

POLARIS MINE
DECOMMISSIONING AND RECLAMATION PROGRESS REPORT
2003 ANNUAL REPORT – SUBMITTED FEBRUARY 25, 2009

FOR THE
NUNAVUT WATER BOARD &
INDIAN AND NORTHERN
AFFAIRS CANADA





February 25, 2009

Nunavut Water Board

Box 119

Gjoa Haven, NU

X0B 0J0

Attention: Phyllis Beaulieu, Manager of Licensing

Indian and Northern Affairs Canada

P.O. Box 100

Iqaluit, Nunavut

X0A 0H0

Attention: Spencer Dewar, Manager, Lands Administration

Dear Ms. Beaulieu and Mr. Dewar;

Re: Polaris Mine Decommissioning and Reclamation – 2003 Report Annual Report

In reviewing the November 24, 2008 report from BGC Engineering Inc. titled "Polaris Mine – Draft Review of Outstanding Items and Assessment of Crown's Remaining Liability", it was identified that Teck Cominco had not submitted the 2003 Annual report as required.

Enclosed with this letter is the missing report. Due to the comprehensive information previously submitted in the 2003 quarterly reports, there was no new information to include in the Annual report. Consequently the enclosed Annual report contains summary information only and is being submitted simply to eliminate the gap in reporting that currently exists.

If you have any questions regarding this submission, please don't hesitate to contact me.

Yours truly,

A handwritten signature in black ink, appearing to read "B. Donald".

Bruce Donald,

Reclamation Manager

Enclosures: Paper and Electronic Version of the 2003 Annual Report



POLARIS MINE

DECOMMISSIONING AND RECLAMATION ACTIVITIES

2003 ANNUAL REPORT

SUBMITTED FEBRUARY 27, 2009

TO

THE NUNAVUT WATER BOARD

AND TO THE

DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS CANADA

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1. EXECUTIVE SUMMARY IN INUKTITUT

Refer to Appendix 1 for an executive summary of plans, reports and studies conducted under this licence 2003 that has been translated into Inuktitut.

2. INTRODUCTION

This is the Annual Decommissioning and Reclamation progress report submitted in relation to the Polaris Mine's Decommissioning and Reclamation Plan ('Closure Plan') as required by the Water Licence NWB1POL0311 which was issued on April 24, 2003 with an effective date of March 1, 2003.

Submission of this report was overlooked and is finally being submitted on February 25, 2009. This report contains no new information as all the data and information has been previously reported in the quarterly reports. However Appendix 2 contains a report submitted summarizing the 2003 MMER data.

3. UNAUTHORIZED DISCHARGES AND SUMMARY OF FOLLOW UP ACTIONS

There were no unauthorized discharges of water or effluent during 2003.

As reported in the 1st Quarter, 2003 report, on March 20, 2003 there was a spill of diesel fuel which was reported to the N.W.T. Spill Report Line. After initial clean up was completed the area will undergo final cleanup as part of the planned soils remedial work planned to occur in this area during the summer of 2004.

4. PROGRESS REPORT OF STUDIES / PLANS REQUESTED

- These have been discussed in each of the four Quarterly reports previously submitted and so will not be duplicated here.

5. DECOMMISSIONING AND RECLAMATION PROGRESS REPORT

Reclamation work completed during the year is summarized below:

5.1. Building Demolition

5.1.1. Mill / Offices / Warehouse Facilities / Barge

- As previously reported the barge has been demolished and the debris hauled to LRDQL and laid out in the pit bottom awaiting burial. Barge hull debris is being further processed (cut into smaller pieces) in LRDQL to lower the height of the debris to ensure there are no voids created by burying sections that are too large.

5.1.2. Concentrate Storage Building

- Five column stubs are all that remain of the building structure. They will be removed in the early spring of 2004.

