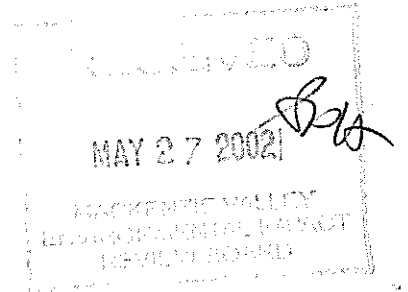


**De Beers Canada Mining Inc. (De Beers)  
Snap Lake Diamond Project**

**Yellowknives Dene First Nation  
Land & Environment Committee**

**Information Request No. 1**

From: Tim Byers  
Impact Review Coordinator



*Introduction*

1.0 Reference: p. 1-2

TOR line: 585

**To:** De Beers Canada Mining Inc.

**Preamble:** The Yellowknives Dene First Nation note, with interest, that De Beers has ISO 14001 certification. We understand that it is their obligation under this certification to regularly review and strive to constantly improve their environmental management plans and procedures.

**Request:** Over and above this general statement, can De Beers provide any specifics about their commitments under ISO 14001 as it more specifically relates to this mine's construction, operation and reclamation activities? For example, is De Beers obligated to:

- ▶ establish completion criteria upon which reclaimed areas can be measured to determine successful completion of reclamation?
- ▶ minimize its contribution to cumulative effects with other developments in the area?

## North Pile Development & Geochemistry Report

1.1 Reference: APPX III.1 & III.2

TOR line: 315-317, 380

**To:** De Beers Canada Mining Inc.

**Preamble:** BHP's pre-mining ABA studies predicted no acids would be produced by the kimberlite in their Coarse Kimberlite pile from the Koala and Panda pits. But acids ARE BEING PRODUCED, and BHP is now trying to figure out why this is happening. Given this situation, it is not clear from the Snap Lake EAR whether De Beers has given any thought to what they will do in the event that their own ABA lab-based predictions prove to be inaccurate.

**Request:** Can De Beers produce for our review a contingency plan that would be implemented in the event that acids are unexpectedly produced by the waste rock piles, either from kimberlite or from granites?



## Hydrology

1.2 Reference: P. 9-331 & 9-150

TOR line: 372 & 395

**To:** De Beers Canada Mining Inc.

**Preamble:** The assumption of the north and northeast lakes being shallow with mean depths of 2 meters for both, results in the De Beers computer model's conclusion of the mine causing a negligible (i.e. insignificant) decrease in water levels for those 2 lakes. Thus, the EAR determines there is no link between reduced groundwater flow caused by the mine and any fish habitat effects. But the actual depths of those lakes is unknown.

**Request:** Could De Beers tell us if they are planning to do any bathymetric studies on these 2 lakes?



*Hydrogeology & Water Quality*

1.3 Reference: P. 9-54

TOR line: 2.6.4 & line 574

**To:** De Beers Canada Mining Inc.

**Preamble:** At closure, groundwater flooding the mine shafts will contact backfill and any other materials left in the shaft after shutdown. Groundwater discharging into lakes to the north will bring with it possible contaminants from these materials, affecting the water quality of these lakes. The groundwater will retain this modified chemistry for about 300 years. It will take about 80 years for groundwater to reach those lakes from the mine. It is not clear what De Beers' intention is in regards to monitoring and mitigation of these lakes.

**Request:** Could De Beers tell us if they intend on monitoring water quality in the north and northeast Lakes 80 years after closure to:  
(a) determine the accuracy of their EA predictions, and  
(b) provide mitigation or compensation for degraded fish habitat?

★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★

*Hydrogeology & Water Quality*

1.4 Reference: Exec. Summary p. xix

TOR line: 192, 201, 344 & 351

**To:** De Beers Canada Mining Inc.

**Preamble:** Groundwater quality will be affected by blast residue, backfill, grout & crushed rock. This degraded water will flow north & northeast to other lakes in the Lockhart watershed. The prediction is that groundwater that moves through the abandoned areas after the closure of the mine will come into contact with the cemented backfill. This water will be alkaline (pH of 11.9) and have higher concentrations of aluminum, chromium, and molybdenum than baseline groundwater. It would seem that some kind of site remediation would be in order here before groundwater from the closed mineshafts migrates to the receiving environment.

**Request:** Could De Beers tell us if they have investigated the feasibility of installing some kind of permeable, chemically-reactive barrier/membrane into the abandoned mine shafts that could encourage adsorption or biodegradation of contaminants in the groundwater that leaves the abandoned panels?

