Louie Azzolini

From: Dahl,Mark [Yel] [Mark.Dahl@EC.GC.CA]
Sent: Tuesday, May 28, 2002 1:04 PM
To: Louie Azzolini
Subject: Environment Canada Information Requests for Round 3

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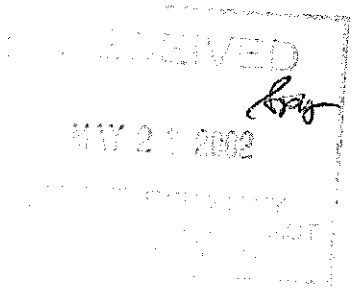

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ENVIRONMENT CANADA
INFORMATION REQUEST
ROUND THREE

WATER QUALITY

Date: May 27, 2002 to the Review Board

From: Stephen Harbicht, Environment Canada

Phone: 867-669-4733
Fax: 867-873-8185
email: stephen.harbicht@ec.gc.ca

Subject: Monitoring of Snap Lake Outlet

Objective: Clarification of criteria used to determine impacts on water quality.

Time Limits: As soon as possible for use in this review.

Reference: Environmental Assessment Report dated February 26, 2002, Section 9.4.2.3.2 Monitoring, page 9-248.

Preamble: The report states that the outlet of Snap Lake will be monitored to ensure that Snap Lake project does not impact water quality at the outlet of Snap Lake.

Request: Please describe criteria that will be used to determine whether water quality is being impacted at this location, and specify thresholds for action.

WATER QUALITY

Date: May 27, 2002 to the Review Board

From: Anne Wilson, Environment Canada

Phone: 867-669-4735
Fax: 867-873-8185
email: stephen.harbicht@ec.gc.ca

Subject: Generation of low pH seepage from waste rock and kimberlite rejects.

Objective: Evaluation of decommissioning of collection ditches and ponds during mine closure.

Time Limits: As soon as possible for use in this review.

Reference: Environmental Assessment Report dated February 26, 2002, Section 3.5.1 page 3-17 and Section 3.10.2 page 3-47.

Preamble: The low pH seepage from coarse kimberlite rejects observed at the Ekati Diamond Mine seems to be linked to the hydrolysis of ferric iron. While the mechanism is not completely understood, it appears that migration of the iron out of the kimberlite or waste rock pile separates it from the carbonate neutralizing capacity of the kimberlite, allowing

acidity to accumulate. The Snap Lake kimberlite does not contain olivine (which would have higher levels of iron), but coarse rejects and tailings will have iron residues from the ferrous silicon used in processing, as well as ambient concentrations in the rocks or kimberlite. In the kinetic testing, kimberlite was found to contain iron concentrations of 0.023 to 0.30mg/L, while layered kimberlite/metavolcanics contained between 0.023 and 10.35 mg/L iron (Table III.2-9 Appendix III.2). Granite samples with or adjacent to metavolcanics averaged 0.27 mg/L and 0.14 mg/L respectively. For comparison, kinetic tests for Ekati kimberlite contained iron concentrations of 0.01 to 2.1 (average of 0.14 ± 0.40 mg/L).

All surface runoff and seepage will be collected for the duration of the mine operations, and directed through the treatment plant prior to release to the environment. The decommissioning and closure plans call for draining of the collection systems in 2026, and it is expected that runoff from the North Pile will then report to the adjacent tundra. The pile will be capped in 2027 with 0.5 m of non-acid-generating rock.

Request: Has consideration been given to long-term exudates from the North pile? The layer immediately below the cover rock will remain within the active layer and as a result it will be exposed to air and precipitation. Iron and fine particulates may migrate out of the pile in seepage until the most recently emplaced processed kimberlite is fully weathered (oxidized). Please provide predictions of seepage quality at closure, and justification for timing of decommissioning the collection ditches and ponds.

WATER QUALITY

Date: May 27, 2002 to the Review Board

From: Anne Wilson, Environment Canada

Phone: 867-669-4735
Fax: 867-873-8185
email: anne.wilson@ec.gc.ca

Subject: Quantities of coagulant and flocculant, and ferro-silicon used annually.

Objective: To clarify amounts of reagents and settling agents.