5.1.3. Thickener Building

- A short section of tails line remaining near Garrow Lake shoreline was removed in December. There is a run of tailings line remaining up slope from the former Concentrate Storage Building. It will be removed in the spring.
- Final clean up by hand around the thickener building area remains outstanding. To be done in the spring once the snow melts.

5.1.4. CRF Plant

- Previously completed.

5.1.5. Fuel Tank Farm

- No further activity until 2004.

5.1.6. Accommodations Building

- No demolition activities in this area have been initiated as the facility will remain in active use until the summer of 2004.

5.1.7. Other Buildings / Structures

- No activities.

5.2. Earthworks

5.2.1. Marine Dock and Adjacent Shoreline

- Work ceased in the dock area early in October waiting for the sea ice to form. Weather during October delayed further significant work until early spring of 2004.
- Re-contouring of the shoreline north of the dock was on-going from Oct 10th to the end of November. Much of the protective berm at the edge of shoreline was removed once the sea ice thickened north of the dock. The sea ice will protect the shoreline from wave action until re-contouring work has been completed.

5.2.2. Garrow Lake Dam

- Excavation of the dam proceeded through until November using an excavator with a ripper to avoid the need for blasting. The ground became too hard to productively work so activities were suspended until March/April of 2004.

5.2.3. Operational Landfill

- As of November 16, approximately 16,000 cu.m. of limestone cap material was reported to have been placed by SNC. Hauling continued until November 30th at which time 98% of the cap had been placed. Will complete next spring once the snow is gone.

5.2.4. Little Red Dog Quarry Landfill ('LRDQL')

- Blasting from Bench 3 and 4 of LRDQL was on-going during the quarter until November 17th to supply limestone cover materials for the Operational Landfill. Dam shell and core materials (c/w Styrofoam insulation) were hauled and placed into LRDQL as fill for burying demolition materials.

5.2.5. Back 40 Area (Including CRF Area, New Quarry, North Pit, Subsidence Area, North Portal Area)

- Minimal activities re-contouring in this area due to winter weather. Substantial progress was made the previous quarter when the active layer was thawed.

5.2.6. Exploration Waste Rock Dump

- Continuing to remove contaminated soils from this area until ceasing work November 16th.

5.2.7. Temporary Dock

- Is forecast to be removed in March. The temporary dock consists of a number of robust steel I beams anchored into the sea bottom. There are no sheet piles associated with the temporary dock either now or in the past. In March while the ice extends to the base of the I-beams (they are in shallow water), the ice can be dug out with an excavator and the I-beams cut off just below the sea bottom. In this way sedimentation during the removal process will not be a concern.

5.2.8. Roadways

- No activity other than snow clearing.

5.3. Contaminated Soil Remediation

The Polaris Mine Decommissioning and Reclamation Plan (DRP) identified a number of locations at the mine site that had potential environmental concerns (Figure 18, Volume 1 of the DRP). These areas were identified as a result of the environmental assessments conducted by Gartner Lee Ltd. (GLL) in 1999 and 2000 and reported in Volumes 3 and 4 of the DRP. GLL has updated Figure 18 from the DRP renumbering the areas to more precisely identify them (Refer to Figure 1 in Appendix 2 of the 4th Quarter report).

TCL's schedule has been to complete all of the required work on site by September 2004 (as indicated in the DRP). At that time, TCL will demobilize all personnel and equipment from the site.

5.3.1. Concentrate Storage Shed and Area

- During October, final clean-up of the floor area was completed. In some areas contaminated soils were removed to bedrock. Small quantities of residual contaminated concentrate dusts have filtered into the cracks of the bedrock preventing further contaminant removal. Clean beach gravel fill was hauled in as a cover material which was completed October 26th. Refer to Appendix 2-A of the 4th Quarter report for a detailed discussion of remedial efforts employed for the Concentrate Storage Shed in the Close-Out report titled 'Former Concentrate Storage Shed Area'.
- Areas surrounding the perimeter of the Concentrate Storage have only limited remedial work completed to date and will be address in 2004.

