



November 26, 2009

Ms. Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, Nunavut  
X0B 1J0

*Your file* *Votre référence*

*Our file* *Notre référence*

Subject: Abandonment and Reclamation Plan, Former Nanisivik Mine Site

Ms. Beaulieu

As you may be aware, Fisheries and Oceans Canada (DFO) is the current federal custodian for the above noted property. Further to your letter of October 26, 2009, we have reviewed the submission from Breakwater Resources Ltd. dated October 15, 2009 and would like to submit the following comments for your consideration:

*General Comments*

1. Although it is indicated that the recommended option of biopiles has been used effectively under similar circumstances in the high Arctic, land farming has also been outlined as a viable option. We are seeking some clarification on the differences between the 2 approaches and associated timelines relative to the subject site and why biopiles have been put forth as the recommended option.
2. Given the nature of the site conditions and the remoteness of the location, the schedule put forth seems very ambitious. Have the timeframes related to compliance requirements with the Nunavut Land Claims Agreement been taken into account in the schedule? (MPC, NWB, NIRB, EA). Can a more detailed Gantt Chart be provided for the proposed project which outlines key activities and related timeframes in further detail?
3. The site plan only indicates 4 biopiles. Depending on the volume of material to be treated, up to 20 or more biopiles could be required and the proposed location offers no contingency for unexpected increased volumes. It is suggested that the biopiles be located between the road and the southerly limit of the property in order to have contingency space for unexpected increased volumes. Multiple entrances to the biopiles should be considered to facilitate access for maintenance should volumes be extensive.

4. Canadian Coast Guard (CCG) will have some ongoing program requirements for use of the docking facilities and laydown area adjacent to the docking facilities during the time period proposed for site remediation. Activities being completed in parallel will need to be coordinated between CCG and Breakwater.

#### *Executive Summary*

It is unclear as to whether the area to be excavated will be immediately backfilled with clean fill or it is proposed to leave the excavation open until all remediation is complete. We recommend backfilling the excavated area immediately with clean fill based on the following observations;

- Health and safety issues could be created for workers on site and wildlife (open pit)
- If the excavation occurs in proximity to the access road, it may impact the structural stability of the roadway and cause safety issues for users
- The permafrost would thaw, which may require additional soil removal and require ongoing water pumping and treatment

#### *Section 3, page 3-4, paragraph 5*

The Spill Contingency Planning and Reporting Regulations under the Nunavut Environmental Protection Act indicates that the person or entity storing the contaminants has the overall responsibility to provide the plan. Therefore the contractor's plan should be closely reviewed by DFO prior to acceptance and not simply provided to the NWB.

#### *Section 3, page 4, paragraph 2 and 3*

Some additional guidance should be provided with respect to how impacted water will be treated. There is detailed discussion on the treatment of impacted soils, but not water. Section 6.4.1 needs to elaborate on water not directly from the biopiles. Criteria for the treatment of the impacted water needs to be included (similar to what has been provided for the soil).

#### *Section 3 page 4-5, paragraph 5*

"The preliminary schedule includes a provision that the demobilization of equipment may not occur until 2011...". If the bioremediation (biopiles) is scheduled to run until 2013, how will this be accomplished with no equipment? It is suggested that demobilization will not occur until 2013 or later.

*Section 4, Table 2*

Although we are satisfied with the BTEX/TPH criteria we would like to see PAHs added to the analytical suite of parameters to be tested based on the historical use of jet fuel A1.

*Section 5.1.2, page 9*

What is proposed for the absorbent materials that have been placed in the tanks? The current proposal only mentions the water and the fuel generated from the cleaning process.

*Section 5.3*

Will the hazardous waste from the cleaning of the tank farm liner be shipped off-site and treated like that from the decontamination of the tanks?

*Section 5.5*

The plan should include provisions for the removal and treatment of impacted groundwater. Section 6.4.1 should be augmented to address all contaminated water.

The excavation should extend to, at least, the bottom of the depth of the contamination encountered in the test pit.

*Section 6.2, page 13 paragraph 1*

Is the laydown area for biopiles or tank system solid waste?

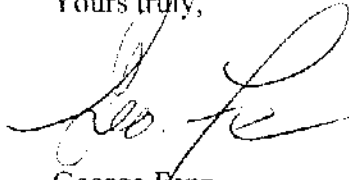
*Section 6.4.1*

Based on the soil volumes provided, a worst case scenario could see up to 20 biopiles which would result in an area of roughly 4,000 m<sup>2</sup> (1 acre). If we consider the permafrost being at a maximum depth of 2m and the biopile design proposed is 2m high, the area needed for the biopiles could potentially be as large as the contaminated area.

Based on this area there would be 45,000 L of water generated for every cm of rainfall. Considering that there is an average of 8 cm of rainfall per summer, there could be a substantial volume of water to deal with. In addition to this volume of water is the water that will likely be present if the excavated area is left open. More explanation on the methods for treating this water needs to be included. Does overland runoff include runoff from between the biopiles as well as runoff from the biopiles? There is a possibility that runoff from between the biopiles could be contaminated by the biopiles. Would this runoff be monitored for contamination?

I look forward to your response with respect to our comments. Please do not hesitate to contact me if you require additional information or clarification. I can be reached by telephone at (905) 639-6139 or by e-mail at [george.fenn@dfo-mpo.gc.ca](mailto:george.fenn@dfo-mpo.gc.ca).

Yours truly,

A handwritten signature in black ink, appearing to read 'Geo. Fenn', written over a horizontal line.

George Fenn  
Real Property Management, Central and Arctic Region  
Fisheries and Oceans Canada