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May 29, 2009

Mr. Richard Edjericon
Chairperson
Mackenzie Valley Environmental Impact Review Board
PO Box 938, 200 Scotia Centre
5102-50th Avenue
Yellowknife NT X2A 2N7

Dear Mr. Edjericon:

**Re: Environmental Assessment of the Giant Mine Remediation Plan (EA0809-001)
– Freeze Optimization Study**

During the scoping phase of the Giant Mine Remediation Plan Environmental Assessment (EA), Indian and Northern Affairs Canada (INAC) committed to keep the Mackenzie Valley Environmental Impact Review Board (the Review Board) apprised of its plans to conduct the freeze optimization study (the Study) in support of the proposed Giant Mine Remediation project. The following is an overview of the progress INAC has made to date in its preparation for the Study and an outline of the steps INAC is intending to take to complete the Study.

As INAC noted during the scoping phase of the EA, the Study will serve to define and confirm certain design and engineering elements of the Frozen Block Method which forms a central part of the proposed Giant Mine Remediation Plan. More specifically, the results of the Study will provide and confirm the best methods to increase the speed of the freezing; build in certain efficiencies; and confirm certain modelling and power requirements that can be incorporated into the Remediation Plan.

At the time of the scoping hearing, INAC indicated that Chamber 14 would be used for the Study. For the past six months, INAC has been working closely with its Technical Advisor and the Department of Public Works and Government Services Canada (PWGSC) to prepare the project brief and design specifications for the Study. Through this process it was identified that additional site work would be required to conduct the Study in this location, which was not originally anticipated. The additional site work involves the large rock outcrop that is located on the surface above Chamber 14. In order to conduct the Study in a manner that would yield satisfactory results and protect worker health and safety it has been determined that a level work area would be required. To create this, it would be necessary to conduct a drilling and blasting program to remove a portion of the rock outcrop.

INAC believes that because of this new information, to conduct the Study in this location would cause unnecessary disruption to the site and could result in adverse impacts to the recently realigned and rehabilitated Baker Creek. As such, INAC and its Technical Advisors along with PWGSC have determined an alternative location. INAC now intends to move the Study to a more optimal location being Chamber 10 which is located on the opposite side of Highway No. 4 on a more level and cleared area of the site (see attached map).

The Study that INAC is proposing to conduct at Chamber 10 has the same intent and purpose as the original freeze optimization study described during the scoping hearing. The intended scope has however been adapted slightly in light of the nature of Chamber 10. Chamber 10 is one of the smallest arsenic chambers on the Giant Mine site. As such, with a relatively small increase in the amount of drilling, INAC will now be able to freeze the entire chamber and stabilize all of the bulkheads associated with the chosen chamber (instead of just targeting a portion of a chamber and only one bulkhead as originally planned in regards to Chamber 14). Details of the proposed Study are outlined in Appendix A.

The Study will be similar to the earlier proposed study in that the components can be considered temporary and are removable if necessary. However INAC would prefer, as indicated for the previously designed study, that such components remain in place for the benefit of the Remediation Plan.

Overall, despite the new location, the nature of the Study has not changed. It remains as originally described in the October 17th submission, small and unobtrusive. INAC believes that the results gained will provide important information on the Frozen Block Method and will help to inform the EA and Regulatory processes for the Remediation Plan, even more so now that INAC will be freezing an entire chamber.

In light of the change in location for the Study, and in light of other necessary interim activity work that has been identified as needing to be done regarding bulkhead inspection and stabilization in the same vicinity, INAC has determined that two structures, the pit crusher building and related conveyor assembly structure, must be removed in order to enable access to the corresponding surface area so the work can proceed. These buildings will be re-located to a storage location on site. Demolition of these structures will not commence however until the EA and regulatory processes are complete and remediation of the site begins.

As indicated in INAC's October 17, 2008 submission, INAC anticipated that implementation of the Study would occur by the summer of 2009. In order for the Study to be implemented this year, implementation must commence by no later than June 8, 2009 to ensure that the components of the Study are in place prior to the winter months.