5.3.2. Cemented Rock Fill (CRF) Plant Area

- As previously reported, both building demolition and soils remediation have been completed. Refer to Appendix 2-B of the 4th Quarter report for the GLL Close-Out report titled 'Former CRF Plant Fuel Storage Tank'.

5.3.3. Former Quonset Huts Fuel Storage Area

- An area of potential concern was identified in the 1999/2000 environmental site assessment, locally known as the High Arctic Club and associated maintenance shed. This was an area suspected of having hydrocarbon contaminated soils. Additional investigations were completed by GLL staff and confirmatory samples

indicated no hydrocarbon concentrations exceeding the remedial targets. GLL's Close-Out report for this area is included in Appendix 2-C of the 4th Quarter report and is titled 'Former Quonset Huts Fuel Storage Area'.

5.3.4. Tailings Thickener Building and Area

- While some minor clean-up of building debris is still required in this area, the soils in the area have either been verified as meeting the remedial targets (without requiring remedial work) or as in the case of the spills pond beside the thickener, remedial activities have been undertaken and successfully completed. The results of the remedial efforts are reported in Appendix 2-D of the 4th Quarter report in the GLL report titled 'Former Tailings Thickener Area'.

5.3.5. Former Fuel Bladder Storage Area

- Remedial work in this area was completed earlier in the year and reported in the 4th Quarter report, Appendix 2-E in the GLL Close-Out report for this area titled 'Former Fuel Bladder Storage Area'.

5.3.6. Former Crusher Area

- This area was identified as having potential for metals contaminated soils in the 1999/2000 environmental site assessments. In early August approximately 1,800 cu.m. (loose volume) of metals contaminated soils were excavated in this area. In the 3rd Quarter, confirmatory sampling was completed. Appendix 2-F of the 4th Quarter report includes the GLL Close-Out report for this area titled 'Old Crusher Area'.

5.3.7. Main Snow Dump

- Remedial work was completed in the 3rd Quarter. The GLL Close-Out report titled 'Main Snow Dump' is included in Appendix 2-G of the 4th Quarter report.

5.3.8. North Portal Ore Stockpile

- Remedial work was completed in the 3rd Quarter with confirmatory sampling results received in the 4th Quarter. Refer to Appendix 2-H of the 4th Quarter report for the GLL Close-Out report titled 'North Portal Stockpile'.

5.3.9. Exploration Waste Dump / Stockpile Area and Shoreline North of Dock

- The exploration waste rock dump was identified as an area of contamination in the DRP without a quantity being assigned. Substantial contaminated soils have been identified and remediated in this area. As the contamination in this area has been quantified, it has increased the estimate of the overall quantities of contaminated soils to be remediated at site. Remedial activities in this area have now been completed. This area is adjacent to the shoreline north of the dock and is reported in the Close-Out Report titled 'Exploration Stockpile and Shoreline North of the Dock' (Figure 1, Area #23) in Appendix 2-I of the 4th Quarter report.
- This does not infer that the final contouring or re-grading has been completed in this area, only that the contaminated soils have been remediated. Additional work re-grading of the foreshore remains to be completed in 2004.

5.3.10. June 2002 Oil Spill Area

- Polaris had an oil spill at the tank farm facilities on June 25/26, 2002. Terrestrial remediation was initiated immediately and soils above the foreshore of the ocean were remediated by July 6, 2002. Gartner Lee Ltd. was on site to monitor the clean up activities and conducted the confirmatory sampling confirming the

remedial targets were achieved. GLL prepared an assessment report dated November 2002 and it was submitted to the NWB and DIAND on December 2, 2002.

- Remediation of the foreshore remained outstanding at the end of 2002 and was completed early in the spring of 2003. GLL has prepared a Close-Out report titled '2002 Fuel Spill' for the foreshore area and it was submitted in Appendix 2-J of the 4th Quarter report.

