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Brad Thompson
Public Works and Government Services Canada (PWGSC)
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PERFORMANCE OF FOAMING RESIN DURING FIELD PROOF-OF-CONCEPT TRIAL

Dear Mr. Thompson,

This letter summarises Golder's appraisal of the foaming resin proof-of-concept trial carried out at the South Tailings Pond at the Giant Mine Remediation Project on October 24, 2013. The outcomes of this test, specifically addressing the questions outlined in the **Work Plan #: 006 Foaming Resins Execution Plan**, are described below.

- The mobility of the un-foamed resin proved satisfactory during the proof-of-concept trial. During the trial, the resin was poured onto the flat floor of a shipping container. The resin did not migrate more than 50 cm from the delivery point before foaming occurred. However, it should be noted that the diameter of the delivery hose was very small and as such, may have limited the mobility of the un-foamed resin. On a production scale, we anticipate that a much larger volume may be delivered and the un-foamed resin, because of its unit weight, may spread further prior to the initiation of foaming.
- The potential distance of migration along an inclined surface prior to the initiation of foaming was not tested as time was limited. While it is not anticipated to be problematic, this portion of the proof-of-concept trial should be tested during an additional trial.
- The proof-of-concept trial was also planned to be undertaken within/onto a sample of underground run-of-mine muck. The aim of this trial was to determine whether the permeability of the muckpile would be sufficient to allow the resin to "soak into" (or saturate) the muck. As the location of the trial was moved from its originally proposed location on the morning of the test, this portion of the proof-of-concept trial could not be completed. It is our opinion that whether or not the saturation of the muck with resin prior to the initiation of foaming is possible should still be tested.
- The equipment supplied to conduct the proof-of-concept trial requires refinement. The suction hoses which extracted the product from the drums frequently recoiled out of the drums which resulted in interruption to resin delivery. As discussed above, the hoses which were to be used to deliver the product to the shipping container were of a small diameter. This limited the rate of resin delivery to the shipping container and resulted in the proof-of-concept trial being cut short due to the loss of daylight. The plug constructed in the shipping container did not reach the full height of the inside of the container. Nevertheless, it is expected that the plug would have been completed, had additional time been available.

The issues described above have been outlined for and discussed with the Contractor, and are currently being addressed. Additional details regarding the trial can be found in the attached report.

Yours very truly,

GOLDER ASSOCIATES LTD.

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