evaluating alternatives and the distribution of costs and benefits amongst various groups and across future generations. This will require a thorough review that is grounded in a sustainability framework or approach.

There should be extra effort put into explaining and documenting the trade-offs amongst various options, particularly with regard to the management of the underground arsenic trioxide. There may be some utility in examining the sustainability trade-off rules developed by Dr. Robert Gibson in a paper prepared for the Mackenzie Gas Project Joint Review Panel as summarized below and detailed in Appendix 1:

- Maximum net gains
- Burden of argument on trade-off proponent
- Avoidance of significant adverse effects
- Protection of the future
- Explicit justification
- Open process

Recommendation 6.

The environmental assessment should adopt a sustainability framework or approach with a focus on evaluation criteria, options and alternatives, and explicit documentation of trade-offs.

4.3 Monitoring of the Frozen Block Option and Contingencies

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 freezepipes, 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.

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. I do not consider this information adequate even for an environmental assessment.

The lack of detail instills little public confidence that this perpetual care methodology has really been thought through carefully. There is also no information provided on how monitoring results will be reviewed internally as part of an overall environmental management system for the Giant Mine. There is also no information provided on how the monitoring results will be conveyed to local residents.

Recommendation 7.

Given that the preferred management option for the underground arsenic trioxide requires perpetual care, the developer should submit a detailed plan and program that includes monitoring locations, frequency, duration, tiered thresholds or triggers for management responses and contingencies. The plan

should include details on how the monitoring results will be used and managed, including communications with local residents.

Recommendation 8.

The developer should document the worst case scenario (catastrophic failure of the arsenic trioxide chambers) and its probability during implementation of the Remediation Plan and afterwards.

4.4 Funding Commitments and Ongoing Research and Development

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 along 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.

If the freezing option is accepted for management of the underground arsenic, there is a need for regular and periodic reassessment of the management regime (e.g. a new environmental assessment every 10 or 20 years) that should be supported through specific and coordinated sunset dates on any regulatory approvals to implement the freezing option. This will reinforce the need for ongoing research and development and encourage implementation of new technologies or methodologies.

Recommendation 9.

The developer should provide details on the funding process and certainty for carrying out the Remediation Plan and commitments for ongoing research and development into improved management or reprocessing of the underground arsenic trioxide.

Recommendation 10.

The developer should provide details on how the Remediation Plan should be reassessed periodically to encourage the implementation of new technologies and methodologies, particularly in relation to the management and monitoring of the underground arsenic trioxide.

4.5 Independent Oversight

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 the Remediation Plan that may require perpetual care. Such an approach will help to build public confidence. There are concerns the mixed roles and concentration of authority in DIAND. The Department will be responsible for managing and implementing the Remediation plan, inspections and enforcement of the water licence to carry out the work, the DIAND Minister will more than likely be a responsible minister under the *MVRMA* and will sign off on the water licence. This creates the sense of potential conflicts of interest and too many responsibilities in one agency. Independent oversight can help ensure that there are outside interests are brought to bear on the project including local residents and strong peer review.

> ***Recommendation 11.***
>
> ***The developer should provide an overview of various models and experiences with independent oversight of remediation projects or other relevant examples of independent oversight in Canada and elsewhere, and how these will be applied to thus development.***

4.6 Policy Context and Remediation Standards for Mine Closure and Reclamation

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. There should be clear descriptions of all monitoring programs including locations for sampling and the rationale for selection, methodology to be employed, frequency, duration, 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.

Environment Canada, in its submission during the preliminary screening of the water licence and the Remediation Plan, has indicated that it is questionable whether the Plan meets DIAND's own Mine Site Reclamation Guidelines for the Northwest Territories (2006, filed as part of this environmental assessment):

> …there does not seem to be a clear discussion of reclamation objectives, performance criteria, and proposed end land use for each mine component in their respective introductory sections. (Environment Canada letter dated January 21, 2008)

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.

The Remediation Plan does not recognize or facilitate the City of Yellowknife's demonstrated interest in the future land and water use at the mine site (see Giant Mine Abandonment and Restoration: Preliminary Identification Of The Issues And Potential Impacts on The City Of Yellowknife. Final Report. March 30, 2007; and Giant Mine Lease Area Land/Water Use Plan. Revision 4. June 4, 2006. Both documents filed on the public registry.).

Recommendation 12.

The developer should be required to show how the Remediation Plan complies with the existing mine closure regulatory and policy regime, and overall best practices.

Recommendation 13.

The developers should be required to provide full justification for the specified remediation standards (with particular regard to contaminated soils) and any supporting documentation. Details on how the Remediation Plan reflects local interests and values should also be provided.

4.7 Local Impacts and Benefits

There are concerns about the local impacts and costs of the Remediation Plan for Yellowknife residents as a result of non-payment of municipal taxes for the property, possible use of the municipal landfill for demolition or other materials, energy requirements for the active freezing system and effects on local electricity peak loads and capacity, and the cost implications for other electricity consumers.

