Water Resources
Nunavut Regional Office
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Your file - Votre référence
2AM-LUP0914
Our file - Notre référence
CIDM# 804621

June 9, 2014

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0A 1J0

Re: Licence 2AM-LUP0914 - Completeness Review and Information Requests pertaining to the review of Lupin Mines Incorporated's renewal application for the Lupin Mine Project

Dear Ms. Beaulieu:

On February 28, 2014, Lupin Mines Incorporated (LMI) submitted an application to renew their Type 'A' Water Licence 2AM-LUP0914 (the application). On May 16, 2014 the Nunavut Water Board (NWB) requested that interested parties review the application for completeness and initial technical assessment, including information requests identified.

Aboriginal Affairs and Northern Development Canada (AANDC) has completed a preliminary assessment of the information in the application with the intent of analyzing the completeness of the information presented to ensure all necessary information to determine effects of the project on the freshwater environment have been provided. The results of our completeness review are identified in the attached memorandum. Comments / recommendations have been provided pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

The NWB requested that interested parties also provide comments on whether any of the updates proposed by the applicant to terms and conditions of the current water licence should be considered as an amendment to the licence. AANDC reviewed the Requested Updates to Terms and Conditions of 2AM-LUP0911 and identified 5 requested changes that may require an amendment to the terms and conditions of the current licence. Please refer to Section 3.0 in the enclosed memorandum. AANDC will also have further comments in the next stage of the licencing process

In addition to the above, the NWB invited interested parties to comment on the type of Technical Meeting / Pre-Hearing Conference and Public Hearing to be held for the Application. Due to the nature of the technical issues and outstanding compliance issues identified, AANDC is recommending that the Technical Meeting / Pre-Hearing Conference be held in person.

AANDC appreciates the opportunity to participate in this completeness review and we look forward to the upcoming technical review. If you have any questions or concerns, please do not hesitate to contact Jean Allen at (867) 975-4738 or by e-mail at Jean.Allen@aandc-aadnc.gc.ca.

Sincerely,

Karen Costello
Director, Resource Management, AANDC

cc. Erik Allain, Manager of Field Operations, AANDC
Murray Ball, Manager of Water Resources, AANDC

Completeness Review and Information Requests
Lupin Gold Mine Project
Type A Water Licence Renewal Application

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1.0 INTRODUCTION

Aboriginal Affairs and Northern Development Canada (AANDC) has conducted a preliminary review of Lupin Mines Incorporated's (LMI, the applicant) application to renew water licence 2AM-LUP0914 for the Lupin Gold Mine Project for completeness and initial technical assessment.

Given the project has already undergone several licence renewals and no material changes are proposed, the basic technical information available for the review should be adequate. A preliminary screening of the documentation on file confirms that the basic technical data is available to support the technical review of the licence renewal application.

Based upon AANDC's preliminary review a number of outstanding issues were identified and need to be addressed as part of the licence renewal process. These include:

1. A formal plan and schedule to address monitoring, cleanup and control of windblown tailings;
2. A formal plan and schedule to address the management and cleanup of hydrocarbon contaminated soils;
3. The removal of the historic inventory of hazardous waste from the site. The management plans call for removal of the waste from site but waste inventories continue to rise;
4. Licensing of an on-site landfill;
5. A formal updated Compliance Plan to be approved by the Inspector;
6. Update to the RECLAIM model to reflect costs for long-term inspection, monitoring, and care and maintenance. The cost estimate also does not appear to have any allowances for final spillway construction, removal of gated control valves, dam breeching or remedial works to dams (e.g., rip-rap addition), as outlined in the closure report or additional cover material required adjacent to the dams to assure the saturate tailings concept is successful;
7. Concerns over increasing pond levels, freeboard on the structures and the ability to manage additional runoff into the ponds. Under the current status with no water licence in force, it does not appear that LMI could gain approval to discharge water from the site. This represents a serious hazard which could lead to overtopping of and potential dam failure (and consequences); and
8. The mine is currently under Care and Maintenance, however, during much of the year there is no presence at the site. AANDC notes that this is contradictory to the 2007 Mine Site Reclamation Guidelines (AANDC, 2007) which requires personnel on-site to fulfill all the monitoring requirements. If the site is unattended, it is not actually in care and maintenance. This greatly increases the risk that unplanned events could lead to contamination of the environment. The site contains valuable infrastructure (buildings, fuel farms, sewage ponds, hazardous waste storage, tailings dams and ponds), all of which require care and maintenance. With no presence on site, spills could go undetected for weeks.

