Water Resources
Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre référence
2AM-LUP0914

August 14, 2014

Our file - Notre référence
CIDM# 833862

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

Re: 2AM-LUP0914- Lupin Mines Incorporated – Lupin Mine Project – Renewal Application

Dear Phyllis Beaulieu:

On July 8, 2014 the Nunavut Water Board (the Board or NWB) requested that interested parties complete a technical assessment of the application by Lupin Mines Incorporated (LMI) to renew Type A Water Licence 2AM-LUP0914.

Aboriginal Affairs and Northern Development Canada (the Department or AANDC) has completed a technical review of the renewal application located on the NWB FTP site under 2AM-LUP0914 and offer comments and recommendations in the enclosed Technical Memo for the Board's consideration.

The following advice is provided pursuant to AANDC's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA) and the *Department of Indian Affairs and Northern Development Act* (DIAND Act).

The Department appreciates the opportunity to participate in this review and looks forward to the upcoming technical meeting. Should you have any questions or concerns, please do not hesitate to contact me at (867) 975-4550 or by e-mail at Murray.Ball@aandc-aadnc.gc.ca

Sincerely,

Murray Ball
Manager, Water Resources

Enclosure

c.c. Karen Costello, Director, Resource Management, AANDC
Erik Allain, Manager, Field Operations, AANDC
Jean Allen, Water Management Specialist, Water Resources, AANDC

Executive Summary

On February 28, 2014, Lupin Mines Incorporated (LMI), a subsidiary of Elgin Mining Inc. (Elgin), submitted an application to the Nunavut Water Board (the Board) to renew the Type A water licence 2AM-LUP0914 (Type A licence) for the Lupin Mine Project (Lupin Mine). Aboriginal Affairs and Northern Development Canada (AANDC) has conducted a technical review of the application and provides comments and recommendations in this submission for the Board's consideration. The key issues are highlighted below based on information currently available.

The Lupin Mine has remained in care and maintenance since 2005 but LMI requests that the renewed licence continue to allow the flexibility of resuming mine operations at any time.

The control and management of windblown tailings has been an issue for several years and was discussed in detail during the last renewal process. The concerns remain as the windblown tailings were never returned to the Tailings Containment Area (TCA) and contaminants (such as arsenic) continue to spread into the environment. Some progressive reclamation has been completed but the licence requirement to cover exposed tailings has generally not been fulfilled and a large area of exposed tailings remains, increasing the potential for acid generation, metal leaching and water contamination.

LMI provided a reclamation cost estimate in their 2012 Annual Report (March 2013) but has not provided an updated estimate in their renewal application. The 2013 estimate was reviewed and contains a number of material deficiencies which could significantly increase closure costs. Based on the information made available, a total reclamation cost estimate of $47,800,000 would be required to cover the total outstanding reclamation liability of the mine site. This is a near doubling of the security presently held.

There are a number of other issues on site that need to be considered if the mine is to be relicensed as an operating mine currently under care and maintenance, including: non-compliance with licence conditions; extent and inventory of contaminated soils; management and reporting of hazardous wastes; lack of monitoring and assessment of tailings cover effectiveness; modifications to management plans; and inadequate control of the site when unattended.

The recently-expired (existing) licence was issued with the expectation that past issues would be addressed and all conditions of the licence would be met, yet a number of the same issues remain. AANDC is hopeful that the issues identified in this review can be resolved during the application process. AANDC recognizes that a number of changes to the licence have been put forward by LMI in the renewal application, including use of a landfill, operation of a landfarm, and open burning that were not previously within the scope of the licence. As part of this submission, AANDC proposes additional changes to the licence for the Board's consideration, related to ongoing issues that pose a risk to the water resource and an associated financial risk to the people of Canada.

ᐊᐅᓚᑦᓯᕚᒃᑯᑦ ᐱᓗᐊᕐᓂᖅᑖᓂᒃ ᐅᖃᐅᓯᑦᓴᖅᑎᑦ

ᐱᕝᕗᐊᓕ 28, 2014ᒥ, ᓘᐱᓐ ᒪᐃᓐᓯᒃᑯᑦ ᐅᔭᕋᓐᓂᐊᖅᑎᐅᔪᑦ, ᐱᖁᑎᒋᔭᐅᔪᑦ ᐃᐅᕐᑎᓐ ᒪᐃᓂᖕᒍᓐᓄᑦ (Elgin), ᑐᓂᓯᓯᒪᕗᑦ ᑐᑦᓯᕋᐅᒻᒥᒃ ᓄᓇᕗᑦ ᐃᒪᓕᕆᔨᒃᑯᓐᓄᑦ ᓄᑖᕈᕆᐊᖁᔨᑦᑐᑎᒃ ᓇᓗᓇᐃᒃᑯᑎᓕᒻᒥᒃ ᐃ (Type A) ᐃᒪᓕᕆᓂᕐᒧᑦ ᓚᐃᓴᓐᓯᒥᒃ 2AM-LUP0914 (Type A Licence) ᑖᒃᑯᓄᖓ ᓘᐱᓐ ᐅᔭᕋᓐᓂᐊᕐᓂᕐᒧᑦ (Lupin Mine). ᓄᓇᖃᖅᑲᖅᓯᒪᔪᓕᕆᔨᒃᑯᑦ ᐊᒻᒪᓗ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐱ ᕚᓪᓕᐊᔪᓕᕆᔨᒃᑯᑦ ᑲᓇᑕᒥ ᑲᒪᓯᒪᕗᑦ ᖃᓄᐃᓕᖓᖓᔪᕐᓂᖓᓂᒃ ᕿᒥᕐᕈᐊᓂᕐᒥᒃ ᑕᐃᑦᓱᒪᖕᖓᑦ ᑐᑦᓯᕋᐅᑎᐅᓯᒪᔪᒥᒃ ᐊᒻᒪᓗ ᑐᓂᓯᓪᓗᑎᒃ ᐅᖃᐅᓯᑦᓴᒥᓐᓂᒃ ᐊᒻᒪᓗ ᐊᑐᓕᖅᑎᑕᐅᖁᔭᒥᓐᓂᒃ ᑕᕝᕙᓂ ᑐᑦᓯᕋᐅᑎᒥᓐᓂ ᑲᑎᒪᔨᓄᑦ ᐃᓱᒪᖅᓴᖅᓯᐅᕈᑕᐅᖁᓪᓗᒋᑦ. ᐱᓗᐊᕐᓂᖅᑎᑦ ᐊᐳᕈᑎᐅᓂᐅᓴᔪᑦ ᓇᓗᓇᐃᔭᖅᓯᒪᕗᑦ ᐅᕙᓂ ᐊᓪᓕᐅᔪᓂ ᑐᓐᖓᕕᐅᓪᓗᑎᒃ ᑐᑭᓯᑎᑦᓯᒐᓱᐊᕈᑎᐅᔪᑦ ᒫᓐᓇᐅᔪᖅ ᐊᑐᐃᓐᓇᐅᑎᑕᐅᔪᑦ.

ᓘᐱᓐ ᒪᐃᓐ ᐃᐸᒋᔭᐅᕗᖅ ᐊᒻᒪᓗ ᒪᑭᒪᔭᐅᓪᓗᓂ ᑕᐃᒪᖓᑦ 2005ᒥᓂᒃ ᑭᓯᐊᓂ ᓘᐱᓐ ᒪᐃᓐᑯᑦ ᑐᑦᓯᕋᑦᑐᑦ ᑕᐃᓐᓇ ᓄᑖᕈᕆᐊᖅᑕᐅᔪᖅ ᓚᐃᓴᓐᓯ ᐱᕕᖃᖅᑎᑦᓯᑲᓐᓂᖁᓪᓗᒍ ᐃᓱᒪᖅᓱᓂᕐᒥᒃ ᐱᕆᐊᖅᑎᑕᐅᒍᓐᓇᖁᓪᓗᒍ ᐅᔭᕋᓐᓂᐊᕐᓂᖅ ᖃᖓᑐᐃᓐᓇᒃᑯᑦ.

ᑲᒪᒋᔭᐅᑦᓯᐊᕋᓱᐊᕐᓂᖅᑎᑦ ᐊᒻᒪᓗ ᐊᐅᓚᑕᐅᑦᓯᐊᕋᓱᐊᕐᓂᖅᑎᑦ ᐊᓄᕆᒧᑦ ᑎᑦᑕᐅᑎᑕᐅᕙᑦᑐᑦ ᐱᔭᕐᓃᓪᓕᐅᕈᑕᐅᓯᒪᕗᖅ ᐊᕐᕋᒍᕋᓴᓐᓄᑦ ᐊᒻᒪᓗ ᐅᖃᓕᒪᐅᑎᐅᓯᒪᓪᓗᓂ ᖃᓄᓕᒫᖅ ᐅᖃᓕᒪᐅᑎᐅᑎᓪᓗᒍ ᑭᖑᓪᓕᖅᐹᒥ ᓄᑖᕈᖅᑎᑦᓯᒐᓱᐊᕐᓂᕐᒥᒃ ᐱᓕᕆᓂᐅᔪᒃᑯᑦ. ᐃᓱᒫᓘᑎᐅᔪᑦ ᓱᓕ ᑕᐃᒪᐃᓕᖓᒐᕗᑦ ᐱᔾᔪᑎᐅᓪᓗᓂ ᑕᒪᓐᓇ ᐊᓄᕆᒧᑦ ᑎᑦᑕᐅᓂᑰᔪᑦ ᐅᑎᖅᑎᑕᐅᓚᐅᖅᓯᒪᖕᖏᒪᑕ ᓴᓐᓇᕐᓗᑯᒥᓂᕐᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕕᒻᒧᑦ ᐊᒻᒪᓗ ᓱᕈᔪᓐᓇᖅᑐᓖᑦ (ᐃᓚᒋᔭᐅᓪᓗᓂ ᐋᕐᓯᓂᒃ arsenic) ᓱᓕ ᐱᕙᓪᓕᐊᒻᒪᑦ ᓯᐊᒻᒪᐸᓪᓕᐊᓂᖓ ᐊᕙᑎᑦᑎᓐᓄᑦ. ᐃᓚᖕᒋᑦ ᐱᕙᓪᓕᐊᔭᐅᓯᒪᕗᑦ ᐅᑎᖅᑎᑦᓯᒐᓱᐊᕐᓂᐅᔪᑦ ᐱᔮᖅᑕᐅᓯᒪᓕᖅᓱᑎᒃ ᑭᓯᐊᓂ ᑕᐃᓐᓇ ᓚᐃᓴᓐᓯᐅᑉ ᐱᓕᕆᔭᐅᖁᔭᕐᑎᑦ ᓴᐅᔭᐅᖁᔨᓂᕐᒧᑦ ᑕᑯᑦᓴᐅᔪᓂᒃ ᓴᓐᓇᕐᓗᑯᒥᓂᕐᓂᒃ ᓱᓕ ᐊᑐᓕᖅᑎᑕᐅᓯᒪᓐᖏᓚᖅ ᐊᒻᒪᓗ ᐊᖏᔪᐊᓗᒻᒥᒃ ᓄᓇᒥᒃ ᑖᕙᓂ ᑕᑯᑦᓴᐅᔪᓂᒃ ᓴᓐᓇᕐᓗᑯᒥᓂᖅᑕᖅᑲᖅᑯᖅ, ᐱᕕᖃᖅᑎᑦᓯᑐᐃᓐᓇᕆᐊᓕᒃ ᕿᑕᓖᒥᓲᒥᒃ ᐋᓯᑦᖑᓂᕋᖅᑕᒥᒃ (acid) ᓴᖅᑭᐸᓪᓕᐊᓂᖓᓂᒃ, ᓴᕕᕋᔭᑦᓴᔭᓗ ᑮᓇᕚᓪᓕᐊᓂᖓᓂᒃ ᐊᒻᒪᓗ ᐃᒪᕐᒥᒃ ᓱᕈᔪᓐᓇᖅᑐᑖᖅᑎᑦᓯᕙᔭᕐᓂᖓ.

ᓘᐱᓐ ᒪᐃᓐᑯᑦ ᑐᓂᓯᓯᒪᕗᑦ ᐅᑎᖅᑎᑦᓯᕙᓱᐊᕈᑎᓄᑦ ᑕᐃᒪᐃᑉᐸᓚᐅᕐᓂᖓᓄᑦ ᐊᑭᐅᕙᔭᖅᑐᐃᑦ ᒥᑦᓴᐅᓴᔭᐅᒍᑎᖕᒋᓐᓂᒃ ᑕᐃᑲᓂ ᑕᐃᒃᑯᐊ 2012ᒥ ᐊᕐᕌᒍᑕᒫᖅᓯᐅᑎᖕᒋᓐᓂ ᑐᓴᖅᑎᑦᓯᒍᑎᖕᒋᓐᓂᒃ (ᒫᑦᓯ 2013) ᑭᓯᐊᓂ ᑐᓂᓯᓯᒪᖕᒋᓚᑦ ᐅᓪᓗᒥᒨᓕᖅᑎᓯᒪᔪᓂᒃ ᒥᑦᓴᐅᓴᔭᐅᒍᑎᓂᒃ ᑕᐃᑲᓂ ᑕᐃᒃᑯᐊ ᓄᑖᕈᖅᑎᑦᓯᕙᓱᐊᕐᓂᕐᒧᑦ ᑐᑦᓯᕋᐅᑎᒥᓐᓂ. ᑕᐃᒃᑯᐊ 2013ᒧᑦ ᒥᑦᓴᐅᓴᔭᐅᒍᑎᐅᔪᑦ ᕿᒥᕐᕈᔭᐅᓯᒪᓕᖅᑯᑦ ᐊᒻᒪᓗ ᐃᓗᓕᖃᑦᑐᑦ ᐊᒥᓱᓂᒃ ᓱᓇᒃᑯᑎᐅᔪᓂᒃ ᐊᒥᒐᖅᑐᓂᒃ ᑕᐃᒪᓐᓇᓗ ᐊᑦᓱᒻᒪᕆᒃ ᐊᖏᓪᓕᕚᓪᓕᑎᑦᓱᒍᓐᓇᖅᑯᖅ ᒪᑐᔭᐅᓂᖓᓄᑦ ᕿᓇᐅᔭᖅᑐᕈᑎᐅᔪᓂᒃ. ᑐᓐᖓᕕᒋᔭᐅᓪᓗᓂ ᑐᑭᓯᑎᑦᓱᒍᑎᐅᔪᑦ ᐊᑐᐃᓐᓇᐅᑎᑕᐅᔪᑦ, ᑲᑎᓪᓗᒋᑦ ᐅᑎᖅᑎᑦᓯᕙᓱᐊᕈᑎᓄᑦ ᑕᐃᒪᐃᑉᐸᓚᐅᕐᓂᖓᓄᑦ ᐊᑭᐅᕙᔭᖅᑐᑦ ᒥᑦᓴᐅᓴᔭᐅᓯᒪᔪᑦ ᐃᒪᐃᓪᓗᐊᖅᑐᑦ $47,800,000 ᐱᔭᕆᐊᖃᕋᔭᖅᑐᑦ ᑲᒪᒋᔭᐅᖁᓪᓗᒋᑦ ᑲᑎᓪᓗᒋᑦ ᑲᒪᒋᓯᒪᓐᖏᑦᑐᑦ ᐅᑎᖅᑎᑕᐅᕆᐊᓕᓐᓄᑦ

ᑲᒪᒋᔭᐅᔭᕆᐊᓖᑦ ᑕᐃᑦᓱᒧᖓ ᐅᔭᕋᓂᐊᕐᕕᒻᒧᑦ. ᑕᒪᓇ ᖃᓂᒋᔭᖃᖅᑯᖅ ᒪᕈᐊᑎᕐᓗᒍ ᐊᖏᓪᓕᒋᐊᖅᑕᐅᓂᖓᓂᒃ ᑕᒪᑦᓱᒧᖓ ᓇᓪᓕᐅᑲᒫᖃᕈᑕᐅᓂᖓᑕ ᒫᓇᐅᔪᑲᑦ ᐸᐸᑕᐅᔪᒥᒃ.

