



Eastern Arctic Area  
Iqaluit Office

Région Arctique de l'est  
Bureau de Iqaluit

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P.O. Box 358.  
Iqaluit NU X0A 0H0

C.P. 358  
Iqaluit NU X0A 0H0

*Our file    Notre référence*  
NU-00-0068

Tel: (867) 979-8007  
Fax: (867) 979-8039

Tél: (867) 979-8007  
Télé: (867) 979-8039

December 13, 2011

Stephanie Autut  
Vice President Environmental and Community Affairs  
Shear Diamonds Ltd.  
17010, 103 Ave NW  
Edmonton AB, T5S 1K7

Dear Ms. Autut:

**Subject: DFO Comments, Review of Phase 1 Fish Habitat Compensation Plan, Jericho Mine**

On November 3, 2011, Fisheries and Oceans Canada (DFO) received Phase 1 of the Fish Habitat Compensation Plan for the Jericho Mine. The document was submitted to DFO for review and comment by Shear Diamonds (Nunavut) Corp (Shear). After reviewing this document, DFO has the following comments.

The Phase 1 report mentions that the addition of one more rock shoal is the proposed compensation to replace the fish habitat enhancement that were planned to occur at O21 and the lower 150 metres of C1 Diversion. The report does not suggest why the addition of one more rock shoal would be beneficial for fish habitat within Lake O3. The report also does not mention where the proposed shoal will be located within Lake O3. The report briefly discusses criteria that were suggested by Mainstream Aquatic Ltd. in 2005 to determine an appropriate location for the proposed shoal. DFO is requesting that these details need to be developed in greater detail to identify the most suitable location for an additional rock shoal. The addition of an extra shoal within Lake O3 must be supported with rationale.

It has been identified by Shear that rock shoals that were constructed by Tahera in Carat Lake and Lake 01 in 2007 may not have been constructed according to original design details. The construction of underwater rock shoals can present a challenging situation during frozen conditions due to shifting ice, working within the safe load limit of the ice and factoring in the amount and type of substrate and slope that is present on the lake bottom. DFO is requesting that Shear prepare a thorough plan describing what measures will be utilized to ensure the accurate placement and construction of the 14 outstanding rock shoals and potentially one additional rock shoal (15<sup>th</sup> rock shoal). This plan should be submitted to DFO for review and comment.

DFO is requesting that Shear provide a more thorough explanation of why the enhancement of the lower portion of stream C1 is being deferred as a compensation measure. The decision made by Shear to not perform fish habitat enhancements of the lower portion of the C1 Diversion represents a significant modification in the fish habitat compensation plan that has been included in the *Fisheries Act* Authorization for the Jericho Mine. Shear should support this change with an in depth rationale for the decision.

Section 3.0 of Phase 1 of the compensation plan report states that “*as discussed with DFO on September 6, 2011, given the uncertain future of the C1 Diversion Channel upon closure, it was decided between DFO and Shear that no further enhancements will be constructed within the C1 Diversion Channel*”. DFO would like to provide clarification on this point. During the September 6, 2011 meeting, Shear brought forward the option to redirect the C1 Diversion channel into the open pit upon closure of the mine. At the time of the meeting, DFO considered this to be a potential scenario that may occur during closure. DFO took the opportunity to describe what potential regulatory implications may occur should this option be chosen as a final plan. DFO did not commit to or support the option of not performing enhancements on the C1 diversion channel. To re-iterate, the destruction of a portion of fish habitat within the C1 Diversion Channel would require additional compensation or potentially a section 35 (2) *Fisheries Act* Authorization.

The results of the monitoring program presented in section 3.1.1 that were gathered during the scuba diving survey of the existing rock shoals should be presented to DFO in an annual report as described in section 8.0 of the *Fisheries Act* Authorization and amended authorization for the Jericho mine (DFO File # NU-00-0068). The monitoring results should also be explained in greater detail and the methodology for the scuba survey should be provided. The methodology should describe the rationale for performing Dive #3 (table 3) and explain the purpose of incorporating this dive into the methodology of the shoal monitoring program. (eg. was Dive # 3 used as a control area to compare to the fish habitat present within the constructed rock shoals?). An in depth discussion and explanation of the results should also be provided in the annual monitoring report that is being requested by DFO. This explanation should describe in detail such general statements as “*visible disruption of algae*” and “*sandy bottom had been disturbed*”. These observations should be explained in the context of what these remarks mean to the ultimate goal of describing the productive capacity of fish and fish habitat and functioning of the shoals.

A more robust program should be developed to monitor the productive capacity of the rock shoals for future sampling events and years. Possible suggestions would be to incorporate quantitative measures of productivity (i.e. algal growth, periphyton, etc) as well as a fish sampling component such as gill netting, to determine if and how fish are using the constructed shoal habitat. The monitoring plan to address future evaluation of the rock shoals should also be included in the annual monitoring report that is mentioned above.

Once DFO and Shear have agreed to a final compensation plan, a cost estimate to describe how much it would cost a third party contractor to complete the final fish habitat compensation plan should be submitted to DFO.

Section 4.0 of Phase 1 of the Fish Habitat Compensation Plan Report states that monitoring of the compensation will occur annually for Year 1 through 4 inclusive and biennially thereafter. DFO would like clarification on whether this schedule applies to the monitoring regime for the previously constructed rock shoals and other compensation measures at the mine site, as well as the shoals that are to be constructed in 2013 and 2014. An end date for scheduled monitoring activities should be proposed with the understanding that if compensation functioning has not been demonstrated by this date, monitoring activities will be extended, or Shear will develop contingency compensation to achieve the no net loss of fish habitat. A detailed monitoring schedule should be prepared by Shear and submitted to DFO for review and approval.

DFO would also like confirmation on when Phase 2 of the Jericho fish habitation compensation plan will be submitted.

DFO would request that the following documents that were referenced in this report be submitted to DFO:

- EBA, 2011 *C1 Diversion Construction Summary*. Edmonton AB February 2011.
- Shear Diamonds, 2011. *Field Summary of Scuba Diving Investigation of Rock Shoals Jericho Diamond Mine, Nunavut*. Technical Memorandum DRAFT. September 12, 2011.

If you have any questions concerning the above or would like to discuss in greater detail please contact me directly by telephone at (403) 292-8675 by email at Robert.Bedingfield@dfo-mpo.gc.ca

Sincerely,



Bobby Bedingfield  
Fish Habitat Biologist  
Eastern Arctic Area  
Fisheries and Oceans Canada

cc. Derrick Moggy, Fisheries and Oceans Canada  
Amanda Hanson, Nunavut Impact Review Board  
Phyllis Beaulieu, Nunavut Water Board