

May 13, 2004

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

**Attention: Peter Blackall, Regional Director of Environmental Protection**

Dear Sir;

**Re: Polaris Mine – 2004 1<sup>st</sup> Quarter Metal Mining Effluent Regulations Report**

Despite having a designated discharge location for effluent identified under Section 9 of the MMER, there was no discharge from the Garrow Lake Tailings Impoundment Area during the period January 1, 2004 to March 31, 2004. While there is no data to report, I have completed the monitoring report as required by the regulations and have attached it to this letter.

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

Yours truly,

Bruce Donald

Attachments: 1<sup>st</sup> Quarter 2004 Monitoring Report

cc:

Walter Kuit (Teck Cominco Limited)  
Polaris Mine Site Files  
Randy Baker (Azimuth Consulting Group)

# **POLARIS MINE – MMER MONITORING REPORT**

## **1<sup>st</sup> QUARTER 2004**

### **APPENDIX A**

- i. Information specified by Section 8.1 of Reference Method EPS 1/Rm/13

### **APPENDIX B**

- i. Information specified by Section 8.1 of Reference Method EPS 1/Rm/14

### **APPENDIX C**

- i. Concentration & monthly mean concentrations of each deleterious substance of Schedule 4
- ii. pH of the effluents samples as required by subsection 12(1)
- iii. Description of sample collection method
- iv. Total volume of effluent deposited during each month of the quarter as per section 19
- v. Mass loading of the deleterious substances set out in Schedule 4 and as per section 20

### **APPENDIX D**

- i. Results of the effluent characterization as per paragraph 15(1)(a)

## **APPENDIX A**

## **Reporting Requirements for Reference Method EPS 1/RM/13**

### **Section 8.1.1 Effluent**

- i. Name & location of operation generating the effluent
  - Polaris Mine, Little Cornwallis Island, Nunavut
  - Final Discharge Point for Garrow Lake is geo referenced as 75° 22' 32" N, 96° 48' 37" W.
- ii. Date & time of sampling
  - No sampling conducted as there was no effluent discharge during the quarter.
- iii. Type of sample
  - No sampling conducted as there was no effluent discharge during the quarter
- iv. Brief description of sampling point
  - Discharge point of siphon at Garrow Lake dam
- v. Sampling method
  - No sampling conducted as there was no effluent discharge during the quarter
- vi. Name of person submitting samples
  - No sampling conducted as there was no effluent discharge during the quarter

### **Section 8.1.2 Test Facilities and Conditions**

- i. Test type & method
  - No testing conducted as there was no effluent discharge during the quarter
- ii. Indications of deviations from requirements in Sections 2 to 7 of Method EPS 1/RM/13
  - No deviations to report as there was no testing conducted during the quarter
- iii. Name and city of testing laboratory
  - No laboratory used during the quarter
- iv. Percent mortality of fish in stock tank(s)
  - None to report. There were no tests conducted during the period
- v. Species of test organism
  - None to report as there were no tests conducted during the period
- vi. Date and time for start of definitive test
  - None to report as there were no tests conducted during the period
- vii. Person(s) performing the test and verifying the results
  - No tests performed during the quarter
- viii. pH, temperature, dissolved oxygen, and conductivity of unadjusted, undiluted effluent
  - No data to report as there were no tests conducted during the period
- ix. Confirmation that no adjustment of sample or solution pH occurred
  - No adjustment to report as there were no tests conducted during the period
- x. Indication of aeration of test solutions before introduction of fish
  - None to report as there were no tests conducted during the period
- xi. Concentrations and volumes tested
  - No data to report as there were no tests conducted during the period
- xii. Measurements of dissolved oxygen, pH and temperature
  - No data to report as there were no tests conducted during the period
- xiii. Number of fish added to each test vessel
  - No fish added as there were no tests conducted during the period
- xiv. Mean and range of fork length of control fish at end of test
  - No data to report as there were no tests conducted during the period
- xv. Mean wet weight of individual control fish at end of the test
  - No data to report as there were no tests conducted during the period
- xvi. Estimated loading density of fish in test solutions
  - No data to report as there were no tests conducted during the period