5.3.11. Marine Dock and Adjacent Foreshore Areas

- Minor excavation in the dock area occurred at the beginning of October removing the final remains of the hydrocarbon contamination in Cell #3. Confirmatory sampling results will be provided once excavation work is complete in this area.
- Excavation in the shoreline north of the dock continued until November 4th and activity ceased until the new year.

5.3.12. Barge Area

- Hauling of metals and hydrocarbon contaminated soils for disposal in the mine was on-going until work ceased in mid November. Hydrocarbon contamination is extending beyond expected boundaries, increasing the forecast quantities of contaminated soils. As a result additional assessment of adjacent areas using a drill was conducted to better define contaminant boundaries and to improve the accuracy of forecast quantities. As of November 10th, all excavated hydrocarbon contamination had been placed underground and approximately 30,000 cu.m. of metals contaminated soils had been stockpiled. Additional metals and hydrocarbon contaminated soils remain to be excavated from this area in 2004.

6. UPDATE OF DECOMMISSIONING AND RECLAMATION SCHEDULE

Appendix 3 of the 4th Quarter 2003 report contains an updated decommissioning schedule current as of December 31, 2003. The source of the data for the schedule is primarily from our demolition contractor. There are some revisions to the near term portions of the schedule as more detailed planning occurred. The project is still forecast to be completed by the end of September of 2004.

Reviews of previous quarterly reports indicated a desire to obtain regular updates on the percentage completion of the various work elements of the project. An additional column has been added to the schedule presented in Appendix 3 which estimates this for each line item in the schedule. This will be updated each quarter.

Reviews of previous quarterly reports indicated a desire to obtain regular updates on the percentage completion of the project as a whole. ***It is our judgment that as of December 31, 2003 the project is 71% complete*** (excluding site monitoring required subsequent to 2004).

7. PROJECT COST ESTIMATE UPDATE

7.1. Update of Estimated Mine Decommissioning, Reclamation and Monitoring Costs

Appendix 4 of the 2003 4th Quarter report contains the detailed estimate of the Polaris Mine Decommissioning and Reclamation Plan (DRP) cost forecast updated as of December 31, 2003 in accordance with Part B, Item 3 and Part G, Item 21 and forecasts costs to the end of 2011.

In summary, total DRP costs to December 31, 2003 were \$43,655,000. Estimated costs to complete decommissioning, reclamation and monitoring through to 2011 have increased to \$62,312,000 from an original budget of \$47,500,000. The cost report included in Appendix 4 of the 4th Quarter report contains discussions of the forecast project cost variances relative to the original budget as requested in the quarterly report review document submitted to TCL in December by the NWB and INAC.

8. RECLAMATION SECURITY REQUIREMENTS

Teck Cominco has submitted detailed documentation in the quarterly reports to the NWB and INAC.

While TCL has identified that there are substantial increases in quantities of contaminated soils over original estimates, TCL has been addressing this by extending the fall work season later than originally anticipated and by increasing crew sizes sooner in the New Year than originally anticipated in order to keep the project on schedule. Work is still forecasted to be completed on schedule in the fall of 2004.

Outstanding reclamation liabilities have been decreasing rapidly due to the high level of reclamation effort expended in 2003. At the end of the 4th Quarter of 2003 a detailed review of costs was conducted based on the progress made during the year and with the updated knowledge that the quantities of contaminated soils have increased substantially. The current forecast of the outstanding liability has decreased to \$18,600,000 as of December 31, 2003. Work is continuing to progress at the site and by the time that this report is reviewed by the NWB and INAC the outstanding liability at the site will be less than \$18,000,000.

As requested in the 4th Quarter 2003 report, under Part B, Paragraph 3, TCL has requested that the NWB and INAC reduce the Reclamation Security requirements to \$18,000,000.

9. PUBLIC CONSULTATION / PARTICIPATION

As reported in the 3rd Quarter report, Patrick Duxbury, Mine Reclamation Coordinator for the NWB was on site in September participating in a site inspection. After the site visit, Mr. Duxbury stopped in Resolute for a few days to update residents of the status of the project.

