



Mackenzie Valley Land and Water Board
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Staff Report

Applicant: Department of Indian Affairs and Northern Development – Giant Mine Remediation Project	
Location: Giant Mine Site	File Number: MV2019X0007 and MV2007L8-0031
Date Prepared: April 17, 2019	Date of Board Meeting: May 1, 2019
Subject: Giant Mine Remediation Project – Further Studies Required	

1. Purpose

The purpose of this Report is to present to the Mackenzie Valley Land and Water Board (MVLWB/the Board) a request that the Board consider that future studies or investigations be made for Giant Mine Remediation Project’s Land Use Permit (Permit) Application MV2019X0007 as per paragraph 22(2)(b) of the Mackenzie Valley Land Use Regulations (MVLUR).

2. Background

- October 18, 2007 – Department of Indian and Northern Affairs Canada (DIAND) applied for Type A Water Licence (Licence), MV2007L8-0031 to cover the remediation of Giant Mine and ongoing maintenance and monitoring of the site;
- October 26, 2007 – Licence Application deemed complete and distributed for review;
- February 21, 2008 – The Board decided to approve the preliminary screening and proceed with the Regulatory Process with the understanding that any impacts of the development on the environment could be mitigated through the imposition of terms and conditions in a Water Licence and that there was not a likelihood of significant adverse impacts on the environment or probable cause of public concern;
- March 31, 2008 – The City of Yellowknife referred Licence Application MV2007L8-0031 to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for Environmental Assessment;
- June 20, 2013 – MVEIRB released its Report of Environmental Assessment (EA 0809-001) for the Giant Mine Remediation Project;
- August 11, 2014 – The Minister of DIAND provided approval of the EA, including modified measures;
- August 20, 2014 – MVLWB requested DIAND to submit an updated Project Description and supporting documents in order to recommence the water licencing process;
- September 5, 2014 – DIAND responds to the Board’s request for an updated Project Description and refers to the need to address measures as approved by the Minister prior to recommencing the licencing process;
- August 4, 2017 – Board staff follow up with DIAND for an update on the status of the Project;
- August 18, 2017 – DIAND response with Project update provided to the Board;

- April 1, 2019 – Post-EA Information Package and Land Use Permit Application MV2019X0007 received;
- April 10, 2019 – Post-EA Information Package and Permit Applications deemed complete and review commenced;
- **May 1, 2019 – Further Studies Required request presented to the Board;**
- May 12, 2019 – end of the 42-day timeline for the Permit; and
- May 16, 2019 – Reviewer comments due.

3. Discussion

Project History

The Giant Mine, located in Yellowknife, produced gold from 1948 until 1999. After the mine owner (Royal Oak Mines Ltd.) went into receivership in 1999, the mine was transferred to Indian and Northern Affairs Canada (DIAND). Immediately thereafter, DIAND entered into an agreement by which Miramar Giant Mine Ltd. continued to operate the mine, with the gold ore shipped offsite for processing, from 1999 until 2004. Mining ceased in July 2004 and DIAND again took control of the site. The Giant Mine became "orphaned and abandoned" when Miramar Giant Mine Ltd. was assigned into bankruptcy.

Regulatory Procedural History

The surface land lease for Giant Mine, L-3668T, was returned to the GNWT following the operations of the mine. The GNWT subsequently established a reserve in favour of DIAND, Reserve R662T, with the same boundaries as the former lease. DIAND, now Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), remains in control of the site and has contracted Parsons Canada (Parsons) as the Main Construction Manager (MCM). Parsons will continue the required maintenance and environmental management activities at the Giant Mine Remediation Site. All activities will take place within the boundaries of the former lease L-3668T, with two exceptions, the areas of the former Giant Mine "Townsite", and an area of historic tailings deposition along the north shore of the Yellowknife Bay. These additional areas are being added to the reserve lands under DIAND responsibility. The entire Project is located within the limits of the City of Yellowknife.

GNWT is a co-proponent with the Government of Canada on the Giant Mine Remediation Project (GMRP or Project), as established with the signing of the 2005 Cooperation Agreement.

On October 19, 2007 DIAND Contaminants and Remediation Division (CARD) submitted to the MVLWB their Type A Water Licence Application with accompanying Giant Mine Remediation Plan and supporting documents for the remediation of the Giant Mine Site. On February 21, 2008 the Board decided to approve the preliminary screening and proceed with the regulatory process with the understanding that any impacts of the development on the environment could be mitigated through the imposition of terms and conditions in a Water Licence and that there was not a likelihood of significant adverse impacts on the environment or probable cause of public concern. On March 31, 2008, however, the City of Yellowknife referred Licence Application MV2007L8-0031 to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for Environmental Assessment (EA) on the basis that the proposed activities to take place during the term of the Water Licence would have, in the City's opinion, an adverse impact on the environment within its municipal boundaries.