Time Limits: As soon as possible for use in this review.

Reference: Environmental Assessment Report dated February 26, 2002, Section 3.4 page 3-14 and Table 3.7-1.

Preamble: The Environmental Assessment Report contains two substantially different estimates of the quantities of reagents to be used on an annual at the Snap Lake site, specifically:
Ferrosilicon - 220 tonnes per year vs. 350 tonnes per year.
Flocculant - 20 tonnes per year vs. 40 tonnes per year.
Ferrosilicon is of particular interest because of the role ferric iron is thought to play in the depression of seepage pH when it is mobilized from the coarse kimberlite or tailings. Concerns with polymer-type coagulents and flocculants have recently been identified, with respect to chronic toxicity to aquatic organisms.

Request: Please clarify which estimate of each quantity should be used in this review. If trade names for coagulants and flocculants are known, these should be identified. Otherwise, the type should be specified.

SPILL REPORTING

Date: May 27, 2002 to the Review Board

From: Anne Wilson, Environment Canada

Phone: 867-669-4735
Fax: 867-873-8185
email: anne.wilson@ec.gc.ca

Subject: Reporting of spills.

Objective: To ensure all spills are reported.

Time Limits: As soon as possible for use in this review.

Reference: Environmental Assessment Report dated February 26, 2002, Section 3.6.6.1 page 3-26.

Preamble: The Spills Contingency Plan specifies reporting thresholds (page III.9-3) which are drawn from the 1990 *Consolidation of Spill Contingency Planning and Reporting Regulations, NWT Environmental Protection Act.* These thresholds only to bulk storage facilities licenced by the Government of the NWT. These thresholds do not apply to developments on federal lands such as this one; i.e. <u>all</u> spills should be reported to the NWT Spill Line.

Request: Environment Canada seeks an undertaking from the proponent to report <u>all</u> spills, rather than just those that exceed the volume thresholds listed in Table III.9-1.

SPILL REMEDIATION

Date: May 27, 2002 to the Review Board

From: Anne Wilson, Environment Canada

Phone: 867-669-4735
Fax: 867-873-8185
email: anne.wilson@ec.gc.ca

Subject: Landfarming and disposal of hydrocarbon-contaminated materials.

Objective: To identify the fate of contaminated materials not suitable for remediation by landfarming.

Time Limits: As soon as possible for use in this review.

Reference: Environmental Assessment Report dated February 26, 2002, Section 3.5.3.4 page 3-19.

Preamble: Spills of hydrocarbons may occur on materials such as crushed rock, pit materials, or waste rock, which are unsuitable for treatment in the landfarm.

Request: How will hydrocarbon spills on, or in, substrates that are not amenable for landfarming be remediated or disposed of?

WATER QUALITY

Date: May 27, 2002 to the Review Board

From: Anne Wilson, Environment Canada

Phone: 867-669-4735
Fax: 867-873-8185
email: anne.wilson@ec.gc.ca

Subject: Phosphorus predictions and loading.

Objective: Clarification of total phosphorus concentrations and annual loadings or phosphorus to Snap Lake.

Time Limits: As soon as possible for use in this review.

Reference: Environmental Assessment Report dated February 26, 2002, Section 9.4.2.2.4 Table 9.4-18 page 9-222; Table 9.4-22 Page 233; Table 9.4-23 page 9-235; Table 9.4-24 page 9-238.

Preamble: In the EAR (Table 9.4-23) De Beers predicts the water chemistry of the mine water discharge, seepage, and runoff at the Snap Lake site. The report provides concentration estimates for phosphate, rather than total phosphorus (TP). In general TP is a better indicator when evaluating the potential for eutrophication problems.

Table 9.4-22 shows a decrease in average summer total phosphorus concentrations during operations when compared to baseline. This decrease is explained as a modeling artifact resulting from the use of a low proportion of organic phosphorus in the discharge. Figure 9.4-15 appears to be based on this modeling, and is similarly understated. It would be much more helpful (and realistic) to have annual TP loadings provided.

Request: Please provide:

- predicted values for total phosphorus concentrations in each of the waste streams;
- predicted total annual TP loadings to Snap Lake from all sources