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STAFF REPORT

Company: INAC – Contaminants and Remediation Directorate	
Location: Giant Mine	Application: MV2007L8-0031
Date Prepared: February 13, 2008	Meeting Date: February 21, 2008
Subject: New “Type A” Water License Application	

1. Purpose/Report Summary

The purpose of this Staff Report and Board Package is to obtain a Board Preliminary Screening decision regarding this new “Type A” Water Licence application submitted by Contaminants and Remediation Directorate – INAC (CARD) to conduct closure and reclamation activities at the Giant Minesite. This is outlined in CARD’s Giant Mine Remediation Plan and its associated documents.

2. Background

- Water License Application Received: October 19, 2007
- Deemed complete: October 26, 2007
- Sent out for public review: October 26, 2007
- Original Comment deadline: December 7, 2007
- Comment deadline extended until: January 21, 2008
- Application being presented to the Board: February 16, 2008

CARD has applied for a Type “A” Water License (WL) to perform full-scale environmental reclamation of the former Giant Mine Site for a period of up to 10 years. (See figure 2.2.2 for major site Features). The 10-year duration of the WL would facilitate overlap between remediation activities and interim care and maintenance activities. The implementation phase of this unique project will take approximately 10 years, however, long-term maintenance and performance monitoring will be required for an indefinite period of time. The WL period is anticipated to begin in 2010 (or earlier) until approximately 2020. (See attached “Implementation Schedule” – Figure 8.1.1). “Depending on contractor availability it is anticipated that

most major surface activities would be completed over a period of 5 years. The ground freezing would be substantially complete 9-10 years after implementation. The undertaking would then enter a long term monitoring and maintenance phase.” (WL application, Page 13)

All remediation activities will take place within the boundaries of former lease L-3668T (now designated as Reserve R662T), exceptions include: the areas of the former Giant Mine “Townsite”; and an area of historic tailings deposition along the north shore of the Yellowknife Bay. (See attached figure 1.1.1 for Site Location Information)

The mine is on Commissioners land, administered by the Government of the Northwest Territories Department of Municipal and Community Affairs (MACA) and includes everything within the boundaries of former Lease L3668T that was surrendered in 2005: subsurface mineral rights are under federal jurisdiction and have been withdrawn by Order in Council SI/2005-55 June 15, 2005.

The specific objectives of the remediation activities as stated in the Giant Mine Remediation Plan are:

1. To manage the 237,000 tonnes of underground arsenic trioxide dust in a manner that will prevent the release of arsenic to the surrounding environment, minimize public and worker health and safety risks during implementation, and be cost effective and robust over the long term;
2. To remediate the surface of the site to the industrial guidelines under the NWT Environmental Protection Act, recognizing that portions of the site will be suitable for other land uses with appropriate restrictions;
3. To minimize public and worker health and safety risks associated with buildings, mine openings and other physical hazards at the site;
4. To minimize the release of contaminants from the site to the surrounding environment; and
5. To restore Baker Creek to a condition that is as productive as possible, given the constraints of hydrology and climate.

The Giant Mine Remediation Plan consists of the following 12 components. See the attached Project Summary for further detail on each component:

1. **Arsenic Trioxide Dust Storage Areas.** Under the “frozen block” method, the ground under and around the arsenic trioxide dust stopes and chambers would be frozen to prevent any escape of arsenic. The interior of the frozen shell would then be flooded and also frozen”. (pg. 125, Giant Mine Remediation Plan).

This remediation component includes: the freezing of 237,000 tonnes of arsenic contaminated dust (consisting of a concentration of approximately 60% Arsenic) into the ground in former underground chambers and stopes; the installation of freeze pipes below and around the 16 underground chambers and stopes (frozen blocks); and the construction and maintenance of a Freeze Plant.

