DE BEERS
CANADA
GAHCHO KUÉ PROJECT

September 10 , 2012 File: S110-01-10

Chuck Hubert
Senior Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board
Suite 200, 5102 – 50th Avenue
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Yellowknife NT X1A 2N7

Dear Mr. Hubert:

Environment Canada – Round 2 Information Request
Responses - Gahcho Kué Project Environmental Impact Review

De Beers is pleased to provide the Mackenzie Valley Environmental Impact Review Board with responses to Round 2 Information Requests submitted by the Environment Canada.

Sincerely,

Veronica Chisholm

Veronica Chisholm
Permitting Manager

Attachment

c: Cheryl Baraniecki, Regional Director, Environmental Protection Operations, EC
L. Lowman, Senior EA Coordinator, EA & Marine Programs Division, EC

DE BEERS CANADA

September 2012

GAHCHO KUÉ PROJECT ENVIRONMENTAL IMPACT STATEMENT
ROUND 2 INFORMATION REQUEST RESPONSES

Round 2 Information Request Number: EC 1

Source: Environment Canada

Subject: Disturbance/destruction of nests from flooding of terrestrial habitat

References: Response to DeBeers response to Round 1 IR #EC-3; Gahcho Kue Fish Habitat Compensation Plan – Update (June 29th, 2012)

Terms of Reference Section: 5.2.4 - Species at Risk and Birds

Preamble

In response to Environment Canada's (EC) Round 1 IR #EC-3, De Beers Canada Inc. identified that the construction of perimeter Dyke F will cause the water level in Lakes D2 and D3 to rise by 2.8 m over a three year period. Construction of Dyke G will cause Lake E1 to rise by 0.8 m over a 1 year period. This will result in 53.31 ha of flooded terrestrial habitat around Lakes D2/D3 and 6.83 ha of flooded habitat around Lake E1. The largest changes in water level are anticipated to occur during the month of June in each year due to the spring freshet. This corresponds to the period when migratory birds may be establishing nests in the areas that will be flooded.

The updated fish habitat compensation plan (dated June 29th, 2012), suggests that De Beers may increase the area flooded to create new fish habitat. This would involve raising the water level of some lakes west of Kennady Lake to a level greater than required only for the Project. Lakes D2, D3, E1 and N14 will be raised by 3.8 m, 2.6 m, 2.8 m, and 2.7 m respectively. This will result in roughly 150 ha of flooded terrestrial habitat, more than twice what was originally estimated in the response to Round 1 IR #EC-3. Water levels would be raised even further following mine closure, increasing the flooded area to 184.4 ha. Additional flooded areas would also be created in the A watershed.

Activities that physically disturb or destroy terrestrial habitat during the breeding season can result in the inadvertent disturbance or destruction of nests and eggs of migratory birds. This "incidental take" of migratory bird nests and eggs is prohibited under section 6(a) of the federal *Migratory Birds Regulations*. Under the legislation, EC cannot issue a permit to authorize the disturbance or destruction of a nest in circumstances of incidental take. As a result, the

Proponent is responsible for taking appropriate measures to ensure that they comply with the legislation.

De Beers Canada Inc. is aware of the Regulations and has met with EC on two occasions (i.e. May 8th and July 4th, 2012) to discuss potential approaches to mitigation.

Request

1. Confirm the total amount of terrestrial habitat that will be flooded during operations and post-closure if the fish habitat compensation plan is implemented; and

2. Provide a description of potential mitigation measures that are being considered to prevent destruction of nests and eggs of migratory birds in the areas that will be flooded following construction of the Kennady Lake perimeter dykes. This description should include details of the advantages and limitations of each potential mitigation measure, the rationale for selecting the best available option, and any field work that has been carried out or is being planned to confirm how many birds may be nesting in the affected area.

Response

Response to Request 1:

To clarify, 60 hectares (ha) (hydrological calculation of 58.8 ha) of terrestrial habitat will be flooded around lakes D2, D3 and E1 as a result of the construction of Dyke F and Dyke G on the west side of Kennady Lake (Section 8, Table 8.7-11 of the 2011 EIS Update [De Beers 2011]). Dyke F and dyke G are required to keep non-contact water away from the mining operations.

The June 29th *Gahcho Kué Fish Habitat Compensation Plan – Update* memo (Golder 2012) investigated a further increase in water level as an option to create replacement fish habitat in order to achieve no net loss of fish habitat according to the Fisheries and Oceans Canada (DFO) *Policy for Management of Fish Habitat* (DFO 1986). However, following consultation on the option with communities and DFO, this option is being reconsidered at this time and other compensation options are being evaluated for the No Net Loss Plan.

Environment Canada will be consulted prior to any final adjustments to the No Net Loss Plan.