While there was no formal tracking system in place, Inuit employment was a priority and varied depending on the season. During the peak work season, up to 26 Inuit were employed on site.

10. SUMMARY OF WORK DONE IN RESPONSE TO INSPECTION / COMPLIANCE REPORTS

In the 3rd Quarter INAC conducted two site visits (July and September). From the first inspection, a report dated July 22, 2003 was issued (a copy is included in the 3rd Quarter report, Appendix 7). The report noted that free standing water observed at the bottom of LRD Quarry Landfill had dye in it. Due to concerns that the contamination would lower the freezing point of the water, the floating dye was removed from the water, and a sample was taken and tested. The test result confirmed that there was no measurable change in the freezing point of the water. This was reported in Appendix 8 of the 3rd Quarter report. TCL was also requested to submit material sizing and moisture tests of the bottom layer of the cover cap material being placed at the time of the inspection. The results were submitted in Appendix 15 of the 3rd Quarter report.

A review of TCL's 1st and 2nd Quarter reports resulted in a request for additional information regarding the project cost variance relative to the original budget. This information was submitted in Section 8 of the 4th Quarter report. The review also requests TCL to state whether or not TCL is requesting a reduction in the security requirements. TCL in Sections 8 and 9 of the 4th Quarter report discusses progress of work (71% complete) and the primary reasons for cost variances. Appendix 4 of that report also included a detailed breakdown of costs complete with discussion of variances on a line by line basis. *Section 9 of the 4th Quarter report contains a request to reduce the security requirements to \$18,000,000.*

11. FRESHWATER USE

Freshwater use from Frustration Lake for all uses during the 4th Quarter of 2003 was:

October 2003	3,514 cu.m.
November 2003	4,814 cu.m.
December 2003	<u>18,926 cu.m.</u>
Total 4 th Quarter	64,695 cu.m.
Total 3 rd Quarter	27,254 cu.m.
Total 2 nd Quarter	29,088 cu.m.
Total 1 st Quarter	<u>56,927 cu.m.</u>
Total Annual Used 2003	177,964 cu.m.

Water use for the year was within the 250,000 cubic metres authorized for 2003 in Part C of the Water Licence.

12. GARROW LAKE STRATIGRAPHIC MONITORING

The Water Licence requires that a monitoring event of Garrow Lake Stratigraphy be conducted during the mid-winter, maximum ice thickness and at maximum ice melt during the summer. In previous reports, the mid winter and maximum ice thickness sampling have been submitted. The maximum ice melt sampling is normally conducted during mid August when there is usually (but not always) a brief period where Garrow Lake is ice free. Due to personnel and equipment problems the summer sampling of Garrow Lake was not able to be completed while it was ice free. To attempt to sample as soon after the maximum ice free period as possible, the ice thickness of Garrow was monitored so that the sampling event could be accomplished after the

ice became strong enough to be safe to work from. However, testing of the ice thickness in October indicated that it was still not safe to take equipment out onto the ice so that the meaningful time to do the open water sampling long since passed.

The two sampling events conducted verified that the stratigraphy of the lake remains strong and the chemistry of the lake continues to improve as predicted.

13. SUMMARY OF EFFLUENT MONITORING AND EFFLUENT CHARACTERIZATION

Detailed effluent monitoring data required under the MMER and the Water Licence were presented in each of the four quarterly reports submitted, despite only the 3rd Quarter report having any sample data as this was the only quarter where effluent was discharging. The annual summary of effluent monitoring and effluent characterization is included in Appendix 2.

14. SUMMARY OF EEM STUDY PROGRAM PROGRESS

In December, Teck Cominco and its consultants (Azimuth Consulting) met with the Environment Canada's Technical Advisory Committee ('TAC') to review the 2003 summer field program and results. The purpose of the meeting was to obtain guidance regarding the requirements for the 2004 sampling program so that planning can proceed. Field conditions were extreme in 2003 and only through the diligence and hard efforts of the seasoned consultants was the program successfully undertaken. At the end of the quarter, formal response from the TAC was outstanding.