2. **Other Underground Mine Components.** This remediation component includes: closure of openings to surface (adits, portals, shafts); and the removal of sources of hydrocarbon/other contamination prior to flooding.
3. **Open Pits.** This remediation component includes: the backfilling of approximately 330,00m³ of material into the B1 pit; other work on the C1; B3 pit will have the slopes of the pit pushed in to partially fill the excavation; B4 pit walls will be regraded to shallower slopes; Brock pit will be backfilled and the entrances blocked.
4. **Waste Rock.** This remediation component includes: the remediation and salvage of waste rock on various mine roads and other infrastructure to be used for backfill into pits.
5. **Tailings and Sludge.** This remediation component includes: regrading and installation of covers on the polishing/settling and tailings Ponds
6. **Historic Foreshore Tailings.** This remediation component includes: extension of the geotextile and rip-rap cover below the lake surface to cover the tailings where they occur in the littoral zone.
7. **Site Water Management.** This remediation component includes: the year-round operation of proposed Water Treatment Plant; underground storage of contaminated water for treatment; the year-round discharge of treated water into Yellowknife Bay.
8. **Baker Creek.** This remediation component includes: please see attached figure 5.8.1.Baker Creek Restoration for a summary of Baker Creek remediation activities.
9. **Quarries, Borrow Pits, and Overburden Piles.** This remediation component includes: the resloping of borrow pit walls and the regrading of the bottom to allow free drainage; exposed surfaces will be revegetated.

10. **Contaminated Surficial Materials.** This remediation component includes: the excavation or covering of all areas with concentrations exceeding the industrial land use criterion; the backfilling of approximately 60,000m³ of contaminated material into B1 Pit within the frozen zone; disposal of approximately 115,000m³ into the tailings and/or sludge ponds; backfilling of waste rock with concentration exceeding the industrial land use criterion into the unfrozen section of B1 Pit; excavation of spilled tailings below the polishing pond and placement into the existing tailings impoundment and covered with existing tailings; the disposal of any high arsenic material from the spilled tailings will be disposed of into the frozen zone of B1 Pit.
11. **Buildings and Infrastructure.** This remediation component includes: the demolition of any unused mine buildings and infrastructure; relocation of Highway #4.
12. **Waste Storage and Disposal Areas.** This remediation component includes: the removal and disposal of hazardous materials (ie asbestos) into the northwest tailings; off-site disposal of other hazardous materials.

3. Discussion

Comments received from the Yellowknife Dene First Nation (YKDFN) and The City of Yellowknife (The City) during the public review process indicate the need for further participation and dialogue to communicate, describe and understand the technical aspects of the project. (See attached letters) The application's supporting documents are technical in nature and it is reasonable that some reviewers could feel overwhelmed with the volume of information associated with this application.

A Board decision is required to determine which direction the MVLWB will take at this time. Board Staff are presenting the following two options for discussion and decision:

1. The Board could decide to approve the Preliminary Screening and refer the application to the MVEIRB for a full Environmental Assessment based on the likelihood that the proposed development might be a cause for public concern, or
2. The Board could decide to approve the Preliminary Screening and move forward in the licensing and hearing process, and establish a Working Group once the Water License is in place.

Both options may be feasible at this point in time, however, based on S. 125 (1) of the MVRMA,
“Except as provided by subsection (2), a body that conducts a preliminary screening of a proposal shall

- (a) determine and report to the Review Board whether, in its opinion, the development might have a significant adverse impact on the environment or might be a cause of public concern; and*
- (b) where it so determines in the affirmative, refer the proposal to the Review Board for an environmental assessment.*

Board Staff is of the impression that the Board should heed the concerns of the YKDFN and The City of Yellowknife as they may potentially represent the overall public perception of the Giant Mine Remediation Plan. This is further supported by Section 2.7 Performing the “Might” test of the March 2004 Environmental Impact Assessment Guidelines published by MVEIRB:

Although there is no clear formula for determining public concern, the following are examples where, in the Review Board’s experience, public concern could be an issue. Note that this list is similar to that of the factors that might cause significantly adverse environmental impacts (above). The two are sometimes, but not always, related:

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 there 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 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.

Where a development invokes any of these, the Preliminary Screener should be particularly careful to identify and gauge concerns, for consideration in the “might” test.

The number of concerns voiced may be a factor to the screener in gauging public concern, but is not necessarily the only factor. Although a large number of voiced concerns could lead to a referral, even a small number of voiced concerns may do so, depending on the reasons for the concern. If a single concern is well justified by relevant reasons, this could be more important to the Preliminary Screening than many unsupported letters.