AANDC continues to review the application in anticipation of submitting technical review comments. It is expected that the deficiencies and issues identified in this memo will be addressed during the water licence renewal process.

2.0 COMPLETENESS REVIEW AND INFORMATION REQUESTS

The mine is presently under Care and Maintenance with no permanent or regular staff presence on site. Significant issues have been detected by Inspectors (i.e., Environment Canada detected leaking tanks, AANDC detected hydrocarbon spillage, hazardous tailings windblown from the containment area, etc.). These should have been detected and remediated by on-site staff. This aspect is exacerbated by having extended periods with no staff on-site.

There are many residual issues at the site that should be addressed in the water licence renewal application process. The following presents AANDC's key concerns with the application and, where deemed necessary, Information Requests directed to the Applicant.

2.1 Wind Blown Tailings

Reference: AANDC Inspector Report Nov. 28, 2012

Observation: Management of windblown tailings is a material issue at the Lupin Mine site and have been for many years. In the 2008 review of the water licence renewal application, the Nunavut Impact Review Board indicated ongoing concern over windblown tailings but assessed this could be addressed in the renewal of the water licence. Six years later the concerns remain and arsenic and metal borne contamination continues to spread into the environment. This has resulted in unnecessary contamination of the land and exposure of plants and animals to tailings contaminants (sample locations are shown on Figure 3 of the Closure Plan and soil analyses are in Appendix I).

LMI has indicated that they would remediate the land and apply a temporary stabilizer to the tailings surface to control future dusting. Although this has the potential to be effective in the short term, more proactive remedial measures such as the placement of a shallow surface cover of esker sands would be much more effective and could last for many years. Surface stabilizers are costly and are likely to require repeated additions to be effective over several years. The costs of repeated application may well be less economic and less effective than a shallow surficial sediment cover.

Request / Recommendation: AANDC requests the following of LMI:

- Details of the windblown tailings monitoring plan, cleanup methodology, tailings surface stabilization plan, and schedule for implementation. This plan should include immediate steps that will be taken to stabilize the tailings.
- A review of longer term interim solutions such as shallow cover to limit future tailings dust release.

2.2 Water Balance and Freeboard

Reference: Geotechnical Monitoring Report (SRK 2012)

Observation: The overtopping of dams is the prime failure mechanism for constructed dams. The Water Licence has allowed freeboards to be a minimum of 1 m in the water storage ponds in the tailings area and sewage lagoons. This is adequate when there is a permanent presence at the site, however this may not be suitable in the absence of staff present to conduct regular monitoring of water levels. Storage below the 1 m freeboard is required to store water from extreme runoff events (design storms, or maximum runoff flood events). It is unclear how pond levels are being managed or whether these design events have been adequately addressed.

In its 2012 geotechnical monitoring report, SRK recommended that pond water levels be monitored weekly during the freshet and weekly during the open water period if pond levels were allowed to rise (Section 4.2 General Recommendations). If freeboards are reduced and spillways were to clog, overtopping and failure of dams is a material risk.

Request / Recommendation: AANDC requests the following of LMI:

- A report that assesses the adequacy and basis for a 1 m freeboard. The assessment should revisit the water balance and design storms for evaluating water storage.

- Justification for not routinely monitoring and reporting pond water levels. The justification should include science- and risk-based reasons for not monitoring all of the ponds on a weekly basis during the June/July season and weekly if pond levels rise to within 2m of the dam crest.

2.3 New Effluent Limits

Reference: Water Licence 2AM-LUP0914

Observation: The licence limits for effluent discharges were established many years ago. Typically limits are set based upon best available technology or in some cases site specific limits required to protect a sensitive effluent receiver. Since the time licence limits were established, there has been extensive operational history to characterize the performance of the treatment system (in this case iron precipitation for arsenic control, natural degradation for cyanide control and lime addition for pH control) and environmental effects in the receiver have been determined.