*Hydrogeology & Water Quality*

1.5 Reference: p. 9-57

TOR line: 253, 351 & 391

**To:** De Beers Canada Mining Inc.

**Preamble:** "The small lakes to the north, NL1 to NL6, are hydraulically isolated from the deep groundwater flow system." This determination has an important bearing on whether these lakes would be included in the area of impact.

**Request:**

1. Could De Beers elaborate on how they determined that these lakes are isolated from the groundwater flow?
2. Is De Beers confident that there are no fissures in the rock beneath these lakes that the deep groundwater from the Snap Lake zone of impact could conceivably migrate up into?
3. Is De Beers confident that underground blasting will not serve to create or open up fissures in those areas?
4. Can De Beers tell us whether the small lakes between Snap Lake and north lake are also hydraulically isolated from the deep groundwater?

\*\*\*\*\*

*Aquatic Organisms and Habitat*

1.6 Reference: 9-156

TOR line: 2.6.5 & line 222

**To:** De Beers Canada Mining Inc.

**Preamble:** Table 9.4-1 lists the sampling periods and locations for the aquatic baseline studies. We would suggest that a deficiency in these studies is the lack of water quality sampling in the reference lake during 2000 and 2001. Data for those years would have provided a comparison to Snap Lake.

Also, the plankton and benthos were last surveyed in 1999.

**Request:**

1. Is De Beers committed to doing a complete aquatics study in both the reference lake and Snap Lake during 2002?
2. Does De Beers have plans to sample the plankton and benthos again this coming summer (2002), especially considering this would be the last year of baseline (pre-development) data?

\*\*\*\*\*

*Aquatic Organisms and Habitat*

1.7 Reference: p. 9-311&324

TOR line: 2.6.5 & line 222

To: De Beers Canada Mining Inc.

**Preamble:** The rating of moderate for environmental impacts of hexavalent chromium loadings into the north & northeast lakes, based on chronic effects on aquatic organisms in  $\leq 10\%$  of the lake area, may be appropriate for the benthos, which is a mostly sedentary community. However, this may be underrating the effects on the zooplankton community (reduced biomass) since these invertebrates are mobile and don't necessarily spend their entire lives in only 10% of a water body. So 10% of a lake's area affected does not equate to 90% of a zooplankton population being unaffected since zooplankters can move in and out of a contaminated part of a lake

**Request:** Would De Beers agree with this premise and if so, would they be willing to re-evaluate their rating of impacts on zooplankton from hexavalent chromium and pH increases in the north & northeast lakes?

\*\*\*\*\*

*Project Description*

1.8 Reference: 3.6.9

TOR line: 351-355

To: De Beers Canada Mining Inc.

**Preamble:** The effluent from both the sewage treatment plant and the water treatment plant will be combined and discharged through one pipe.

**Request:** Could De Beers provide us with their contingency plan if end-of-pipe discharge rises above criteria limits? It would seem that in this event, the effluent from both plants would have to be rerouted/halted.

\*\*\*\*\*

*Water Quality*

1.9 Reference: p.9-257

TOR line: 289, 406-408

**To:** De Beers Canada Mining Inc.

**Preamble:** The EAR states that while there is a high degree of confidence that acid deposition impacts on the local and regional lakes will not be greater than predicted, there are uncertainties in predicting acid deposition. For one thing, "CLs (critical loadings) were calculated based on limited data, in some cases collected during a single sampling event.." Also, "...magnitude of the impacts to streams in the form of spring acid pulses was undetermined, largely because of limited information regarding this phenomenon."

**Request:** How will De Beers mitigate problems of lake acidification if its annual summer monitoring program finds that the PAI is greater than the critical load estimate (CL) in the lakes IL3, IL4 and IL5 and streams I1 - I7? This would likely be especially serious for IL5 since it "provides important fish habitat".



*Water Quality*

1.10 Reference: p. 9-306

TOR line: 406-408

**To:** De Beers Canada Mining Inc.

**Preamble:** There is predicted to be a 20-fold increase in the TDS concentration (from 15 mg/L baseline to 330 maximum predicted) in up to 20% of Snap Lake, which is an oligotrophic lake containing very soft-water. Large increases or decreases in TDS can lead to changes in the structure of aquatic invertebrate communities. If the species composition of these communities are changed (i.e. preferred prey species vanish or are reduced in abundance), this has a potential impact on the fish populations of the lake.

**Request:** Is De Beers planning to monitor the effect of TDS increase (as well as TDS decrease after abandonment & restoration) on the invertebrate communities to determine if there is alteration of the zooplankton and benthic community structures?

