



July-August 2021 Environmental Update for SLEMA Board

September 7, 2021

Outline

1. Mine Update
2. SNP Reports
3. Reported incidents
4. Water Monitoring
5. Inspections
6. Regulatory News
7. Environmental Agreement News
8. SLEMA's Activities



Acronyms

- AEMP – Aquatic Effects Monitoring Program
- ARD – Acid Rock Drainage
- DFO – Fisheries and Oceans Canada
- ECCC – Environment and Climate Change Canada
- ECM – Extended Care and Maintenance
- ENR – Department of Environment and Natural Resources, GNWT
- EQC – Effluent Quality Criterion
- GNWT – Government of the Northwest Territories
- MVEIRB – Mackenzie Valley Environmental Impact Review Board
- MVLWB – Mackenzie Valley Land and Water Board
- PK – Processed Kimberlite
- SNP – Surveillance Network Program
- TDS – Total Dissolved Solids
- WEMP – Wildlife Effects Monitoring Program
- WTP – Water Treatment Plant



1. Mine Update

- The Snap Lake Mine is currently in Extended Care and Maintenance (ECM);
- The site was reopened on April 20, 2021



2. SNP Reports

- DeBeers submitted the following SNP Reports:
 - June 2021 SNP Report, and
 - July 2021 SNP Report.
- SNP Reports describe activities at the mine site, and on-site monitoring in June and July.



2. SNP Reports

➤ WATER MANAGEMENT AT SITE

- Water Extraction from Snap Lake: The quantity of water extracted from Snap Lake for camp operations, site services and construction was:
 - 938 cubic meters (June)
 - 538 cubic meters (July).
- The Sewage Treatment Plant (STP) operated for 30 day(s) in the month of June and 31 day(s) in the month of July.



2. SNP Reports

➤ WATER MANAGEMENT AT SITE

- The water treatment plant was in operation (WTP) in June and July;
- Effluent discharge commenced on June 6th, 2021, according to:
 - 83,355 cubic meter discharged into Snap Lake (June);
 - 68,385 cubic meter discharged into Snap Lake (July);
 - Brine discharged to underground:
 - 6,549 cubic meters (June) and
 - 5,035 cubic meters (July)



2. SNP Reports

➤ GENERAL WASTE MANAGEMENT AT SITE

- Glass jars, tin cans, and most food related plastic containers are washed and stored until they can be shipped off site.
- Waste wood products and cardboard are burned in the authorized pit as per the LUP
- Waste is handled as per the approved operational procedures for waste handling



2. SNP Reports

- Regulatory site inspection was conducted by GNWT inspector, Joe Heron on July 15th, 2021.

- SPILLS

- Following an observation of decreasing water level in Perimeter Sump 3 (PS3), a spill was reported;
- Subsurface leakage was confirmed migrating from the north side of PS3 and towards Snap Lake.



2. SNP Reports

➤ ENVIROMENTAL STUDIES/SURVEYS

- Fuel tank inspections;
- Air quality monitoring;
- SNP monitoring and sampling;
- Perimeter Sump monitoring and sampling;
- Monthly North Pile, ditch, and perimeter sump monitoring.



2. SNP Reports

➤ OTHER ON-SITE ACTIVITIES

- Main camp building inspection;
- Dam and Water Management Pond monitoring;
- Collection of data from on-site piezometers and thermistors;
- Geotechnical investigations;
- Wildlife monitoring.



3. Water Monitoring



Fig 1: SNP Sampling Stations



3. 2021 - WATER MONITORING DATES

Monitoring Station	Apr.	May	June	July	Aug.
02-02 North Pile Ditch		28	11 & 27	11 & 27	
02-05 Run off at Rock Pad			03	15	
02-06 Runoff at Quarry		23			
02-11 Seepage WMP Dam					
02-14 WMP			05	03-17- 26	



3. 2021- WATER MONITORING DATES

Monitoring Station	Apr.	May	June	July	Aug.
02-15 Water Intake		11	15	13	
02-16i Sewage Effluent		21	29	13&27	
02-17b Treated Effluent			5&29	20	
02-20d 02-20e 02-20f Diffuser Stations	11 (all MS)		23 (all MS)	25 (all MS)	



3. 2021- WATER MONITORING

Results:

- Effluent discharge's Water quality satisfied Effluent Quality Criteria (EQC) in June and July.
- Reported TDS in Snap Lake, at the mixing zone:

	TDS June	TDS July
SNP 02-20d	245 (mg/L)	235 (mg/L)
SNP 02-20 e	269 (mg/L)	231 (mg/L)
SNP 02-20 f	246 (mg/L)	235 (mg/L)



4. Incident Reported: Leak

- On July 23 DB communicated SLEMA Tech Advisor of a leak in the liner of the Sump 3 that started in July 2020;
- Sump 3 is one of the sumps that receives the seepage from the North Pile;
- They noticed a decrease in the level of Sump 3;
- The decrease in water level occurred when the Sump was full.