Monitoring data for the final effluent discharge indicate that cyanide and metals levels have been well below discharge criteria which suggest that the mine can meet much more stringent effluent criteria. Given the potential concerns with copper levels on juvenile Arctic Grayling and their increased sensitivity to arsenic and zinc, it would be prudent to establish lower treated effluent quality limits. Furthermore, Environment Canada is proposing new limits for the Metal Mining Effluent Regulations (MMER), based upon a review of current technologies and effluent treatment performance at mines in Canada.

Request / Recommendation: AANDC requests that LMI conduct a review of past effluent treatment performance and propose new effluent limits where appropriate. The review and proposed limits should be presented in a report.

2.4 Water Use / Recycling of Water

Reference: Mining and Milling Practice

Observation: Standard best practice is to use reclaim water from the tailings pond in lieu of fresh water. Recycling has the benefit of reducing fresh water use and reducing the quantity of treated effluent discharged to the environment. Reduced discharge quantities will also lower loading of contaminants and increase residence time for natural degradation of cyanide and its related compounds (e.g., metals that are controlled by solubility).

Request / Recommendation: AANDC requests that LMI provide an explanation as to why a water recycling approach is not considered if production is resumed on site.

2.5 Reclamation Cost Estimate – Long-term Care and Maintenance Costs

Reference: Reclamation Liability Estimate (Appendix 6)

Observation: All engineered facilities on the Lupin Mine site will require ongoing care, monitoring and maintenance. The RECLAIM estimate provides a credible

estimate for the capital costs of closure of the site and provides a modest allowance for monitoring at closure. There are areas where inadequate costs are provided. These are:

- Costs for long-term inspection, monitoring, and care and maintenance. This is a material deficiency as this site will require long-term inspection, monitoring, and care and maintenance well beyond the 5 years allowed for in the current estimate. Ongoing maintenance of covers, spillways, dams, etc. will be required, and at no time can this site with engineered dams and hydraulic structures be abandoned. Perpetual inspection and monitoring of the site will be required and costs must be reflected in the reclamation estimate.
- The cost estimate also does not appear to have any allowances for final spillway construction, removal of gated control valves, dam breeching or remedial works to dams (e.g., rip-rap addition) as outlined in the closure report, or additional cover material required adjacent to the dams to assure the saturate tailings concept is successful.
- There is no provision for repair and upgrading of existing soil covered areas where cover depth is inadequate.
- As a minimum, a second post closure EEM is also likely required.

Request / Recommendation: AANDC requests that LMI provide an updated reclamation cost estimate that includes long-term costs for care, monitoring, maintenance and inspection of the site. Additional deficiencies may be identified once a complete technical review is completed.

2.6 Hydrocarbon Remediation Plan

Reference: Waste Management Plan

Observation: The site contains a large inventory of hydrocarbon contaminated soils. There is no approval for management of this waste on-site and as such until an approved facility is in place, it would be appropriate to have the material removed from the site. To date, it is understood no application has been submitted for an on-site land farm for management of this contaminated soil.

The current Waste Management Plan provides no information on the quantities or characteristics of the inventories of hydrocarbon materials and provides no information with regard to how this material will be managed. The plan simply states the contaminated material will be remediated.

Request / Recommendation: AANDC recommends that LMI submit a revised Waste Management Plan. Specific requirements for the management of hydrocarbon soils should include:

- A monitoring program to define the extent and characterization of hydrocarbon contaminated soils,
- Program and schedule for management of the contaminated soil, and
- Siting and design of a landfarm (should on-site management of the material be selected).
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2.7 Hazardous Waste Management

Reference: Waste Management Plan, AANDC Inspection 2012

Observation: The site has amassed a large inventory of hazardous materials. During the last formal inspection of the storage site by AANDC in 2012, the inspector noted that the waste had been centralized but the site was poorly managed with uncovered and leaking barrels. The Waste Management Plan is silent on quantities, storage location and design of a storage facility. Management practices as outlined in the plan are adequate. The plan indicates all material will be removed off-site to a hazardous waste facility however this remains to be acted upon.