It is unclear how NWT residents and Aboriginal peoples will benefit from whatever management takes place in terms of contracting and employment. Wherever possible, use of the former mine employees should be encouraged for their operational knowledge of the site, its facilities and impacts.

Recommendation 14.

The developer should identify and document the local impacts and costs of the Remediation Plan including effects on municipal taxes, use of municipal infrastructure, and cost implications for electricity consumers.

Recommendation 15.

The developer should clearly indicate what policies and regulations may be in place for employment and contracting related to the implementation of the Remediation Plan and what specific measures will be used to maximize local economic benefits. The developer should also indicate how the knowledge of former mine employees was used to develop the Remediation Plan.

5.0 Other Outstanding Issues

5.1 Participant Funding

I have already raised the issue of participant funding for this environmental assessment and have yet to receive a response. 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.

I note that DIAND has now set a precedent for participant funding for a northern environmental assessment outside of the *Canadian Environmental Assessment Act.* DIAND recently made announced over $340,000 of participant funding for the Nunavut Impact Review Board Part 5 review of the Bathurst Inlet Port and Road Project (see letter dated May 15, 2008 filed on the public registry).

Given the amount of information available on the Giant Mine, its environmental effects, the proposed Remediation Plan and supporting documents, it is essential that participant funding be made available for meaningful participation. I anticipate that governments will restrict their participation as the proponents of this development which makes participant funding even more critical.

> ***Recommendation 16.***
>
> ***The Board and the developer should clearly indicate their respective positions on participant funding for this environmental assessment of the Giant Mine Remediation Plan as soon as possible, and well in advance of the review of the developer's assessment report.***

5.2 Role of Government in the Environmental Assessment

I raised the issue of which Minister or Ministers have been deemed "Responsible Ministers" under the *Mackenzie Valley Resource Management Act* (*MVRMA*) for this Environmental Assessment at the Scoping Workshop yesterday. I also wish to know which federal and territorial government departments wish to be considered "expert advisors" to the Board. The response I got from Board staff was that this has not been resolved.

I am aware that the Department of Indian Affairs and Northern Development indicated in a letter dated March 17, 2008 to the Mackenzie Valley Land and Water Board (now on the public registry for this environmental assessment) stated:

> INAC [Indian and Northern Affairs Canada] will not be participating as an intervener on water licence application [*sic*] for this project. INAC plans to make full use of its resources and expertise, including those INAC officials who would typically perform intervener review and comment, to support its role as the proponent of the undertaking.

It is not clear to me whether DIAND will take the same approach during this Environmental Assessment or whether the Government of the Northwest Territories will similarly restrict its participation. This reinforces my point above on the need for clarity on the role that governments intend to play in this Environmental Assessment. If governments do not intend to fully participate, this will seriously affect the ability of the Board and others to conduct a thorough and informed review.

Parties to this Environmental Assessment need to understand what role various government departments and agencies intend to play. This information is needed for all parties to properly participate.

Recommendation 17.

The Board should seriously consider the need to retain its own expert consultants to provide technical advice during this Environmental Assessment.

Recommendation 18.

The Board should formally request, as soon as possible, that federal and territorial departments and agencies clearly indicate what role they intend to play during this Environmental Assessment, and more specifically, whether they wish to be deemed Responsible Ministers or expert advisors to the Board.

5.3 Written Reasons for Decision on the Scope of the Assessment

It would also be helpful for the Board to issue Reasons for Decision regarding its determination on the scope of the development and the scope of the assessment as required under s. 121 of the *MVRMA*.

5.4 Environmental Assessment versus Environmental Impact Review

In my view, there are several advantages to conducting the review of the Giant Mine Remediation Plan as an Environmental Impact Review (EIR) versus an Environmental Assessment. Given that this is not a typical environmental assessment, the developer proposes a perpetual care option for a key part of the development (the management of the underground arsenic trioxide), monitoring and follow-up are critical. The case for a careful evaluation of alternatives and their relative costs and benefits should be documented through a rigorous sustainability approach with details on trade-offs. These factors are precisely the additional considerations for an EIR as noted above.

An EIR of this development may also provide access to participant funding which is essential for a meaningful review given the restricted roles that governments are likely to play, and the complexity of the proposed Remediation Plan.

An EIR also ensures that the Panel report includes an account of the Panel's analysis and recommendations for mitigation and follow-up (see s. 134(2) of the *MVRMA*).

A determination of whether to proceed to an EIR is to be based on whether the development is likely in the Board's opinion to have a significant adverse impact on the environment or where the development is likely in its opinion to be a cause of significant public concern (see s. 128(1)(b)(i) and 128(1)(c) of the *MVRMA*).

