

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



- 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.



> 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.

- > 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)



> 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

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.

> 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.



> 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

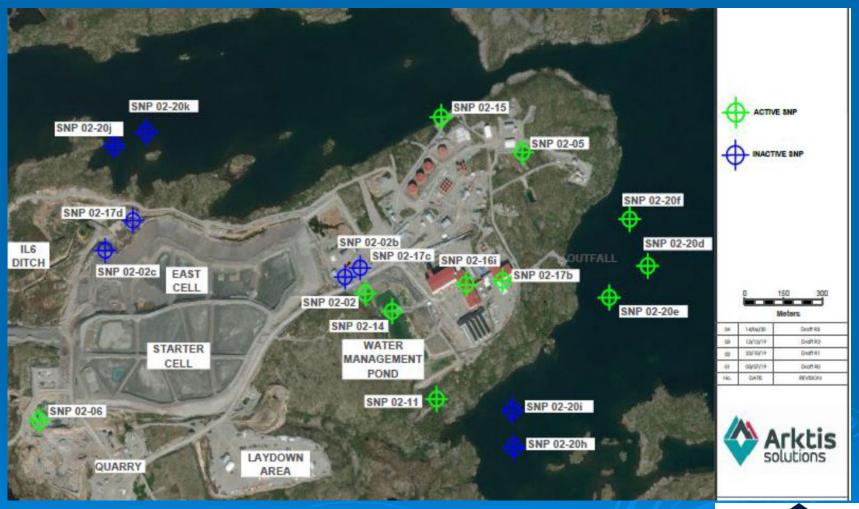


Fig 1: SNP Sampling Stations



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-	



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)



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.



- 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;

 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.



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;

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.



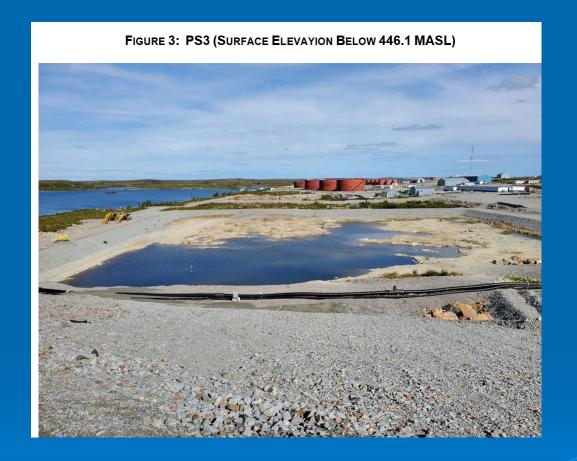


Fig 1: View of the North Pile. The leak occurred in SP3

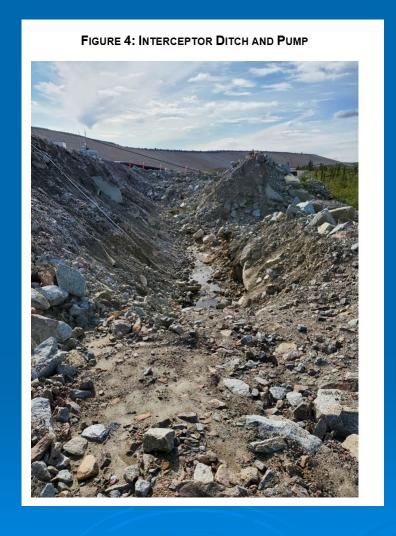














5. Inspector's Letter of Warning

- 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.



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



- > 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.





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





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





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





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





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





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





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





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





Photo9: The bulk fuel storage facility transfer station.





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





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





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.



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





Photo14: Looking north at the mine Landfill.





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





Photo16: The camp incinerators and fuel supply.





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



Photo18: The mine burn pit area.





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



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



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

- 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.



- 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.



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.



Pending Update to Reflect Commitments Made During The Review:

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

<u>Current Situation:</u> Interim WM Plan Approval. DeBeers should submit an updated WM Plan



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.



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, 2021SLEMA 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.



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.



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.



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.



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

