

Fisheries  
and OceansPêches  
et OcéansFish Habitat Management  
Suite 101, 5204-50<sup>th</sup> Avenue  
Yellowknife, Northwest  
Territories  
X1A 1E2Your file *Votre référence*Our file *Notre référence*July 27<sup>th</sup>, 2001Mackenzie Valley Land  
& Water BoardBHP Diamonds Inc.  
1102 4920-52<sup>nd</sup> St., Yellowknife, NT X1A 3T1

File \_\_\_\_\_

JUL 31 2001

Application # MV2001L2-0004  
MV2001F0032Attention: Helen ButlerCopied To MSILB/KL/RegRE: Sable Road Alignment

Dear Ms. Butler:

As follow up to the Department of Fisheries and Oceans visit of the Sable road alignment on June 26<sup>th</sup> and July 24, 2001 I offer the following comments.

The original proposal for a land use permit and water license (MV2001L2-0004/MV2001F0032) indicated seven locations where the road intersected a watercourse (SR1-SR7). During the site visit of June 26<sup>th</sup> I had an opportunity to visit these locations. In addition, at my request six additional locations not previously identified by BHP were visited to identify possible flow. These latter locations labelled SR-A to SR-F are identified on the figure attached and described where appropriate.

DFO habitat management typically has three main areas of concern in any road alignments such as Sable road. These are 1) ensuring that the natural surface and sub-surface hydrology of the landscape is maintained and uninhibited, 2) that fish passage be maintained during periods of flow, and 3) that construction techniques and engineering designs be adequate to accommodate the points above. The first concern arises from past experience with construction in permafrost areas and the potential for 'fill construction' methods for watercourse or drainage area crossings to cause water ponding, erosion of the permafrost and subsequent release of sediments into downstream water bodies. The second concern must be addressed to be in compliance with several sections of the *Fisheries Act*.

**Identified watercourse crossings: SR1-SR7**

SR1 crosses a deep stream of 1-2 meters wide with noticeable flow. This stream crossing should be constructed to facilitate fish passage. An open bottom culvert may be required to avoid disturbing the stream bottom.

SR2 is essentially dry; fish movement does not appear to be possible and spawning for the length of the channel is not likely. Facilitating drainage to avoid ponding of water should be the main concern.

SR3 crosses a stream with noticeable flow of about 1 meter wide. The flood plain is approximately 30 meters. This crossing should facilitate fish passage during high water periods.

SR4 crosses a stream that is 15-30 cm wide with a flood plain of approximately 30 meters. Field assessment suggests that a culvert may be required to ensure fish passage.

SR5 crosses a soft bottom stream approximately 1 meter in depth. A large culvert may be needed here to ensure flow since the flood plain is very wide.

SR6 consists of under-boulder flow with sections of above ground flow. Water channel width is approximately 20-30 cm. The flood plain width is approximately 75 meters. Ensuring flow is maintained and fish passage is possible is essential at this location.

SR7 is bound on the east and west by small shallow ponds. Vegetation growth pattern (i.e. grasses flattened toward downstream side) suggests that overland flow occurs during high water. Ensuring adequate drainage would be the main concern at this location.

Of the additional six locations visited, five (SR-A, -B, -C, -E, and -F) showed no flow and no evidence of a high water mark. Location SR-D (UTM coordinates 520806E, 7190289N) appeared have flow or contain water such that the potential for fish to directly or indirectly use the watercourse for migration, spawning, feeding, or rearing exists. For this reason BHP should consider addressing both the hydrology and fish passage concerns mentioned above with properly engineered structures at this location.

The area near SR-A would need to be engineered to facilitate drainage, while fish passage would not appear to be required.

From discussions with BHP during the June 26<sup>th</sup> visit, it was understood that water course crossings SR1,3,4,5,6, and 7 will be constructed with culverts in order to facilitate fish passage and natural stream flow.

It is anticipated that all crossings and culvert installations will be done in such a manner as to ensure:

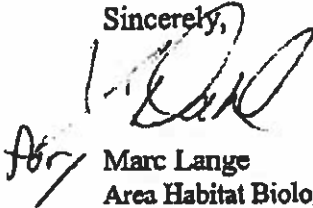
- that existing drainage is not altered in any way,
- that erosion due to runoff is prevented,
- that only clean rip rap is used
- that culvert alignments maintain the original stream flow directions to minimize erosion and maintain flow characteristics, and

-that culvert size is adequate for the streambed or drainage course width, and to allow passage of the largest migratory fish expected.

You may also find the following link helpful in designing crossings. Fish Passage Design at Road Culverts, A design manual for fish passage at road crossings  
<http://www.wa.gov/wdfw/hab/engineer/cm/loc.htm>

I trust this will help BHP in designing and building the Sable road. If you have any questions concerning this letter please contact the undersigned at (867) 669-4912, FAX (867) 669-4940, or Kelly Withers at (867) 669-4916. Finally I wish to thank you personally for taking me on a tour of the Sable road alignment. The visit provided me with better understanding of land- and waterscape at EKATI.

Sincerely,



Marc Lange  
Area Habitat Biologist  
Fish Habitat Management  
Department of Fisheries and Oceans- Western Arctic Area

Copy: Julie Dahl, Area Chief, Habitat – DFO  
Independent Environmental Monitoring Agency  
MVLWB