ᐱᑕᖃᒃᑲᓂᕆᓪᓗᓂ ᐊᒥᓱᒃᑲᓂᕐᓂᒃ ᐊᓯᖏᓐᓂᒃ ᐃᓱᒫᓗᑎᐅᔪᓂᒃ ᑕᐃᑯᖓ ᐅᔭᕋᓂᐊᕐᕕᒻᒧᑦ ᑕᒪᒃᑯᐊᓗ ᐃᓱᒪᒋᔭᐅᔭᕆᐊᖃᖅᑐᑦ ᑕᐃᓇ ᐅᔭᕋᓂᐊᕐᕕᒃ ᓚᐃᓴᓯᑖᖅᑎᑕᐅᒃᑲᓂᕐᓂᐊᖅᑲᑦ ᐊᐅᓚᓂᖃᕈᓇᓂᐊᕐᓗᓂ ᐅᔭᕋᓂᐊᕐᕕᐅᓗᓂ ᒫᓇᐅᔪᑲᑦ ᐃᑉᐱᒋᔭᐅᓗᓂ ᐊᒻᒪᓗ ᒪᑭᒪᔭᐅᓗᓂ, ᐃᓚᒋᔭᐅᓪᓗᑎᒃ: ᒪᓕᑦᓯᐊᖏᓐᓂᐅᔪᑦ ᓚᐃᓴᓐᓯᐅᑉ ᒪᓕᑦᑕᐅᕐᑯᔭᖏᓐᓂᒃ; ᖃᐅᐃᓗᐊᖅᑎᒋᓂᖏᑦ ᐊᒻᒪᓗ ᓇᓗᓇᐃᔭᖅᑕᐅᕙᓐᓂᖏᑦ ᓱᕈᔪᓇᖅᑐᓖᑦ ᓄᓇᐃᑦ; ᐊᐅᓚᑕᐅᓂᖏᑦ ᐊᒻᒪᓗ ᑐᓴᖅᑎᓯᒍᑎᐅᕐᑲᑦᑕᕐᓂᖏᑦ ᓱᕈᔪᓇᖅᑐᓖᑦ ᐊᓂᑕᑯᐃᑦ; ᖃᐅᔨᓴᖅᑕᐅᓐᖏᓗᐊᕐᑲᑦᑕᕐᓂᖏᑦ ᐊᒻᒪᓗ ᖃᐅᔨᒐᓱᐊᖅᑕᐅᓐᖏᓗᐊᕐᑲᑦᑕᕐᓂᖏᑦ ᑕᒪᒃᑯᐊ ᓴᓇᕐᓗᑯᐃᑦ ᓴᐅᔭᐅᓂᖏᑦ ᐊᑐᑦᓯᐊᕋᓗᐊᕐᒪᖔᑕ; ᐊᓯᔾᔨᕆᐊᖅᑕᐅᓂᖏᑦ ᐊᐅᓚᑦᓯᓂᕐᒧᑦ ᐸᕐᓇᐅᑏᑦ; ᐊᒻᒪᓗ ᓈᒻᒪᖕᖏᓗᐊᖅᑐᑦ ᐊᐅᓚᑦᓯᓂᐅᔪᑦ ᑕᐃᓇ ᐅᔭᕋᓂᐊᕐᕕᒃ ᓇᔪᖅᑕᐅᑎᓇᒍ.

ᒫᓇᐅᔪᑲᑦ ᓚᐃᓴᓐᓯᒋᔭᐅᔪᖅ ᑐᓂᔭᐅᓯᒪᕗᖅ ᓂᕆᐅᒋᔭᐅᓪᓗᑎᒃ ᑕᒪᒃᑯᐊ ᑮᓇᐅᑦᑎᓐᓂ ᐊᕙᑲᐊᕈᑎᐅᓯᒪᔪᑦ ᓵᖓᓴᔭᐅᓴᔭᕆᐊᖏᑦ ᐊᒻᒪᓗ ᐃᓗᓐᓇᑎᒃ ᒪᓕᑦᑕᐅᕐᑯᔭᐅᔪᑦ ᑕᐃᑲᓂ ᓚᐃᓴᓐᓯᒥ ᐱᓕᕆᔭᐅᒍᓇᕐᑯᓪᓗᒋᑦ, ᑕᐃᒪᐃᒃᑲᓗᐊᖅᑎᓪᓗᒍ ᐊᒥᓱᑦ ᑕᐃᒃᑯᐊᓴᐃᓇᐃᑦ ᐊᕙᑲᐊᕈᑎᐅᔪᑦ ᑕᐃᒪᐃᓕᖓᑦᓴᐃᓇᖅᐳᑦ. ᓄᓇᕐᑲᖅᑳᖅᓯᒪᔪᓕᓈᒃᑯᑦ ᐅᑭᐅᖅᑕᖅᑐᒥᓗ ᐱᕙᓪᓕᐊᔪᓕᓈᒃᑯᑦ ᑲᓇᑕᒥ ᓂᓇᐅᒋᔭᕐᑲᕋᓱᐊᖅᑯᑦ ᑕᒪᒃᑯᐊ ᐊᕙᑲᐊᕈᑎᐅᔪᑦ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᔪᑦ ᐅᕙᓂ ᕿᒥᕈᓂᐅᔪᒥ ᐋᖅᑭᑦᑕᐅᕐᑯᓇᖅᑯᑦ ᑲᒪᔪᖃᖅᑎᓪᓗᒍ ᑐᑦᓯᕋᐅᑎᓕᓂᕐᒥᒃ. ᓄᓇᕐᑲᖅᑳᖅᓯᒪᔪᓕᓈᒃᑯᑦ ᐅᑭᐅᖅᑕᖅᑐᒥᓗ ᐱᕙᓪᓕᐊᔪᓕᓈᒃᑯᑦ ᑲᓇᑕᒥ ᐃᓕᑕᖅᓯᕗᑦ ᑕᒪᒃᑯᐊ ᐊᒥᒐᐃᑦ ᐊᓯᔾᔨᓇᐊᕈᑎᐅᔪᑦ ᓚᐃᓴᓐᓱᒧᑦ ᓯᕗᒧᐊᑦᑎᑕᐅᓯᒪᕗᑦ ᑕᐃᒃᑯᓄᖓ ᓘᐱᓐ ᒪᐃᓐᑯᓐᓄᑦ ᑕᐃᑲᓂ ᓄᑖᕈᖅᑎᑦᓯᓂᕐᒧᑦ ᑐᑦᓯᕋᐅᒻᒥ, ᐃᓚᒋᔭᐅᓪᓗᓂ ᐊᑐᕐᓂᕐᒥᒃ ᐊᑦᓯᕕᒻᒥᒃ, ᐊᐅᓚᑦᓯᓂᖅ ᐅᖅᓱᐊᓗᓕᒥᓂᕐᒥᒃ ᓄᓇᒥᒃ ᓴᓗᒻᒪᖅᓴᐃᕕᒻᒥᒃ, ᐊᒻᒪᓗ ᒫᓂᑐᐃᓐᓇᖅ ᐃᑯᐊᓚᑎᑦᓯᒍᓐᓇᓂᕐᒥᒃ ᑕᒪᓇᓗ ᐃᓕᒋᔭᐅᓯᒪᓐᓂᕋᓂ ᑮᓪᓂᑦᑎᓐᓂ ᐃᓗᐊᓂ ᑲᒪᒋᔭᐅᕐᑲᑦᑕᕈᒫᕐᓂᐊᖅᑐᑦ ᐃᓚᒍᑦᓯᐅᓯᒪᓐᓂᖏᑦᑐᑦ ᓚᐃᓴᓐᓯᒥ.

ᑕᒪᑦᓱᒧᖓ ᐃᓚᒋᔭᐅᓪᓗᓂ ᑐᓂᓯᓂᕆᔭᖏᓐᓄᑦ, ᓄᓇᕐᑲᖅᑳᖅᓯᒪᔪᓕᓈᒃᑯᑦ ᐅᑭᐅᖅᑕᖅᑐᒥᓗ ᐱᕙᓪᓕᐊᔪᓕᓈᒃᑯᑦ ᑲᓇᑕᒥ ᐃᒪᐃᖁᔨᕗᑦ ᐃᓚᒋᐊᕈᑎᑦᓴᐃᑦ ᐊᓯᔾᔩᓇᐊᕈᑎᐅᓗᑎᒃ ᓚᐃᓴᓐᓱᒧᑦ ᑲᑎᒪᔨᓄᑦ ᐃᓱᒪᒃᓴᖅᓯᐅᕈᑎᐅᓂᐊᕐᓗᑎᒃ, ᐊᑦᑐᐊᓂᖅᑐᑦ ᓴᖅᑮᔭᑦᓴᐅᑎᒋᔪᓄᑦ ᐊᕙᑲᐊᕈᑎᐅᔪᓄᑦ ᐅᓗᕆᐊᓇᖅᑐᖅᑕᖅᑎᑦᓯᔪᓄᑦ ᐃᒪᕐᑯᑎᒋᔭᐅᔪᓄᑦ ᐊᒻᒪᓗ ᐊᑦᑐᐊᓂᖅᑐᓂᒃ ᑰᓇᐅᔭᖅᑐᑲᓂᕈᑎᐅᒐᔭᕐᓇᓱᒐᓗ ᐅᓗᕆᐊᓇᕐᓂᖅᑐᑦ ᐃᖅᑯᑎᖏᓐᓄᑦ ᑲᓇᑕᒥᐅᑦ.

Ataniuyunut Nainaqhimayut

Talvani Fibruari 28, 2014-mi, Lupin Uyagakhiuqvit Nanminilgit (LMI-kut), nanminigiyat tapkuat Elgin Uyagakhiuqtit Nanminilgit (Elgin-kut), tunihiyut tukhigautmik tapkununga Nunavut Imaligiyit Katimayit (tapkuat Katimayit) nutanguqnianik tapkuat Qanugittunia A imaqmun laisat 2AM-LUP0914 (Qanugittunia A laisauyuq) taphumunga Lupin Uyagakhiuqvik Havanguyuq (Lupin Uyagakhiuqvik). Nunaqaqaqtuligiyit Ukiurtaqtumilu Pivaliayuligiyikkut Kanatami (AANDC-kut) havagiyat tamna pitquhiqnut naunaiyaqnia taphuma tukhigaut piqaqtitailu uqauhit atugahuaqunitlu uumunga tuniyaunianut tapkuat Katimayit ihumagiyakhai. Tapkuat atuqniqhat pityutit naunaiqhimayut ataani tuhagakhanut tatya piyaulat.

Tamna Lupin Uyagakhiuqvia hunniumaittuq munagiyaunia ihuaqhihimanialu taimanga 2005-min kihimik LMI-kut tukhigaqtut tamna nutanguqtaunia laisauyuq kayuhinia pilaqninut tapkuat ihuaqhigialaqni atulitqikhaqninut uyagakhiurvik aulaninut quyagitnaq pilaliqat.

Tapkuat munagiyaunia aulataunilu anuqimit hiamaktaqnit uyagaktaqnikut pityutauvaktut qaphinut ukiunut uqauhigiyauplunilu unniqtutiaqhugit atuqtitlugu kingulliqmik nutanguqtaunianut pityuhiqni. Tapkuat ihumalutai hunniumaittut piplugit anuqimut hiamaktaqnit uyagaktaqnikut utiqtitauhimaitmata talvunga Uyagaktaqnikut Hianaktailivianut (TCA-nga) halumailgutlu (tahapkuatut arsenic) huli hiamaktaqtut avatigiyauyumun. Ilai atugauvaliani halumaqhaqtaunit iniqtauyut kihimik tamna laisauyuq piyalik ilautitni hatqiumayut uyagaktaqnikut tamaitnut hauhimaitmata angiyuqlu inigiyat hatqiumayunut uyagaktaqnikut hunniumaittut, agligiagutaupluni pilqnigiyai huguilat pinguqtaunit, haviit maqiviuninut imaqlu halumaiqtitni.

LMI-kut piqaqtitai halumaqtiginit akituninut mikhautni tapkununga 2012 Ukiumun Tuhagakhaliat (Matyi 2013) kihimik piqaqtingitai nutanguqhimayut mikhautnit nutangugutimut tukhigautani. Tapkuat 2013-mi mikhautnit naunaiyaqtauyut hunniumaittutlu qaphiunit hunat iniqhimaitnit tapkuat angipyaktumik ilavaligutaulaqnit umiktigaunianut akitunikhait. Piplugit tuhagakhat piyaulqnit, katitlugu halumaqtigauninut akitunia mikhauhimayuq $47,800,000 piyaqaqniaq atuqnikhanut tapkuat katitlugu halumaqtiqhimaitnit atugakhait taphuma uyagakhiuqviup inaanut. Una malguiqhunguyat tapkuat nautiumatit tatya tigumiaqtauyut.

Piqaqtuttauq qaphinik ahiinik pityutinik havakvikmi ihumagiyauyaliknik tamna uyagakhiuqvik laisatatqikhaqniaqat aulalamik uyagakhiuqvik tatya munagiyauyuq ihuaqhihimayaukmat, ilautitlugit: malikhangitni laisauyup atugiaqaqninut; aktilangi kititaunitlu halumaiqhimayut nunat; aulatauni tuhagakhaliatlu hivuganaqtut iqakut; munagiyaungitnit naunaiyaqnilu uyagaktaqnikut hauyauni atuttiagiakhait; nutanguqtauni tapkuat aulatyutainut upalungaiyautit; naamangitnilu munaqhityutit havakvikmi inuqaguigangat munaqtinik.

Tapkuat atuqtut laisa tuniyauyuq unniqtuqhugit tapkuat pityutauhimayut ihuaqhiyauniat tamaitalu atugialgit laisauyumi piyauniat, kihimik huli tapkuat atauttit pityutit huniumaittut. AANDC-kut nigiuktut tapkuat pityutit naunaiqtauninik uumani naunaiyaqniani ihuaqhiyauyakhait atqutitlugu tukhigautanut pityuhiani. AANDC-kut ilittugiyat tapkuat qaphit ahianguqnit laisauyumun hatqiqtitauni tapkunanga LMI-kut talvani nutanguqtaunianut tukhigautmi, ilautitlugit atuqnianut nunami iqakuqvia, aulataunia nunami iqaqvia, hilainaqmilu

ikualattiniq ilaungihimayut hivuani ihumagiyaunit laisauyumun. AANDC-kut qanigtigiyat tamna inungnit ihumalutauniat hatqiqtitninik ilagiagutinut ihuaqhigiagutit maligainut laisauyumun tugangayut tapkununga uyagaktaqnikut iqakut aulataunit ahiilu pityutit pityutauni angipyaktumik hivuganaqnit avatigiyauyumun kiinauyaliqutitlu hivuganaqnit inuqutainut Kanatami.

Résumé

Le 28 février 2014, Lupin Mines Incorporated (LMI), filiale d'Elgin Mining Inc., a demandé à l'Office des eaux du Nunavut (OEN) de renouveler son permis d'utilisation des eaux de type A n^{o} 2AM-LUP0914, relativement au projet de la mine Lupin. À la suite de l'analyse technique de la demande et en fonction de l'information actuellement disponible, le ministère des Affaires autochtones et du Développement du Nord canadien (AADNC) formule dans le présent mémoire ses commentaires et recommandations à l'intention de l'OEN, dont voici les points saillants.

La mine Lupin est en mode entretien depuis 2005, mais LMI demande que le permis renouvelé lui laisse la possibilité d'en reprendre l'exploitation en tout temps.

Le contrôle et la gestion des résidus soufflés par le vent, qui posent problème depuis plusieurs années, ont fait l'objet de discussions approfondies au cours du dernier processus de renouvellement. Des inquiétudes persistent toutefois étant donné que les résidus n'ont jamais été rapportés à l'aire de confinement des résidus et que les contaminants, notamment l'arsenic, continuent à se répandre dans l'environnement. Des travaux de remise en état progressive ont été réalisés. Cependant, l'une des conditions associées au permis, qui prévoyait le recouvrement des résidus exposés, n'a essentiellement pas été respectée. En conséquence, une grande quantité de résidus demeure à ciel ouvert, ce qui accroît les risques de production d'acide, de lixiviation des métaux et de contamination des eaux.

L'estimation des coûts de remise en état qui figure dans le rapport annuel de 2012 de LMI (mars 2013) n'a pas été mise à jour dans la demande de renouvellement de permis. À l'issue de son analyse, le ministère a relevé à ce sujet diverses lacunes susceptibles de faire monter en flèche les coûts de fermeture. Selon les renseignements fournis, la dette non réglée rattachée aux travaux de remise en état du site minier totaliserait environ 47 800 000 $, soit presque le double de la garantie ayant été versée.

D'autres problèmes doivent être considérés avant de renouveler le permis d'exploitation de la mine, actuellement en mode entretien, notamment les suivants : non-conformité aux conditions associées au permis, étendue et inventaire des sols contaminés, gestion et signalement des déchets dangereux, absence de surveillance des débris recouverts et d'évaluation de l'efficacité des travaux effectués à ce chapitre, modifications aux plans de gestion et contrôle inadéquat du site lorsqu'il est laissé sans surveillance.

L'octroi du permis actuel supposait que les problèmes repérés par le passés seraient réglés et que toutes les conditions assorties au permis seraient respectées. Or, un certain nombre de problèmes persistent. AADNC a bon espoir que ceux que l'analyse a permis de relever puissent être corrigés dans le cadre du processus de demande. Le ministère sait d'ailleurs que LMI propose dans sa demande de renouvellement un certain nombre de modifications qui ne relevaient pas du champ d'application du permis précédent, notamment le recours à un site d'enfouissement, l'épandage des boues et l'incinération à ciel ouvert. Dans le cadre de ce mémoire, AADNC propose, pour révision par l'OEN, des changements additionnels au permis, relatifs aux problèmes courants posant un risque pour les ressources en eau, et par conséquent, un risque financier pour la population canadienne.