When identifying public concern, it may be valuable to consider whether the proposed development is being discussed in the media (radio, TV, newspapers, etc.), whether letters of concern have been submitted, whether there is a history of concerns about the area, whether the proposed type of development has caused controversy in the past, and so on. (pg. 19, EIA Guidelines. Mackenzie Valley Environmental Impact Review Board)

Board staff consider the above six examples of potential for public concerns written by MVEIRB applicable to this remediation project.

4. Comments

n/a

5. Review comments

To date, MVLWB has directly received comments from: (1) The Department of Transportation; (2) Prince of Wales Heritage Center; (3) Yellowknives Dene First Nations; (4) City of Yellowknife; (5) Environment Canada. (See attached Comment Summary Table).

The Yellowknives Dene First Nations have made the following statements:

- “We believe that there are a large number of unresolved issues and indeed some of the impacts of the remediation are not well known.”
- “While extensive studies have been conducted we believe that the technology which is being proposed in relatively new, is untried and must be examined in depth.”
- “We believe that it is essential that there be a full impact review and Public Hearing of this Application so that there be a complete and open discussion that all interested parties may attend and provide their input”
- “We nonetheless feel that full Environmental Assessment be conducted of the proposed project before it is allowed to proceed.”

The City of Yellowknife has made the following statement:

- “Due to the proximity of this site to the City and its’ residents, it is imperative that remediation be carried out properly and the City would appreciate ongoing involvement either through a Working Group or other process.”

Through the Federal Contaminated Sites Action Plan (FCSAP) the following agencies have had an opportunity to review the project and provide feedback indirectly (1) Environment Canada, (2) Fisheries and Oceans Canada, (3) Health Canada (attached). “EC believes that the concerns raised in June 2005 were, in general adequately addressed. However, under the Section “Openings to surface”, EC would suggest that once flooding and any such holes being to flow, that their quality be confirmed as benign”. (EC letter dated: January 21, 2008).

6. Security

As the project is being completed by the Crown, security is not required.

7. Conclusion

MVLWB Staff conclude that this application might be a cause of public concern. This conclusion is based on reviewer comments, and MVEIRB’s “Performing the “Might Test” criteria within the EIA Guidelines.

A Board decision is required to determine which direction in the Licensing process the MVLWB would like to take at this time. Board Staff are presenting the two options for discussion:

1. The Board could decide to approve the Preliminary Screening and refer the application to the MVEIRB for a full Environmental Assessment based on the likelihood that the proposed development might be a cause for public concern, or
2. The Board could decide to approve the Preliminary Screening and move forward in the licensing and hearing process, and establish a Working Group once the Water License is in place.

However, according to the submissions (attached) it is unknown whether the concerns and issues of the YKDFN can be adequately addressed during the public hearing and licensing process. Since the formation of a Giant Mine Working Group can only be developed after the Water License has been issued, it is recommended that the Board heed the concerns brought forward by the Yellowknives Dene First Nations and consider this project for Environmental Assessment based on the potential that this project might be a cause of public concern.

8. Recommendation

I recommend the Board approve the attached Draft Preliminary Screening, and refer this project to MVEIRB for an Environmental Assessment based on the likelihood that the proposed development might be a cause of public concern.

9. Attachments

- Water License Application (MV2007L8-0031)
- CD Copy of the Giant Mine Remediation Plan;
- CD Copy of the Giant Mine Remediation Plan Supporting Documents;
- Remediation Plan Summary;
- Comment Summary Table;
- YKDFN Letter received: January 18, 2008;
- The City of Yellowknife letters received January 2008;
- Map of Major Site Features (Figure 2.2.2);
- Map of Site Location (Figure 1.1.1);
- Giant Mine Remediation Implementation Schedule (Figure 8.1.1);
- Tailings Cover Conceptual Design (Figure 5.5.5);
- Dust Storage Chambers and Stopes (Figure 3.1.1);
- Location of Freeze Pipes and Freeze Plant at Surface (Figure 5.1.7);
- Approximate Limit of Tailings and Arsenic in Lake Sediments (Figure 3.6.1);
- Location of Arsenic Contaminated Surficial Materials (Figure 3.10.1);
- Baker Creek Habitat Restoration (Figure 5.8.1); and
- Draft Preliminary Screening.

Respectfully submitted,



Kathleen Graham
Regulatory Officer