

**LUPIN MINE**  
**NUNAVUT, CANADA**

**Water Licence**  
**No. 2AM-LUP2032**

**2020** Revised  
Annual  
Report  
to the Nunavut Water Board

Date: October 29, 2021  
(Rev 1 -June 26, 2021)

Submitted by:  
Lupin Mines Incorporated  
[A wholly owned subsidiary of Mandalay Resources Corporation]  
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# LUPIN MINE, NUNAVUT

## WATER LICENCE NO. 2AM-LUP2032

### 2020 ANNUAL REPORT

#### EXECUTIVE SUMMARY

The Lupin Mine was in the closure phase throughout 2020 resulting in minimal water use. Waste deposit took place from the Sewage Lakes disposal Facility and the Tailings Containment Facility during open water in accordance with the Licence requirements. The site was occupied from February 16, 2020 to March 30, 2020. The crews left site due to the global pandemic. Once COVID-19 procedures and protocols were established with various governmental agencies the crews returned to site on May 7, 2020 through October 7, 2020. The camp had upwards of 85 people working at site.

During this period, care and maintenance, and closure activities included the following:

- camp opening and closing, utilizing freshwater and deposit of sewage to the Sewage Lakes Disposal Facility, and incineration of general camp wastes;
- general site maintenance including airstrip, roads, minor repairs to Tailings Containment Area (TCA) internal dams;
- discharge of the Sewage Lakes Disposal Facility effluent (lower sewage lake). Approximately 419,466 m<sup>3</sup> of effluent was released to the environment, all within Licence discharge criteria;
- discharge of water from the TCA, Pond 2. Approximately 4,492,593 m<sup>3</sup> of effluent was released from the TCA to the environment over a fifty-seven (57) day period for an average daily rate of 78,817 m<sup>3</sup>/day. All water quality parameters were within Licence discharge criteria as well as meeting the discharge criteria of the Metal and Diamond Mining Effluent Regulations (Fisheries Act);
- dewatering of the Tailings Dump Pond No.1 to the lower sewage lake;
- dewatering/transferring of water from the upper sewage lake to the lower sewage lake;
- removal of accumulated snow from the Bulk Fuel Storage (Main Tank Farm) prior to freshet resulted no discharge being required from the facilities;
- collection and pumping of TCA Dam 2 seepage back to the TCA Pond 2;
- general water quality monitoring;

- annual geotechnical inspection of engineered facilities; Tailings Containment Area
- collection of various hazardous materials and other waste
- closure activities that took place are shown under Section M below.

**KAVAMALIQINIRMUT NAINAAQHIMAYUT NAUNAITKUTAT  
2020 UKIUM NUNNGUTAANUT NAUNAITKUTAT**

AWAITING TRANSLATION – WILL SEND AS SOON AS WE RECEIVE THEM

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AWAITING TRANSLATION – WILL SEND AS SOON AS WE RECEIVE THEM

### INTRODUCTION

The Lupin Mine is located approximately 285 km southeast of Kugluktuk in the Kitikmeot Region of Nunavut and is owned by Lupin Mines Incorporated (LMI), a wholly owned, indirect subsidiary of Mandalay Resources Corporation. The mine site is situated on the western shore of Contwoyto Lake, approximately 60 km south of the Arctic Circle. It is an underground gold mine that was in operation from 1982 to 2005 with temporary suspensions of activities between January 1998 and April 2000, and again between August 2003 and March 2004. The mine resumed production in March 2004 until February 2005 when the Site was placed into Care and Maintenance, and no active mining has taken place since.

On October 20 2017, Mandalay Resources Corporation, through its wholly owned, independent subsidiary Lupin Mines Incorporated (LMI), announced that the Lupin Mine will transition from care and maintenance to full closure and reclamation, beginning in 2018 through to 2020. An application for renewal and amendment of the current water licence (Application), as well as a Final Closure and Reclamation Plan (FCRP) was submitted to the Nunavut Water Board on July 27, 2018 which underwent an extensive review process and culminated in the issuance of amended Type A Water Licence 2AM-LUP2032 on February 29, 2020 by the Nunavut Water Board (NWB) and approval by the Minister of Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) on April 9, 2020. LMI continued active preparatory work and initiated year one of the active closure phase in Q1 of 2020.

Under Part B, Item 2 of the Licence, an Annual Report is required to be submitted to the NWB prior to March 31 of the year following the calendar year being reported, and prepared in accordance with Schedule B of the Licence. LMI obtained an extension to file the 2020 Annual Report on June 26, 2021.