4. Incidents Reported: Leak

- Part of the water leak was discharging into Snap Lake;
- After analysis, they found that the leak water quality meets the Water Licence's Effluent Quality Criteria (EQC);
- Following that, DeBeers reported the leak to the NT-NU SPILL REPORT: Spill Report # 20211331;
- And submitted a Follow-up Report to the MVLWB;



4. Incidents Reported: Leak

- Further measures of response and containment of the leak include:
 - Pumping the remaining PS3 water to the Water Management Pond (WMP) until the surface elevation was below the suspected seepage;
 - Building an interceptor ditch North of PS3 to cut off the flow pathway to Snap Lake.



4. Incidents Reported: Leak

- Corrective actions include:
 - Monitoring daily PS3 and pumping water as needed to the WMP to prevent further seepage;
 - Maintain water surface elevations below the 446.1 MASL threshold, which is the suspected level at which seepage occurs;
 - The interceptor ditch and associated submersible pump remain in place and are monitored daily to ensure water is contained and transferred to the WMP for treatment before discharge;



4. Incidents Reported: Leak

- Corrective actions include (Cont.):
 - These corrective actions will remain in place until a pending engineering report outlines next steps and actions required to repair PS3.



4. Incidents Reported: Leak



Fig 1: View of the North Pile. The leak occurred in SP3



4. Incidents Reported: Leak

FIGURE 2: FLUORESCIN DYE TESTING



4. Incidents Reported: Leak

FIGURE 3: PS3 (SURFACE ELEVATION BELOW 446.1 MASL)



4. Incidents Reported: Leak

FIGURE 4: INTERCEPTOR DITCH AND PUMP



5. Inspector's Letter of Warning

- On August 17, 2021, a Letter of Warning was issued by the Inspector in relation to a failure of DeBeers to notify the Inspector and the MVLWB
- of a seepage event that occurred at the Snap Lake Mine North Pile Perimeter Sump #3 (PS3) on July 26th, 2020.
- An accelerated decrease in water levels at the PS3 was noted by staff during the period from July 17th, through July 26th, 2020.



5. Inspector's Letter of Warning

- Upon closer inspection of the site, staff noticed water pooling outside the water containment facility along the North Pile access road.
- Testing showed the source of the pooled water to be from the North Pile Perimeter sump PS3.
- As the seepage meets the Effluent Quality Criteria (EQC) and there was no harm to the receiving environment, no further enforcement action is being considered at this time.



5. Site Inspections

➤ Regulatory site inspection was conducted on July 15th, 2021, by Inspector Joe Heron.

The following areas were inspected:

- North Pile Facility
- North Pile Perimeter Sump #3
- Fuel Storage Facilities & Tanks
- Waste Transfer Area
- Incinerators
- Landfill



5. Site Inspections

➤ Conclusions:

- Overall, the Snap Lake Mine appeared to be operating in compliance with the conditions of Water Licence MV2019L2-0004.
- The Inspector was disappointed the mine failed to immediately notify the Inspector (and the Board) when seepage from the North Pile Perimeter Sump #3 (PS3) was discovered, as is required by Water Licence MV2019L2-0004 Part F, Condition #12 and Part H, Condition #4.



5. Site Inspections



Photo 1: A diesel pump set-up at the North Pile cells. The Licensee must monitor the secondary containment and properly maintain to ensure hydrocarbon spills are being minimized



5. Site Inspections



Photo 2: Water from the cell in Photo #1 is pumped down the North Pile and into sump PS3.



5. Site Inspections



Photo 3: Looking east at the North Pile sump PS4.



5. Site Inspections



Photo 4: Looking west at the North Pile sump PS5. A staff gauge will be installed and surveyed into place.



5. Site Inspections



Photo5: Looking north at the Snap Lake Mine Water Management Pond.



5. Site Inspections



Photo6: Treated water that meets EQC is discharged into Snap Lake via this diffuser



5. Site Inspections



Photo7: Pooled water along the North Pile access road due to seepage from North Pile sump PS3.



5. Site Inspections



Photo8: Looking west at the 18-million litre bulk fuel storage tanks and pumped-out berm.



5. Site Inspections



Photo9: The bulk fuel storage facility transfer station.



5. Site Inspections



Photo10: As seen, water from the tank berm is pumped out as required.