Technical Review Memorandum

To: Phyllis Beaulieu – Manager of Licensing, Nunavut Water Board

From: Murray Ball – Manager, Water Resources, AANDC

Re: 2AM-LUP0914 – Lupin Mines Incorporated – Lupin Mine Project – Renewal Application

Aboriginal Affairs and Northern Development Canada (AANDC or the Department) has conducted a technical review of the Lupin Mines Incorporated (the Licensee or LMI) application (the application) for the renewal of Type A water licence 2AM-LUP0914 (Type A licence or 2AM-LUP0914). The Department retained SENES Consultants (SENES) to assist in the review. The results are presented here, in the context of AANDC policy, along with recommended changes to terms and conditions of the existing water licence (Table 1), and comments on LMI responses to previous information requests (Table 2).

1.0 Results Summary of Technical Review

AANDC provides a summary of comments and recommendations below for the Board's consideration in the technical review of the application. Please refer to the attached SENES Technical Review Report (SENES Report) for further details (Appendix 1).

General

1. In the application, LMI requested a licence term of 10 years. Considering that a number of the terms and conditions of the existing water licence have not been met after a 5 year licence term (2009-2014), AANDC recommends: a) a shorter licence term of 3 years; and b) that the renewed licence include prescriptive timelines for additional monitoring, updated studies, submission of plan updates, and progressive reclamation, as described below.

Tailings Management

2. The Nunavut Impact Review Board (NIRB) indicated ongoing concern over windblown tailings, noting that the issue could be addressed in the renewal of the water licence. An ecological risk assessment was prepared for the covered tailings pond by Golder (2004) and concluded that there is minimal risk to the ecosystem. It is not clear, however, whether the report addressed effects from historical windblown tailings on the ecosystem outside of the tailings pond. While the impact of windblown tailings has, therefore not been fully characterized, the chemistry of the tailings, and the presence of arsenic in surficial sediment samples outside the TCA, as identified by AANDC inspectors, provides a basis for concern regarding windblown tailing contamination. The existing licence was explicit in addressing the issue, requiring the Licensee to: contain solid tailings within the TCA (Part E, Item 6e); implement progressive covering of the tailings as soon as realistically possible (Part I, Item

9); and provide details on tailings management, monitoring and implementation plans for mitigation of exposed tailings (Schedule I). At the end of the five-year licence term, however, the licence conditions have not been effectively addressed and the environment continues to be contaminated by windblown tailings.

As part of the licence renewal process, LMI has indicated a willingness to complete and submit an evaluation and action plan for windblown tailings by the end of August, 2014, that will detail a monitoring plan, cleanup methodology, tailings surface stabilization plan and a schedule for implementation. AANDC requests that the NWB provide interested parties an opportunity to review and comment on the plan prior to the Technical Meeting, so that a fixed schedule for action may be incorporated in the terms and conditions of the renewed licence. AANDC recommends that the renewed licence specify a timeline for implementation of a cleanup plan for areas affected by windblown tailings, and the progressive covering of all tailings, applicable even during care and maintenance (C&M).

3. The closure plan provides for the application of an esker sand cover to cause saturation of the tailings surface and thereby control acid generation. It is difficult, however, to assess whether the system is performing as projected, since no data on the variability of water level or depth of saturation in the cover material has been produced since 2005. Noting that the risk of acid generation and the associated potential dissolution of arsenic pose significant threats to ground and surface water, AANDC recommends that the water licence require the Licensee to provide a monitoring and assessment program to: a) monitor variability of the active permafrost zone within the tailings; b) monitor water levels in the esker sands over the covered tailings; c) monitor porewater quality in the covered tailings and internal pond water quality; and d) assess the progression of water quality in the tailings porewater and ponds to verify conditions are improving.

Waste Management

4. The site has accumulated a large inventory of hazardous materials. In response to information requests, LMI has indicated they will revise the Waste Management Plan to keep hazardous material in secure storage until it is removed from the site. No information has been provided regarding the inventory of hazardous material onsite, or the location and design of the proposed storage facility. AANDC therefore recommends: a) that the Licensee be required to provide a current inventory, the location and design of the proposed storage facility, and a schedule for removing the inventory of hazardous waste from the site, as part of an update to the Waste Management Plan, to be circulated to interested parties at least 30 days prior to the submission deadline for intervener comments to the final hearing, and b) the licence stipulate that the inventory of hazardous waste must be updated annually as part of the annual report.

5. The site contains a large inventory of hydrocarbon-contaminated soils, yet the Waste Management Plan provides no information on the quantities or characteristics of hydrocarbon materials, and no information on how the material will be managed. It appears that the last site assessment was conducted in 2005, and, therefore, any soil that may have been contaminated over the past nine years, including from the apparent spill at the fuel storage facility, has not been accounted for. AANDC recommends that the licensee be required to: a)

conduct a site assessment to define the extent and to characterize the type of contamination of hydrocarbon-contaminated soils, reporting back to the Board within a year of issuance of the licence renewal; and b) submit a revised Waste Management Plan including details on the management of hydrocarbon soils to be circulated to interested parties at least 30 days prior to the submission deadline for intervener comments to the final hearing. The revised Waste Management Plan must include:

- a program and schedule for management of the hydrocarbon contaminated soil, that would apply irrespective of whether the mine was in C&M or in Operations;
- a back-haul management plan, should annual backhauling be selected as a management option, including siting and effluent management of storage areas, and a schedule for removal of all contaminated soil;
- a Landfarm Management Plan, should on-site management of hydrocarbon contaminated soils be selected as a management option, including siting, design, management procedures and schedule for soil treatment;
- a commitment to report the type and quantities of waste that are backhauled and/or treated on site in annual reports.

The absence of a current site assessment should not preclude a decision by the Board on the amount of reclamation security required under the licence. The security amount should include an estimate for reclaiming hydrocarbon-contaminated soils based on the quantities identified in the 2005 site assessment, with an arbitrary 50% contingency increase. When the Licensee completes a new assessment and Waste Management Plan, the precision of the reclamation estimate for contaminated soil may be improved and the Licensee may apply for a reduction or increase in security as may be appropriate.

Management Plans

Many of the plans were last updated and submitted with the 2012 Annual Report in March, 2013. AANDC has reviewed the plans and provides comments and recommendations below. It is noted that LMI has committed to submitting additional plan revisions at the end of July and the end of August for three of the plans (refer to Table 2 for LMI commitments). AANDC requests that the NWB ensure interested parties will have 30 days to review the plan revisions and submit comments either prior to the Technical Meeting, or prior to the Final Hearing as indicated for each plan below. All plans requiring revision should be distributed for comment during the technical review phase of the application process.

Interim Abandonment and Restoration Plan (IARP)

6. AANDC requests that, prior to the Technical Meeting, the Licensee be required to eliminate outdated information, provide accurate information on current site conditions and clarify the following:
    - current area of uncovered tailings within and outside the TCA (IARP pages 33, 52);
    - how active revegetation will be executed (i.e. by sod transplanting or commercial seed production); though the recent plan favors natural attenuation as the most practical option for reclamation, active revegetation is nonetheless a condition of the

licence (Part J, Item 11) (IARP page 35-36); AANDC notes that the introduction of foreign species (alpine grasses) is not an option in Nunavut;

- date of sampling for water quality in the cells and ponds (IARP page 39);
- whether additional strips of esker were added to unlined periphery dykes and dams as committed in 2005 (IARP page 43);
- whether the cycle 4 EEM study was completed as planned (IARP page 49); and
- whether Cell 2 was covered and Cell 1 leveled (IARP page 51).

AANDC recommends that the information provided in response to the above clarification requests be incorporated, along with additional information relevant to recommendations 2 to 5 above, in a fully updated Interim Abandonment and Restoration Plan to be circulated for 30 day review by interested parties prior to the Final Hearing.

Fuel Containment Management Strategy

7. The Fuel Containment Management Strategy includes data on the tank capacity, type of fuel and status of all tanks but the quality and quantity of fuel remain unknown. AANDC requests that a) LMI clarify whether the sixth diesel tank (M16) was drained in 2013 as planned, b) the renewed licence require the annual reporting of the quantity and quality of fuel in each tank on site and c) the recent upgrades to the Fuel Storage Facilities be reflected in the new Strategy.

   The absence of current fuel quantity and quality data should not preclude a decision by the Board on the amount of reclamation security required under the licence. The security amount should assume that all fuel on site is of doubtful quality and will need to be disposed. The amount of fuel cited in the Spill Contingency Plan should be used to estimate reclamation costs for fuel on site and of the precision of the estimate may be improved when further information is available.

Spill Contingency Plan

8. The plan states (page 5) that there were approximately 2,762,519 L of diesel fuel as of December 31, 2012. AANDC recommends that the licence require an updated Spill Contingency Plan be submitted to the Board within 60 days of licence renewal, indicating quantities of fuel in site.

9. The Plan states (page 5) that there are 850 bags of lime on site but the size of the bags or total weight was not provided. AANDC recommends that: a) LMI clarify the quantity of lime stored on site prior to the technical meeting and b) the licence require the Spill Contingency Plan updates to indicate the quantity of lime on site.

Water Quality Monitoring Plan and Quality Assurance/Quality Control Plan

10. The monitoring of ponds and tailing porewaters should be included as a licence requirement as per recommendation 4 above. AANDC recommends that the Water Quality Monitoring Plan and Quality Assurance/Quality Control Plan be updated to include internal monitoring

of the ponds and tailings porewaters and submitted to the Board for approval within 60 days of issuance of the licence renewal.

Waste Management Plan

11. The Waste Management Plan includes a proposal (page 5) to operate a landfill for non-hazardous solid waste, however, the existing licence does not currently authorize a landfill. LMI committed to submitting a Landfill Management Plan by the end of July 2014 but no plan has yet been made available. AANDC recommends that: a) interested parties be given 30 days prior to the Final Hearing to review the Landfill Management Plan; b) the Waste Management Plan be updated to include the Landfill Management Plan before the Final Hearing, c) the licence include standard terms and conditions for landfill management.

12. The Waste Management Plan proposes (page 5) to operate existing burn pits for combustible non-domestic solid waste, however, there is no approval in the licence for the operation of burn pits. AANDC recommends that: a) the Licensee provide an open burning quality assurance plan as part of the update to the Waste Management Plan, to be circulated for review 30 days before the Final Hearing; and b) the licence include standard terms and conditions for open burning.

13. The plan indicates hydrocarbon contaminated soils will be remediated on site, however no details are provided regarding how the bioremediation of hydrocarbon contaminated soils will be managed. In the response to the AANDC Completeness Review, LMI suggested they preferred to back-haul hydrocarbon contaminated soils as on-site treatment would be difficult. This issue is addressed in recommendation 5 above.

Reclamation Cost Estimate

14. LMI has posted an irrevocable letter of credit in the amount of $25,500,000 as financial security as required under Part C, Item 1 of 2AM-LUP0914 for the Lupin Mine site. The Department reviewed the RECLAIM estimate submitted with the 2012 Annual Report and found the financial security estimate insufficient to cover the total outstanding reclamation liability of the mine site. The Mine Site Reclamation Policy for Nunavut (INAC, 2002) requires that security at any time during the life of the mine should be equal to the outstanding reclamation liability. The Department's preliminary assessment, based on available data, is that the total reclamation security liability is closer to $47.8 million. Items that do not appear to have been included in the LMI estimate are addressed in Section 2.4 of the SENES Report and differences in costs are shown in Table 2.1.

    LMI has committed to undertaking a re-evaluation of the reclamation cost estimate and will provide additional information to address AANDC's technical issues on closure costing by the end of August 2014. AANDC recommends that LMI provide an updated RECLAIM estimate, using the most current version of RECLAIM, adjusted for unit costs applicable to the site, and accounting for the deficiencies identified. The updated RECLAIM estimate should be shared with interested parties at a time that would allow at least 30 days for review prior to the Final Hearing.

15. Recognizing that financial security will likely be required under Crown land leases, AANDC recommends that Part C of the renewed licence allow the Board to "discount" an amount of reclamation security held under a Crown land lease from the total amount of reclamation security required to reclaim the mine undertaking when setting the security requirement under the water licence.

Care and Maintenance

16. The Lupin Mine is currently in C&M but LMI requested that the renewed licence allow the flexibility to resume mining operations at any time. AANDC notes that the commencement of mining operations may affect the reclamation security requirement or the water use requirement under the licence, and that the Board will need to consider whether a licence amendment will be required. AANDC therefore recommends that: a) commencement of mining operations be subject to Board approval; and b) the Licensee be required to provide at least 90 days notice of the desire to resume mining. The notice should include: i) updated management plans for review and approval by the NWB; ii) an updated reclamation cost estimate for review and approval by the NWB; iii) any change in the amount of water use; and iv) a schedule of planned activities.

17. The July 15 AANDC Inspection Report (see attached) identifies a number of issues that pose an increasing risk to the environment that have occurred during C&M, including:
    - no significant reduction in hazardous waste on site since 2012;
    - un-repaired erosion of TCA Road at Dam 6;
    - un-tended rips in the lining of the main tank farm;
    - no progressive covering of the tailings;
    - no clean-up or mitigation of the windblown tailings; and
    - no response to the spill at the satellite tank farm (reported in 2012).

    LMI has fallen short of providing proper site maintenance during C&M, and has failed to fully respond to Inspector's instructions. AANDC recommends that the Board, in setting terms and conditions for the licence renewal, consider the increase in environmental risks at the mine site and the licensee's failure to meet licence requirements over the term of the previous licence.

18. The LMI renewal application requested a reduction in monitoring requirements (Part E, Item 6f) to bi-weekly during freshet and monthly during the remainder of the open water period. AANDC is concerned that limited presence on site would increase the risk of unplanned events that could lead to contamination of the environment. Various commitments in management plans and in the water licence also require presence on site, and the Mine Site Reclamation Guidelines for the Northwest Territories, referenced in the water licence, indicates that "staff should be present at the site and sufficient int in number and expertise to care for the site and any potential problems that may arise". AANDC therefore recommends that: a) LMI retain a full time presence at the site during freshet to complete daily inspections of key facilities (dams, tailings lines, catchment basins, etc.); b) LMI retain a weekly presence on site during the open water period, and c) LMI be required to implement all

measures included in Section 1.4 of the Mine Site Reclamation Guidelines for the Northwest Territories (INAC, 2007) during C&M (or temporary mine closure). Some of these measures include:

- All physical, chemical and biological treatment and monitoring programs must continue according to licences in order to maintain compliance;
- An inventory hazardous materials must be conducted and removed from site;
- Fluid levels in all fuel tanks must be recorded and monitored regularly for leaks;
- All waste rock piles, ore stockpiles, tailings, minewater and other impoundment structures must be stable and maintained in an appropriate manner (including regular geotechnical inspections);
- Drainage ditches and spillways must be inspected and maintained regularly and included as part of geotechnical inspections;
- Facilities and infrastructure must be inspected regularly; and
- The reclamation security deposit must be kept up to date.

2.0 Water Licence Terms and Conditions

Recognizing that the Licensee had proposed changes to the water licence, and that the renewal offers an opportunity to improve the effectiveness of the licence, general considerations are requested below and specific recommendations for changes to terms and conditions are presented in Table 1. The recommendations are in addition to proposed licence changes noted in previous sections, and will be extended to other issues following review of additional information pending from the licensee.

Environmental management of the Lupin Mine, particularly with respect to contamination from tailings, has arguably been on hold since the cessation of active mining in 2005. Planning and execution of progressive reclamation has not significantly advanced since ownership shifted from Echo Bay Mines Ltd to LMI in 2007. Of greatest concern, the environmental risk of wind-blown tailings, and the effectiveness of tailings covers have not been adequately characterized or managed. The potential environmental liability and associated financial burden to the people of Canada resulting from improper tailings management could be very significant, and the risk, therefore, may be characterized as high. There is enough concern to warrant a precautionary and more interventionist approach, and this has implications for the licence renewal.

The attached technical review from SENES identifies significant technical gaps in the application for licence renewal that neither fully addresses environmental risks nor financial risks to the people of Canada. Progressive reclamation and re-vegetation, both conditions of the previous licence, will be deferred with no commitment to address either during the proposed licence term of 10 years. Monitoring is insufficient to properly characterize contamination from tailings. The estimate for financial security for abandonment and reclamation is inadequate. During the five-year period of "Care and Maintenance" under the recently-expired water licence, LMI failed to meet licence requirements related to monitoring, progressive reclamation, and re-vegetation. The updated A&R plan of 2013 is internally inconsistent, fails to characterize the effectiveness of tailings coverings; and continues to defer reclamation (i.e. p. 19 – "tailings covering to re-commence at final closure"). Several compliance issues have been identified by

AANDC inspectors, and LMI allowed the water licence to expire without addressing many of the issues identified in the previous licence renewal.

Mine site management under LMI does not appear to have satisfied either the vision of mine site reclamation identified in AANDC policy (the 2002 Mine Site Reclamation Policy for Nunavut and the 2007 Mine Site Reclamation Guidelines for the Northwest Territories), or the intent of the previous water licence. AANDC raises this point during the technical review to provide context supporting our assertion that more prescriptive terms and conditions are warranted in the water licence to ensure that the waters of Nunavut will be adequately protected. The water licence should include schedules for additional studies, monitoring, assessment of tailings covering effectiveness, and development of an updated abandonment and reclamation plan, so that the work will be completed in a timely way following issuance of the renewed licence. Similarly, the water licence terms and conditions should include schedules for progressive reclamation and re-vegetation, to ensure that outstanding work is completed within the term of the renewed licence. Considering the history of site management under LMI, AANDC suggests that a licence renewal should not be issued without prescriptive schedules in place.