The following sections provide the information as required under Schedule B of Water Licence No. 2AM-LUP2032.

#### A. FRESHWATER INTAKE VOLUME (MONITORING STATION LUP-01)

*The monthly and annual quantities in cubic metres of Water pumped from Contwoyto Lake at Station Number LUP-01 and other sources.*

The Lupin Mine camp opened on February 16, 2020. Pumping water from Contwoyto Lake at the causeway began on February 17, 2020 until April 1, 2020 and then May 7, 2020 utilizing a submersible pump, filling a 4,542 litre (1,200 usg) plastic tank within a water truck that is used to transport water to the camp's two (2) 4,542 litre storage tanks. The water is then run through a series of filters with disinfection provided by a flow-through Ultraviolet chamber prior to distribution in camp. The camp was open for 200 days in 2020, through October 6, 2020, using a total of 1,947.85 m<sup>3</sup> of freshwater, for

an average water use of 9.739 m<sup>3</sup>/day<sup>1</sup> for domestic purposes, well within the maximum authorized water use of 250,025 m<sup>3</sup>/year during Active Closure and Reclamation Phase under the water licence. The following table summarizes the monthly and annual quantities in cubic metres of Water pumped from Contwoyto Lake at Monitoring Station LUP-01.

2020	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Water Use (m <sup>3</sup> /day)		21.80	123.95		300.45	472.58	657.95	300.88	52.62	17.59			1947.85

#### B. OTHER WATER USE FOR INDUSTRIAL PURPOSES, INCLUDING DUST SUPPRESSION

*The monthly and annual quantities in cubic metres of Water pumped from ponds against the roads, or ponds or lakes proximal to the road, for industrial purposes, including dust suppression.*

No water was pumped from ponds against the roads or proximal to the road for either industrial purposes or for dust suppression. Water used for these purposes was taken from the freshwater intake at Contwoyto Lake, and included in the overall camp use volumes.

#### C. TAILINGS EFFLUENT DISCHARGE (MONITORING STATION LUP-10)

*The monthly and annual quantities in cubic metres of treated Tailings Effluent discharged at Station Number LUP-10.*

Treatment of stored water in the Tailings Containment Area (TCA) and the discharge of Effluent at Monitoring Station LUP-10 took place between July 29, 2020 and **September 23, 2020**. Monthly and annual discharge volumes are summarized in the following table. Detailed Daily and Monthly Discharge volumes for monitoring Station LUP-10 are presented in Table No. 1 of Appendix A.

2020	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total (m <sup>3</sup> )
TCA Effluent (m <sup>3</sup> )							282,532	3,389,484	820,577				4,492,593

#### D. MINEWATER (MONITORING STATION LUP-11)

*The monthly and annual quantities in cubic metres of Minewater discharged at Station Number LUP-11.*

There was no mine water discharged from the underground workings at the Lupin Mine Site in 2020 while carrying out closure and reclamation activities.

<sup>1</sup> A Blue-White Industries Model F-1000-RT Totalizer flow meter is used to calculate the daily freshwater consumption.

#### E. SEWAGE EFFLUENT (MONITORING STATION LUP-14)

*The monthly and annual quantities in cubic metres of treated Sewage Effluent discharged at Station Number LUP-14.*

Two six-inch syphon lines were installed at the Lower Sewage Lake discharge. Effluent release from the Sewage Lakes Disposal Facilities began on July 29, 2020 and continued until August 29, 2020. Total volume of effluent discharged at Monitoring Station LUP-14 was approximately 419,466 m<sup>3</sup>. The following table illustrates the monthly and annual discharge quantity of Sewage Effluent at monitoring Station LUP-14 in 2020. A summary of the daily discharge from the Sewage Lakes Disposal Facility is included in Table No. 2 of Appendix A.

2018	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Sewage Effluent (m <sup>3</sup> /day)							72,000	347,466					419,466

Following the discharge of the Sewage Lakes Disposal Facilities, transfer of water from the upper sewage lake and the Tailings Line Dump Pond No.1 to the lower sewage lake took place in order to lower the respective water levels and provide for storage of spring freshet in 2021.

#### F. HAZARDOUS WASTE AND CHEMICALS

*Details on the types and quantities of Hazardous Waste and chemicals stored on site.*

The following table summarizes the types and quantities of Hazardous Waste and chemicals remaining on site as of December 31, 2020, to be used or eventually transported off site.