The Board has set out some guidance with regard to these matters in its *EIA Guidelines* (see pgs. 18-19) in providing guidance on whether a development should be referred for an Environmental Assessment:

> Significant Adverse Environmental Impacts
>
> • Development scale: Larger developments often have more potential to cause significant adverse impacts.
> • Development location: Development projects in, near or upstream of protected or potential protected areas, areas used for hunting, fishing, and trapping, or areas of known ecological sensitivity might cause significant adverse environmental impacts;
> • Nature of the activity: Some activities typically involve more environmental risk than others, due to factors such as (but not limited to):
> • the degree of disturbance;
> • involvement of hazardous chemicals or effluents;
> • major infrastructure requirements;
> • changes to access;
> • use of a new technology, or known technology in an unfamiliar setting;
> • social changes to community structure (i.e. influx of migrant workers to a community); or,
> • changes to stress on existing social services.
>
> Significant Public Concern
>
> 1. Development scale: Larger developments often affect more people, and their proposal may generate public concern.
> 2. Proximity to communities: People are often concerned with developments in their vicinity, so the closer a development is to a community, the more concern may be caused.
> 3. New technology: Where a proposed development uses a new type of technology or one that has never been used in the North before, people's unfamiliarity with the type of development could generate concern.

4. Severity of Worst Case Scenarios: Typically, there will be more concern over a development the more severe its worst case malfunction scenario is.
5. Proximity to protected or sensitive areas: There is typically more potential for public concern for developments in, around or upstream of protected areas (such as parks or reserves), or ecologically sensitive areas (such as calving or spawning grounds).
6. Areas known for harvesting: The closer a development is to a good hunting, fishing or trapping area, the more there may be public concern associated with it.

I am of the view that the Giant Mine Remediation Plan should proceed immediately to an EIR based on the following:

- the close proximity of the development to the largest community in the Northwest Territories and the potable water supply for the City of Yellowknife;
- the risks involved with a worst case scenario of a catastrophic failure of the underground arsenic trioxide storage chambers;
- the scale and duration into perpetuity for management of the underground arsenic trioxide;
- use of the frozen block method in a new setting, namely areas underneath Baker Creek; and
- the public concerns already expressed that resulted in the referral of this development to an environmental assessment by the City of Yellowknife, the first time a municipal government has ever made a referral.

Recommendation 19.

The Board should conclude from the scoping hearing and submissions to date, that the Giant Mine Remediation Plan be referred to an Environmental Impact Review based on the potential for adverse environmental impacts and significant public concern.

APPENDIX 1

Sustainability Assessment Trade-Off Rules

As set out in a report prepared for the Mackenzie Gas Project Joint Review Panel by Dr. Bob Gibson, *Sustainability-based assessment criteria and associated frameworks for evaluations and decisions theory, practice and implications for the Mackenzie Gas Project Review.*

http://www.ngps.nt.ca/Upload/Joint%20Review%20Panel/Specialist%20Advisors/Dr.%20Robert%20Gibson/sust_asmt_MGP_fnl.pdf

Maximum net gains

Any acceptable trade-off or set of trade-offs must deliver net progress towards meeting the requirements for sustainability; it must seek mutually reinforcing, cumulative and lasting contributions and must favour achievement of the most positive feasible overall result, while avoiding significant adverse effects.

Burden of argument on trade-off proponent

Trade-off compromises that involve acceptance of adverse effects in sustainability-related areas are undesirable unless proven (or reasonably established) otherwise; the burden of justification falls on the proponent of the trade-off.

Avoidance of significant adverse effects

No trade-off that involves a significant adverse effect on any sustainability requirement area (for example, any effect that might undermine the integrity of a viable socio-ecological system) can be justified unless the alternative is acceptance of an even more significant adverse effect.

- Generally, then, no compromise or trade-off is acceptable if it entails further decline or risk of decline in a major area of existing concern (for example, as set out in official international, national or other sustainability strategies or accords or as identified in open public processes at the local level), or if it endangers prospects for resolving problems properly identified as global, national and/or local priorities.
- Similarly, no trade-off is acceptable if it deepens problems in any requirement area (integrity, equity, etc.) where further decline in the existing situation may imperil the long term viability of the whole, even if compensations of other kinds, or in other places are offered (for example, if inequities are already deep, there may be no ecological rehabilitation or efficiency compensation for introduction of significantly greater inequities).
- No enhancement can be permitted as an acceptable trade-off against incomplete mitigation of significant adverse effects if stronger mitigation efforts are feasible.

Protection of the future

No displacement of a significant adverse effect from the present to the future can be justified unless the alternative is displacement of an even more significant negative effect from the present to the future.

Explicit justification

All trade-offs must be accompanied by an explicit justification based on openly identified, context specific priorities as well as the sustainability decision criteria and the general trade-off rules. Justifications will be assisted by the presence of clarifying guides (sustainability policies, priority statements, plans based on analyses of existing stresses and desirable futures, guides to the evaluation of 'significance', etc.) that have been developed in processes as open and participative as those expected for sustainability assessments.

Open process

Proposed compromises and trade-offs must be addressed and justified through processes that include open and effective involvement of all stakeholders.

Relevant stakeholders include those representing sustainability-relevant positions (for example, community elders speaking for future generations) as well as those directly affected.

While application of specialized expertise and technical tools can be very helpful, the decisions to be made are essentially and unavoidably value-laden and a public role is crucial.