SRK Consulting (Canada) Inc.
2200–1066 West Hastings Street
Vancouver, BC V6E 3X2

T: +1.604.681.4196
F: +1.604.687.5532

vancouver@srk.com
www.srk.com

Memo

To:	George Friesen	**Client:**	Lupin Mine Incorporated
From:	Alvin Tong	**Project No:**	1CL008.001
Cc:	Peter Healey; Arlene Laudrum	**Date:**	October 29, 2014
Subject:	Addendum to 2014 Lupin TCA Geotechnical Inspection Report		

Introduction

This memorandum is issued as an addendum to the Sewage Pond Inspection Report dated October 2014 and forms part of the request outlined by AANDC in Section 3, Article 4 of the Water License Inspection Form issued on July 15, 2014. As part of the form, AANDC request a separate visual inspection was carried out at the main fuel tank farm and satellite tank farm at the Mill Site (Figure 2.2 of the report) during the visit on August 19th, 2014. The geotechnical inspection was carried out by Alvin Tong, PEng., accompanied by LMI representative George Friesen. It should be noted that there is no statutory requirement to complete a geotechnical inspection on these containment berms for the fuel tank farms. This memorandum specifically addresses the findings of the tank farm inspection as requested in the AANDC Inspection Form and provides recommendations.

Observations

The tank farm containment systems were observed to be in geotechnically stable condition. Liner exposures and minor damages are noted in both tank farms. The liner exposure is mainly located near the crest of the berm where sand overliner either eroded away or sloughed off. Minor damage typically associated with an exposed liner was found to include punctures of various sizes ranged from less than 2 cm to 30 cm in longest dimensions. It should be noted that site personnel complete repairs to such punctures when identified after inspections. Minor erosion gullies were observed in some areas in the downstream slope of the berms. Active seepage from the tank farms was not observed at the time of visit. Minor water ponding was observed in the main tank farm, assumed to be from runoff ranging from 5 to 15 cm. Engineering judgment suggests the water ponding in the tank farms indicates that the liner is unlikely to be compromised by damages in the bottom of the tank farms. Photographs of the tank farms are included in Attachment A.

Recommendations

Prior to adding new fuel in the tank farms, it is recommended that any noted damage to the liner to be repaired to ensure containment and the sand overliner be replaced over the exposed liner to provide for long-term protection. In addition to repairs on visually identified liner damages,

general earthwork maintenance repairs should be carried out on the erosion gullies in downstream slopes of the containment berms.

References

SRK Consulting Ltd. 2014. 2014 Sewage Pond Dam Geotechnical Inspection. 1CL008.001. Prepared for Lupin Mines Incorporated.

Attachment A: Photo Log

Picture 1: South view from the front of the main tank farm with shallow ponding water inside.

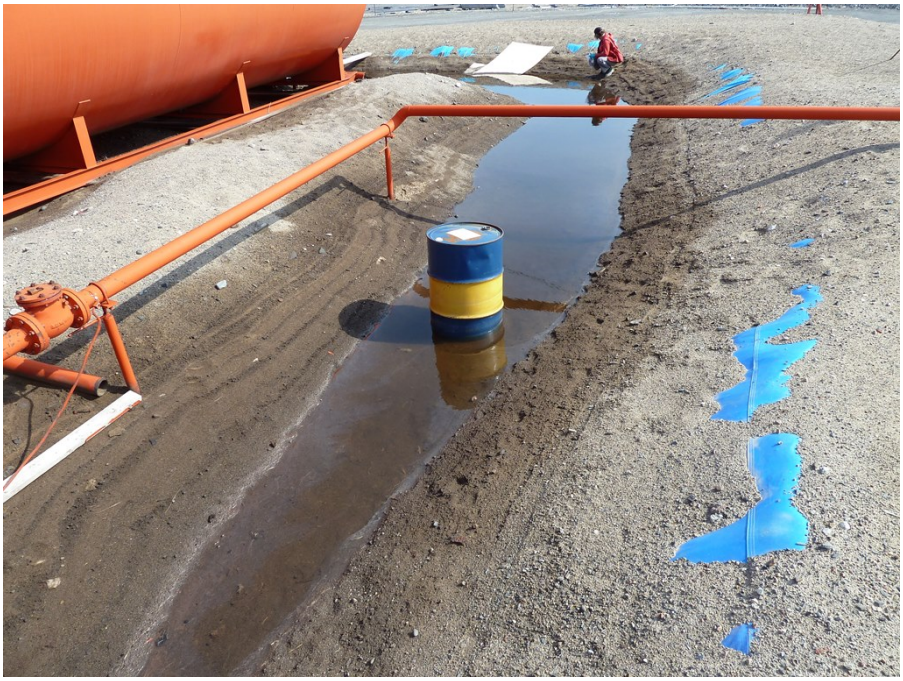
Picture 2: North view from the front of the main tank farm with shallow ponding water in the front of the containment.

Picture 3: North view from the back of the tank farm with shallow ponding water. Note the exposed and damaged liner.

Picture 4: Closure up view of the damaged liner.

Picture 5: South view from inside of the main tank farm.

Picture 6: View of the damaged liner in the northwestern corner of the main tank farm.



Picture 7: South view of the southwestern corner of the satellite tank farm with exposed liner.

Picture 8: South view of the eastern embankment of the satellite tank farm with exposed and damaged liner.