Hazardous Waste and Chemicals Stored on Site	
Material	Amount
Waste Motor Oil	30,000 litres (42 ea - 1000L cubes); 12,000 litres (2 waste oil tanks); (3 ea - 1000L cubes) Equipment Shop; 1,536 litres (64 ea - 20L pails)
Contaminated (old) Diesel Fuel	1,845 litres (9 drums in Third party Drum Storage - TPDS)
Contaminated (old) Jet Fuel	615 litres (3 drums in TPDS)
Oily Water	96,965 litres (473 drums in TPDS)
Acid Filled Batteries	36 count 12volt lead/acid Batteries (seacan)
Hydrated Lime	16,636kg (916ea - 20 kg bags, Cold Storage)
Soda Ash	48,978kg (54 ea - 907 kg totes, Cold Storage)
Used Glycol (antifreeze)	16,000 litres (16ea - 1000L cubes, TPDS)
Portland Cement	3,000 kg (150 - 20 kg bags, Cold Storage #2)
Calcium Chloride	Approx. 20,000 kg (covered at laydown area #2)

Shotcrete Cement	30,000 kg (Cold Storage #4 near Winter Rd)
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No waste was shipped offsite in 2020, as all waste, hazardous waste and chemicals will be shipped to Yellowknife via the winter road in 2022.

#### *Fuel and Petroleum Products Inventory:*

As of December 31, 2020, there was approximately 1,275,920 litres of diesel fuel and 387,072 litres of jet fuel in storage in large fuel tanks within the Bulk Fuel Storage (Main Tank Farm). Within the Third-Party Drum Storage (TPDS) berm, stored in 205 Litre drums, there is approximately 615 Litres of gasoline in three (3) drums; 1,640 Litres of diesel fuel in eight (8) drums and approximately 2,460 litres in twelve (12) drums of jet-A and/or Av-gas.

Additionally, there are several empty 205 litre drums and three (3) empty 1,300 litre oil cubes on site available for spill contingency and/or temporary storage of hydrocarbons or hydrocarbon contaminated water.

### G. MONITORING PROGRAM DATA

*Tabular summaries of all data generated under the "Monitoring Program".*

#### *Water Quality Monitoring - Freshwater*

Freshwater is obtained from Contwoyto Lake, pumphouse (removed in 2020) or causeway, as described in Section A above. A water sample is obtained from this location annually and submitted for physical and chemical analyses as per Licence monitoring requirements. The 2020 sample was obtained on May 9, 2020. The following table summarizes the Water quality analyses required under Schedule J, at the Freshwater Intake located at Contwoyto Lake, Monitoring Station LUP-01 (see Appendix B, Certificate of Analysis Lab WO#: L2445812, attached).

Station LUP-01		
Parameter	Result (mg/L) May 9, 2020	Laboratory Method Detection Limit (MDL)
pH	6.68	0.1
Conductivity		
Total Suspended Solids (TSS)	<1.0	3
Fecal Coliform (MPN/100mL)	<1 CFU/100mL	1
Total Metals (ICP Scan) mg/L		
Mercury (Hg)	<0.0000050	0.000005
Aluminum (Al)	0.0073	0.003
Antimony (Sb)	<0.00010	0.0001
Arsenic (As)	0.00030	0.0001



Station LUP-01		
Parameter	Result (mg/L) May 9, 2020	Laboratory Method Detection Limit (MDL)
Barium (Ba)	0.00339	0.0001
Beryllium (Be)	<0.00010	0.0001
Bismuth (Bi)	<0.000050	0.00005
Boron (B)	<0.010	0.01
Cadmium (Cd)	0.0000050	0.000005
Calcium (Ca)	1.39	0.05
Cesium (Cs)	0.000010	0.00001
Chromium (Cr)	0.00010	0.0001
Cobalt (Co)	0.00010	0.0001
Copper (Cu)	0.00081	0.0005
Iron (Fe)	0.010	0.01
Lead (Pb)	0.000050	0.00005
Lithium (Li)	0.0012	0.001
Magnesium (Mg)	0.804	0.005
Manganese (Mn)	0.00033	0.0001
Molybdenum (Mo)	<0.000050	0.00005
Nickel (Ni)	0.00104	0.0005
Phosphorus (P)	<0.050	0.05
Potassium (K)	0.579	0.05
Rubidium (Rb)	0.00162	0.0002
Selenium (Se)	<0.000050	0.00005
Silicon (Si)	0.10	0.1
Silver (Ag)	<0.000010	0.00001
Sodium (Na)	0.806	0.05
Strontium (Sr)	0.00815	0.0002
Sulfur (S)	1.35	0.5
Tellurium (Te)	<0.00020	0.0002
Thallium (Tl)	<0.000010	0.00001
Thorium (Th)	<0.00010	0.0001
Tin (Sn)	<0.00010	0.0001
Titanium (Ti)	<0.00030	0.0006
Tungsten (W)	<0.00010	0.0001
Uranium (U)	0.000022	0.00001

