Environmental Protection Operations Directorate
Prairie & Northern Region
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ECCC File: 6100 000 009
NWB File: 2AM-LUP2032

November 12, 2020

via email at: licensing@nwb-oen.ca

Richard Dwyer
Manager Licencing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Dear Richard Dwyer,

RE: 2AM-LUP2032 Lupin Mine Water Licence – Final Closure and Reclamation Plan

Environment and Climate Change Canada (ECCC) has reviewed the Final Closure and Reclamation Plan submitted to the Nunavut Water Board (NWB) for water licence 2AM-LUP2032 by Lupin Mines Incorporated (the Proponent).

ECCC's specialist advice is based on our mandate pursuant to the *Canadian Environmental Protection Act* and the pollution prevention provisions of the *Fisheries Act.*

The following comment is provided:

1. **Tailings Containment Area**

   Reference(s):

   - Section 3.3.1 Tailings Containment Area (TCA), Final Closure and Reclamation Plan
   - Appendix H-9 Technical Memorandum regarding Cover Data from Lupin Mine Tailings Containment Area for response to TM/PHC Commitment No.10 (Stantec, 2019e), Final Closure and Reclamation Plan

   Comment:

   The Proponent stated, "the 2016 and 2017 cover performance data indicated that the cover active layer (thaw depth) ranged from 1.0 m to 1.5 m, and varied between reporting years and TCA locations." Furthermore, the Proponent stated, "as of 2017, there remained approximately 123,500 m^2 to cover in Cell 5 and 86,000 m^2 to cover in Cell 3. Covering of Cell 5 resumed in 2018. Approximately 19,136 m^3 of esker material was placed in Cell 5 during 2018 to cover exposed tailings. An area of approximately 104,500 m^2 remains to

be covered in Cell 5 and approximately 86,000 m^2 remains to be covered in Cell 3, for a total area of approximately 190,500 m^2 remaining to be covered within the Tailings Containment Area."

Based on the above statements, ECCC is of the view that the active layer (thaw depth) is thicker or deeper than the cover thickness of 1 m, implying that the thaw depth will penetrate beyond the cover into the tailings, which may thaw causing potential oxidation of sulphide content that will result in Acid Rock Drainage (ARD)/Metal Leaching (ML).

Although the Stantec Technical Memo (Appendix H-9) concluded, "Oxidized tailings were not observed within the test pits. In general, the water quality results from 2002 and 2019 are comparable. Based on these observations and measurements, the cover appears to be functioning as permitted," test pit 1 photograph shows frozen tailings at 1.3m depth (August 24-25, 2019), and test Pit 2 photograph shows water seeping into the test pit at 1.3m depth. These photographs show that the thaw penetrated beyond the cover into the tailings. Therefore, ECCC recommends that the proponent implement a monitoring and mitigation program to detect and remediate any ARD/ML issues should that occur.

Recommendation:

ECCC recommends that the proponent have a mitigation plan to address acidic leachates that may occur should the tailings begin to thaw and produce acidic leachate.

If you need more information, please contact Victoria Shore at Victoria.Shore@canada.ca.

Sincerely,

Shore

Victoria Shore
Senior Environmental Assessment Coordinator
Environmental Protection Operations Directorate, Prairie Northern Region

Cc: Brian Asher, Acting Head, Environmental Assessment North (NT and NU)
Environmental Protection Operations Directorate, Prairie Northern Region