\*\*\*\*\*

*Project Description; Water Quality*

1.11 Reference: Table 9.4-17

TOR line: 71, 74, 368

**To:** De Beers Canada Mining Inc.

**Preamble:** Table 9.4-17 shows the treated sewage discharge specifications that the EAR says the sewage treatment plant will comply with. DIAVIK has been having problems keeping phosphorous loading into Lac de Gras from exceeding the same limits as De Beers proposes (0.2 mg/L). DIAVIK had to take remedial action by rerouting their sewage waste stream to temporarily avoid being in non-compliance with their water license.

**Request:** Could De Beers produce for our review a contingency plan designed to deal with unforeseen problems in keeping treated sewage discharge under the water quality limits of their water license?

\*\*\*\*\*

*Project Description; Water Quality*

1.12 Reference: p. 3-28 - 3-30

TOR line: 2.3.2.2

**To:** De Beers Canada Mining Inc.

**Preamble:** We would assume that the water discharged from the treatment plant will be above the ambient temperature of the Snap Lake receiving waters, especially in winter.

**Request:** How will (a) the elevated temperatures of discharge water into Snap Lake be mitigated, and (b) its effects on the aquatic organisms in the zone of impact be monitored?

\*\*\*\*\*

*Project Description; Aquatic Organisms and Habitat*  
1.13 Reference: p. 3.9-328; Figs. 3.3-1 & 9.5-6

TOR line: 405

**To:** De Beers Canada Mining Inc.

**Preamble:** Mine shafts will be blasted beneath 2 secondary spawning habitat locations. The EA states that there is no link between blasting and fish habitat impacts.

**Request:** How far beneath the spawning grounds will the shaft be? Has the effect on fish fry and eggs been assessed?  
Does De Beers have any intention of monitoring the effects of blasting on fish eggs and fry at these locations? Please provide supporting data/documentation to support your answers.

\*\*\*\*\*

*Air Quality; Aquatic Organisms and Habitat; Wildlife*  
1.14 Reference: Chapter 7 & 10.4.2 & line 9-330

TOR line: 2.6.3; 2.6.5 & line 291

**To:** De Beers Canada Mining Inc.

**Preamble:** The YK Dene are concerned about the effects of mine-generated dust on waterbodies and on the land (particularly, the plants that people and animals eat). Thus, it is recommended that De Beers determine not only the amount and geographical extent of dust. They should also characterize the dust. That is, tell us its mineral/chemical properties so that we can better evaluate the possible effects on (1) terrestrial plant life, and (2) the water quality and benthos of lakes and streams over which the dust will settle. The EAR is not clear as to whether De Beers plans to characterize the dust created by their mining activities.

Also, there is no mention of settling rates for the deposited dust over lakes. It is not mentioned whether there is a possibility that the dust deposited onto Snap Lake will be moved, by wave action and water density differentials, into larger concentrated masses that would result in thicker depositions on the bottom. This could result in life-of-mine accumulations being closer to the 1-mm thickness threshold on fish habitat than currently predicted.

**Request:** Could De Beers provide their predictions as to the composition and chemical properties of dust generated and deposited in the LSA?  
Could De Beers provide an assessment of the settling rate and other variables describing the dynamics of dust particle transport to the



**bottom in various parts of the lake?**

*ELC and Biodiversity*

1.15 Reference: p.10-87

TOR line: 319

**To:** De Beers Canada Mining Inc.

**Preamble:** "Eskers will be recontoured following closure.."(p.10-87)

**Request:** Please explain how this recontouring will be done?  
Will esker materials from other eskers in the area be needed to help fill in cavities left in the disturbed esker?

★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★

*Cumulative Effects*

1.16 Reference: p. 6-97 - 6-100; 8-38; 12-88 - 12-97

TOR line: 2.9 & line 511-513

**To:** De Beers Canada Mining Inc.

**Preamble:** Because noise from Snap L project does not overlap with that of other projects, De Beers believes environmental consequences are insignificant as there are no compounding effects. However, it does contribute to the overall change in the "soundscape" over the entire region. For example, the Snap Lake project will increase the cumulative sound level from the winter road by an imperceptible amount (<3 dB). However, it is not reported whether there will be smaller "quiet" gaps between truck passes, which one would assume if the frequency of truck passes increases.