3.0 Comments on LMI Responses to Information Requests

AANDC submitted comments and recommendations, including information requests, as requested by the NWB on July 18, 2014. Responses to information requests were received on July 25, 2014. AANDC reviewed the responses from LMI and further comments are provided in Table 2.

Tables

Table 1: AANDC Proposed Changes to Water Licence 2AM-LUP0914

T & C	Original Condition	Proposed Condition	Comments
General	The licence contains several references to information located in the licence application (Part A, Item 1 and Schedule A).	The licence should list all authorized activities and the definitions should be complete without reference to other documents.	Lack of clarity in the licence makes it difficult to enforce. The renewed licence should list all authorized activities and the definitions should be complete and stand alone.
Part B, Item 8	Any notice to an Inspector shall be made in writing to the attention of: Water Resources Officer Nunavut District, Nunavut Region PO Box 100 Iqaluit, NU X0A 0H0 Telephone: (867) 975-4295 Fax: (867) 979-6445	Any notice to an Inspector shall be made in writing to the attention of: Water Resources Officer Nunavut Regional Office PO Box **2200** Iqaluit, NU X0A 0H0 Telephone: (867) 975-4295 Fax: (867) 975-6445	AANDC recommends that the contact information for the Water Resources Officer be updated.
Part B, Item 16	The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans and Manuals accordingly. Revisions to the Plans or Manuals are to be submitted in the form of an Addendum to be included with the Annual Report required by Part B, Item 2, complete with a revisions list detailing where significant content changes are made.	The Licensee shall review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans and Manuals accordingly. Revisions to the Plans or Manuals are to be included with the Annual Report required by Part B, Item 2, complete with a revisions list detailing where significant content changes are made.	Part B, Item 16 requires the Licensee to review and modify plans and manuals accordingly and submit revisions in the form of Addendums. AANDC recommends that this term be changed to not limit the form of the submission to addendums. Complete plan updates, with revision lists, are preferred to facilitate operations, technical review, and enforcement.
Part D		The Licensee shall maximize to the greatest practical extent, the use of reclaim water from the Tailings Containment Area for use in the mill during Operations. The Licensee shall evaluate the potential to recycle water and provide updates in annual reports.	AANDC recommends a new term and condition to a) encourage the use of reclaim water from the TCA during Operations to minimize the use of fresh water and the production of tailings water; and b) include LMI's commitment to evaluate the potential to recycle water at Lupin.
Part E		An inspection of all engineered facilities (including the Sewage Lake Disposal Facilities and the fuel containment facilities), except as specified in Part E, Item 6, shall be carried out within one (1) year following approval of the Licence by the Minister, during ice free, open water conditions by a Geotechnical Engineer. The Engineer's report shall be submitted to the Board within sixty (60) days following the inspection, and shall include a covering letter from the Licensee outlining an	Part E, Item 6g requires an annual inspection of the TCA but there is currently no requirement for inspections of other engineered facilities designed to contain water or waste on site. Considering the length of time that the facilities have been in C&M and the apparent degradation of several structures, AANDC recommends a new term and condition (or a modification of the existing condition Part E, Item 6g) that requires an inspection of all engineered facilities (including sewage disposal

		implementation plan to respond to the Engineer's recommendations.	facilities, fuel containment facilities, quarries, landfills, etc.) within one year of licence approval to determine the overall integrity of the engineered facilities and LMI's implementation plan in response to all of the Engineer's recommendations.
Part E, Item 5	The Effluent discharged from the Tailings Containment Area shall not exceed the following effluent quality limits at Monitoring Program station LUP-10… …Oil and Grease: visible sheen	The Effluent discharged from the Tailings Containment Area shall not exceed the following effluent quality limits at Monitoring Program station LUP-10… …Oil and Grease: **5.0 mg/L and no visible sheen**	Part E, Item 5 requires all effluent discharged from the TCA to meet effluent quality limits set by the Board. A visible sheen is indicated as a limit for oil and grease but recommends that the limit be 5.0 mg/L and no visible sheen.
Part E, Item 8	The Effluent discharged from the Sewage Lakes Disposal Facilities shall not exceed the following effluent quality limits at Monitoring Program monitoring station LUP-14… …Oil and Grease: visible sheen	The Effluent discharged from the Sewage Lakes Disposal Facilities shall not exceed the following effluent quality limits at Monitoring Program station LUP-14… …Oil and Grease: **5.0 mg/L and no visible sheen**	Part E, Item 5 requires all effluent discharged from the SLDF to meet effluent quality limits set by the Board. As above, A visible sheen is indicated as a limit for oil and grease but recommends that the limit be 5.0 mg/L and no visible sheen.
Part E, Item 11	The Licensee shall Discharge all Minewater to the Tailings Containment Area or to the Sewage Lakes Disposal Facilities, except as specified in Part E, Item 12.	The Licensee shall Discharge all minewater to the Tailings Containment Area or to the Sewage Lakes Disposal Facilities, except as specified in Part E, Item 12. **Prior to Discharge, Minewater shall not exceed the following effluent quality limits at Monitoring Program station** (new station).	Part E, Item 11 requires the discharge of minewater to the TCA or SLDF but parameters and effluent quality limits for these facilities in Part E, Items 5 and 8 are inconsistent. AANDC recommends that the NWB include parameters for minewater in the SLDF discharge criteria.
Part E, Item 14	The Licensee shall remove from the project site, all Hhazardous wastes generated through the course of the Operation, for disposal at an approved hazardous waste disposal facility.	**To prevent the over-accumulation of these materials,** the Licensee shall remove accumulated hazardous wastes from the project site, over the licence period, for disposal at an approved hazardous waste disposal facility**.** The Licensee shall also annually remove all new hazardous wastes produced on site.	Part E, Item 14 requires the Licensee to remove all hazardous wastes from the project site during operations, but does not specify what should happen during C&M and no timeline for removal is provided. Hazardous waste continues to accumulate on site, posing an increasing risk. With a licence term of 3 years, for example, 1/3 of the accumulated hazardous waste should be removed each year, including addition hazardous waste that may be produced.
Part G		All surface runoff during the construction of any facilities, where flow may directly or indirectly enter a water body, shall be sampled Weekly and not exceed the following Effluent quality limits: Parameter Maximum Average Concentration (mg/L) • Total Suspended Solids: 50.0	Currently the licence does not include criteria for surface runoff during construction. AANDC recommends that the licence include criteria for all surface runoff during construction for total suspended solids, oil and grease, and pH (the criteria in the proposed change is taken from 2AM-MRY1325).

		• Oil and Grease: no visible sheen • pH: between 6.0 – 9.5 Maximum Concentration of Any Grab Sample(mg/L) • Total Suspended Solids: 100.0 • Oil and Grease: no visible sheen • pH: between 6.0 – 9.5 •	
Part G, Item 2	Prior to construction of any dams, dykes or structures to contain, withhold, divert or retain water or wastes other than as contemplated in the Contingency Plan, the Licensee shall submit to the Board, for approval, final design and construction drawings signed and stamped by an Engineer.	The Licensee shall submit to the Board, for approval, final design and construction drawings signed and stamped by an Engineer **at least sixty (60) days** prior to construction of any dams, dykes or structures to contain, withhold, divert or retain water or wastes other than as contemplated in the Contingency Plan.	Part G, Item 2 requires the Licensee to submit final design and construction drawings for approval prior to construction but no timeline is provided for review.
Part G, Item 6	The Licensee shall use fill material for construction from an approved source, which has been demonstrated not to produce Acid Rock Drainage and to be non-Metal Leaching.	The Licensee shall use fill material for construction from an approved source, which has been demonstrated not to produce Acid Rock Drainage and to be non-Metal Leaching, and is **free of contaminants.**	Part G, Item 6 requires the Licensee to use fill material that has been demonstrated not to produce acid rock drainage and to be non-metal leaching but there is no requirement that the fill material is free of contaminants (i.e. hydrocarbons, chemicals, tailings, etc.).
Part H		All sumps and fuel caches shall be located at a distance of at least thirty one (31) metres from the ordinary high water mark of any adjacent water body and inspected on a regular basis.	AANDC recommends that a setback for the location of sumps and the storage of fuel be required in the licence to protect nearby waters from potential contamination.
Part H, Item 5b	The Licensee shall operate the Bulk Fuel Storage Facilities in accordance with all applicable legislation, guidelines and practices, including:… b. *National Fire Code, 1995,* and…	The Licensee shall operate the Bulk Fuel Storage Facilities in accordance with all applicable legislation, guidelines and practices, including:… b. *National Fire Code, **2010**,* and…	AANDC notes that Part H, Item 5b specifically references the old National Fire Code (2005) and recommends that the licence instead reference the most current version of the National Fire Code.
Part I, Item 7	The Licensee shall notify the Board in writing, as soon as is practically possible, of any change in the status of the mine operations. This notice shall include a summary of Plans and a Schedule for anticipated activities related to the Care and Maintenance or the Final Closure of the Mine and associated infrastructure.	The Licensee shall notify the Board in writing, **at least ninety (90) days prior to** any change in the status of mine operations. This notice shall include **revised Plans, an updated reclamation cost estimate, an update in projected water use**, and a Schedule for anticipated activities related to the Care and Maintenance or the Final Closure of the Mine and associated infrastructure.	Part I, Item 7 requires the Licensee to notify the Board of any change in status (C&M or final closure). However, the condition does not include a timeline for submitting such notice. The notice should include full plan revisions rather than a plan summary. The notice should include a site assessment and an updated security cost estimate. The plans will require approval prior to implementation (Part B, Item 12) and it is expected that the security will be updated to reflect the environmental liability on site each time there is a

			change in the status of mine operations to care and maintenance or final closure of the mine.
Part I, Item 8	The Licensee shall notify the Board in writing, at least sixety (60) days prior to recommencement of the mining and milling undertaking on site. This notice shall include a summary of Plans and a Schedule for anticipated activities related to the change in status.	The Licensee shall notify the Board in writing, at least **ninety (90)** days prior to recommencement of the mining and milling undertaking on site. This notice shall include **revised Plans, an updated reclamation cost estimate,** and a Schedule for anticipated activities related to the change in status.	Part I, Item 8 requires the Licensee to notify the Board 60 days prior to recommencement of mine operations. As above, the notice should include plan revisions rather than a summary of plans, a site assessment and an updated security cost estimate. AANDC recommends the notification period be increased to 90 days to allow time for review and approval of plans and reclamation security changes.
Part I, Item 9	Notwithstanding the time schedule referred to in the Abandonment, Reclamation and Closure Plan, the Licensee shall implement Progressive Reclamation, including progressive covering of the tailings and revegetation, as soon as is realistically possible.	Notwithstanding the time schedule referred to in the Abandonment, Reclamation and Closure Plan, the Licensee shall implement Progressive Reclamation, including progressive covering of the tailings and revegetation **regardless of whether the mine is in Operations or C&M status, according to a schedule approved by the Board**.	Part I, Item 9 does not require the Licensee to implement progressive reclamation (including progressive covering of tailings) unless it is "realistically possible". Considering the deteriorating conditions on the mine site, the licence should be changed to require progressive reclamation, with an implementation schedule clearly established for the period of the renewed licence, applicable whether the mine is in C&M or in operation status. The Licence should require the Licensee to cover and maintain a percentage of exposed tailings each year. See Section 1, Recommendation 3, above.
Part J, Item 2	The Licensee shall provide the GPS co-ordinates, in degrees, minutes, and seconds of latitude and longitude, of all locations where sources of water are utilized for all purposes.	The Licensee shall provide the GPS co-ordinates, in degrees, minutes, and seconds of latitude and longitude **as well as the datum source (i.e NAD83),** of all locations where sources of water are utilized for all purposes.	To ensure consistency, even when reporting in degrees, AANDC recommends that the licence either specify the datum (i.e. NAD83) to be used or require the Licensee to specify the datum when submitting GPS co-ordinates.
Part J, Item 3	The Licensee shall determine the GPS co-ordinates, in degrees, minutes, and seconds of latitude and longitude, of all locations where wastes associated with camp operations and drilling operations are deposited.	The Licensee shall **provide** the GPS co-ordinates, in degrees, minutes, and seconds of latitude and longitude **as well as the datum source (i.e. NAD83),** of all locations where wastes associated with camp operations and drilling operations are deposited.	To ensure consistency, even when reporting in degrees, AANDC recommends that the licence either specify the datum (i.e. NAD83) to be used or require the Licensee to specify the datum when submitting GPS co-ordinates.
Part J, Item 11	The Licensee is responsible for the monitoring during Care and Maintenance as set out in this Part. In the event the Licensee fails to carry out monitoring requirements set out in this Part that are essential to ensuring the integrity of	The Licensee is responsible for the monitoring during Care and Maintenance as set out in this Part.	AANDC recommends that regular monitoring and site inspections be required both during operations and during care and maintenance. Extending the period of care and maintenance can potentially pose an increasing risk to the environment, particularly

	significant site components, including fuel storage, general site deterioration, tailings containment, and site water and sewage management, Canada shall carry out such monitoring during periods of highest risk to fresh water.		to water resources, and monitoring during care and maintenance is therefore important. Part J, Item requires Canada to carry out monitoring in the event the Licensee fails to do so. AANDC recommends that this term and condition be removed as it is not consistent with the AANDC Mine Site Reclamation Policy (2002), which clearly articulates the principle of Polluter Pays. The licence should be structured to put the onus for monitoring related to infrastructure and operations on the Licensee (the potential polluter) rather than on the taxpayers of Canada. The water licence can mitigate the concerns expressed in the previous amendment to 2AM-LUP0914 (May 2009) by requiring: permanent LMI presence on site during periods of highest risk to freshwater; progressive covering and cleanup of tailings; and other progressive reclamation (revegetation, removal of hazardous waste, etc.). AANDC will enforce the licence under the Act and will continue to conduct periodic compliance sampling in addition to water licence requirements. AANDC would have an obligation to step in should LMI abandon the site. In an abandonment scenario, AANDC would have access to financial security to conduct monitoring as and when required, otherwise, the onus should remain with the Licensee to carry out regular licenced monitoring requirements related to their own design and operation decisions.
Schedule A	"Care and Maintenance" in respect of a mine, means the status of the facility when the Licensee ceases production or commercial operation temporarily for an undefined period of time;	"Care and Maintenance" in respect of a mine, means the status of the facility when the Licensee ceases production or commercial operation temporarily for an undefined period of time. **Care and Maintenance status does not exempt the licencee from obligations to protect humans, wildlife, and the environment; or to maintain compliance with applicable laws and regulations, including licences, permits, and leases.**	AANDC recommends that the definition for 'Care and Maintenance' be updated to be consistent with the Mine Site Reclamation Guidelines for the Northwest Territories (INAC, 2007). It is also recommended that Licensee requirements during Care and Maintenance be made very clear, such as ensuring sufficient staff, equipment and supplies will be at the site for any maintenance or reclamation activities that may need to take place. Refer to Section 1.4 of the guidelines referenced above for recommended measures to be implemented during Care and Maintenance. See Section 1, Recommendation 18, above.

Table 2: Comments on LMI Responses to AANDC Completeness Review

AANDC Comments	LMI Responses	SENES Comments	AANDC Comments
AANDC 2.1 Windblown Tailings A formal plan and schedule to address monitoring, cleanup and control of windblown tailings: 1. 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. 2. A review of longer term interim solutions such as shallow cover to limit future tailings dust release.	In June and July 2014, LMI is undertaking an evaluation to address this concern. LMI will provide additional information to address AANDC's technical issue with respect to windblown tailings by the end of August 2014. However, LMI notes that tailings at site are under a water cover and the windblown dust may be emanating from the redundant tailings ponds that have been covered in the past with esker material and frozen. LMI will take samples to assess the material and based on that a plan would be developed, if warranted.	The issue of windblown tailings has been an historical concern. We look forward to the evaluation and action plan to be submitted by the end of August 2014.	LMI commits to submitting an evaluation and action plan in August 2014. AANDC requests that interested parties be provided an opportunity to assess the new information during the application process.
AANDC 2.2 Water Balance and Freeboard 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). 1. 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. 2. 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.	LMI agrees with the practical need to discharge water while the Licence is being renewed. Discharge is required to maintain adequate freeboard, minimize environmental risks and potential damage to Project infrastructure. LMI generally maintains the free board at 2+m below the berm height. At this time, LMI has filed an emergency amendment request with the NWB to the term of the Licence through to October 1, 2014 to discharge water that has collected within containments following freshet and manage water prior to freeze up so the site is prepared to receive snow melt during freshet 2015. The 1-m freeboard is the limit regulated in the water licence and its adequacy has not been an issue for the geotechnical inspections that are carried out annually. Furthermore, the 1-m was set based on a detailed design review from past operations and is generally standard throughout the world. Following freshet, when most water accumulates, facilities are generally decanted as needed to ensure there is adequate freeboard. Facilities at Lupin are inspected regularly during the open water	LMI has not completed an assessment of the adequacy of the 1-m freeboard for this remote site (which is often times unattended). The concern relates to the ability to store runoff from extreme events in the event that the ponds are near the 1-m freeboard limit. This could occur during an extreme rainfall event or heavy spring thaw in combination with an extreme rainfall event. With no spillways, perimeter dams could be at risk of failure. A 1-m freeboard is by no means a world-wide standard. Freeboards are determined based upon detailed water balances, wave run-up analysis and sensitivity of receiving waters. The 1-m freeboard was assessed 40 years ago with limited data and may or may not be suitable, especially with no final spillway. Typically one would assess: • Capacity to store a wet year of runoff at the end of the season if the	AANDC maintains that a one-meter freeboard may not be sufficient during C&M if there is no continual presence of staff on site and that LMI therefore complete an updated assessment to determine an appropriate freeboard which should based on detailed water balances, wave run-up analysis and sensitivity of receiving waters.

