



# Giant Mine Environmental Assessment

## IR Response Template

Round One: Information Request - Environment Canada #07

May 31, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: Environment Canada #07**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

Alternatives North IR #12

**Date of this Response**

May 31, 2011

**Request**

***Preamble:***

An array of survey beacons is in place to monitor movement of a test cover plot of 32 m<sup>2</sup>. Cover movement will be a function of the cover materials and the geotechnical characteristics of the underlying tailings and foundation materials (fine grained vs coarse grained, degree of saturation, freeze-thaw cycles). It has been observed at many mine sites in northern environments that the tailings surface can change significantly with time through heaving, frost action, weathering, erosion, etc. Therefore, determining tailings characteristics throughout the impoundments and monitoring movement of the tailings surface over time may provide valuable information about zones of concern and zones of greater movement.

***Question:***

Please indicate if there is currently and/or will be a surveying program to examine the current rate and patterns of tailings surface movement.

**Reference to DAR:**

DAR, s.5.5.2.5 Test Tailings Cover Plots

**Reference to the EA Terms of Reference**

TOR, s. 3.6 Monitoring, Evaluation and Management





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### Summary

Tailings surfaces will be surveyed as part of final design of the cover system, and probably during and immediately after construction. Particular areas may also require several years of post-construction surveying. But, The Giant Mine Remediation Project (Remediation Project) has no plans for comprehensive and continuing surveys of the covered tailings.

### Response

Outside of the test cover areas, there is currently no surveying program to examine rates and patterns of tailings surface movement at Giant Mine.

There are portions of the proposed tailings covers that will warrant several years of post-construction surveying. Portions of the Northwest Pond where drainage swales and channels need to cross soft tailings are an example. However, while it is true that heaving, frost action, weathering and erosion of tailings surfaces have been observed at other northern mines, these processes have not generally created any new risks to the environment or people. Therefore, the Remediation Project has no plan for comprehensive and continuing surveys of the covered tailings surfaces.

There are cases where particular types of tailings surface movement have led to localized problems. At the Beaverlodge Mine in northern Saskatchewan, for example, groundwater and frost action caused radioactive tailings to bubble upwards through a coarse rock cover. The covers proposed for the Giant Mine are designed to prevent that from occurring. But the case is illustrative because the resulting tailings boils were noted in routine inspections. An intensive program of investigation was then focused on the boil areas, allowing appropriate repair measures to be designed and completed. A program of regular comprehensive surface surveys would not have helped and in fact probably would have directed attention away from the real problem.

It is expected that comprehensive surveys will be required for final design of the tailings regrading and covers. Surveys will also be required during tailings cover construction and at completion of the construction. The design and construction surveys will provide a baseline against which future movement could be compared, in the event that such movement does lead to significant risks.

Further information on monitoring is addressed in the response to Alternatives North Information Request #12.