Response to Request 2:

De Beers recognizes their responsibility for taking appropriate actions to meet compliance with the *Migratory Birds Convention Act* (MBCA). Mitigation to avoid inadvertent disturbance or destruction of migratory bird nests that has been considered to date includes:

- grubbing all vegetation;
- managing the timing of flooding;
- pumping water to flood the area after the nesting season;
- removal of shrub vegetation; and
- the use of bird deterrents.

Grubbing of vegetation using heavy equipment is not considered feasible because of the area of land affected and the distance of the area from road access. Maintenance and refuelling of the equipment would also be difficult. Grubbing would also increase the amount of erosion and siltation in the raised lakes (refer to Golder [2012] for a summary of current erosion potential).

Changing the timing of dyke construction to delay flooding until after the migratory bird nesting season (defined as 15 May to 31 August) would not have the intended outcome because the primary source of water for flooding is spring freshet, occurring in June. Delaying the construction of the dyke would only delay the flooding until the following season.

A potential option may exist to pump water from Kennady Lake during dewatering to fill Areas D and E rather than relying on natural runoff to fill these areas. Dyke construction and subsequent pump filling may be timed so as to avoid the nesting period. The current mine plan is to build Dyke F in Year -1, prior to freshet. In the event dyke construction is complete, water from Kennady Lake could be pumped prior to May 15 such that newly flooded areas will reach their planned new water levels prior to the commencement of the nesting season. This strategy also assumes that the dyke foundation is fully frozen. To accommodate this option, some adjustments to the water management plan

would be required. The feasibility of this option will be further investigated going forward.

To reduce the likelihood that nests that may be affected, shrub vegetation may be removed by hand with brush cutters prior to the nesting season. Willow and dwarf birch is widely distributed, but in low coverage throughout the area to be flooded, and is unlikely to provide nesting habitat for migratory birds. However, there are some areas (particularly along drainage courses), where willows and dwarf birch are dominant; this vegetation could possibly attract particular passerine species that are associated with shrubs. In these areas, targeted removal of the shrub with brush cutters may help to reduce the suitability to migratory bird species that select this habitat. Surveys can be undertaken to delineate the key areas where removal of shrub vegetation may contribute to mitigation. These surveys are planned for 2013.

Supplemental mitigation in the form of bird deterrents may reduce the possibility of nesting. Continued correspondence with Environment Canada will be undertaken prior to construction to evaluate the likely effectiveness of bird deterrents in the area. Although there are many types of bird deterrents, they must be capable of operating remotely, with little or no electricity, and be weather resistant.

With respect to monitoring, De Beers understands that there is little information regarding the N7 Bird Conservation Region outside of Yellowknife. Subsequently, data regarding trends in bird populations (such as may be obtained through the Protocol for the Regional and International Shorebird Monitoring, or PRISM) would be useful. The intent of monitoring would be to detect natural population trends during the mine life and contribute to the regional conservation database.

References

De Beers (De Beers Canada Inc.). 2011. Environmental Impact Statement for the Gahcho Kué Project. Volumes 3a Revision 2, 3b Revision 2, 4 Revision 2, and 5 Revision 2. Submitted to the Mackenzie Valley Environmental Impact Review Board in Response to the Environmental Impact Statement Conformity Review. July 2011.

DFO (Fisheries and Oceans Canada). 1986. The Department of Fisheries and Oceans Policy for the Management of Fish Habitat. Presented to Parliament by the Minister of Fisheries and Oceans. October 7, 1986.

Golder (Golder Associates Ltd.). 2012. Gahcho Kué Project 2011 Shoreline and Channel Erosion Assessment. Prepared for De Beers Canada Inc. by Golder Associates Ltd. April 2012.

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GAHCHO KUÉ PROJECT ENVIRONMENTAL IMPACT STATEMENT
ROUND 2 INFORMATION REQUEST RESPONSES

Round 2 Information Request Number: EC 2

Source: Environment Canada

Subject: Area 7 Dewatering

References: *"Detailed Alternatives Analysis Report"*, June 2012

Preamble

EC has reviewed the report and participated in discussions with De Beers and DFO regarding the proposed configuration for water management within the basin of Kennady Lake. Option B3 of Alternative B was selected, as addressing concerns with the use of Area 1 as well as retaining economic feasibility. This option includes full dewatering of Area 7 in order to construct Dyke K in the dry. Dewatering would subsequently provide additional water management capacity in Area 7.

Request

EC requests that De Beers Canada Inc. provide an explicit rationale for dewatering Area 7 that includes consideration of the benefits of preserving that basin of the lake as a viable ecosystem.