AANDC Comments	LMI Responses	SENES Comments	AANDC Comments
	period (monthly) and prior to freeze up to ensure there is sufficient capacity to handle to following year's freshet. Facilities are decanted as needed, meeting effluent quality criteria, and the freeboard limit of 1-m has generally been met.	pond was not drained • Additional storage to store the probable maximum runoff • Additional freeboard to account for wave run-up during high wind events.	
AANDC 2.3 New Effluent Limits 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.	LMI is committed to continual improvement and continues to monitor the Lupin mine along with the potential for identifying additional resources through its exploration activities. The Lupin mine has discharged effluent since the 1980s according to the effluent quality criteria included in Licences for the protection of the receiving environment, and based on the monitoring carried out to date the effluent quality criteria has achieved protection. Should operations recommence LMI will look to continually improve operational performance as part of best management practice, however the existing effluent limits are anticipated to remain applicable.	LMI was not responsive to the request.	AANDC maintains that effluent treatment objectives should be reviewed prior to the mine resuming operations, considering anticipated changes to MMER standards.
AANDC 2.4 Water Use / Recycling of Water AANDC requests that LMI provide an explanation as to why a water recycling approach is not considered if production is resumed on site.	LMI will evaluate the potential to recycle water and the effect this could have on the mill process and ore recovery if the mine is put back in operation. However, based on past water volumes used during operations, LMI requests that the current permitted volume be maintained based on previous volumes required for mining operations. LMI's review of the water balance to date sees no clear option to reduce water usage at this time.	LMI states its review of the water balance sees no clear option to reduce water use but provides no explanation. The question is why would reclaim water use not reduce fresh water use? Effectively, this suggests that the quality of the water discharged from the tailings pond is not of acceptable quality to use in the process but suitable for discharge to the environment.	AANDC encourages water recycling as a means to reduce the volume of tailings water produced and stored on site and looks forward to the evaluation of the potential to recycle water during operations. It is expected that this evaluation will be submitted to the Board prior to restart of mine operations. See comment in Table 1.
AANDC 2.5 Reclamation Cost Estimate – Long-term Care and Maintenance Costs 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	LMI provided an updated reclamation cost estimate to the NWB in April 2013, included with the 2012 Annual Report. In June and July 2014, LMI is undertaking a re-evaluation of the reclamation cost estimate. LMI will provide additional information to address AANDC's technical issues on closure costing	Please refer to SENES Technical Review addressing the LMI relicensing submission for details of the deficiencies in the costs. We look forward to LMI's updated RECLAIM estimate.	The Department looks forward to the updated reclamation cost estimate in August 2014. It is expected that it will address concerns identified in the Technical Memo and attached SENES Report. AANDC requests that interested parties be provided an

AANDC Comments	LMI Responses	SENES Comments	AANDC Comments
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 are areas where inadequate costs are provided. These are: 1. 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. 2. 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. 3. There is no provision for repair and upgrading of existing soil covered areas where cover depth is inadequate. 4. As a minimum, a second post closure EEM is also likely required. AANDC requests that LMI provide an updated reclamation cost estimate that includes long-	by the end of August 2014.		opportunity to assess the new information presented during the application process.

AANDC Comments	LMI Responses	SENES Comments	AANDC Comments
term costs for care, monitoring, maintenance and inspection of the site. Additional deficiencies may be identified once a complete technical review is completed.			
AANDC 2.6 Hydrocarbon Remediation Plan A formal plan and schedule to address the management and cleanup of hydrocarbon contaminated soils – AANDC recommends that LMI submit a revised Waste Management Plan. Specific requirements for the management of hydrocarbon soils should include: 1. A monitoring program to define the extent and characterization of hydrocarbon contaminated soils, 2. Program and schedule for management of the contaminated soil, and 3. Siting and design of a landfarm (should on-site management of the material be selected).	A Waste Management Plan (WMP) was submitted to the NWB in March 2013, included as part of the 2012 Annual Report. Regarding landfarming, Section 7 of the WMP states that soils contaminated from spills of petroleum products (including diesel, gasoline, oils, used oil, and grease) will be remediated to the CCME Canada Wide Standards for Petroleum Hydrocarbons in Soil, which have been adopted by the Government of Nunavut in the Environmental Guideline for Contaminated Site Remediation (2009). At present, as part of care and maintenance, LMI continues to collect on an ongoing basis any hydrocarbon impacted soil when encountered and places it in sealed drums to be backhauled whenever possible on return flights for processing at a third party facility. Drums are stored in a lined storage area until they can be backhauled to mitigate environmental risks. While soil management has been considered and included in the reclamation cost estimate (2012 Annual Report), LMI's preferred approach is to backhaul materials as landfarming requires considerable infrastructure and is challenging given the short duration of the summer period. Further, LMI has indicated in the March 2013 Abandonment and Restoration Plan, that the West Zone crown pillar, which was mined between 1996 and 2004, has been left open for the future disposal of demolition debris and soils. However, in the event landfarming is determined to be feasible, LMI suggests that a stand-alone Landfarm Management Plan be provided to the NWB prior to construction.	LMI did not provide a response to items 1) and 2). Regarding item 3) the Hydrocarbon Soils Management Plans suggests that on-site treatment in using landfarming is preferred while this response suggests that LMI prefers to back-haul material for off - site disposal.	See Recommendation 5 above, and proposed changes to Part E, Item 14 in Table 1 above.
AANDC 2.7 Hazardous Waste Management	LMI takes every opportunity to backhaul	LMI has not provided an inventory of	AANDC requested LMI to provide an

AANDC Comments	LMI Responses	SENES Comments	AANDC Comments
The removal of the historic inventory of hazardous waste from the site. The management plans call for removal of the waste from site but large inventories continue. 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.	hazardous waste from the site. Progressive reclamation activities during 2013 consisted of backhauling 51 mega bags of waste from the site. LMI agrees that the WMP should be clarified to indicate that hazardous wastes that are stored pending backhauled are to be stored in sealed drums in designated areas. LMI has noted this clarification and will include it in the next iteration of the WMP.	hazardous materials or a schedule for removing hazardous materials from the site.	inventory of hazardous materials and that the inventory be updated annually and submitted in annual reports. See proposed licence condition regarding a schedule for removing hazardous materials in Table 1.
AANDC 2.8 On-Site Landfill 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. AANDC requests an update from LMI on the status of an application for an on-site landfill.	As noted in the March 2013 WMP, non-combustible, non-hazardous materials were historically placed within the landfill area at site and constantly kept covered. One burn pit is located on site adjacent to the landfill, and a second one is at the north end of the site. Historically, combustible non-hazardous, non-domestic waste was open-burned at these designated locations. The landfill at site has been used in the past on a regular basis and is included in previous versions of the WMP. LMI requests to continue to utilize the landfill and burn pits, and requests that these activities be included specifically in the Licence renewal to clarify the perception of a permitting issue noted by AANDC. This clarification will facilitate the progressive reclamation of the site. A WMP was previously submitted to the NWB for approval in March 2010 by MMG Canada as Appendix A of its Care and Maintenance Plan in accordance with Part I, Item 2 of water licence 2AM-LUP0914. This plan proposed the same landfill operations. The NWB distributed the Care and Maintenance Plan including its Appendices to interested parties for review and comment on October 13, 2010 and by November 12, 2010 comments were received from AANDC, EC, and the KIA. AANDC recommended that if the facility is to be used, a plan be submitted by the Licensee. LMI will submit a Landfill	It appears that LMI will submit an application Landfill Management Plan by the end of July 2014.	LMI committed to submitting a Landfill Management Plan in July 2014 but it has not yet been received by AANDC. AANDC requests that interested parties be provided an opportunity during the technical review to assess the new information.

AANDC Comments	LMI Responses	SENES Comments	AANDC Comments
	Management Plan by the end of July 2014.		
AANDC 2.9 Updated Compliance Plan A formal updated Compliance Plan to be approved by the Inspector. 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). 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.	LMI provided an updated Compliance Plan with the 2014 renewal application. Please see attached for your reference.	The compliance plan submitted was competed in 2013 and is outdated. It is not known whether many of the actions proposed for 2013 and 2014 were completed.	According to the July 15, 2014 AANDC Inspection Report (see attached), the changes discussed with LMI regarding the compliance plan were never incorporated into the plan and submitted to the NWB, a number of items were not accurately reflected in the plan, and commitments have not been completed. AANDC recommends that the Compliance Plan be updated to address Inspector's concerns and that it be approved by the Inspector and by the Board prior to renewing the Type A licence.
AANDC 2.10 Unattended Site 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 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	There are many sites that effectively carry out care and maintenance without a constant presence at remote locations, and established close out procedures are followed specifically for this purpose.. LMI acknowledges that a site presence is required on a frequency during the open water period that ensures the conditions of the Licence for the protection of the receiving environment can be met, and to ensure that facilities are inspected on a regular basis to ensure stability prior to freeze up. To this end, LMI carries out monthly inspections from May to October [This is the frequency noted in the table of updates submitted with the application] and a comprehensive annual geotechnical inspection by a third party. LMI also complete upgrades when deemed appropriate. Given that the facilities are found to be in stable condition, and issues are addressed considering risks prior to leaving site, there is no need to maintain an on-going site presence. In contemplating the schedule for care and maintenance LMI has given due consideration of the increased risks to the safety of small caretaker crew working at a	LMI has not responded to the comments and concerns raised by AANDC. LMI cannot meet its own commitments in its management plans, water licence monitoring requirements or the 2007 Mine Site Reclamation Guidelines (AANDC, 2007) with an unattended site.	Refer to recommendation 18 above.

AANDC Comments	LMI Responses	SENES Comments	AANDC Comments
unattended, it is not actually in care and maintenance.	remote location. Similar to other northern remote sites in care and maintenance, LMI follows standard procedures prior to vacating the site on a temporary basis including securing access, inspection of waste management areas, inventory of fuel and chemicals, recording of fluid levels in tanks, and inspection of drainage systems.		
AANDC 3.0 Licence Updates 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.	LMI will adhere to the annual reporting in regards to the annual report. However, LMI understands that an update to the reclamation cost estimate may not be required every year where facilities and costs remain substantially unchanged. In these cases the estimate would be updated based on acceptable inflation indices particular for the location.	LMI has agreed to annual reporting.	AANDC agrees that reclamation assessments could be conducted in three year intervals while the mine is in C&M, but should be conducted annually during Operations.
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	LMI generally agrees with the requirement to submit, revise and update plans according to the Licence. LMI submitted updates to a number of plans in April 2013, which have not been formally approved by the Board	LMI has agreed.	AANDC accepts LMI's commitment.
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	To clarify, SRK suggested in the 2013 Geotechnical Inspection Report that LMI submit a request to the Nunavut Water Board for an amendment to the schedule. Given the lack of mining activities and loading, SRK suggested that a schedule consisting of bi-weekly inspections during freshet, and monthly inspections for the remaining open water period would be adequate. In the event water levels in the ponds are allowed to rise, then inspections should be carried out bi-weekly. However, given that containment areas are generally decanted early in the year, preventing the accumulation of water, monthly	LMI is correct that SRK changed their 2012 recommendations in 2013 to be in accordance with LMI's request for biweekly inspections during freshet, and monthly inspections for the remaining open water period. This was understood to be based upon the assumption that the ponds would be drained which, to our understanding, has not occurred. LMI also indicates it is risky to have a crew at the remote site as it would "require that facilities continue to	AANDC maintains that the monitoring frequency required under 2AM-LUP0914 should be continued because the SRK report appears to be based upon the assumption that the ponds would be drained which, to our understanding, has not occurred and because there is more than 2 million litres of hazardous fuel on site and the fuel management and spill contingency plans do not appear to be followed.

AANDC Comments	LMI Responses	SENES Comments	AANDC Comments
recommendation under section 2.10 regarding definition and obligations while under Care and Maintenance.	monitoring is adequate. Regarding the interpretation of care and maintenance from the noted guideline, LMI carries out activities and third party inspections as needed to ensure the site is secure and stable, and maintains a security deposit with AANDC. However, once scheduled care and maintenance activities are carried out and the site is secured, there is no need to maintain personnel on site until the next scheduled visit. Maintaining a crew at the remote site indefinitely presents safety hazards, and would require that facilities continue to operate which requires more fuel and increases hazards.	operate which requires more fuel and increases hazard". It is understood that at this time there are more than 2 million litres of hazardous fuel at the site. There is a Fuel Management Plans in place, but it has not been followed.	
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.	LMI will investigate the feasibility of remote video monitoring by the end of July 2014.	LMI has agreed to investigate remote monitoring	AANDC accepts LMI's commitment. AANDC requests that interested parties be provided an opportunity to assess the new monitoring plan during the application process.
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.	To clarify, the use of the landfill was noted as a site waste management practice in the WMP submitted in 2009 and has been used frequently in the past and was considered as part of previous applications and plans. Its omission from the current Licence appears to be an administrative issue rather than an issue of scope. While the landfill has not been operated in recent years, LMI requests that the Licence renewal acknowledge the facility to address the perception of a permitting issue. LMI will submit a landfill management plan by the end of July 2014.	It appears LMI will submit a licence application for an on-site landfill by the end of July.	AANDC agrees that the licence should acknowledge the landfill facility and the Department looks forward to the landfill management plan. As above, it is requested that interested parties be provided an opportunity to assess the new information presented during the application process. See recommendation 5 above.

Appendices

Appendix 1

SENES Consultants Technical Review

FINAL TECHNICAL REVIEW

LICENCE RENEWAL APPLICATION

LUPIN MINE WATER LICENCE 2AM-LUP0914

(Operated by Lupin Mines Inc.)

Prepared for:

Aboriginal Affairs and Northern Development Canada

Water Resources Division

Nunavut Regional Office

P.O. Box 100

Iqaluit, NU, X0A 0H0

Prepared by:

SENES Consultants ***(under SOA 01-11-6003/7)***
4915 – 48th Street, Unit 23
Yellowknife NT X1A 3S4

August 8, 2014

Executive Summary

Lupin Mines Incorporated (LMI), a subsidiary of Elgin Mining Inc., has applied to the Nunavut Water Board to renew its Water Licence (2AM-LUP0914) which expired in March 31, 2014. The expired licence was last renewed for a 5 year term in March of 2009. The renewed licence contained many conditions and was issued with the expectation that past issues would be addressed and all conditions of the licence would be met.

Although the Lupin Mine last operated in 2005 and has been in care and maintenance since that time, the licence allows for mining to continue with 60 days of notice.

LMI has submitted extensive documentation in support of the licence renewal application; however, the Technical Review of these documents has identified a number of concerns and issues.

The key issues include:

- The control and management of windblown tailings. Windblown tailings have been a concern at the site for many years especially during the operational period. This was discussed in detail during the 2009 licence renewal. Concerns have remained during the care and maintenance period yet no monitoring or plans have been put in place to characterize the problem and develop and implement a remedial plan.
- Interim Abandonment and Restoration Plan – LMI has filed an Interim Abandonment and Reclamation Plan (IARP) in accordance with the licence. Although the plan reports to have been updated, the plan contains conflicting dates and data. The plan needs to be fully edited and updated to reflect current conditions.
- Progressive Reclamation – LMI has conducted some progressive reclamation but does not appear to have a formal schedule or plan to progressively reclaim the site. It was the expectation of the 2009 licence (Part I, Item 9) that the remaining exposed tailings would be covered and vegetated "as soon as realistically possible". This was in part due the concern of windblown tailings. Exposed tailings remain and no tailings have been revegetated. The actual area of exposed tailings is uncertain and varies in the documentation provided.
- Financial Security – LMI has provided a $25,500,000 letter of credit as security for reclaiming the mine. In that regard, LMI filed an updated RECLAIM estimate. The estimate contains a number of material deficiencies which we believe could significantly increase closure costs. Our preliminary estimate suggests that costs could be in the range of $47,800,000 ($22,300,000 more than the allotted financial assurance).
- Licence Non-compliance – There have been a series of non-compliances with conditions of the licence. These have included: failure to complete weekly monitoring; failure to judiciously implement recommendations arising from the annual geotechnical inspections; failure to maintain 1-m freeboard; failure to implement cover and vegetation of tailings; and, failure to remove all hazardous material from the site. All of these conditions were included in the licence to minimize risks and hazards at the site.