Following the City's referral, EA 0809-001 was initiated by MVEIRB. On June 20, 2013, MVEIRB released its Report of Environmental Assessment (REA) for the GMRP and on August 11, 2014, the Minister of DIAND provided approval of the REA, including modified Measures. Since 2014, the Project Team has

worked towards fulfilling the requirements of the 26 Measures set forth in the REA before re-applying for the authorizations needed to complete the Giant Mine Remediation Project.

On April 1, 2019, the Giant Mine Remediation Team (GMRT) submitted its Post-EA Information Package for Water Licence MV2007L8-0031 and Land Use Permit Application MV2019X0007 to the Board.

Description of Application

The Giant Mine Remediation Project as applied for under MV2007L8-0031 consisted of the following components:

1. Underground freezing of the Arsenic Trioxide dust storage areas using the "Frozen Block" method.
2. Clean-up and disposal of other underground mine components and waste material.
3. Remediation of currently existing open pits through:
 - a) the backfilling of B1 Pit with contaminated soils, waste rock, clean demolition waste, and quarried rock, frozen, covered and vegetated; and
 - b) the prevention of public access to all other open pits.
4. The recontouring and covering of surface tailings and sludge containment areas to allow for revegetation and future recreational or traditional use of the site.
5. Ongoing, year-round, long-term treatment of underground and surface waters discharged via a diffuser to Yellowknife Bay.
6. Diversion of Baker Creek into a new channel around the areas where it poses a risk to the underground workings and possible excavation of contaminated sediment.
7. Excavation of contaminated soils (an estimated 328,000 cubic metres) and mine rock to be disposed of within the frozen portion of B1 Pit or into the Tailings Ponds.
8. The closure and remediation of other surface mine components (infrastructure, mine openings and mine roads):
 - a) arsenic-contaminated materials removed and placed underground in the empty chamber 15; and
 - b) relocation of highway.
9. The covering of the historic foreshore tailings in the Great Slave Lake.

Changes in the Project since the 2007 Application as a result of the Environmental Assessment and/or public engagement include:

1. Implementation of a passive freeze system, using a dry method (i.e., a frozen shell).
2. Backfill open pits fully or partially; water diversions/berms and scour protection materials will be installed when needed to reduce risk of water from Baker Creek entering pits. Engineered covers will be installed where needed to protect underground water quality/quantity.
3. Place contaminated soils in A1 Pit (with possible placement in B2 Pit if needed).
4. Re-contour A1 Pit and A2 Pit highwalls.
5. Excavate contaminated sediments in Baker Creek bed and banks down to bedrock or underlying native soils to reduce arsenic loadings to receiving environment.
6. Remediate Townsite/Marina area soils to residential standards.
7. Partial excavation and covering of Shoreline Lands including shoreline soils and near-shore sediments along Townsite area, to Foreshore Tailings cover.
8. Expansion of remediation efforts of tailings-impacted soil down-gradient of Dam 3 to industrial standards.
9. Fence forested terrain, wetlands, and bedrock areas to encompass area most impacted by Roaster emission fallout, a radius of approximately one kilometer from the roaster.

10. Place a coarse rock cover with a geosynthetic liner over tailings ponds.
11. Relocate South Pond and consolidate in North and Central Ponds to reduce tailings footprint.
12. Minewater will be treated using an ion exchange method to meet the arsenic concentration of 10 µg/L and approved effluent quality criteria (EQC) for all other parameters of concern at the point of discharge.
13. Install a near-shore outfall in the vicinity of Baker Creek.
14. Expansion of onsite borrow areas for required rock material.
15. Install a freshwater intake in Yellowknife Bay.
16. Construction of long-term underground access.
17. Development of a wetland treatment system or use of other passive treatment technology in Baker Creek. *
18. Partial controlled raise of the minewater elevation in underground mine workings. *
19. Continued research in area north of Dam 3 on North Pond (in addition to Modification #8), to identify whether further remediation efforts in this area would be valuable. *

*Potential changes in the Project

Fees

No Application fees were required, as set out by Section 20 of the MVLUR, as the Applicant is the federal government.