Station LUP-01		
Parameter	Result (mg/L) May 9, 2020	Laboratory Method Detection Limit (MDL)
Vanadium (V)	<0.00050	0.0005
Zinc (Zn)	0.0030	0.003
Zirconium (Zr)	<0.00020	0.00006

### *Water Quality Monitoring - Effluent*

Discharge of Effluent at the Lupin Mine took place from the Tailings Containment Area and the Sewage Lakes Disposal Facility. Discharge from the Bulk Fuel Storage Facility (including the Satellite Tank Farm and the Third-Party Drum Storage area) was not required in 2020 as accumulated snow was removed in May and June prior to spring melt, placed on the south facing downward slope of the mine site general area so that snow melt would be captured by the Upper Sewage Lake, and any contaminants would be remediated via the Sewage Lakes Disposal Facility prior to discharge. Effluent monitoring is summarized in the following sections.

#### Tailings Containment Area Discharge and Downstream Monitoring

Water quantity and quality monitoring was carried out during 2020 for discharge from the Tailings Containment Area as required by Schedule J of the Water Licence. Monthly and annual Water quantity discharged is summarized above in Section B of this report. Detailed discharge flow monitoring is included in Table 1 of Appendix A, providing daily and monthly volumes discharged at monitoring station LUP-10. Approximately 4,492,593m<sup>3</sup> of effluent was discharged at Monitoring Station LUP-10 in 2020.

Initial water quality samples to comply with Part E, Item 15 were obtained on July 23, 2020 from Station LUP-10 (102), which is upstream of the discharge syphons at Dam1a, within the Tailings Pond 2. Water quality analyses as well as toxicity bioassay tests were carried out for compliance confirmation prior to initiating discharge. A request to discharge from the Tailings Containment Area (TCA) was sent to the Inspector on July 28, 2020, which included the pre-discharge water quality data and toxicity results. Written approval for discharge was received from the Inspector on July 28, 2020 and discharge commenced on July 29, 2020 and concluded on September 23, 2020.

A further sample for bioassay testwork was obtained on September 23, 2020, prior to the completion of discharge, from both Monitoring Stations LUP-10 (discharge, monthly requirement) and LUP-10 (102), and submitted to the lab.

A summary of the chemical analysis results for the above are included within Tables 3-5 of Appendix A, indicating compliance with Water Licence Effluent Quality Limits. The full test result reports, certificate of analyses, bioassay test reports, are included in the Appendix B of this report. In summary, the bioassay testwork determined that at 100% effluent concentration, the water within the Tailings Pond 2

(prior to discharge and during discharge) was non-toxic (100% survival) in both the rainbow trout and daphnia LC<sub>50</sub> test methods.

The following table summarizes the water quality of effluent discharged with respect to Effluent quality limits and compliance under Part E, Items 5 for Monitoring Station LUP-10.

	Monitoring Station	Field pH	pH (pH)	Total Suspended Solids (mg/L)	Cyanide, Total (mg/L)	Arsenic (As)-Total (ug/L)	Copper (Cu)-Total (ug/L)	Lead (Pb)-Total (ug/L)	Nickel (Ni)-Total (ug/L)	Zinc (Zn)-Total (ug/L)
Minimum	LUP-10	6.26	6.44	<1	< 0.0050	4.4	1.77	0.051	52.3	120
Maximum	LUP-10	8.37	7.39	12	< 0.0050	31.0	5.32	1.740	63.4	187
Average	LUP-10	6.96	6.90	N/A*	< 0.0050	15.5	3.22	0.151	58.4	153
Licence Criteria										
Max. Average Conc.		6.0-9.5		15	0.8	500	150	100	200	400
Max. Conc. of Any Grab Sample		6.0-9.5		30	1.6	1000	300	200	400	800

\*n/a = average not calculated as the majority of values were below detection

Note: The Licence criteria is generally presented in mg/L however for metals the lab is reporting in ug/L

A full summary of data for the 2020 discharge at monitoring station LUP-10, and the downstream monitoring stations prior to, during and post discharge is included in Appendix A. Table 3 summarizes the monitoring data for station LUP-10, whereas Tables 4 and 5 summarize the data for the downstream monitoring chronologically and by monitoring station respectively. Copies of the laboratory Certificates of Analysis for all monitoring related to the TCA discharge is included in Appendix B.