Additional issues include:

- Lack of monitoring and assessment of tailings cover effectiveness since 2005. How can an assessment of the system performance be determined if it isn't monitored?
- Extent and inventory of contaminated soils.
- Management of hazardous materials.
- Modifications and improvement to Management Plans.
- Inadequate control of the site when unattended.

This report includes a review of the supporting documents and management plans and identifies a number of areas where clarification or additional details are required.

Based upon this review, the following key comments and recommendations are summarized for the Board's consideration:

- LMI should be requested to provide details of the windblown tailings monitoring plan, cleanup methodology, tailings surface stabilization plan, and a schedule for implementation.
- LMI should provide a monitoring program which is included in the licence to:
    - Monitor variability of the active permafrost zone within the tailings.
    - Monitor water levels in the esker sands over the covered tailings.
    - Monitor porewater quality in the covered tailings and internal pond water quality to assess the progression of water quality in the tailings porewater and ponds to verify conditions are improving.
- LMI should be requested to prepare a revised waste management plan. Specific requirements for the management of hydrocarbon soils should include:
    - A monitoring program and site assessment to define the extent and characterization of hydrocarbon contaminated soils.
    - Program and schedule for management of the hydrocarbon contaminated soil.
    - Siting and design of landfarm (should on-site management of Hydrocarbon Contaminated soils be selected).
- LMI needs to fully update the closure plan and eliminate outdated information and provide accurate information on current site conditions. A progressive reclamation plan and implementation schedule should be included.
- LMI should update the RECLAIM estimate using Version 7, taking into account the items addressed in this review. An updated financial assurance should also be issued to reflect increased costs for closure.

TABLE OF CONTENTS

List of Abbreviations

Abbreviation	Term
AANDC	Aboriginal Affairs and Northern Development Canada
Closure Plan	Interim Abandonment and Reclamation Plan
EEM	Environmental Effects Monitoring
Elgin	Elgin Mining Inc.
IARP	Interim Abandonment and Reclamation Plan
LMI	Lupin Mines Incorporated
m^2	Square metres
m^3	Cubic metres
NWB	Nunavut Water Board
RECLAIM	Model developed by Brodie Consultants for AANDC to estimate mine closure costs (version 7)

1.0 INTRODUCTION

1.1 Overview

The Lupin Gold Mine (Lupin or Lupin Mine) is located on the west shore of Contwoyto Lake, approximately 285 km southeast of Kugluktuk, Nunavut and approximately 400 km northeast of Yellowknife, NWT. The initial water licence was issued in 1981 by the Northwest Territories Water Board to Echo Bay Mines Ltd and the Nunavut Water Board (NWB) assumed water licensing regulatory authority for Lupin in 2006. Lupin Mines Incorporated (LMI), a wholly owned subsidiary of Wolfden Resources Inc. at the time, assumed the water licence in 2007. Elgin Mining Inc. (Elgin) purchased LMI from MMG Resources Ltd. in July 2011 and is presently the parent company of LMI. LMI is currently the owner of Lupin Mine and the licensee of water licence 2AM-LUP0914. It is understood that on June 4, 2014 Mandalay Resources made an agreement to purchase Elgin Mining Inc. It is unclear how this acquisition will impact on this application.

Lupin is an underground gold mine that produced over 3.3 million ounces of gold from 12.8 million tons of mined ore. Lupin was in operation from 1982 to 2005, with temporary suspensions of activities (entered a care and maintenance phase) between January 1998 and April 2000, and again between August 2003 and March 2004. Lupin Mine has remained in care and maintenance since 2005 and will continue to remain in care and maintenance while Elgin determines the economic feasibility of the property.

The site includes a camp, site roads, bulk fuel storage areas, underground workings, mill buildings, air strip and accommodation buildings. The only year-round access to the site is via aircraft. During February and March, the mine may be potentially supplied via a 570 km ice road, which runs from Tibbitt Lake, north of Yellowknife, to Contwoyto Lake.

LMI submitted an application requesting renewal of Type 'A' water licence 2AM-LUP0914, which had expired on March 31, 2014, for a 10-year term without any change to the scope of the project activities. The mine site has now been under care and maintenance for 9 years and no notice has been received that there are any plans to place the mine back into operation in the near future. LMI indicate that they continue to study the restart of the mine and with the recent increase in the price of gold, a transition back to operations could occur quickly. The expired licence allows for the mine to restart with 60 days notice.

On July 3, 2014 LMI requested that an emergency amendment to discharge contact water that has accumulated within the Bulk Fuel Storage Facility and Sewage Pond be allowed, given the risk to the integrity of the facilities and environment if not released in a controlled manner. LMI is required to provide more information to justify the emergency amendment. It should be noted that the emergency amendment process will be considered separately from this non-emergency application process (July 4, 2014 NWB response to LMI's emergency amendment request).

In June 2014, AANDC submitted to the NWB a "Completeness Review and Information Requests pertaining to the review of LMI's renewal application for the Lupin Mine Project".

The LMI responses to this submission and SENES' assessment of these responses can be found in Appendix A, Table A-1.

2.0 KEY TECHNICAL ISSUES

The technical review has identified a number of potential issues that need to be considered if the mine is to be relicensed as an operating mine currently under care and maintenance. The key issues, many of which are interrelated, include:

i) Are there current and longer term environmental issues at the site that should be addressed as part of the licence?
ii) Are the current monitoring, care and maintenance plans suitable and adequate to assure protection of the site? These plans include: Closure Plan, Fuel Containment Management Strategy, Spill Contingency Plan, Wildlife Management Plan, Water Quality Monitoring Plan, Quality Assurance/Quality Control Plan, Lupin Mine Waste Management Plan (Solid and Hazardous), Incinerator Operations and Maintenance Procedure.
iii) Has the company met its licence requirements and commitments?
iv) Is there adequate financial security to close out and reclaim the site?
v) Are there other considerations?

2.1 Potential Short and Long Term Environmental Issues

The following environmental issues have been identified:

- Windblown tailings
- Acid control in Closed Out and Reclaimed Tailings Basin
- Inventory and Management of Hydrocarbon Contaminated Soils
- Management of Hazardous Materials

2.1.1 Windblown Tailings

Relevant Review Document/Reference: AANDC Inspections, Care and Maintenance Plan (Sections 4.3), Compliance Plan

Observation:

Windblown tailings have been an issue at the site for many years. In the 2009 review of the Water Licence Renewal, the Nunavut Impact Review Board indicated ongoing concern over windblown tailings but assessed this could be addressed in the renewal of the Water Licence. The concerns remain and air-borne arsenic and metal 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.

LMI in the Care and Maintenance Plan (Section 4.3) has indicated they would remediate the land and apply a temporary stabilizer to the tailings surface to control future dusting, although to our

knowledge this has not been completed to date (5 years since licence renewal). While this has the potential to be effective on an interim basis, more proactive remedial measures such as the placement of a shallow surface cover of esker sands and vegetation as required by the licence (Part I. Item 9) would be much more effective and could last indefinitely. 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 shallow soil cover.

In the response to AANDC Comments on the Licence Application, LMI indicated they would complete and submit an evaluation and action plan by the end of August, 2014.

Recommendation:

It is recommended that LMI be required to provide details of the windblown tailings monitoring plan, cleanup methodology, tailings surface stabilization plan and schedule for implementation. Furthermore, implementation of this plan should be a requirement of the licence.

2.1.2 Acid Control in Closed Out and Reclaimed Tailings Basin

Relevant Review Document/Reference: LMI IARP, March 2013

Observation:

The primary concern with the decommissioning and closeout of acid generating tailings is the prevention and control of acid drainage. The Abandonment and Restoration plan provides for the application of an esker sand cover (1-m depth) to cause saturation of the tailings surface and control acid generation. Information to date suggests this plan has been effective, however, we are not aware of recent monitoring data to indicate that the plan is functioning as designed. It appears that no data have been collected on porewater quality within the saturated tailings cells since about 2005 or internal pond water quality (e.g., all ponds upstream of Pond 2). Furthermore, we could find no data on variability of water level or depth of saturation in the cover material since 2005. As such, it is difficult to assess whether the system is performing as projected as no monitoring appears to have been undertaken for 9 years. This greatly increases the uncertainty and risk that the plan remains valid.

Recommendation:

It is recommended that LMI be required to provide a monitoring program that is included in the licence to:

- Monitor variability of the active permafrost zone within the tailings;
- Monitor water levels in the esker sands over the covered tailings; and,
- Monitor porewater quality in the covered tailings and internal pond water quality to assess the progression of water quality in the tailings porewater and ponds to verify conditions are improving.

2.1.3 Inventory and Management of Hydrocarbon Contaminated Soils

Relevant Review Document/Reference: LMI Waste Management Plan, LMI Response to Information Requests

Observation:

The site contains a large inventory of hydrocarbon contaminated soils although no updated site assessment has been completed to determine the likely quantities. The site has 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. Given the site is more than 30 years old, there is a high potential that tanks may have leaked and contributed to the inventories of contaminated soils which could be substantially greater than the quantities identified to date. The plan simply states the contaminated material will be remediated.

In the response to AANDC Comments on the Licence Application, LMI indicated the Waste Management Plan (2013) was submitted but provided no commitment to address the extent of hydrocarbon contaminated soils. LMI also suggested they preferred to back-haul hydrocarbon contaminated soils as on-site treatment would be difficult.

Recommendation:

It is recommended that LMI submit a revised Waste Management Plan. Specific requirements for the management of hydrocarbon soils should include:

- A site assessment and monitoring program to define the extent and characterization of hydrocarbon contaminated soils;
- Program and schedule for management of the hydrocarbon contaminated soil (including a schedule for annual back-hauling even during C&M);
- A Landfarm Management Plan, including siting and design of a landfarm (should on-site management of hydrocarbon contaminated soils be selected).

2.1.4 Management of Hazardous Materials

Relevant Review Document/Reference: AANDC Inspections; LMI Waste Management Plan

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 the storage facility. Management practices as outlined in the plan are generally adequate. The plan indicates all material will be

removed off site to a hazardous waste facility as is required in the Licence, however hazardous material remains in storage at the site.

In the response to AANDC Comments on the Licence Application, LMI indicated they would revise the plan to keep hazardous material in secure storage until removed from the site but provided no inventory or schedule for removal.

Recommendation:

It is recommended 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 waste from the site.

2.2 Review of Management Plans

There are a number of management plans which are in force to ensure the environment is adequately protected. These plans include: i) Closure Plan (Interim Abandonment and Restoration Plan); ii) Fuel Containment Management Strategy; iii) Spill Contingency Plan; iv) Wildlife Management Plan; v) Water Quality Monitoring Plan Quality Assurance/Quality Control Plan; vi) Lupin Mine Waste Management Plan (Solid and Hazardous); and, vii) Incinerator Operations and Maintenance Procedure. These plans are briefly reviewed below.

2.2.1 Interim Abandonment and Restoration Plan (2013)

Observation:

The closure plan for the Lupin Mine is generally well prepared and supported by technical documentation. The last material update of the plan was submitted by Kinross in 2005. Minor additions and updates have occurred and are included in the plan submitted in 2013. The plan in 2005 was reviewed in detail and many issues were identified. These were addressed in responses to the NWB and overall we are supportive of the plan concepts but believe a thorough update is required to remove inconsistencies and old information and provide data on recent site monitoring. Specific requirements include:

- *A Site Assessment* – The last site assessment was conducted in 2005 (Morrow, 2006). As stated previously, given this was 9 years ago, the assessment needs to be updated so that more accurate estimates of contaminated soils can be determined and included in the cleanup costs for the reclamation estimate.
- *Clarification on Soil Cover requirements (area to be covered)* – On page 33, the updated plan states there are 650,000 m^2 of tailings that remain to be covered. The RECLAIM estimate provides for only 375,000 m^2 to be covered.
- *Natural Revegetation* – The report states that no revegetation is proposed and that the site will be allowed to naturally recolonize. In responses to various questions, LMI continues to defend this position indicating it is difficult to revegetate in Arctic environments and costs would be prohibitive. The licence (Part I, Item 9) requires the tailings be covered and vegetated.

- *Water Quality Table 9, pg.39* – The updated plan shows the water quality in the cells and ponds. The date of sampling is not stated but appears to be from 2005.
- *Additional Sand to perimeter dams and dykes* – On page 43 it states that a peripheral strip of esker was added to the upstream edge of Dam 3D and additional strips would be added to all other unlined periphery cell dykes and dams in 2005. Clarification is required on whether this has been completed.
- *Ecological Risk Assessment* – An ecological risk assessment was prepared for the covered tailings pond by Golder (2004) and concluded there is minimal risk to the ecosystem. It is not clear if the report addressed any effects from historical windblown tailings on the ecosystem outside of the tailings pond. Given there has been no cleanup of this material it would be prudent to assess the ecological risks.
- *Rip Rap Quarry Rock* – The report on page 47 states that approximately 100,000 m^3 of rock will be quarried for resloping dams and miscellaneous uses. The RECLAIM estimate has no allowance for quarry development or placement of any of this material. Other deficiencies include no allowances for spillways, dam resloping, removal of hydraulic structures, etc. (see section on the Financial Assurance estimate for further detail).
- *Cycle 4 EEM Study* – Page 49 of the updated report says the cycle 4 EEM study would be completed in 2013. *Was this done?*
- *Cover to Cell 2 and Levelling Cell 1* – Page 51 states Cell 2 will be covered in the near future and Cell 1 levelled. *Was this completed?*
- *Cover Application* – Page 52 suggests that the last cover application was in September 2005, increasing the total area covered to 383,001 m^2. *How much area remains to be covered?*
- *Cover Application - Response to Comments on the 2005 A&R Plan (Environment Canada, pg. 15)* – The report states there are 250,000 m^2 that remain to be covered and this will be completed in 2007. This work does not appear to have been completed and is a different number than quoted elsewhere.

Recommendation:

It is recommended that LMI fully update the closure plan, eliminate outdated information and provide accurate information on current site conditions. This may not be achievable during the licence review process and as such may need to be included as a licence condition.

2.2.2 Fuel Containment Management Strategy (2013)

Observation:

An updated Fuel Containment Management Strategy was submitted as Appendix 4 of the Care and Maintenance Plan. As a general comment, the plan is reasonable. The following comments, clarifications and recommendations are offered for consideration.

- *Inventories and Characteristics* – The Fuel Containment Strategy report includes data on the total capacity and reported contents of all tanks and whether they are in active service. Given most of the fuels have been on-site for more than 10 years, many of these fuels are

contaminated, deficient in volatiles or contain excess water. It is likely most of these fuels cannot be used to support future operations and as such are likely waste materials that require disposal.

- *Status of Diesel tanks* – The report on page 3 states the sixth tank (M16) contains residual fuel and water and will be drained in 2013. Was this work completed?
- *Tank Inspection Schedule* – Page 9 states that weekly and monthly inspections will be conducted with inventories monitored on a weekly basis. This appears to be inconsistent with the inspection log presented in the annual reports. During 2012 tanks were only monitored during 3 months of the year (total inspections reported were 9) and in 2013 in 7 months (total inspections were 11). Weekly inspections were only conducted during December 2012.

Recommendation:

It is recommended that LMI include an updated inventory of the quantity and quality of all fuels in each tank on site. The total quantities will be required to assess disposal costs for the IARP. AANDC also recommends that LMI inspect fuel facilities in accordance with the plan and sand the water licence.

2.2.3 Spill Contingency Plan (2013)

Observation:

The spill contingency plan is reasonable and only minor comments are provided. The primary issue is that the site is often without staff and as such spills could go undetected for extended periods of time. Furthermore, when staff is on site, it is unknown if they are qualified to operate the heavy equipment required to contain or clean up a spill. The following clarifications are required:

- *Update Fuel Quantities* – The report on page 5 states as of December 31, 2012 there were approximately 2,762,519 L of diesel fuel on site. This should be updated to 2014.
- *Lime Bags* – The report on page 5 says there are 850 bags of lime at the site. The size of the bags or total weight should be stated.

2.2.4 Wildlife Management Plan (2013)

We have no comments material to the water licence.

2.2.5 Water Quality Monitoring Plan Quality Assurance/Quality Control Plan (2013)

Observation:

The plan is directed at monitoring water quality in the discharge and the receiving environment. As previously discussed, it is recommended the plan be expanded to include internal monitoring of the ponds and tailings porewaters so that it is possible to confirm the system is functioning as expected.

Recommendation:

It is recommended that the plan be expanded to include internal monitoring of the ponds and tailings porewaters.