Term

The GMRT has applied for a term of 5 years for its Land Use Permit and 20 years for its Water Licence. Project Schedules provided with the Closure and Reclamation Plan and Updated Project Description show Phase 1 active remediation activities occurring until at least 2031. Once complete, active monitoring and, if necessary, adaptive management activities will occur under Phase 2 of the closure plan for as long as necessary. The GMRP will not enter Phase 3, post-closure monitoring and maintenance, until all closure activities are confirmed to be completed. EA0809-001 specified a time limit of 100 years on the Giant Mine Remediation Project with additional requirements for long-term assessment. Water treatment is expected to continue into the long-term (project life of 100 years) and will require ongoing operation. It is anticipated a new water licence application will be submitted as the project enters post-closure, as has been done for other remediation projects in the Mackenzie Valley.

4. Comments

Triggers

The activities as described trigger a Type A land use permit as per paragraph 4(b) of the MVLUR:

- (b) On land within or outside the boundaries of a local government,*
 - (i) The use of motorized earth-drilling machinery the operating weight of which, excluding the weight of drill rods, stems, bits, pumps and other ancillary equipment, equals or exceeds 2.5 t, for a purpose other than the drilling of holes for building piles or utility poles or the setting of explosives within the boundaries of the local government; and (iv) The use of a stationary motorized machine, other than a power saw, for hydraulic prospecting, moving earth or clearing land.*

The activities as described trigger a water licence as per Schedule VII of the Mackenzie Valley Federal Areas Waters Regulations (MVFAWR):

1. Direct water use – use of up to 1,200 cubic metres per day (Type A)
2. (2) Watercourse training including channel and bank alterations, spurs, culverts, erosion control, and artificial accretion – the banks of Baker Creek will be widened and realigned in sections; Yellowknife tailings will be excavated and capped; and a constructed wetland may be established (Type B).
2. (5) Alteration of flow or storage by means of dams or dikes – storage of more than 60,000 m³ behind existing dykes and underground (Type A).
3. Deposit of waste – treated effluent, contaminated soils, etc. (Type B).

Description of Request

According to paragraph 22(2)(b) of the MVLUR, the Board shall, within 42 day after receipt of a complete application, conduct a hearing or require that further studies or investigation be made respecting the lands proposed to be used in the land use operation and notify the Applicant in writing of the reasons for the hearing, studies or investigations. In its cover letter for the Water Licence and Land Use Permit Applications, the GMRT acknowledged that it expected the Permit process to be aligned with the Licence according to paragraph 22(2)(b).

Public Hearings for the Giant Mine Remediation Project are scheduled in a draft work plan for January 2020. The Type A Land Use Permit Application MV2019X0007 is directly associated with the Type A Water Licence MV2007L8-0031 and was submitted jointly with the Post-EA Information Package. In order to allow the Board, reviewers, and the GMRT to review and discuss recommendations on the Applications, Board staff suggest that it is prudent for the Board to assess the Giant Mine Remediation Project as a whole. Additional information, further studies or investigations are required respecting the lands proposed to be used in the land use operation. Required further studies include geochemical studies on potential quarry locations, the impacts of the consolidation of highly contaminated wastes into the open pits, the proposed fencing of highly contaminated forest/wetland/bedrock areas, and final remediation standards. In order to allow a procedurally fair process, review of all land use activities in concert with water use and waste deposits through the Type A Water Licencing process is recommended.

The time required to obtain the additional information described above will facilitate the concurrent review and processing of the Giant Mine Remediation Project Water Licence and Land Use Permit.

5. Security

Not applicable in accordance with Section 94 of the Mackenzie Valley Resource Management Act: Notwithstanding section 7, Her Majesty in right of Canada and, for greater certainty, the territorial government shall not be required to post security pursuant to section 71.

6. Conclusion

Board staff suggest that additional information respecting the lands proposed to be used in the Giant Mine Remediation Project are required. In order to accommodate the time required for further studies or investigations to address the outstanding information, as well as to provide adequate time for reviewers to consider the Land Use Permit Application in line with the associated Water Licence Application, the Board could invoke paragraph 22(2)(b) of the MVLUR.

7. Recommendation

Board staff recommend the Board **make a motion to invoke paragraph 22(2)(b) of the MVLUR** for Land Use Permit Application MV2019X0007 to allow additional time to gather information respecting the lands proposed to be used in the Giant Mine Remediation Project.

A draft decision letter is attached.

8. Attachments

- Land Use Permit Application:
 - [Cover Letter, Permit Application Form, and Updated Project Description](#)
- Water Licence Post-EA Project Information:
 - [Cover Letter, Licence Application Form, and Updated Project Description](#)

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'SA', is written over a light blue horizontal line. The signature is contained within a rectangular box that has a yellow border on the right side.

Shannon Allerston
Regulatory Specialist