With the exception of the results from the TCA (monitoring station LUP-10 (102)) for post discharge, all effluent water quality during discharge was observed to be well within the Licence discharge criteria of Part E, Item 5.

As noted in Table 3, Appendix A, on September 16, 2020 no sample was obtained as there was no discharge, due to syphon malfunction from ice build-up which was corrected, as shown in Table 1, Appendix A – Discharge Volume Monitoring Summary.

## Sewage Lakes Disposal Facilities

A request to discharge from the Sewage Lakes Disposal Facilities was sent to the Inspector on July 28, 2020, which included pre-discharge water quality data. Written approval for discharge was received from the Inspector on July 28, 2020 and discharge commenced on July 29, 2020, continuing through to August 29, 2020. Approximately 419,466 m<sup>3</sup> of Effluent was discharged from the facilities. The following table summarizes the Water quality analyses as required under Part E, Items 9 and 15 of the Licence, for discharge to the environment of the Sewage Lakes Disposal Facilities at Monitoring Station LUP-14, sampled June 25, 2020 and July 29, 2020 and August 19, 2020. Additional analyses as required under Schedule J are included in Appendix B, in the attached Certificate of Analysis, Lab WO#: L2466926, Lab WO#2481826 and Lab WO#2491978:

Station LUP-14				
Parameter (mg/L)*	June 25, 2020	July 29, 2020	August 19, 2020	Maximum Concentration of Any Grab Sample (mg/L)*
pH	6.43	6.94	7.22	6.0 - 9.5
Total Suspended Solids (TSS)	2.1	3.1	NV	35
Biochemical Oxygen Demand (BOD <sub>5</sub> )	<2.0	2.0	2.0	30
Oil and Grease	No Visible Sheen	No Visible Sheen	No Visible Sheen	No Visible Sheen
Fecal Coliforms (cfu/100mL)	<1	4	<1	1000 cfu/100mL
Arsenic (As)	0.00368	0.00699	0.00767	0.05
Copper (Cu)	0.00081	0.00239	0.00118	0.20
Lead (Pb)	0.00055	0.00079	<0.00050	0.05
Nickel (Ni)	0.00366	0.00964	0.00474	0.30
Zinc (Zn)	0.0037	0.0055	<0.0030	0.50

\* unless otherwise stated

## Bulk Fuel Storage (Main Tank Farm)

As mentioned above, there was no discharge of effluent in 2020 from the fuel storage areas, that include the Main Tank Farm, Satellite Tank Farm and the Third-Party Storage Area. During May and early June, accumulated snow was collected from the tank farm areas, removed and disposed of along the south bank of the main laydown area, north of the Upper Sewage Lake, where spring melt and runoff would report to the Sewage Disposal Facilities and be managed through the eventual discharge of the Lower Sewage Lake. Any remaining snow and future precipitation within the fuel storage areas was minimal and managed through normal seasonal evaporation.

## Other Monitoring Requirements

Sampling at East Lake and Boot Lake took place on July 21-22, 2020. See Appendix B, Certificates of Analysis Lab W/O#: L2479238.

### H. RESPONSE TO INSPECTION REPORTS AND COMPLIANCE REPORTS FILED BY AN INSPECTOR

*A summary of actions taken to address concerns or deficiencies listed in the inspection reports and/or compliance reports filed by an Inspector.*

Crown Indigenous Relations and Northern Affairs (CIRNA) conducted an inspection at the Lupin Mine site on July 2, 2020 for the Water Licence and associated Land Leases. The Inspector filed the report for the water licence on July 21, 2020 (Appendix D). As noted in the Inspector's Report, "Due to the ongoing global Covid-19 Pandemic situation, this was a very unique Inspection process. The writer flew in to site on an Air Charter, which is the only accessible means of travel to and from the mine site during the summer months. Recommended health guidelines including social distancing in response to the pandemic were respected the entire time the writer was on the ground at the Lupin Site. John Franklin Kaoudluak and the writer followed Gord Peckford around the site using their own ATV's while Gord was using his company's truck. At NO time did any parties including the 2 pilots of the Charger Flight come into contact with anyone working at the Lupin Site." During the July 2020 inspection the Inspection Report advised LMI of the following for action as following:

1. Sewage Lagoon Sample Results from the Lab MUST be provided to the writer for approval prior to Decanting.
2. The Temporary Landfill Storage Area is in an acceptable state. The writer walked the entire area and the perimeter and found no major concerns.
3. LMI MUST pay constant attention to Dust Control Mitigation Measures in order to minimize the effects of windblown dust getting into any Bodies of Water.
4. The writer has no concerns with the Incineration of Camp Food Waste.
5. The writer has no concerns with Potable Water retrieval or Consumption Levels.
6. LMI must inform the Nunavut Water Board in writing if there are to be any changes in the Approved Project Schedule.
7. Where required, Sample Station Signage is to be Repaired or Replaced prior to the next scheduled Inspection.