5. Site Inspections



Photo11: The light vehicle fuel transfer station at the Snap Lake Mine.



5. Site Inspections



Photo12: This sump at the fuel station in Photo #14 was approaching capacity due to a recent rainfall. The sumps are sucked out with a vacuum truck and the water is deposited into the WMP prior to treatment and discharge.



5. Site Inspections



Photo13: The hydrocarbon matting on this fuel spigot was saturated required changing.



5. Site Inspections



Photo14: Looking north at the mine Landfill.



5. Site Inspections



Photo15: Waste is segregated into its proper waste streams prior to disposal.



5. Site Inspections



Photo16: The camp incinerators and fuel supply.



5. Site Inspections



Photo17: Water within the incinerator fuel tank berm is monitored and removed as required to ensure capacity.



5. Site Inspections



Photo18: The mine burn pit area.



5. Site Inspections



Photo18: Waste metals and ash from the mine waste incinerations are containerized and tested prior to disposal.



5. Site Inspections



Photo18: Hazardous waste is staged within this lined and bermed area to await disposal offsite.



5. Site Inspections



Photo19: Additional hazardous waste is being properly staged and labeled to await offsite disposal at the mine Waste Transfer Area.



6. MVLWB Regulatory Update

- Documents Submitted for Review in July – August:
 - 1) Aquatic Effects Monitoring Program (AEMP) Design Plan and
 - 2) 2012-2020 Aquatic Effects Re-evaluation Report.

Deadline on September 2, 2021.

Current Situation:

Pending DeBeers answer to reviewers' comments.



6. MVLWB Regulatory Update

- Report Approved: 2020 Aquatic Effects Monitoring Program (AEMP) Annual Report
- Following public review DeBeers updated the AEMP Annual Report to address reviewers comments and resubmitted it to the Board.
- After confirmation of changes, MVLWB approved the AEMP AR on August 6.



6. MVLWB Regulatory Update

- Pending Update to Reflect Commitments Made During The Review:

Snap Lake - Erosion and Sedimentation Management Plan Version 1.1

Current Situation: Interim MLVWB's Approval.
DeBeers should submitted an updated E&S Plan.



6. MVLWB Regulatory Update

- Pending Update to Reflect Commitments Made During The Review:

Snap Lake Water Management Plan (WMP)
Version 5.1 for Review

Current Situation: Interim WM Plan Approval.
DeBeers should submit an updated WM Plan



6. MVLWB Regulatory Update

- Pending Resubmission and Review by Stakeholders

Snap Lake Water Licence Annual Report

Current Situation:

The MVLWB requested De Beers resubmit the 2020 Annual Water Licence Report to reflect updates as agreed to during the review.



6. MVLWB Regulatory Update

➤ Pending MVLWB Decision:

Snap Lake Final Closure and Reclamation (FC&R) Plan - Version 1.1

Reviewers submitted comments on Apr 08.
The Proponent responded on Apr 22.

Current Situation: Pending Board's Decision.



7. ENVIRONMENTAL AGREEMENT

➤ De Beers' Snap Lake Mine Wildlife Management and Monitoring Plan Tier 2

On May 26, 2021 SLEMA received De Beers' Snap Lake Mine Wildlife Management and Monitoring Plan (Tier 2) from the Government of the Northwest Territories; this Plan is a requirement under the Section 95 of Wildlife Act.

SLEMA reviewed and commented the Plan on June 25.



8. SLEMA ACTIVITIES

➤ Postponement of Snap Lake Mine Fish Tasting :

On August 17, following the cases of COVID-19 in the Sahtu and Yellowknife and the situation around Canada, DeBeers communicated its decision to postpone the Elders Fish Tasting event planned for Snap Lake Mine.

They look forward to rescheduling the event in 2022.



8. SLEMA ACTIVITIES

➤ SLEMA reviews in June and July 2021:

1) Review of the Surveillance Network Program - SNP monthly reports

SLEMA reviewed June and July 2021 SNP Reports submitted by DeBeers and found them sound and according to the regulatory requirements with no major issues.



8. SLEMA ACTIVITIES

➤ SLEMA reviews in June and July 2021

The following documents were sent out by the MVLWB for public review and commented by SLEMA:

- 1) Aquatic Effects Monitoring Program (AEMP) Design Plan and
- 2) 2012-2020 Aquatic Effects Re-evaluation Report.



8. SLEMA ACTIVITIES

➤ SLEMA Workshop Attendance

SLEMA attended De Beers' AEMP Re-evaluation and Design Plan workshop for Snap Lake on the following dates:

- July 21 9:00-12:00 AEMP Re-Evaluation
- July 22 9:00-12:00 AEMP Design Plan