## **Reporting Requirements for Reference Method EPS 1/RM/13** - Continued

### **Section 8.1.3 Results**

- i. Number of mortalities of fish in each test solution
  - None to report. No tests conducted during the period
- ii. Number of control fish showing atypical/stressed behaviour
  - None to report. No tests conducted.
- iii. Mean mortality rate in solutions of effluent and control water
  - None to report. No tests conducted
- iv. Estimate of 96-h LC50 in multi-concentration tests
  - No data to report. No tests conducted
- v. Most recent 96-h LC50 for reference toxicity test(s)
  - No data to report. No tests conducted

## **APPENDIX B**

## **Reporting Requirements for Reference Method EPS 1/RM/14**

### **Section 8.1.1 Effluent**

- i. Name & location of operation generating the effluent
  - Polaris Mine, Little Cornwallis Island, Nunavut
  - Final Discharge Point for Garrow Lake is geo referenced as 75° 22' 32" N, 96° 48' 37" W.
- ii. Date & time of sampling
  - No sampling conducted as there was no effluent discharge during the quarter.
- iii. Type of sample
  - No sampling conducted as there was no effluent discharge during the quarter
- iv. Brief description of sampling point
  - Discharge point of siphon at Garrow Lake dam
- v. Sampling method
  - No sampling conducted as there was no effluent discharge during the quarter
- vi. Name of person submitting samples
  - No sampling conducted as there was no effluent discharge during the quarter

### **Section 8.1.2 Test Facilities and Conditions**

- i. Test type & method
  - No testing conducted as there was no effluent discharge during the quarter
- ii. Indications of deviations from requirements in Sections 2 to 7 of Method EPS 1/RM/13
  - No deviations to report as there was no testing conducted during the quarter
- iii. Name and city of testing laboratory
  - No laboratory used during the quarter
- iv. Species of test organism
  - None to report as there were no tests conducted during the period
- v. Date and time for start of definitive test
  - None to report as there were no tests conducted during the period
- vi. Person(s) performing the test and verifying the results
  - No tests performed during the quarter
- vii. pH, temperature, dissolved oxygen, and conductivity of unadjusted, undiluted effluent
  - No data to report as there were no tests conducted during the period
- viii. Confirmation that no adjustment of sample or solution pH occurred
  - No adjustment to report as there were no tests conducted during the period
- ix. Indication of any adjustment of hardness of effluent sample
  - No adjustment to report as there were no tests conducted during the period
- x. Indication of any aeration of sample
  - No indication to report as there were no tests conducted during the period
- xi. Concentrations and volumes tested
  - No data to report as there were no tests conducted during the period
- xii. Measurements of dissolved oxygen, pH and temperature
  - No data to report as there were no tests conducted during the period
- xiii. Estimates of time to first brood, average number of neonates per brood, and percent mortality during the seven-day period prior to the test
  - No data to report as there were no tests conducted during the period
- xiv. Number of neonates per test vessel and milliliters of solution per daphnid
  - No data to report as there were no tests conducted during the period

## **Reporting Requirements for Reference Method EPS 1/RM/14** - Continued

### **Section 8.1.3 Results**

- i. Number of dead and/or immobile daphnids in each test solution including controls
  - No data to report. No tests conducted during the period.
- ii. For single-concentration test the number of daphnids dead in each of three replicate effluent solutions and in each of three replicate control solutions at end of test. Also report the mean value.
  - No data to report. No tests conducted during the period.
- iii. Estimate of 48-h LC50 and 95% confidence limits in multi-concentration tests, 48-h EC50 for immobilization and 95% confidence limits, indication of statistical method on which results are based.
  - No data to report. No tests conducted during the period
- iv. Most recent 48-h LC50 for reference toxicant test(s), reference chemical(s), date test initiated, historic geometric mean LC50 and warning limits.
  - No data to report. No tests conducted during the period.



