



**Snap Lake Environmental Monitoring Agency**  
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**4501 Franklin Avenue**  
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Shannon Hayden  
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P.O.Box 2130  
Yellowknife, NT X1A 2P6

File: MV2001L2-0002/ICRP

June 1, 2011

**RE: Interim Mine Closure and Reclamation Plan (ICRP, 2011)**

Dear Ms. Hayden,

Snap Lake Environmental Monitoring Agency (SLEMA) is pleased to provide Mackenzie Valley Land and Water Board (MVLWB) with the following comments related to the above document. The comment table is also attached.

Goal and Objectives of Mine Closure and Reclamation

The ICRP discusses the macroscopic objectives, the goal of reclamation, the specific objectives of landscape reclamation, the global objectives of reclamation, and three categories of site specific reclamation objectives – physical stability, chemical and biological stability, and future land use compatibility (recommended in the Mine Site Reclamation Guideline for the Northwest Territories published by INAC in 2007) in Section 2.1. The terms about objectives used in the section seem too much and may confuse readers. It is recommended that De Beers clearly define the hierarchy of goal and objectives system for closure and reclamation.

The reclamation objectives and measurable criteria for evaluation for each mine element are further discussed in Section 5.2.4. If the hierarchy of the reclamation project is Goal – Objectives and Criteria for Performance Evaluation – Reclamation Tasks/Activities, some of the objectives are not well defined because they look like reclamation tasks/activities, such as

- Section 5.2.4.1 (North Pile, Physical Stability, page 70): “Placement of a functional stabilizing cover of waste rock with an ability to shed excessive precipitation including extreme events without causing significant erosion.”
- Section 5.2.4.2 (Underground Mine, Physical Stability, page 72): “Remove salvageable equipment and material, electrical generators, explosives and



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other hazardous contaminants from underground and remove off site for disposal.”

- Section 5.2.4.3 (Water Management Structures, Physical Stability, page 74): “Remove water management structures that are no longer required after site rehabilitation.”
- Section 5.2.4.3 (Water Management Structures, Future Land use Compatibility, page 74): “Cover areas with sediments that may impact surface water.”
- Section 5.2.4.4 (Process Facilities and Site Infrastructure, Physical Stability, page 75): “Decommission all process facilities and surface infrastructure and appropriately dispose of all non-hazardous materials from decommissioned debris.” “Decommission fuel storage facilities and dispose.”
- Section 5.2.4.5 (Roadways and Airstrip, Physical Stability, page 76): “Decommission site roads.”
- Section 5.2.4.5 (Roadways and Airstrip, Chemical and Biological Stability, page 76): “Rehabilitate site roads and airstrip with grading and re-contouring, without relocating rock fill to the North Pile.”

It is recommended that De Beers further refine the site specific objectives. In addition, numbering each objective will make it easier to identify a specific objective.

### Role of Traditional Knowledge

It is stated in Section 5.2.1 (page 57) that consideration of both traditional knowledge (TK) and other scientific information available is one of the reclamation principles. However, there is only one TK item about eskers incorporated into Section 3.2.2.3 (page 18), and more efforts about TK should be made by De Beers.

Traditional Knowledge could be incorporated into the development and the implementation of the ICRP, and elders could play an important role during the process. Some examples are:

- Development of the objectives: elders can provide opinions on what they want to see at the mine site 5, 10, 20, 50 and 100 years after the mine closure.
- Development of reclamation options: elders can provide opinions on their preference between natural re-vegetation and active re-vegetation.
- Closure performance evaluation: elders could act as judges and tell whether mine closure is a success through site inspections conducted by them.



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### Progressive Reclamation

Progressive reclamation is defined in the ICRP (Section 5.3.1, page 85) as actions that can be taken during mining operations before permanent closure to reduce the overall reclamation costs and liability. However, only the North Pile is believed to be the facility that has the potential to be reclaimed during the mining period. The statement may be not true.

It is stated in Section 5.2.3.2 (page 68) that underground voids will be backfilled with cemented paste backfill as part of the mining operations. As a result, the paste backfilling should be part of De Beers progressive reclamation effort.