2.2.6 Lupin Mine Waste Management Plan (Solid and Hazardous-2013)

Observation:

The Waste Management Plan is reasonable. The following clarifications are required:

- *Landfill* – On page 5, LMI proposes to operate a landfill for non-hazardous solid waste. Currently the licence does not include an approved landfill. In the response to AANDC Comments on the Licence Application, LMI indicated they proposed to submit a Landfill Management Plan by the end of July 2014.
- *Burn Pit* – On page 5, LMI proposes to operate a burn pit for combustible non-domestic solid waste.
- *On-site Remediation of hydrocarbon contaminated soils* – The plan assumes hydrocarbon contaminated soils will be remediated on site, however no bioremediation site has been approved and no application for bioremediation of hydrocarbon contaminated soils has been received. In the response to AANDC Comments on the Licence Application, LMI suggested they preferred to back-haul hydrocarbon contaminated soils as on-site treatment would be difficult.

Recommendation:

It is recommended that the unknowns identified above be clarified.

2.2.7 Incinerator Operations and Maintenance Procedure

We have no comments material to the water licence.

2.3 Licence Requirements and Commitments

Observation:

There are a number of areas where the company has not lived up to its commitments. In this regard, a compliance plan (2013) was submitted which identifies these areas. The plan is now more than 1 year out of date and it appears that many of the items remain unaddressed in 2014. Key areas of concern include:

- *Weekly Inspections* – LMI is not compliant with the licence condition stating, "The Licensee shall carry out weekly inspections of all water management structures during periods of flow and maintain records of the inspections and findings, for review upon the request of the Board" and "Weekly inspections of the dam(s), Tailings line(s), and catchment basin(s) shall be carried out and records of these inspections shall be kept for review upon the request of an Inspector, or as otherwise approved by the Board" (Part E,

Item 6f) and "The Licensee shall perform, at a minimum, weekly inspections of fuel containment facilities for leaks and settlement and shall keep a written log of inspections to be made available to an Inspector upon request, or as otherwise approved by the Board in writing" (Part H, Item 6).

- *Minimum Freeboards of 1-m* – LMI has had periods when minimum freeboards have not been maintained, contrary to the licence condition stating, "freeboard limit of 1.0 metre shall be maintained at all times or as recommended by a Geotechnical Engineer and as approved by the Board in writing" (Part E, Item 6e). In 2013, LMI was compliant.
- *Dam and Tailings Area Maintenance* – LMI has annual geotechnical inspections of the dams as required but has not been diligent in responding to all recommendations arising from the inspections. This is in contravention of the licence requirement that states, "Erosion of constructed facilities is addressed immediately..." (Part E, Item 6d).
- *Removal of Hazardous Material* – LMI has not removed all hazardous material from the site in accordance with the licence condition stating, "The Licensee shall remove from the project site, all hazardous wastes generated through the course of the Operation, for disposal at an approved hazardous waste disposal facility" (Part E, Item 14).
- *Progressive Reclamation*- LMI has not met the condition (Part I, Item 9) to cover and vegetate exposed tailings in the tailings pond as soon a realistically possible.

Recommendation:

LMI should operate the Lupin Mine in compliance with licence conditions.

2.4 Financial Security

Relevant Review Document/Reference: 2012 Reclamation Liability Estimate (Appendix 6 of the Abandonment and Restoration Plan, April 2013)

Observation:

LMI has posted an irrevocable letter of credit in the amount of $25,500,000 as financial security for the Abandonment and Reclamation of the Lupin Mine site. This was issued by HSBC Bank in 2011 and is understood to have been renewed. LMI has prepared a RECLAIM excel spreadsheet estimate as support for the estimate. We have reviewed the estimate and believe the financial security appears to be insufficient to cover the total outstanding reclamation liability of the mine site (Mine Site Reclamation Policy for Nunavut, INAC, 2002).

Items that do not appear to have been included in the costs are addressed below and differences in costs are shown in Table 2.1. The SENES estimate is approximately $47,800,000. We would like to stress that our review is based on partial access to data and does not include any engineering design or updated quantity estimates. There is also substantial confusion over which quantities are valid (e.g., area of exposed tailings, quantity of contaminated soils, fuel inventory, etc.).

The following are the key differences in the cost estimates:

1) Underground Mine – LMI did not allow for any costs to backfill the portal, address crown pillar or remove hazardous material from the mine.
2) Tailings – There are material deficiencies in this estimate for tailings closure. These include:
    - No allowance for quarrying of 100,000 m^3 of rock for resloping dams and lining ditches and spillways.
    - No allowance for additional cover or repair to historic cover where depths are inadequate.
    - No allowance for any vegetation even though the licence calls for revegetation of the tailings. As a minimum , one should assume islands of vegetation are applied to assist in natural recolonization.
    - No provision for grading and ditching.
    - No allowance for removal of tailings pipelines.
    - No provisions for removal of hydraulic structures or construction of spillways.
    - No provisions for dam improvements and resloping.
    - No provisions for monitoring instrumentation.
    - No provisions for water treatment and draining of the ponds.
    - Unit costs appear to be based upon NWT costs rather than Nunavut costs
3) Buildings – LMI used a low unit rate for building removal (the model says remove-mothball). No allowance for vegetation. Require at least islands of vegetation to enhance natural regeneration. No other material deficiencies were noted.
4) Chemicals and Soil Contamination
    - No allowance for disposal of 2,762,519 L of fuel that were reported to be on site in 2012. Assume this fuel will be flared on-site.
    - No allowance for disposal of heavy fuels/waste oil.
5) Mobilization
    - Costs for mobilizing equipment and ice road costs appear low.
    - There are no allowances to mobilize workers to the site.
    - No allowances for accommodation.
    - No allowance for monitoring or geotechnical inspection.
    - Fuel costs of $1.15/L are far too low.
6) Post Closure Monitoring and Maintenance
    - There are no provisions for care, maintenance or repair of the site post-closure.
    - There are no provisions for long term inspection of the site.
    - No allowance for regulatory oversight/inspection.
    - Monitoring is limited to 5 years while dams impounding hazardous tailings will need to function in perpetuity.

Regarding item 6), there will be a need for long term inspection and care and maintenance of the site. The Lupin Water Licence was approved with a surface tailings disposal facility. These tailings are acid generating and contain elevated levels of heavy metals. The tailings are stored behind engineered dams and the acid generation is controlled by either a saturated sand cover or a flooded pond. These engineered facilities will require perpetual care and monitoring. For planning purposes we have suggested that provisions be included for care and maintenance for

100 years. Costs will reduce over time and 100 years is a reasonable planning timeframe. Potential future issues that may develop include:

- Erosion of cover materials and dams.
- Glaciation/plugging of spillways leading to overtopping or rapid failure of the plug, and erosion of cover/spillway.
- Potential failure of saturated cover due to loss of cover by erosion, extended drought, inadequate cover depth, seepage resulting from climate change, cover removal by other factors, other factors.
- Potential need for treatment (likelihood uncertain given the lack of monitoring since 2005, however given the data available to 2005, long term treatment is unlikely to be required).

7) Other Costs
   - The costs for project management and engineering were assumed to be 4% of the direct cost. This appears low and we suggest 5% be included.
   - Contingencies were included at 10%. This is far too low for a conceptual plan and should be increased to at least 25%.
   - No provisions for insurance/bonding were included.

In the response to AANDC Comments on the Licence Application, LMI indicated they provided an updated reclamation cost estimate to the NWB in April 2013, included with the 2012 Annual Report. They stated that in June and July 2014, LMI is undertaking a re-evaluation of the reclamation cost estimate and will provide additional information to address AANDC's technical issues on closure costing by the end of August 2014.

Recommendation:

It is recommended that LMI update the RECLAIM (version 7) estimate taking into account the items addressed in this section. The update should be submitted for review prior to the Public Hearing. An updated financial assurance should also be issued to reflect increased costs for the IARP.

Table 2.1 – RECLAIM Estimates Comparison

Reclamation Cost	Elgin	SENES
Underground Mine	$413,921	$460,019
Tailings	$2,625,345	$7,060,206
Buildings and Equipment	$6,046,303	$7,862,228
Chemicals and Soil Management	$2,417,469	$4,255,876
Post Closure Monitoring and C&M	$1,395,753	$7,640,000
Subtotal	$12,898,791	$27,278,328
Mob and Demob	$6,018,646	$9,756,865
Project Management	$515,952	$1,363,916
Site assessment/permitting	$0	$909,800

Insurance	$0	$272,783
Engineering	$515,952	$1,363,916
Contingency	$1,289,879	$6,819,582
Subtotal	$8,340,429	$20,486,863
Total Estimated Cost	**$21,239,220**	**$47,765,191**

2.5 Other Considerations

2.5.1 Unattended Site

Relevant Review Document/Reference: AANDC Inspections

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 millions of dollars of 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. LMI cannot meet its own commitments in its management plans, water licence monitoring requirements or the 2007 Mine Site Reclamation Guidelines (AANDC, 2007) with an unattended site.

In the response to AANDC Comments on the Licence Application, LMI did not specifically respond to the comments and concerns raised by AANDC. LMI indicated they consider the unattended site adequate and had concerns for the safety and risks associated with having a small crew at a remote site.

Recommendation:

It would be prudent to retain a permanent presence at the site. This could be in the form of a caretaker/security guards who would complete daily inspections of key facilities to ensure the site is functioning as designed.

2.5.2 Progressive Reclamation

Relevant Review Document/Reference: AANDC Inspections

Observation:

It has now been 9 years since any material reclamation activity appears to have occurred at the tailings pond. During this period, tailings have remained exposed and wind erosion continues. In the response to AANDC Comments on the Licence Application, LMI indicated that all tailings are covered yet the Abandonment and Restoration Plan report indicates either 660,000 m^2, 375000 m^2 or 250,000 m^2 remain to be covered. The Care and Maintenance Plan says 241,000 m^2 (pg. 5) remain to be covered. As discussed, the licence requires all tailings be

covered and revegetated. Furthermore, many of the facilities have likely degraded to the point where they are no longer useable and should be demolished and reclaimed.

Recommendation:

It is recommended that LMI submit an updated progressive reclamation plan as part the update to the IARP. This plan should detail what facilities are no longer useable and provide a schedule for the progressive decommissioning and reclamation of these areas.

2.5.3 Current Status for Reopening

Relevant Review Document/Reference: G.A. Harron and Associates Inc. Technical Report (2012)

Observation:

The current prospects for reopening the mine are unknown. To our knowledge, the last technical report by G.A. Harron and Associates Inc. (2012) recommended a program for underground exploration to upgrade information on inferred reserves. The status of this additional work is unknown.

In June 2014, Elgin announced in a press release that they were being acquired by Mandalay Resources. The status of this transaction, or its bearing on the activities at the site are unknown.

Recommendation:

It is recommended that LMI clarify the anticipated future use for the mine.

3.0 BIBLIOGRAPHY

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LMI Response to Initial Information Requests by AANDC and Environment Canada (EC) on June 9, 2014 concerning the renewal of the Type A water licence (2AM-LUP0914) for the Lupin Mine., July 2014.

LMI Letter to Nunavut Water Boards, 3 July 2014 re: Request for Emergency Amendment to discharge contact water at the Lupin Mine.

LMI Spill Contingency Plan- March 2013.

LMI Interim Abandonment and Restoration Plan, March 2013.

LMI Care and Maintenance Plan (with management plan appendices 1-5), March 2013.

LMI Plan for Compliance-April 2013

LMI 2012 Reclamation Liability Estimate-Appendix 6 to A&R Plan-10 April 2013.

LMI 2013 Annual Report: Lupin Mine Type A Water Licence (2AM-LUP0914)-April 1014.

Mandalay Resources and Elgin Mining Press Release- Mandalay Resources to Acquire Elgin Mining, June 04, 2014

Morrow Environmental Consultants Inc. Phase 1 and 2 Environmental Site Assessment, Lupin Mine Site, Nunavut Territory; January 2006

Nunavut Water Board Amended Lupin Mine Water Licence (2AM-LUP0914), May 25, 2009.

Nunavut Water Board July 4, 2014 NWB response to LMI's emergency amendment request.

SRK Consulting 2012 Annual Geotechnical Inspection − Lupin Mine Tailings, November 2012.

SRK Consulting 2013 Annual Geotechnical Inspection − Lupin Mine Tailings, October 2013.

APPENDIX A – Completeness Review Comments and Responses

Table A-1 provides a summary of the AANDC Completeness Review and Information Requests pertaining to the review of LMI's renewal application for the Lupin Mine Project, LMI responses to this submission and SENES' assessment of these responses.

TABLE A-1- Completeness Review Comments and Responses

AANDC Comments	LMI Responses	SENES Comments
AANDC 2.1 Windblown Tailings A formal plan and schedule to address monitoring, cleanup and control of windblown tailings: 1. 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. 2. A review of longer term interim solutions such as shallow cover to limit future tailings dust release.	In June and July 2014, LMI is undertaking an evaluation to address this concern. LMI will provide additional information to address AANDC's technical issue with respect to windblown tailings by the end of August 2014. However, LMI notes that tailings at site are under a water cover and the wind blow dust may be emanating from the redundant tailings ponds that have been covered in the past with esker material and frozen. LMI will take samples to assess the material and based on that a plan would be developed, if warranted.	The issue of windblown tailings has been an historical concern. We look forward to the evaluation and action plan to be submitted by the end of August 2014.
AANDC 2.2 Water Balance and Freeboard 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). 1. 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. 2. 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.).	LMI agrees with the practical need to discharge water while the Licence is being renewed. Discharge is required to maintain adequate freeboard, minimize environmental risks and potential damage to Project infrastructure. LMI generally maintains the free board at 2+m below the berm height. At this time, LMI has filed an emergency amendment request with the NWB to the term of the Licence through to October 1, 2014 to discharge water that has collected within containments following freshet and manage water prior to freeze up so the site is prepared to receive snow melt during freshet 2015. The 1-m freeboard is the limit regulated in the water licence and its adequacy has not been an issue for the geotechnical inspections that are carried out annually. Furthermore, the 1-m was set based on a detailed design review from past operations and is generally standard throughout the world. Following freshet, when most water accumulates, facilities are generally decanted as needed to ensure there is adequate freeboard. Facilities at Lupin are inspected regularly during the open water period (monthly) and prior to	LMI has not completed an assessment of the adequacy of the 1-m freeboard for this remote site (which is often times unattended). The concern relates to ability to store runoff from extreme events in the event that the ponds are near the 1-m freeboard limit. This could occur during an extreme rainfall event or heavy spring thaw in combination with an extreme rainfall event. With no spillways, perimeter dams could be at risk of failure. A 1-m freeboard is by no means a world-wide standard. Freeboards are determined based upon detailed water balances, wave run-up analysis and sensitivity of receiving waters. The 1-m freeboard was assessed 40 years ago with limited data and may or may not be suitable, especially with no final spillway. Typically one

AANDC Comments	LMI Responses	SENES Comments
	freeze up to ensure there is sufficient capacity to handle to following year's freshet. Facilities are decanted as needed, meeting effluent quality criteria, and the freeboard limit of 1-m has generally been met.	would assess: • Capacity to store a wet year of runoff at the end of the season if the pond was not drained • Additional storage to store the probable maximum runoff • Additional freeboard to account for wave run-up during high wind events.
AANDC 2.3 New Effluent Limits 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.	LMI is committed to continual improvement and continues to monitor the Lupin mine along with the potential for identifying additional resources through its exploration activities. The Lupin mine has discharged effluent since the 1980s according to the effluent quality criteria included in Licences for the protection of the receiving environment, and based on the monitoring carried out to date the effluent quality criteria has achieved protection. Should operations recommence LMI will look to continually improve operational performance as part of best management practice, however the existing effluent limits are anticipated to remain applicable.	LMI was not responsive to the request.
AANDC 2.4 Water Use / Recycling of Water AANDC requests that LMI provide an explanation as to why a water recycling approach is not considered if production is resumed on site.	LMI will evaluate the potential to recycle water and the effect this could have on the mill process and ore recovery if the mine is put back in operation. However, based on past water volumes used during operations, LMI requests that the current permitted volume be maintained based on previous volumes required for mining operations. LMI's review of the water balance to date sees no clear option to reduce water usage at this time	LMI was not responsive to the request. LMI states its review of the water balance sees no clear option to reduce water use but provides no explanation. The question is why would reclaim water use not reduce fresh water use? Effectively, this suggests that the quality of the water discharged from the tailings pond is not of acceptable quality to use in the process but suitable for discharge to the environment.
AANDC 2.5 Reclamation Cost Estimate – Long-term Care and Maintenance Costs 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. There are areas where inadequate costs are provided. These are: 5. Costs for long-term inspection, monitoring, and	LMI provided an updated reclamation cost estimate to the NWB in April 2013, included with the 2012 Annual Report. In June and July 2014, LMI is undertaking a re-evaluation of the reclamation cost estimate. LMI will provide additional information to address AANDC's technical issues on closure costing by the end of August 2014.	Please refer to SENES Technical Review addressing the LMI relicensing submission for details of the deficiencies in the costs. We look forward to LMI's updated RECLAIM estimate.

