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Memo

To:	Patrick Downey, Elgin Mining Inc.	**Client:**	Lupin Mines Incorporated
From:	Arlene Laudrum, PGeo, FGC	**Project No:**	1CL008.000
Cc:	Karen Costello, Jean Allen, Eva Paul of AANDC Sean Joseph, David Hohnstein of NWB	**Date:**	October 29, 2014
Subject:	Arsenic concentrations in sample of windblown material collected by AANDC in 2012 does not exceed background levels		

1 Background

On 6 July 2012 AANDC collected a soil sample at Dam 6 of the Lupin Mine Tailings Containment Area (TCA). It is understood that the sample was collected on the west side of Dam 6, outside of the TCA. Based on the results of this sample AANDC raised the concern that airborne arsenic and metal contamination continues to spread into the environment; that windblown tails were being deposited outside of the TCA. On 29 October 2014 analytical results were forwarded to SRK for review and comment.

Dam 6 is located on the southwest side of the TCA. The dam is described as a minor perimeter closure established to retain some tailings beach and ponded water in Cell 3 (BGC 2003). Cell 3 has a surficial area of approximately 614,000 m^2 of which 540,600 m^2 was used for tailings deposition (Kinross 2003). The tails in Cell 3 are covered with 1.0 m or more of esker material except for an 86,000 m^2 area of uncovered saturated tails situated more than 750 m from Dam 6.

A Phase 1 and Phase 2 Environmental Site Assessment identified arsenic as the primary metal of concern at the site and secondary metals of concern included chromium, copper, lead, molybdenum, nickel and zinc (Morrow 2006). The study documented that background soil quality exceeds the *Canadian Council of Ministers of the Environment* (CCME) screening criterion for arsenic of 12 mg/kg and that elevated metal concentrations were due to the site geology. The 95th percentile of arsenic concentration of the background data set was used to determine a background soil concentration limit above which would trigger further action. The statistical evaluation of the data set also concluded that the secondary metals of concern do not represent contamination except where they exist without significant arsenic. The Phase 2 study determined a management/remediation trigger for arsenic in soil of 179 mg/kg (Morrow 2006).

2 Sample Results

A comparison of the soil sample results for the concentrations of the metals of concern with the CCME Residential Land Use (RL) and Industrial Land Use (IL) criteria are provided in Table 1.

Table 1: Comparison of metals of concern with AANDC 2012 soil sample result.

Parameter	Dam 6 Sample Result (mg/kg)	CCME RL Criteria (mg/kg)	CCME IL Criteria (mg/kg)
Arsenic	162	12	12
Chromium	29.1	64	87
Copper	100	63	91
Lead	150	140	600
Molybdenum	0.4	10	40
Nickel	25.4	50	50
Zinc	39	200	360

The results for soil sample “Dam 6” exceed the CCME generic guidelines for residential land use for arsenic, copper and lead. Concentrations for arsenic and copper also exceed the industrial land use guideline. **The arsenic result does not exceed the site specific background concentration trigger limit of 179 mg/kg.**

3 Conclusion

The analytical results of the sample collected by AANDC in 2012 represent arsenic and metal concentrations consistent with the background soil concentrations specific to the site. The result of this single soil sample does not indicate that further remedial efforts are warranted; it does not document the occurrence of ongoing windblown tailings being spread into the environment.

4 Recommendations

It is recommended that the ultimate remedial/reclamation plan for the site apply soil remediation criteria that are consistent with the background concentrations at the site and/or that are based on a site-specific risk assessment.

On October 10, 2014 LMI committed to provide further information in the form of physical and soil chemical characterization data from samples collected in a 25 m grid pattern at the downstream base of Dam 6 (LMI 2014). The sampling area should be established within 5 m of the toe of the dam and three rows of samples should be collected. Grain size analysis along with metals analysis should be conducted on every other sample collected immediately adjacent to the dam. Samples collected adjacent to any sample that returns arsenic results greater than the background arsenic concentration trigger limit of 179 mg/kg should then be analysed. The

sampling program should focus on collecting and characterizing the dust from the surface of the soil as opposed to the underlying soil in order to provide additional support to the conclusions derived above from the result of the single sample collected by AANDC.

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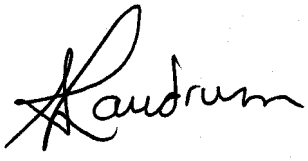

Arlene Laudrum, PGeo, FGC
Principal Consultant

5 References

BGC 2003. 2003 Geotechnical Inspection of Perimeter Tailings Dams and Waste Containment Dikes. Prepared for Kinross Gold Corporation. Dated September 19, 2003.

Kinross 2003. Tailings Containment Area Cover Request for Proposal. Prepared by Kinross Gold Corporation. Dated December 3, 2003.

Lupin Mines Incorporated 2014. LMI Responses to Intervener's Submissions, 141010-LMI Response to AANDC-SENES_Final. Submitted by email to the Nunavut Water Board on October 10, 2014.

Morrow 2006. Phase 1 and 2 Environmental Site Assessment, Lupin Mine Site, Nunavut Territory. Prepared for Kinross Gold Corp. Dated January 11, 2006.