De Beers scheduled reclamation activities associated with the removal of the construction camp and PAG (potentially acid generating rock) at the underground maintenance storage in 2011 (Section 8, page 12, 2010 Annual Mine Reclamation Status Report). In addition, localized zones of metavolcanic rock had been identified in roads near the Water Management Pond (WMP), the diffuser outflow, the fresh water intake, and the Fresh Air Raise (FAR) during site inspections conducted during 2010 and previous monitoring years (Section 8.2, page 57, 2010 Acid Rock Drainage (ARD) and Geochemistry Monitoring Report), and they could be the potential targets of progressive reclamation.

Further, the historical Ammonia Nitrate (AN) Storage Pad was directed by INAC Inspector to be cleaned up by August 31, 2011, thus the AN pad reclamation should also be discussed in the Plan.

In summary, in addition to the North Pile, the following areas should be considered as the potential targets of progressive reclamation and should be described in the Plan.

- Paste backfill to the underground,
- Decommissioning of the construction camp,
- Remediation of PAG sites,
- Reclamation of the AN pad.

### Water Management/Treatment before and after Mine Closure

It is stated in Section 5.3.2.1 (page 58) that the seepage collection system and a water treatment plant will continue to be operated until such time as the quality of the seepage and runoff water is confirmed to be suitable for direct untreated discharge. However, Task#48 in Figure 20 (page 89) states that the Water Treatment Plant will be demolished in November 2030. This possibly indicates a conflict of schedule. Clarification is requested.



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Monitoring and assessment are discussed in Section 5.4.2.1 (page 71) and Section 5.2.8.1 (page 81), but sampling frequency and parameters, discharge criteria for runoff and seepage from the reclaimed site are not specified. Further detail about monitoring and assessment is requested.

Section 5.5.5 (page 91-92) discusses the projected conditions of aquatics resources after permanent closure and reclamation. However, the information provided is very limited. The water quality, sediment quality, plankton and benthos of Snap Lake itself should be further discussed. De Beers water quality modeling work during 2010 to 2011 period could provide input to the discussion.

### North Pile Development

The Plan still uses outdated figures of plan view and cross sections for the development of the North Pile. Those figures (Figure 11 to 19) appear to be prepared in 2002 to 2006 for 2006 version of ICRP. Comparing Figure 12-18 (Section 5.2.3.1, page 60 to 66) with Figure 5 (page 25) will find that

- Perimeter Sump #3 (PS3) in Figure 12 looks much smaller than the one in Figure 5,
- Half of the Water Collection Pond #1 in Figure 12 to 17 is Perimeter Sump # 5 (PS5) in Figure 5, and
- Processed Kimberlite (PK) deposition sequence is northern part of the Starter Cell first, and then the southern part in real life, but Figure 12 and 18 display the reverse sequence.

Therefore the figures do not show the current progressive reclamation practices, and related figures must be updated to represent the changes during the mining and progressive reclamation process.

### Other Issues

In addition to the aforementioned concerns, some minor ones are identified as follow.

- Section 2.1.2 (page 4): The second bullet may be repetitive with the first bullet.
- Section 3.4.7.5 (page 45): It is stated that “the landfarm is located in the northeast portion of the North Pile footprint. Once the eastern section of the North Pile nears completion, the landfarm will be tested and decommissioned. Contaminated soils will be transferred to the second landfarm in the area of the west cell, or taken off-site for disposal or treatment”. The description is not consistent with the current landfarm location – southeast portion of the West Cell footprint, showed in Figure 5 (page 25). Clarification is requested.



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- Section 5.2.3.1 (page 57): The maximum height of the North Pile is 34 m in page 57 and 91, but 39 m in page 80 and 97. Consistency is required.
- Section 5.2.3.1 (page 57): Figure 11 to 17 instead of Figure 11 to 15.

### Conclusion and Recommendations

The submission looks like a draft, and major revision is needed. The goal, objectives and criteria should be clearly defined, more details such as progressive reclamation should be added, and updates such as figures of the North Pile closure process should be done.

If you have any questions whatsoever please feel free to contact the undersigned or David White at 867-765-0961 / [dwhite@slema.ca](mailto:dwhite@slema.ca).

Sincerely,

(original signed by)

Johnny Weyallon  
Chairperson

cc: Indian and Northern Affairs Canada  
Environment and Natural Resources, GNWT  
Environmental Canada  
De Beers Canada Inc.