

North Slave Metis Alliance
Public Hearing Presentation of
De Beers' Snap Lake Diamond Project

Surface Water Quality and Aquatic Resources
Issues



Presented By: Kris Johnson
Public Hearing: April 28- May 2, 2003

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Surface Water Quality and Aquatic Resources Issues

- 1. Is the development likely to have a significant adverse impact on surface water and aquatic resources?**
- 2. Can the impacts be mitigated?**
- 3. Does the development pose significant public concern in regards to surface water and aquatic resources?**



Surface Water Quality and Aquatic Resources Issues

Issues:

- **Surface Water Quality**
- **Aquatic Resources**



Surface Water Quality and Aquatic Resources Issues

Will increases in nutrient and sediment to Snap Lake and adjacent lakes likely have a significant adverse impact on surface water and aquatic resources?

- The addition of phosphorous and nitrate can have dramatic affects on the primary and secondary productivity of Snap Lake.
- Increasing the nutrient levels in Snap Lake will result in increased phytoplankton.
- Additionally, shifts in nutrient balance of the lake can lead to the proliferation of toxic cyanobacteria.
- A shift in the nutrient balance may ultimately have impacts on the aquatic resources (zooplankton, benthic invertebrates, and fish) of Snap Lake.



Surface Water Quality and Aquatic Resources Issues

Will increases in nutrient and sediment to Snap Lake and adjacent lakes likely have a significant adverse impact on surface water and aquatic resources?

Continued...

- Trophic status changes in the lake may be significant over time. Development of the project will compress the time frame in which the trophic level of the lake changes compared to the natural cycle.
- Lake level fluctuations will affect fish and fish habitat.



Surface Water Quality and Aquatic Resources Issues

Will increases in nutrient and sediment to Snap Lake and adjacent lakes likely have a significant adverse impact on surface water and aquatic resources?

Continued...

- De Beers has not provided adequate information and documentation to determine the significance and potential for adverse impacts.
- Nor is there sufficient info to determine the magnitude and extent of adverse impacts.
- Potential impacts to aquatic life from mine water and discharge into Snap lake have not been fully addressed.
- Clarification of nutrient input effects are needed for a proper assessment of impacts to the Snap Lake aquatic ecosystem.
- Impacts of nutrient release have not been reassessed to include food web linkages.



Surface Water Quality and Aquatic Resources Issues

Will increases in nutrient and sediment to Snap Lake and adjacent lakes likely have a significant adverse impact on surface water and aquatic resources?

Continued...

-chronic toxicity testing, focusing on potential stimulatory effects of wastewater discharge rather than inhibitory effects needs to be conducted.

-End-of-pipe predications are based on 100% wastewater treatment efficiency and do not leave room for human or mechanical error.

-A more conservative model for phosphorous release must be used before conclusions can be reached regarding impacts of nutrient discharge on productivity can be reached.

-The Board cannot delegate the assessment of monitoring and mitigation measures to the MVLWB without seriously jeopardizing the objectives of the Environmental Assessment.



Surface Water Quality and Aquatic Resources Issues

Can the Impacts be Mitigated?

-De Beers has not provided enough information to assess if mitigation of adverse impacts is possible.

-Monitoring programs have yet to be developed. Monitoring is essential in order to determine whether impact predictions are accurate and can be mitigated.

-In the absence of sufficient baseline information, there is a need to know how monitoring programs will be developed to show scientific validity and rigor, locally or regionally, and how Traditional Knowledge and local communities will be involved in monitoring design.

“It is only when a developments effects are known and understood that it is possible to determine and implement effective mitigation measures and to make an informed decision about supporting the development”

(Addressing Cumulative Effects in Environmental Assessments under the MVRMA. Interim Guide Sept 2000)



Surface Water Quality and Aquatic Resources Issues

Is there Significant Public Concern?