LMI did not provide formal response to the report but LMI did address the items, some directly with the Inspector. LMI carried out the following:

- LMI provided the sewage lagoon sample results from the lab and requested written approval from the inspector prior to decanting on July 28, 2020 and received written approval to decant on July 28, 2020. See Section 6 above.
- LMI did not make sure they paid constant attention to dust control and during the subsequent Inspection (August) was no longer noted as a concern.
- LMI provided the NWB in September with the updated project schedule. LMI has provided a further updated project schedule with this Annual Report with the Rev 2 FCRP, Addendum.
- The signs that were moved due to activities for the closure work were put back in place and during subsequent inspection (August) the item was no longer noted as a concern.

Crown Indigenous Relations and Northern Affairs (CIRNA) conducted a second inspection at the Lupin Mine site on August 27, 2020 for the Water Licence and associated Land Leases. The site conditions were discussed on-site with representatives of LMI during the inspection and an inspection report for the Water Licence was filed on August 27, 2020 by the Inspector. The Inspector filed the report for the water licence on September 9, 2020 (Appendix D). As noted in the Inspector's Report, "Due to the ongoing global Covid-19 Pandemic situation, this was a very unique Inspection process. The writer flew in to site on an Air Charter, which is the only accessible means of travel to and from the mine site during the summer months. Recommended health guidelines including social distancing in response to the pandemic were respected the entire time the writer was on the ground at the Lupin Site. John Franklin Kaoudluak and the writer followed Gord Peckford around the site using their own ATV's while Gord was using his company's truck. At NO time did any parties including the 2 pilots of the Charger Flight come into contact with anyone working at the Lupin Site."

There were no concerns in the Inspectors report for LMI to address.

## I. MODIFICATIONS AND MAJOR MAINTENANCE WORK

*A summary of modification and/or major maintenance work carried out on the Water supply and the Waste management facilities, including all associated structures.*

Areas identified in the 2019 Geotechnical Inspection prioritized repairs items were mostly addressed during the 2020 care and maintenance/closure phase period to the satisfaction of the Engineer of Record. LMI lowered the Pond 2 water and once the Pond 2 was lowered repairs began on Dam K. Overall, a volume of 11,505 m<sup>3</sup> was hauled, placed and compacted as per the engineer's instructions. The repairs were complete on October 7, 2020. The divider dyke was repaired and raised raised by 0.5m for emergency water management to prevent overtopping – as stated in the 2020 Geotechnical Report. The water level was monitored in Dam N and lowered to increase the freeboard. Dam M was unable to be repairs this season as per the 2020 Geotechnical report. Dam M repairs and closure work, as per the submitted signed and sealed construction drawings to the NWB in July 2020, will take place in 2021.

The 2020 Lupin Mine Tailings Containment Area Geotechnical Inspection was conducted during the period of September 17-18, 2020 by Mr. Alvin Tong, PEng., Senior Geotechnical Engineer with Stantec. Detailed visual inspection was completed on all TCA components, along with readings of instrumentation. The Geotechnical Inspection report was finalized by Stantec, December 18, 2020 and submitted by LMI to the NWB on February 1, 2021. LMI apologizes for the late submission as the LMI Project Manager was on leave from work from Dec 15, 2020 until January 30, 2021 (Appendix C). The general observations indicated that the perimeter dams are in stable condition. Various earthwork was done in 2020 as part the closure activities and emergency water management. The divider dyke and Dam L were raised by 0.5m and 0.8m, respectively, for emergency water management to prevent overtopping. Prior to the emergency raise, Dam L was mechanically breached and backfilled by the contractor to dewater Cell 3 without the engineer-of-record (EOR) authorization or engineering oversight. During repair of Dam M, earthwork equipment has caused a localized minor failure at the downstream face of the dam. Dam K received maintenance and repairs this year. The Pond 2 water level was lowered significantly by the water treatment and discharge operation, providing a freeboard upwards of 5m at the perimeter dams.

LMI will address the items of concern during the 2021 work season.