The Study as described herein, including the moving of the aforementioned structures, has been fully assessed and INAC has concluded that it can proceed without any further licences, permits or other authorizations.

INAC in consultation with its technical advisors including PWGSC, as well as Mackenzie Valley Land and Water Board (MVLWB) staff, determined that the Study will not require a water licence. As for land use permits, INAC will not be making application for any land use permitting for the Study or otherwise on the site, unless and until the joint determination is made between the MVLWB and the territorial Minister (GNWT) under s.98(2) of the *Mackenzie Valley Resource Management Act (MVRMA)*. INAC understands that an initial meeting has been held between the MVLWB and the GNWT on this issue. Until such time as the s.98(2) determination is actually made however, the extent of the applicability of land use regulation, including specifically the application of s.s.4(b) and 5(b) of the *Mackenzie Valley Land Use Regulations* to the Giant Mine site remains undetermined, and therefore presently do not apply. No other authorizations will be required for the Study. As such, INAC intends to complete the drilling for the Study this summer as originally proposed. This will enable the results of the Study to be provided to the Review Board prior to the completion of the Board's review of the Remediation Plan which will allow the study to be of maximized benefit to the EA and regulatory processes.

The intention of this letter is therefore to provide an update on the Study as well as confirm INAC's intention to proceed with the drilling portion of the Study commencing on June 8, 2009. As a result of the work involved in changing and finalizing the Study, INAC was unfortunately prevented from providing an update any earlier however for the reasons specified above INAC still intends to meet its originally proposed timelines. More specific information about Study results and timelines can be found in the attached Appendix A.

INAC looks forward to reviewing and discussing the important information that will be provided from this Study. INAC will continue to keep the Review Board apprised of ongoing developments associated with the Study.

Please do not hesitate to contact us if you have any questions regarding the above.

Sincerely,



Martin Gavin P.Eng
Manager, Giant Mine Remediation Project

- c. Mr. Willard Hagen
Chair
Mackenzie Valley Land and Water Board

Appendix A

Details Description - Proposed Freeze Optimization Study

Purpose and Overview of Study

- The main purpose of the Study is the same as the earlier proposed study in that it is to confirm and compare the freeze rates for both the active and hybrid freeze systems. The Study will provide information about the operation and efficiency, including the power requirements, for each system. The Study will also provide more accurate cost estimates for the installation and operation of all components of the freeze systems.
- The Study involves the freezing of an entire arsenic chamber on the Giant Mine site. The Study area includes a small section of land, approximately 1200 square meters in area, near the pit crusher and conveyor complex. The attached map shows the location of the Study area (shown in green).
- The Study comprises the drilling of forty holes, approximately 150mm in diameter, in the area around Chamber 10 to shallow depths of approximately 100m. These holes will be both vertical (drilled from surface) and horizontal (drilled from underground). Once drilled, welded steel tubes (freeze pipes) will be inserted in the holes.
- Similar to the study proposed for Chamber 14, the Study at Chamber 10 envisages using both active and hybrid freezing systems to compare freeze rates and relative efficiencies in power consumption. The active freezing system includes a mobile freezing unit (similar to that used in ice rinks) connected to the freeze pipes through which coolant will be circulated at approximately -30 degrees Celsius. The hybrid thermosyphon system uses both active freezing (a cooling refrigerant unit) and passive freezing. By using different freeze systems, with possibly different low temperature freeze fluids in a similar test situation, engineers will obtain better comparative information on the relative efficiencies and operational/maintenance requirements of the different freeze systems. This information will be very important in informing both the EA and in the development of engineering specifications for the full freeze project implementation.
- The Study also includes the drilling of forty smaller diameter instrumentation holes. These holes will also be both vertical (drilled from surface) and horizontal (drilled from underground). The instrumentation holes will house the monitoring equipment (thermistors) that will be used to monitor the rock temperature and the progression of the freeze front as the ground freezing progresses through the rock and the arsenic chamber.