AANDC Comments	LMI Responses	SENES Comments
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. 6. 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. There is no provision for repair and upgrading of existing soil covered areas where cover depth is inadequate. 8. As a minimum, a second post closure EEM is also likely required. 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.		
AANDC 2.6 Hydrocarbon Remediation Plan A formal plan and schedule to address the management and cleanup of hydrocarbon contaminated soils – AANDC recommends that LMI submit a revised Waste Management Plan. Specific requirements for the management of hydrocarbon soils should include: 4. A monitoring program to define the extent and characterization of hydrocarbon contaminated soils, 5. Program and schedule for management of the contaminated soil, and 6. Siting and design of a landfarm (should on-site management of the material be selected).	A Waste Management Plan (WMP) was submitted to the NWB in March 2013, included as part of the 2012 Annual Report. Regarding landfarming, Section 7 of the WMP states that soils contaminated from spills of petroleum products (including diesel, gasoline, oils, used oil, and grease) will be remediated to the CCME Canada Wide Standards for Petroleum Hydrocarbons in Soil, which have been adopted by the Government of Nunavut in the Environmental Guideline for Contaminated Site Remediation (2009). At present, as part of care and maintenance, LMI continues to collect on an ongoing basis any hydrocarbon impacted soil when encountered and places it in sealed drums to be backhauled whenever possible on return flights for processing at a third party facility. Drums are stored in a lined storage area until they can be backhauled to mitigate environmental risks. While soil management has been considered and included in the reclamation cost estimate (2012 Annual Report), LMI's preferred approach is to backhaul materials as landfarming requires considerable infrastructure and	LMI did not provide a response to items 1) and 2). Regarding item 3) the Hydrocarbon Soils Management Plans suggests that on-site treatment in using landfarming is preferred while this response suggests that LMI prefers to back-haul material for off -site disposal.

AANDC Comments	LMI Responses	SENES Comments
	is challenging given the short duration of the summer period. Further, LMI has indicated in the March 2013 Abandonment and Restoration Plan, that the West Zone crown pillar, which was mined between 1996 and 2004, has been left open for the future disposal of demolition debris and soils. However, in the event landfarming is determined to be feasible, LMI suggests that a stand-alone Landfarm Management Plan be provided to the NWB prior to construction.	
AANDC 2.7 Hazardous Waste Management The removal of the historic inventory of hazardous waste from the site. The management plans call for removal of the waste from site but large inventories continue. 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.	LMI takes every opportunity to backhaul hazardous waste from the site. Progressive reclamation activities during 2013 consistent of backhauling 51 mega bags of waste from the site. LMI agrees that the WMP should be clarified to indicate that hazardous wastes that are stored pending backhauled are to be stored in sealed drums in designated areas. LMI has noted this clarification and will include it in the next iteration of the WMP.	LMI has not provided an inventory of hazardous materials or a schedule for removing hazardous materials from the site
AANDC 2.8 On-Site Landfill 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. AANDC requests an update from LMI on the status of an application for an on-site landfill.	As noted in the March 2013 WMP, non-combustible, non-hazardous materials were historically placed within the landfill area at site and constantly kept covered. One burn pit is located on site adjacent to the landfill, and a second one is at the north end of the site. Historically, combustible non-hazardous, non-domestic waste was open-burned at these designated locations. The landfill at site has been used in the past on a regular basis and is included in previous versions of the WMP. LMI requests to continue to utilize the landfill and burn pits, and requests that these activities be included specifically in the Licence renewal to clarify the perception of a permitting issue noted by AANDC. This clarification will facilitate the progressive reclamation of the site. A WMP was previously submitted to the NWB for approval in March 2010 by MMG Canada as Appendix A of its Care and Maintenance Plan in accordance with Part I, Item 2 of water licence 2AM-LUP0914. This plan proposed the same landfill operations. The NWB distributed the Care and Maintenance Plan including its Appendices to interested parties for review and comment on October 13, 2010 and by November 12, 2010 comments were received from AANDC, EC, and the KIA. AANDC	It appears that LMI will submit an application Landfill Management Plan by the end of July 2014.

AANDC Comments	LMI Responses	SENES Comments
	recommended that if the facility is to be used, a plan be submitted by the Licensee. LMI will submit a landfill management plan by the end of July 2014.	
AANDC 2.9 Updated Compliance Plan A formal updated Compliance Plan to be approved by the Inspector. 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). 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.	LMI provided an updated compliance plan with the 2014 renewal application. Please see attached for your reference.	The compliance plan submitted was competed in 2013 and is outdated. It is not known whether many of the actions proposed for 2013 and 2014 were completed.
AANDC 2.10 Unattended Site 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 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.	There are many sites that effectively carry out care and maintenance without a constant presence at remote locations, and established close out procedures are followed specifically for this purpose. . LMI acknowledges that a site presence is required on a frequency during the open water period that ensures the conditions of the Licence for the protection of the receiving environment can be met, and to ensure that facilities are inspected on a regular basis to ensure stability prior to freeze up. To this end, LMI carries out monthly inspections from May to October [This is the frequency noted in the table of updates submitted with the application] and a comprehensive annual geotechnical inspection by a third party. LMI also complete upgrades when deemed appropriate. Given that the facilities are found to be in stable condition, and issues are addressed considering risks prior to leaving site, there is no need to maintain an on-going site presence. In contemplating the schedule for care and maintenance LMI has given due consideration of the increased risks to the safety of small caretaker crew working at a remote location. Similar to other northern remote sites in care and maintenance, LMI follows standard procedures prior to vacating the site on a temporary basis including securing access, inspection of waste management areas, inventory of fuel and chemicals, recording of fluid levels in tanks, and inspection of drainage systems.	LMI has not responded to the comments and concerns raised by AANDC. LMI cannot meet its own commitments in its management plans, water licence monitoring requirements or the 2007 Mine Site Reclamation Guidelines (AANDC, 2007) with an unattended site.
AANDC 3.0 Licence Updates Schedule B, Item 1 (m) and Part I, Item 3: LMI has requested the frequency for preparing annual reports	LMI will adhere to the annual reporting in regards to the annual report. However, LMI understands that an	LMI has agreed to annual reporting.

AANDC Comments	LMI Responses	SENES Comments
and reclamation cost assessments be reduced to once every three years. We see no need nor benefit for reduced reporting frequency.	update to the reclamation cost estimate may not be required every year where facilities and costs remain substantially unchanged. In these cases the estimate would be updated based on acceptable inflation indices particular for the location.	
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	LMI generally agrees with the requirement to submit, revise and update plans according to the Licence. LMI submitted updates to a number of plans in April 2013, which have not been formally approved by the Board	LMI has agreed
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.	To clarify, SRK suggested in the 2013 Geotechnical Inspection Report that LMI submit a request to the Nunavut Water Board for an amendment to the schedule. Given the lack of mining activities and loading, SRK suggested that a schedule consisting of bi-weekly inspections during freshet, and monthly inspections for the remaining open water period would be adequate. In the event water levels in the ponds are allowed to rise, then inspections should be carried out bi-weekly. However, given that containment areas are generally decanted early in the year, preventing the accumulation of water, monthly monitoring is adequate. Regarding the interpretation of care and maintenance from the noted guideline, LMI carries out activities and third party inspections as needed to ensure the site is secure and stable, and maintains a security deposit with AANDC. However, once scheduled care and maintenance activities are carried out and the site is secured, there is no need to maintain personnel on site until the next scheduled visit. Maintaining a crew at the remote site indefinitely presents safety hazards, and would require that facilities continue to operate which requires more fuel and increases hazards.	LMI is correct that SRK changed their 2012 recommendations in 2013 to be in accordance with LMI's request for biweekly inspections during freshet, and monthly inspections for the remaining open water period. This was understood to be based upon the assumption that the ponds would be drained which, to our understanding, has not occurred. LMI also indicates it is risky to have a crew at the remote site as it would "require that facilities continue to operate which requires more fuel and increases hazard". It is understood that at this time there is more than 2 million litres of hazardous fuel at the site. There is a Fuel Management Plans in place, but it has not been followed.
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.	LMI will investigate the feasibility of remote video monitoring by the end of July 2014.	LMI has agreed to investigate remote monitoring
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	To clarify, the use of the landfill was noted as a site waste management practice in the WMP submitted in 2009 and has been used frequently in the past and was considered as part of previous	It appears LMI will submit a licence application for an on-site landfill by the end of July.

AANDC Comments	LMI Responses	SENES Comments
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.	applications and plans. Its omission from the current Licence appears to be an administrative issue rather than an issue of scope. While the landfill has not been operated in recent years, LMI requests that the Licence renewal acknowledge the facility to address the perception of a permitting issue. LMI will submit a landfill management plan by the end of July 2014.	

Appendix 2

AANDC Water Licence Inspection Form and Photos
July 15, 2014 Inspection

WATER LICENCE INSPECTION FORM

☒ Original
☐ Follow-Up Report

Licensee	Licensee Representative
LMI / Elgin Mining	George Friesen
Licence No. / Expiry	**Representative's Title**
2AM-LUP0914 – Expired	
Land / Other Authorizations	**Land / Other Authorizations**
8WLC-LUP1415	76E/14-1, -2, -10 and 76E/11-3
Date of Inspection	**Inspector**
15/07/2014	Eva Paul

Activities Inspected

☒ Camp ☐ Drilling ☒ Mining ☐ Construction ☒ Reclamation ☒ Fuel Storage
☒ Roads/Hauling ☒ Other: Tailings ☐ Other:

Conditions: **A - Acceptable** **C - Concern** **U - Unacceptable** **NA – Not Applicable** **NI – Not Inspected**

Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	NA		Water Management Structures	U	3	Storage	C	3
Flow Measure. Device	NA		Culverts / Bridges	A		Spills	U	6
Source:	NA		Drainage	A		Spill Plan	U	6
Water Use:	NA		Erosion / Sediment	C	4			
Recirculation (y /n)	NA		Mitigation Measures	U	5	**Administrative**		
			Reclamation Activities	U	5	Records	NI	
			Materials Storage	A		Reports	U	7
Waste Disposal			Signage	NI		Plans	U	7
Waste Water	C	1				Notifications	A	
Solid Waste	A		**Monitoring**			**Other**		
Hazardous Waste	C	2	Sample Collection / Analysis	A				

**The number in the comments field will correspond with specific comments provided below.*

Samples taken by Inspector:	Location(s):
☐ Yes ☒ No	

SECTION 1 ☒ **Comments** (s.1) ☒ **Non-Compliance with Act or Licence** (s.2) ☒ **Action Required** (s.3)

Lupin Mine is currently inactive and the site empty. No water use or deposit of waste is currently permitted under the Type A water licence, which is expired and pending renewal. An Approval without a Licence ('Approval') has been issued in the meanwhile, to permit LMI to undertake work necessary to maintain the site. Mr. Friesen met me on site for the inspection, with Mr. Shawn Carter who will be conducting work at site this summer in partnership with Delta Engineering.

1. There was approximately one meter freeboard in the lower sewage lagoon. Mr. Friesen indicated that the level was lower than it was during his June visit, however, this level will have to be monitored. Mr. Friesen indicated that sample results from the June visit were compliant for discharge; however LMI is not currently authorized to discharge under the Approval.
2. There is no great reduction in hazardous waste on-site compared to the 2012 inspection. It does not appear from the 2013 monthly reports that any hazardous waste was backhauled in 2013. Hazardous waste should be a priority for backhaul.
3. Barrels of fuel marked 'WSC' were noted at the main water intake. These barrels were within 5 m of the water and not in containment. Tailings Containment Area (TCA) did not show any obvious faults aside from erosion. Tears are visible in the liner of the main tank farm. The satellite tank farm (STF) berm appears to be leaking; heavy staining is showing around the base (outside the berm) but the upper part of the banks are clean, indicating that it has not overflowed as was thought in 2012. This leads me to believe that the contamination is seeping from the bottom outward. Numerous barrels were noted at the shacks down the road from the quarry. There is a steady flow from Upper Sewage Lagoon to the Lower Sewage Lagoon (LSL) through a collapsed and rusted culvert. The creek downstream from the LSL discharge is exhibiting signs of impact from the discharge. It appears that an ice lens has formed under the active layer, and the active layer is being washed out. This may be due to ponding, or another effect of the discharge. In addition, there is a long crack in the dam that contains the lower sewage lagoon.
4. TCA road at Dam 6 is washed out. Mr. Friesen reported that this is a recurring problem.
5. The uncovered tailings remain an outstanding issue. No work has been conducted to cover the tailings despite repeated instruction to do so. No mitigation measures have been implemented to prevent windblown tailings/cover from impacting the tundra. Historic experiments to grow vegetation on the tailings cover near Dam 6 appear to have been successful; this could be implemented on other areas of covered tailings to aid in the encapsulation.
6. Spill reported in 2012 from the STF was not cleaned up; in fact it appears to have worsened. As such, the spill plan is not being implemented. Currently, nothing is being done to ensure that the uncovered tailings do not become windblown from the TCA, nor has the material that has already been blown from the TCA (documented in 2012) been returned to the TCA. Elevated levels of arsenic where noted in the samples taken outside the TCA and reported to LMI in a follow-up report in 2012.
7. Compliance Plan submitted in 2012 was not approved by the Inspector. This was discussed with Mr. Vokey of LMI in November 2012; however the changes that were discussed were never incorporated into the plan nor was the plan updated with the NWB. There are a number of items that were not reflected accurately in the plan. Commitments that were made in the plan have not

or in response to the 2012 inspection report have not been completed. Inspector's instruction to cover the exposed tailings has been repeatedly postponed. Annual reports do not adequately address Inspector's concerns from the 2012 Inspection Report.

SECTION 2	☐ Comments	☒ Non-Compliance with Act or Licence	☐ Action Required

Part E Item 6(e): Failure to contain mill tailings permanently within the TCA.
Part E Item 14: Failure to remove hazardous wastes from site.
Part H Item 4: Failure to provide adequate secondary containment.
Part H Item 8(a): Failure to implement the Spill Contingency Plan with respect to spill from the STF and the TCA.
Part I Item 9: Failure to conduct progressive reclamation, including cover of tailings and revegetation.

SECTION 3	☐ Comments	☐ Non-Compliance with Act or Licence	☒ Action Required

1. Water level of the lower sewage lagoon is to be monitored following rain events or at least monthly. Discharge may only occur with a valid licence in place.
2. An updated inventory of hazardous waste is to be submitted to the inspector and reported in the Annual Report.
3. All new hazardous waste is to be backhauled in the year it is created to prevent further accumulation of waste, and a portion of the historic waste. Quantities and type of waste backhauled is to be reported in the Annual Report.
4. A geotechnical inspection is to be conducted on all engineered water management structures, including but not limited to: Main and Satellite Tank Farms, Upper and Lower Sewage Lagoon, and waste containment areas. The engineer's report is to be submitted to the NWB and to the Inspector by October 31 2014, accompanied by a plan and timelines to implement the engineer's recommendations.
5. The uncovered tailings shall be covered according to the engineer's specifications and any applicable operating plan, and tailings/cover blown out of the TCA is to be replaced in the TCA and permanently encapsulated. This is to be completed and a report submitted to the Inspector by October 31 2014.
6. All contaminated material from around the STF is to be removed as per the Spill Contingency Plan. An investigation as to the origin of the contamination is to be undertaken, and the STF berm is to be assessed by a qualified engineer. A report is to be submitted to the Inspector by October 31 2014 demonstrating a) the engineer's findings, b) that the spill is cleaned up and c) that the necessary work to prevent further contamination has been completed.

Licensee or Representative	Inspector's Name
-	Eva Paul
Signature	**Signature**
-	Sent electronically
Date	**Date**
-	August 5, 2014

Office Use Only: Follow-up report to be issued by Inspector ☐ Yes ☐ No

Attached: Appendix 1 - Photos of Inspection

CC: Phyllis Beaulieu, Manager of Licensing, NWB
Erik Allain, Manager of Field Operations, AANDC
Baba Pedersen, Resource Management Officer – Kitikmeot Region, AANDC

Appendix 1: 2AM-LUP0914 PHOTOS OF INSPECTION, July 15 2014

Figure 1. Lupin Mine Site from the air July 15 2014. Main tank farm in the foreground.

Figure 2. Aerial view of the dam at Lower Sewage Lagoon (LSL).

Figure 3. Crack in the dam at LSL.

Figure 4. Main tank farm (MTF) and Hazardous Waste Storage.

Figure 5. Barrels left near the lake at the water intake. Barrels were left by Water Survey Canada without authorization.

Figure 6. Rips visible in the exposed liner at the MTF.

Figure 7. Satellite Tank (STF) Farm from the air. Heavy staining visible within and without.

Figure 8. Staining outside the STF berm.

Figure 9. Barrels noted at shack past the quarry.

Figure 10. Steady flow seen through rusted culvert from the Upper Sewage Lagoon to the Lower Sewage Lagoon.

Figure 11. Permafrost degradation noted at discharge from LSL.

Figure 12. Ice lens forming at discharge from LSL. Closeup of Figure 11.

Figure 13. Recurring wash-out location at Dam 6. Aerial view in Figure 17.

Figure 14. Dark patch shows the area of tailings still uncovered.

Figure 15. Material deposited outside the TCA.

Figure 16. Material deposited outside the TCA.

Figure 17. Growing vegetation cover near Dam 6. Recurring washouts also visible on left, resulting in deposit to water.

Figure 18. Barrel leaking in the 'Third Party' fuel berm.