Response

Dewatering Area 7 cannot be assessed in isolation as it is an integral part of the development and water management plan of the proposed Gahcho Kué Project. The alternatives analysis is a product of this integrated approach and assessment work completed over the past 10 plus years. Areas within Kennady Lake were numbered to allow for convenient description to facilitate a better understanding of the project activities and associated water management plan. However, these numbered areas of Kennady Lake cannot be separated without affecting the integrity of the overall water management plan.

In addition to the benefits outlined in the Detailed Alternatives Analysis and the 2012 EIS Supplement (De Beers 2012a,b), the rationale for including Area 7 within the control basin (Alternative B3) and its planned dewatering was based on the following technical, economic, and environmental considerations:

- The natural bathymetry of the Kennady Lake basin and topography of the watershed dictates the best location to build a dyke (Dyke A) in order to isolate the controlled area. Dyke A is located where the lake is shallow, narrow and forms a natural break in the topography. Dyke A construction can be completed immediately prior to dewatering with negligible impact on the existing downstream aquatic ecosystem.
- The close circuiting established by the diversion of the upper watersheds and the placement of Dyke A encompasses the entire project development area.
- Storage volumes in Area 7 provide contingency during the operating life of the Project.
- Dyke K would preserve a larger portion of Area 7, but would be located in relatively deep water (9 m) and presents a greater safety risk.
- Should Dyke K be the first dyke to be constructed instead of Dyke A, to preserve Area 7, this would require large volumes of fill to be deposited (on the order of 150,000 m^3) into Kennady Lake prior to dewatering and fish salvage. Although measures, such as silt curtains, are available to mitigate the spread of sedimentation, the level of activity in such a confined waterbody would make it challenging to control sediment dispersion into the lake and downstream, potentially affecting fish and fish habitat.
- Constructing Dyke K first, would add an additional year to the development schedule before dewatering of Kennady Lake could begin. Cost implications due to scheduling include the direct costs of supporting the construction effort for an additional year.
- In addition to the cost of the schedule effects noted above, the direct cost of constructing Dyke K at the onset of the Project (instead of after Area 6 is drained) would add in excess of $40 million to the Project development cost.
- De Beers is committed to explore opportunities to restore Area 7 sooner in the Project schedule by minimizing the drawdown during construction and/or supplemental refilling of Area 7 from water sources within, and outside of, the controlled area. This would allow for reconnection of Area 7 with Area 8 earlier than initially planned. Area 7 would only be reconnected to Area 8 once water quality benchmarks have been achieved.

References

De Beers (De Beers Canada Inc.). 2012a. Environmental Impact Statement Supplemental Information Submission for the Gahcho Kué Project. Submitted to the Mackenzie Valley Environmental Impact Review Board, Yellowknife, NWT, Canada.

De Beers. 2012b. Detailed Alternatives Analysis Report. De Beers Canada Inc. Gahcho Kué Project. Submitted to the Mackenzie Valley Environmental Impact Review Board. June 2012.

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GAHCHO KUÉ PROJECT ENVIRONMENTAL IMPACT STATEMENT
ROUND 2 INFORMATION REQUEST RESPONSES

Round 2 Information Request Number: EC 3

Source: Environment Canada

Subject: Water & Sediment Quality Objectives and EQCs

References: Technical Memo dated June 27th 2012, *"Water Quality Objectives (WQO) and Sediment Quality Objectives (SQO) for the Proposed Gahcho Kue Project – Initial Development Process"*

Preamble

During the May technical sessions the question of environmental quality objectives was raised for water and sediment, along with the identification of achievable effluent quality criteria. De Beers Canada Inc.'s consultants issued the technical memo on June 27th, 2012 outlining the approach and a table of contaminants of potential concern. A selection process has been applied which narrowed down the list of substances that would require development of Chronic Effects Benchmarks (CEBs) for Kennady Lake, Lake N11, and Lake 410. These include parameters which are predicted to be above CCME guidelines for the protection of freshwater aquatic life for baseline levels.

Request

1. Include water and sediment (as applicable) quality objectives for the full suite of parameters listed in Table 1 of the Technical Memo;

2. Where CCME guidelines are deemed inappropriate, or do not exist, identify the procedure used to derive the CEBs, including the toxicity modifying factors that are considered;

3. Identify where CCME Guidelines are proposed as objectives, and compare to baseline concentrations;

4. Where background concentrations are substantially below CCME guidelines, identify the concentration which may be more appropriately maintained as an objective;

5. Identify where in the receiving environment the objectives will be met for each water body; and

6. Identify the extent of the water or substrate which will be above CEBs, or potentially be subject to chronic effects.

Response

The above-listed requests are addressed in a separate technical memorandum, titled, *Water Quality Objectives (WQO) and Sediment Quality Objectives (SQO) for the Proposed Gahcho Kue Project – Recommendations,* which will be submitted to the MVEIRB Public Registry on September 13, 2012.