- The Study area includes four (two upper and two lower bulkheads) of the sixty-one bulkheads located on the site. Bulkheads are concrete plugs used to seal the arsenic trioxide dust into the underground storage chambers. Two of the bulkheads associated with Chamber 10 are problematic because of the high amount of arsenic seepage that occurs at these two locations. The arsenic that seeps from these two bulkheads increases the amount of arsenic in the mine water that must be pumped from the mine and treated by the water treatment plant. Conducting the Study in this location will provide valuable information on the freeze rates at leaking bulkheads and when frozen, will have the added benefit of eliminating the arsenic seepage from these bulkheads.

Infrastructure / Equipment

- Earthwork equipment, such as a loader or grader, will be required to provide a level grade for the study area. The main equipment required for the Study is a drill rig that would be used to drill the holes for the freeze pipes and monitoring equipment.
- The freeze and instrumentation holes will be drilled using a rotary mud drill rig. The drill rig requires approximately 2-3 m³ of water per day. The freeze plant will require approximately 30 m³ of water per day during operation in summer months. The water for the drill rig and the freeze plant will be either trucked to the site from the municipal water supply or piped from Great Slave Lake.
- The drill muds are re-circulated at an estimated 95% recovery rate therefore drill wastes will be minimal. All drill wastes will be removed from the site and disposed of in a licensed facility.
- A portable freeze plant along with a small instrumentation building will be located on the site. The freeze plant is approximately fifteen by twenty-five meters in size and the instrumentation building is approximately five by five meters. An electrical substation will also be brought to the site to provide power to the freeze plant. The substation is approximately three by five meters in size. All of this equipment is skid-mounted and can therefore be easily removed from the study area.
- An insulated pipeline on surface will be used to connect the freeze pipes and monitoring equipment to the freeze plant and instrumentation building.
- Once the Study is complete, the freezing plant, instrumentation building and electrical substation, pipeline and freeze pipes could be removed. INAC is however proposing to leave this equipment in place for the benefit of the Remediation Plan.
- The pit crusher building and the related conveyor assembly structure will need to be removed in order for the drilling to take place in the study area. The attached map identifies the buildings that INAC intends to re-locate to a storage location on the site. Demolition of these buildings will occur after the EA and regulatory processes are complete and the remediation of the site commences.

