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Mackenzie Valley Environmental Impact Review Board
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Mr. L. Azzolini,

On June 13, 2001 Anne Wilson and Mark Dahl from Environment Canada met with Leslie Green and Hilary Machtans from DeBeers Mining Canada. The meeting was called to discuss Environment Canada's review comments regarding the Snap Lake Scoping Document:

Environment Canada prepared the following list of concerns/comments for consideration by DeBeers.

Persuant to sections 124 and 125 of the Mackenzie Valley Resource Management Act (MVRMA) Environment Canada (EC) is participating in a preliminary screening by providing specialist information and or advice. The review of this document focused primarily on EC's mandated responsibilities for the enforcement of Section 36 of the *Fisheries Act,* the *Canadian Environmental Protection Act* (CEPA) and the *Migratory Birds Convention Act* (MBCA). The comments below result from a preliminary review of the scoping document and it is possible that additional concerns will be raised as the environmental assessment of this project progresses.

1) As a result of recent research done at BHP's Ekati mine EC has concerns with using processed kimberlite to cap berms. Processed Kimberlite contains sulphides and the research indicated that the buffering capacity attributed to this material may decline rapidly resulting in acid generation. Long term water quality monitoring at the toe of any berms capped with PK (including pH dissolved sulphate and total and bioavailable/dissolved metals) would be useful for assessing this possibility.

2) Burial of potentially acid generating rock under the north pile has been presented as a method of preventing / reducing acid runoff. Could this material be returned to the mine to prevent any chance of acid runoff from this source? If return to the mine is not an option both the seepage waters

emanating from the covered acid-generating rock base layer of the North Pile and the waters in the adjacent portions of Snap Lake should be monitored for acid related effects throughout the entire mine/mill-life and following decommissioning.

3) The scoping document states that settling will provide adequate treatment for mine water before discharge. How can this assumption be made if the quality of the mine water is not known at this time? It is also unknown if the character of the mine water will change as mining progresses. The nature and quantities of the inflows may change from pure ground water to more like lake water if pore water flow direction changes in the sediments due to mine dewatering. The impact of ground water phosphorus on Snap Lake as a result of mine dewatering needs to be assessed. The quantity of mine water should be minimized to reduce the loading of metals to the receiving environment.

4) DeBeers does not provide contingencies to deal with the possibility that 10 day retention in the MWCP is insufficient to provide adequate treatment. The mine will be producing large quantities of water which may or may not meet discharge criteria, treatment options should be provided so that project discharges will be acceptable for release to the environment. In order to truly protect the environment DeBeers should strive to attain CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life at end of pipe. To date acute toxicity has been used as a test for the deleterious nature of a given effluent. A more integrated approach would involve the use of environmental loadings and testing for chronic rather than acute effects on aquatic organisms.

5) The 60 metre mixing zone appears to have been arbitrarily assigned. While it may be true that this mixing zone is used in other regions does it take into account the extremely sensitive nature of arctic lakes? How was it developed? Can it be justified? Why not 5 metres? Why not 0?

6) Climate change has not been factored into the project. Shorter winter road seasons and changing precipitation patterns have not been input into meteorological models and factored into mine plans. An estimate of the contribution of the project to NWT greenhouse gas emissions should be provided.

7) Air quality is a concern (e.g. $NO_x$, $SO_2$, CO, total suspended particulate (TSP), $PM_{10}$ and $PM_{2.5}$) from all sources should be modeled along with the local climate.

8) The environmental effects listed do not include modelling dispersal of fugitive dust and the materials associated with it (e.g. metals, acidic deposition) and their effects on the water and land surrounding the installation.

9) Water balance calculations do not appear to be well founded. The calculations are based on estimates of the local climate which in turn are based on sampling over an insufficient period of time. If the water balance is to be conservative both seasonal and inter-annual variability, as well as, weather extremes must be incorporated and the project design must make allowances for errors within the water balance calculations.

10) Monitoring does not appear to be sufficient, long term water quality monitoring appears lacking. Sites that will require monitoring include the toe of the North Pile tailings pile, and tailings pond, during the operations and following decommissioning of the underground mine. Snap Lake also requires ongoing year-round water quality monitoring for total and dissolved trace metals and for nutrients (including Total P, diss. P, $PO_4$, $SO_4$, $NH_3$ /$NH_4$) especially near the Northwest peninsula and mine site. Monitoring allows early detection of environmental impacts which provides time for mine managers to alter mine activities to prevent further damage.

11) Permafrost conditions at the site are not fully discussed nor are the likely effects of the project on the permafrost addressed. The significance of localized melting of permafrost could be high if it occurs beneath dams, berms, roadways/runways or other structures.

Please contact me if you have any questions or concerns.

Sincerely,

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