15. SUMMARY OF GARROW LAKE DFO STUDY PROGRAM PROGRESS

Laboratory results from the 2003 summer field program were received. Reporting of results will occur in the New Year.

APPENDIX 1

EXECUTIVE SUMMARY IN INUKTITUT

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APPENDIX 2

ANNUAL MMER SUMMARY REPORT

January 27, 2003

Prairie & Northern Region
Environment Canada
Room 200, 4999 98th Ave.
Edmonton, AB T6B 2X3

Attention: Peter Blackall, Regional Director of Environmental Protection

Dear Sir;

Re: Polaris Mine – 2003 ANNUAL Metal Mining Effluent Regulations Summary Report

Please find attached the Polaris Mine annual MMER summary report. As expected there was only one quarter during the year that had any effluent discharge. There were no non-compliant concentrations related to Schedule 4 limits and no non-compliant results of the acute lethality tests during the year.

If you have any questions regarding the annual report or aspects of the application of the MMER to the Polaris Mine, please feel free to contact me at any time.

Yours truly,

Original signed by B. Donald

Bruce Donald

Attachments: 2003 MMER Annual Summary Report

cc:

Walter Kuit (Teck Cominco Limited)
Joe Dahoy (Cascade Management)
Randy Baker (Azimuth Consulting Group)

SCHEDULE 6

(Section 22)

Mine Name : Polaris Mine

Mine Operator: Cominco Mining Partnership and Teck Cominco Ltd.

Mine Address: Box 188, Resolute, NU X0A 0B0

Telephone: (867) 253-2201 (Site Manager, Joe Dahoy)

Location of Final Discharge Point:
Garrow Lake Siphons at 75° 22' 32" N, 97° 48' 37" W.

Reporting Period: January 1, 2003 to December 31, 2003

Date of Report: January 27, 2003

Non-Compliance Information:

There were no non-compliant effluent discharges during 2003. All effluent sample results were within Schedule 4 limits.

There were no non-compliant acute lethality tests during 2003.

SCHEDULE 6 (Section 22)

TABLE 1

MONTHLY MEAN CONCENTRATIONS, PH RANGE AND VOLUME OF EFFLUENT (1)(2)

MONTH OF	MONTHLY MEAN CONCENTRATION OF DELETERIOUS SUBSTANCE ³								Effluent Volume (m ³)
	Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226	
January	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
February	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
March	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
April	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
May	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
June	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
July	0.000	0.001	0.005	0.006	0.001	0.055	3.00	0.005	1,555,704
August	0.001	0.001	0.005	0.001	0.002	0.137	4.25	0.005	2,909,048
September	0.001	0.001	0.005	0.002	0.003	0.165	8.67	0.007	2,824,710
October	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
November	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
December	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹

Note ¹ - "ND" refers to any measurement not taken because there was no deposit from the final discharge point.

Note ² - "NMR" refers to any measurement not taken because no measurement was required in accordance with the conditions set out in Section 13 of the regulations.

Note ³ - Monthly Mean Concentrations - the **MEAN** value of the concentrations measured in all water samples collected during each month when a deleterious substance is deposited.

SCHEDULE 6 (Section 22)

TABLE 2

RESULTS OF ACUTE LETHALITY TESTS AND DAPHNIA MAGNA MONITORING TESTS

DATE SAMPLE COLLECTED	EFFLUENT ACUTELY LETHAL TO RAINBOW TROUT (Yes or No)	EFFLUENT ACUTELY LETHAL TO DAPHNIA MAGNA (Yes or No)
02-Aug-03	No	No
22-Aug-03	No	No
19-Sep-03	No	No

APPENDIX 3

ELECTRONIC VERSION OF 2003 ANNUAL RECLAMATION REPORT (PDF VERSION)