**Request:** 1. Within the 30 km sound corridor around the road, will there be quieter periods between truck passes, or will there be overlap between the sound contours of 2 trucks arriving and leaving a receptor point?  
2. If so, will these quieter periods be reduced by the increase in traffic due to the Snap Lake project?  
3. Can De Beers evaluate (through literature search, their own studies or best professional judgement) the potential effects of shorter intervals of low or no noise on wildlife near the road?

★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★

*Accidents & Malfunctions*

1.17 Reference: Table 13.3-5

TOR line: 160-163

**To:** De Beers Canada Mining Inc.

**Preamble:** In their risk assessment of possible effects of accidental spills on the winter road, Golder used the historical incidences of spills to determine probability of occurrence. However, one large spill of ammonium nitrate (1000 kg.) is not listed in their table. This spill is code number 2001062 in RWED's Hazardous Materials Spill Database.

**Request:** Can De Beers tell us if this is a typing oversight, or was that spill not included in Golder's calculations?

★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★

*Accidents & Malfunctions*

1.18 Reference: Table 13.3-9

TOR line: 160-163

**To:** De Beers Canada Mining Inc.

**Preamble:** Golder evaluated the probable frequency of diesel spills as 1/100 years (*Table 13.3-9*). This is an order of magnitude less than DIAVIK's 1998 estimate of 1 every 10 years (see *Diavik Diamond Mines Environmental Assessment Report - Section 7.5.1*).

**Request:** Can De Beers explain the discrepancy between these 2 estimates?

★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★

*Accidents & Malfunctions*

1.19 Reference:

TOR line:

**To:** De Beers Canada Mining Inc.

**Request:** Can De Beers explain what a "Tidy" tank truck is.  
Is this an improvement over regular tanker trucks?



*Mine Operations; Accidents & Malfunctions*

1.20 Reference: 3-41 - 3-45; 13-1 - 13-9 & Chapter 14

TOR line: 160-163, 597

**To:** De Beers Canada Mining Inc.

**Preamble:** It is an important element of accidental spill management that personnel who either cause or happen upon a spill know how to respond to it in an expedient manner.

**Request:** Will all mine personnel receive training in spill response protocols and clean-up procedures? Will this training include all of the following:

- ▶ how to identify and report a spill;
- ▶ responsibilities of first responder;
- ▶ chain of communication for spill reporting;
- ▶ spill equipment use and storage locations;
- ▶ methods of containing a spill.



*Cumulative Effects*

1.21 Reference: Table 12.7-3

TOR line:

**To:** De Beers Canada Mining Inc.

**Preamble:** The EAR's assumption is that Snap Lake's regional study area is the northern limit for migrating waterfowl, so there would be no cumulative effect during migration. Also, during breeding season, the waterfowl do not have a large area of movement. But geese, and probably some ducks, move longitudinally through the whole Slave Geological Province during migration to Arctic coastal areas. So there could potentially be cumulative effects of all SGP developments during migration from noise, contamination of resting and staging areas, etc. The decision whether to do a Cumulative Effects Analysis on waterfowl was based solely on mallards.

**Request:** Could De Beers explain why geese weren't included in assessing the need for a CE analysis?



*Water Quality*

2.0 Reference: p. 9-246

TOR line: 389

**To:** Mackenzie Valley Environmental Impact Review Board

**Preamble:** P. 9-246 of the EAR lists a number of additional preliminary studies needed to improve the level of certainty of predictions in the assessment of potential water quality impacts.

**Request:** **Will the results of these additional studies be a prerequisite for the Board's decision? In other words, will the Board require these studies be done and results provided to the Board before the Board can make its decision, since these results would better inform the Board and regulators about the final quality of groundwater leaving the underground mine?**

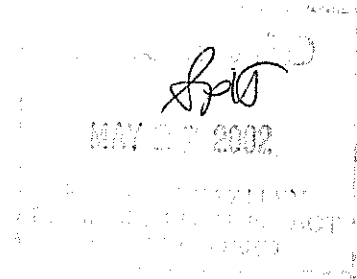
## Louie Azzolini

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**From:** Tim Byers [byerses@escape.ca]  
**Sent:** Monday, May 27, 2002 3:36 PM  
**To:** Louie Azzolini  
**Subject:** YK Dene IRs



YKDENE~1.WPD



Hi Louie.

Just soakin' up the 25-degree weather and ogling women in skimpy attire here in the 'Peg.  
But not enough to distract me from my work of course.

Here are the IRs for the Yellowknives Dene.  
Nothing like saving them all to the last minute, eh?

I only hope we get clear answers from De Beers (and from your Board as well, as the last question is for you).

Tim.