The following organizations have documented unresolved surface water quality and aquatic resources issues with the Snap Lake Diamond Project:

- North Slave Metis Alliance
- Yellowknives Dene First Nations
- Dogrib Treaty 11 Council
- Lutsel K'e Dene First Nation
- Environment Canada
- Indian and Northern Affairs Canada
- Department of Fisheries and Oceans



Surface Water Quality and Aquatic Resources Issues

What could be done in a further review to remove the uncertainty surrounding the SLDP:

Baseline Data and Modeling

1. Nutrient inputs must be clarified before a proper assessment of impacts to the Snap Lake aquatic ecosystem can be complete.
2. Impacts of nutrient release have to be reassessed to include food web linkages before approval can be assessed.
3. There must be a closer examination of potential impacts of flocculent release and development of spill response measures.
4. A more conservative model for phosphorous release must be used before the Board can assess the impacts of nutrient discharge on the productivity of Snap Lake can be reached.



Surface Water Quality and Aquatic Resources Issues

What could be done in a further review to remove the uncertainty surrounding the SLDP:

Baseline Data and Modeling cont...

5. Chronic toxicity testing must be conducted, focusing on potential stimulatory effects of wastewater discharge rather than inhibitory effects before a proper assessment of the SLDP can be conducted.

6. The prediction that trophic status of the lake will change with the project has to be reevaluated in ecological terms regardless of the lack of water quality guidelines.



Surface Water Quality and Aquatic Resources Issues

What could be done in a further review to remove the uncertainty surrounding the SLDP:

Baseline Data and Modeling cont...

7. A more thorough examination of lake level fluctuations and potential effects on fish and fish habitat is necessary to provide a greater level of confidence in the impact predictions.

8. Validating the regional groundwater flow regime, with proper consideration of the faults and fracture zones, would allow a proper assessment of post-closure impacts on the adjacent lakes.



Surface Water Quality and Aquatic Resources Issues

What could be done in a further review to remove the uncertainty surrounding the SLDP:

Monitoring Programs

9. Monitoring programs must be developed. Monitoring is essential in order to determine whether impact predictions are accurate and as a safeguard to the aquatic ecosystem of the project area.

Monitoring programs must include:

- specific objectives,
- proposed approach
- methodologies
- Traditional Knowledge

10. The monitoring program must address fish resources (population change, fish health), fish habitat, and non-fish organisms.



Surface Water Quality and Aquatic Resources Issues

What could be done in a further review to remove the uncertainty surrounding the SLDP:

Monitoring Programs cont...

11. Consultation with affected Aboriginal communities must be done to ensure these programs address their concerns and incorporate Traditional Knowledge EQUALLY with Western Science.

12. The NSMA and other affected Aboriginal communities must be active participants in the monitoring program.

13. The results of the monitoring programs must be incorporated into an adaptive management plan.



Surface Water Quality and Aquatic Resources Issues

The Board cannot recommend the SLDP for approval because:

- 1. De Beers has not provided the Board with adequate information to assess if there is likely to be significant adverse impacts on surface water and aquatic resources.**
- 2. The baseline information that exists does not adequately assess the impacts on the surface water quality and aquatic resources of Snap Lake and adjacent lakes.**
- 3. Given the absence of adequate baseline data, monitoring programs cannot be developed to accurately and adaptively mitigate impacts from the Snap Lake Diamond Project. Monitoring programs must be developed and implemented before any development occurs to ensure accurate baseline information exists.**
- 4. There remains considerable public concern.**



“If it is uncertain, however, whether the project is likely to cause an significant adverse environmental effect or that the project will cause significant adverse environmental effects that may be justified in the circumstances, the project must be referred to a mediator or a review panel.”

(Addressing Cumulative Effects in Environmental Assessments under the MVRMA. Interim Guide Sept 2000)



Surface Water Quality and Aquatic Resources Issues

1. Is the development likely to have a significant adverse impact on surface water and aquatic resources?

YES

2. Can the impacts be mitigated?

NO- Unknown impacts cannot be mitigated

3. Does the development pose significant public concern in regards to surface water and aquatic resources?

YES



Where there is not sufficient information to determine the impacts of a project on the environment the Precautionary Principle must be applied.