#### J. SUMMARY OF UNAUTHORIZED DISCHARGES

*A list and description of all unauthorized discharges including volumes, spill report line identification number and summaries of follow-up action taken.*

There were no unauthorised discharges or spills reported in 2020.

#### K. REVISIONS TO PLANS, REPORTS AND MANUALS

*Where applicable, revisions as Addendums, with an indication of where changes have been made, for Plans, Reports, and Manuals*

Management Plans have been updated. There were not significant changes to the plans but LMI anticipates that following this season with a majority of the final closure and reclamation work completed that the management plans will change significant to reflect site. The following Addendums, Part B, Item 11, are attached with this report:

1. Appendix E - Care and Maintenance and Closure Phase Plan Addendum (June 2021) including the following Appendices Addendums (all dated June 2021):
  - Appendix 1 - Waste Management Plan (Solid and Hazardous) Addendum
    - Appendix 2 - Landfill Management Plan Addendum
    - Appendix 3 - Landfarm Management Plan Addendum
  - Appendix 2 - Liquid Waste Management Plan Addendum
  - Appendix 3 - Wildlife Management Plan Addendum
  - Appendix 4 - Monitoring and Inspection Schedule Addendum

2. Appendix F - Spill Contingency Plan Addendum (June 2021)

3. Appendix G - Rev 2 Final Closure and Reclamation Plan Addendum (June 2021) including:

- Appendix 1 - Rev 2 FCRP - Table 14 - Summary of Measures for Final Closure (June 2021)
- Appendix 2 - Technical Memo Part E, Item Part 25 - TM Dome Design \_ June 8, 2020
- Appendix 3 - Technical Memo Part E, Item 26 - Geotechnical Details TCA - Dam K and Dam Cross Sections - includes construction designs for Dam M, Dam K, Cell 5 and Cell 3 (Appendices 3a and 3b below are the signed versions) - June 8, 2020
- Appendix 3a - Construction Designs submitted for Dam M, Dam K, Cell 5 and Cell 3 to fulfill Part G, Item 1 (unsigned drawings were submitted in Appendix C) - July 15, 2020
- Appendix 3b - Updated Drawing 005 - Outflow to address comment and fulfill Part G, Item 1 - August 5, 2020
- Appendix 4 - Technical Memo Part E, Item 27 - Exposed Tailings
- Appendix 5 - Cell N Contour Information
- Appendix 6 - Updated Reclaim Estimate to Reflect Security Reductions received from CIRNAC.

#### L. PUBLIC CONSULTATION AND PARTICIPATION RECORD

*A summary of public consultation and participation with local organizations and the residents of the nearby communities, including a schedule of upcoming community events and information sessions and the consultation efforts of the Licensee required under Part B, Item 20.*

LMI's public hearing took place in Kugluktuk on January 15-16, 2020. LMI participated in the community meeting on evening of January 15, 2020.

LMI's renewed water licence was approved on April 9, 2020, and unfortunately the entire world changed in Feb/March 2020 due to COVID-19. While LMI does not want to appear that they making an excuse for not having engagement with the local organizations and the residents of Kugluktuk in 2020, due to COVID-19 LMI work load more than doubled with procedures and protocols to ensure everyone's (up to 84 people on site) safety at site and be able to continue the closure and reclamation work. LMI was not able to carry out in-person consultation with the community of Kugluktuk in 2020, but we hope that at some point in the 2021 we will be able to provide an in-person update.

LMI would note that they have engaged with community organizations and community members in Kugluktuk on four separate occasions in 2021, via conference calls and a number of written questions/concerns that we believe we have addressed. LMI will continue to engage with community organizations and community members. Further details on the 2021 conference calls/correspondence will be included in the 2021 Annual Report.

#### M. ABANDONMENT AND RECLAMATION WORK

*A summary of any abandonment and reclamation work completed during the year and an outline of any work anticipated for the next year.*

##### **Tailings Containment Area –**



As of the end of 2020, there remained approximately 95,000 m<sup>2</sup> of exposed tailings in Cell 5 and 86,000 m<sup>2</sup> in Cell 3. In 2020, all the esker material required to complete the Cell 3 designs is stockpiled at Cell 3. Cell 5 still requires approximately 31,000m<sup>3</sup> of esker material to be hauled at Cell 5. LMI intends to complete the placement of the cover and the outlet structures by the end of the 2021 season.

The tailings pipeline has been removed and buried in the landfill.

Repairs to Dam K, Divider Dyke and Dam L, see Section I above.