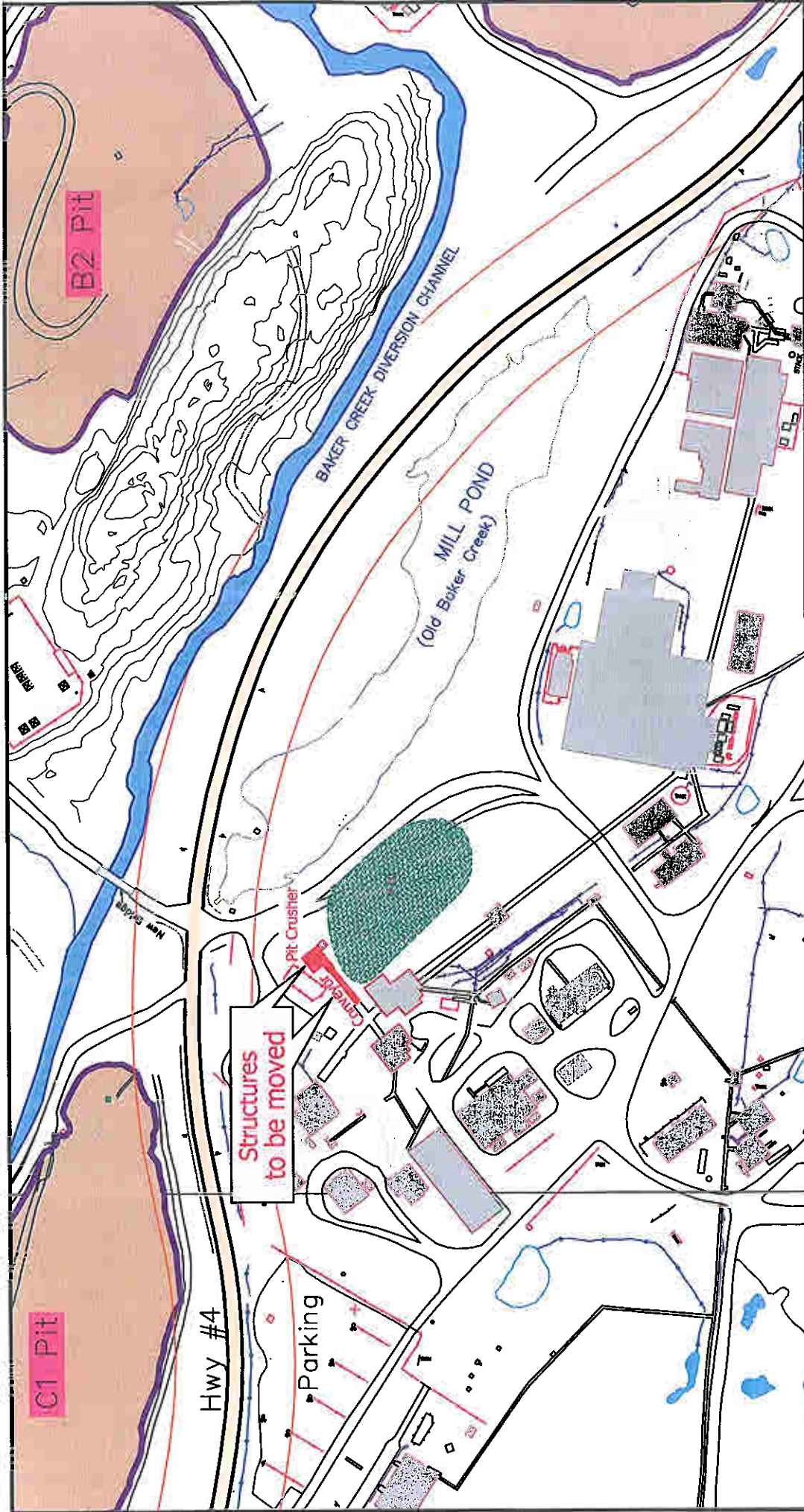
- The existing soil within the study area will be tested. If it is found that the soils exceed the industrial standards outlined in the GNWT's Guidelines for Contaminated Site Remediation, INAC will remove the soil. If the contaminated soil cannot not be completely removed INAC will cap the area by placing a meter of clean fill material on the site. This is consistent with the approach outlined in the proposed Remediation Plan. Any contaminated soil will be relocated to an area near the north tailings pond until the EA and regulatory processes are complete and remediation of the site can commence.


Contingency Plans

- The contractor hired to carry out the Study will prepare and work under the guidance of an emergency and spill contingency plan. Spill kits will be available on the site.
- No fuel will be stored within the study area.

Timing / Anticipated Results

- As was proposed with the earlier study, it is INAC's intention to begin implementation of the Study in the summer of 2009.
- INAC will begin to receive results when the Study commences. The initial information provided by the Study will include the drilling accuracy of the specific types of drill equipment and the optimal methods of installing and welding the freeze pipes. The Study will also provide the optimal installation methods for the different types of freeze systems, including operating efficiency, within a few months of the commencement of the Study (fall 2009).
- The instrumentation in the monitoring holes will determine the rate of progression of the freezing through the rock and arsenic chamber. INAC anticipates that the freeze progression data will be available by November 2009 and will continue to be provided through the Study as the freezing progresses.
- As with the earlier proposed study, INAC anticipates that a complete set of freeze progression data will be available and provided to the Review Board by spring 2010.
- INAC commits to keeping the Review Board apprised of the progress related to the Study.



		Indian and Northern Affairs Canada	Affaires Indiennes et du Nord Canada
Giant Mine Remediation Project			
FREEZE OPTIMIZATION STUDY			
DATE:	May 28, 2009	SCALE:	NTS
DRAWN BY:	MSL	REVISION:	
UPDATED BY:		REVISION:	
Fig. No.		Fig. No.	

SURFACE GENERAL ARRANGEMENT

File Name: S:\2009 Giant\...\Surface Map\Surfmap_2009_jarrett.dwg