Request / Recommendation: AANDC recommends that LMI update the management plans for hazardous waste to include the location and design of the storage facility and provide a schedule for removing the inventory of hazardous waste.

2.8 On-Site Landfill

Reference: Waste Management Plan

Observation: AANDC notes that the on-site landfilling of waste is not authorized under the current water licence, and as such all waste must be removed from site. Section 5.2 of the current Waste Management Plan (LMI, 2013) suggests an application for an on-site landfill will be requested but this has not yet been received.

Request / Recommendation: AANDC requests an update from LMI on the status of an application for an on-site landfill.

2.9 Updated Compliance Plan

Reference: Plan for Compliance (February 28, 2014)

Observation: A Compliance Plan was submitted in October 2012 and updated in October 2013 to address all non-compliant conditions in the licence. The plan is

now out of date and many of the commitments made in 2012 have not been met (e.g., maintenance and repairs to dam structures, windblown tailings actions).

Request / Recommendation: AANDC recommends that LMI update the Compliance Plan and adhere to proposed schedules for action. This plan must be prepared in conjunction with and approved by the Inspector.

2.10 Unattended Site

Observation: During much of the year there is no presence at the site. This greatly increases the risk that unplanned events could lead to contamination of the environment. The site contains valuable infrastructure (buildings, fuel farms, sewage ponds, hazardous waste storage, tailings dams and ponds), all of which require care and maintenance. With no presence on site, spills could go undetected for weeks and during the winter period, months could pass without inspection during which period a material failure would go undetected.

Request / Recommendation: AANDC recommends permanent presence at the site. As mentioned earlier Care and Maintenance according to the 2007 Mine Site Reclamation Guidelines (AANDC, 2007) requires personnel to be on-site to fulfill all the monitoring requirements. If the site is unattended, it is not actually in care and maintenance.

3.0 PROPOSED CHANGES TO WATER LICENE 2AM-LUP0914

AANDC reviewed LMI's Requested Updates to Terms and Conditions of 2AM-LUP0914 as requested by the Nunavut Water Board and the following presents our comments on items of potential concern:

Schedule B, Item 1 (m) and Part I, Item 3: LMI has requested the frequency for preparing annual reports and reclamation cost assessments be reduced to once every three years. We see no need nor benefit for reduced reporting frequency.

Part A, Items 12-16: LMI would like to remove or update general conditions regarding plans such that project activities are not hindered or delayed due to timing of approval. The requirement to submit, revise, and update plans is necessary and AANDC recommends that the applicant submit required plans and updates well in advance of resuming activity in order to prevent delays and hindrances.

Part E, Item 6 (f): LMI has indicated weekly inspections are not practical for the site while under Care and Maintenance. They have requested that inspections be carried out on a bi-weekly basis during freshet (approx. May and June), and monthly during the remainder of the open water period. AANDC does not support

this request. As a minimum, the inspection frequency should be as specified in the SRK 2012 Geotechnical Dam Inspection Report which states that pond water levels be monitored weekly during the freshet and weekly during the open water period if pond levels were allowed to rise. Also see recommendation under section 2.10 regarding definition and obligations while under Care and Maintenance.

Part H, Item 6: LMI would like the requirement of weekly fuel storage monitoring to be reduced. AANDC recommends that LMI examine alternatives such as remote monitoring with video surveillance and product level monitors before such a request is considered. Also must be in compliance with Environment Canada regulations and monitored for a period of time to ensure proper installation

Section 5.2, Waste Management Plan (LMI, 2013): LMI states that non-combustible and non-hazardous materials have been historically disposed in a landfill and they propose to continue utilizing the landfill for the disposal of solid waste. This proposed change was not identified in the table provided by the applicant but it is a proposed change to the scope of the water licence and should be taken into consideration.

If LMI is requesting the NWB and interested parties to consider the requests above, AANDC recommends that additional information be provided to justify the requests and to demonstrate that the requests will not result in any impacts to freshwater. Therefore, AANDC is of the opinion that the above proposed changes to the water licence should be considered as an amendment to the current water licence 2AM-LUP0914.