#### **Mine Site Area Complex –**

Mill, hoist room, travel ways, shaft house, warehouse, powerhouse airlock buildings, carpenter shop, fire house, emergency power house, batch plant, atv building, LMI's weather station (not be confused with ECCC's weather station), cold storage buildings have all been demolished; non-hazardous rubble was disposed of in landfill. Any concrete foundation slabs will be hoe-ramped, left in place and covered with 0.3 m of granular fill. Asbestos containing materials was safely disposed of in the landfill. All other hazardous materials have been assembled in a staging area (bermed area) and will be shipped off-site via winter road in 2022 for disposal.

Approximately, 68,000m<sup>3</sup> of esker material is stockpiled at the mine site to complete the mine site cover design in 2021.

#### **Landfill(s) and Other Waste Disposal –**

Approximately 50,000m<sup>3</sup> of non-hazardous wastes was be disposed of in the existing landfill, and there is approximately 10,500m<sup>3</sup> left on site to be buried in the landfill. Approximately 7,000m<sup>3</sup> of waste rock will be used to infill voids and create a stable contoured surface which drains freely. The waste in the landfill was covered progressively during 2020 and will continue in 2021.

#### **Accommodation Facilities**

Approximately 75% of the accommodation facilities were be demolished and the rubble will be disposed the landfill.

#### **Freshwater Supply**

The pumphouse and the freshwater supply line were demolished/removed and placed in the landfill.

#### **Explosives Magazine**

The explosives storage magazine is located 2 km west of the TCA and consists of 2 steel-frame/metal clad buildings which were demolished and the rubble was disposed of in the landfill.

#### **Tailings Pipeline**

The tailings line has been flushed thoroughly with clean water. All the tailings line has been removed and placed in the landfill.

#### **Fuel Storage**

The fuel storage facilities at Lupin included a main tank farm (including a system of 14 diesel tanks, 1 jet A tank and 9 individual tanks), a satellite tank farm (STF) (including a system of 10 diesel tanks and 2 gasoline tanks and a waste oil tank farm which included 2 waste oil tanks). As of December 2020, two of the diesel storage tanks and the Jet A tank are in use. 11 diesel storage tanks have been cleaned and placed in the landfill. 7 individual tanks have been cleaned and will be disposed in the landfill. Clean tanks in the boneyard were also demolished and placed in the landfill.

At the end of 2020, there was approx. 1.3m litres of diesel fuel in storage at the site.

### **Soil Remediation**

Soil remediation began in 2020, with approximately 5,700m<sup>3</sup> of hydrocarbon soils and approximately 80 m<sup>3</sup> of As soil was excavated. The As soil remediation has been completed well below the estimate amount in the final closure and reclamation plan.

### **Equipment and Chemical Storage**

On-site equipment, that was no longer in use, has been buried in the landfill, including equipment located in the boneyard. Further equipment will be placed in the landfill in 2021, some equipment will remain for post closure but a majority of the equipment will be shipped to Yellowknife via the winter road in 2022. Fluids drained from the equipment are stored in a bermed area to be shipped off-site on the winter road for disposal. See Section F above for waste amounts on site as of December 30, 2020.

### **2021 Work**

LMI intends to complete a majority of the final closure and reclamation work as outlined in the final closure and reclamation plan. See Appendix H - 2021 Rev 2 Final Closure and Reclamation Plan – Updated Table 14 Summary of Measures for Final Closure for a list of activities.

### **N. ADDITIONAL DETAILS REQUESTED BY THE BOARD**

*Any other details on Water use or Waste disposal requested by the Board by November 1 of the year being reported.*

Lupin Mines Incorporated did not receive additional requests for information from the Nunavut Water Board prior to November 1, 2020 for the 2020 annual reporting period.

## **APPENDIX A**

### **Tabular Summaries of Monitoring Program**

**APPENDIX B**  
**2020 Certificates of Analysis**

**APPENDIX C**

**2020 Geotechnical Report and Cover Letter**

## **APPENDIX D**

### **2020 Inspection Reports**

**APPENDIX E**  
**2021 Care and Maintenance and Closure Phase Plan Addendum**  
**including Appendices Addendums 1-4**

**APPENDIX F**  
**2021 Spill Contingency Plan Addendum**



**APPENDIX G**  
**2021 Rev 2 Final Closure and Reclamation Plan Addendum**  
**including Appendices Addendums A-F**

## **APPENDIX H**

### **2021 Rev 2 Final Closure and Reclamation Plan – Updated Table 14**

#### **Summary of Measures for Final Closure**