## **APPENDIX C**

## 2004 1<sup>st</sup> QUARTER MMER REPORT

LOCATION - FINAL DISCHARGE POINT FROM GARROW LAKE (GARROW LAKE DAM SIPHONS)

### CONCENTRATIONS OF EFFLUENT FOR MMER SCHEDULE 4 SAMPLED WEEKLY

Sample Taken											
During The Week of	Date Sample Taken	DELETERIOUS SUBSTANCE (mg/L) <sup>1</sup>								pH <sup>1</sup>	Collection Method
		Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226 <sup>1</sup>		
05-Jan-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
12-Jan-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
19-Jan-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
26-Jan-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
02-Feb-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
09-Feb-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
16-Feb-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
23-Feb-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
01-Mar-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
08-Mar-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
15-Mar-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
22-Mar-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>
29-Mar-04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>

Note<sup>1</sup> - All concentrations are in mg/L except Radium 226 which is Bq/L and pH which is in pH units

Note<sup>2</sup> - "nd" refers to no deposit of effluent discharge to sample

### MONTHLY MEAN CONCENTRATIONS OF EFFLUENT FOR MMER SCHEDULE 4

MONTH OF	MONTHLY <b>MEAN</b> CONCENTRATION <sup>1</sup> OF DELETERIOUS SUBSTANCE <sup>3</sup>								
	Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226	
January/04	nd <sup>2</sup>	nd <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	na <sup>2</sup>	nd <sup>2</sup>	
February/04	nd <sup>2</sup>	n <sup>2</sup>	n <sup>2</sup>	n <sup>2</sup>	n <sup>2</sup>	n <sup>2</sup>	n <sup>2</sup>	nd <sup>2</sup>	
March/04	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	nd <sup>2</sup>	

Note<sup>1</sup> - All concentrations are in mg/L except Radium 226 which is Bq/L

Note<sup>2</sup> - "nd" refers to no deposit of effluent to sample

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

### MASS LOADING OF DELETERIOUS SUBSTANCE FOR EACH DAY SAMPLED

Sample Taken		DAILY MASS LOADING OF DELETERIOUS SUBSTANCE (kg/day) <sup>1</sup>								Average Daily
During The	Date									Flow Rate
Week of	Sample Taken	Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226 <sup>1</sup>	(m <sup>3</sup> /day)
05-Jan-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
12-Jan-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
19-Jan-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
26-Jan-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
02-Feb-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
09-Feb-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
16-Feb-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
23-Feb-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
01-Mar-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
08-Mar-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
15-Mar-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
22-Mar-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0
29-Mar-04	nd <sup>2</sup>	0	0	0	0	0	0	0	0	0

Note<sup>1</sup> - Mass Loading is in kilograms per day of the deleterious substance deposited except Radium 226 which is in Bq per day

Note<sup>2</sup> - "nd" refers to no deposit of effluent to sample

### MASS LOADING PER CALENDAR MONTH FOR EACH DELETERIOUS SUBSTANCE

CALENDAR MONTH OF	MASS LOADING <sup>1</sup> FOR DELETERIOUS SUBSTANCE (kg/month) <sup>2</sup>								Average Weekly Flow Rate <sup>3</sup> (m <sup>3</sup> /week)	Total Monthly Volume <sup>4</sup> (m <sup>3</sup> /month)
	Arsenic	Copper	Cyanide	Lead	Nickel	Zinc	TSS	Radium 226 <sup>2</sup>		
January/04	0	0	0	0	0	0	0	0	0	0
February/04	0	0	0	0	0	0	0	0	0	0
March/04	0	0	0	0	0	0	0	0	0	0

Note<sup>1</sup> - Total Mass Loading for Calendar month calculated by multiplying the Average Daily Mass Loading for the Month x # days in the month

Note<sup>2</sup> - Mass loading units are in kg per month except Radium 226, which is in Bq per month

Note<sup>3</sup> - Average Weekly Flow Rate calculated by multiplying Average Daily Flow Rate x 7 days per week

Note<sup>4</sup> - Total Monthly Volume calculated by multiplying Average Daily Flow Rate for the month x days in month

## **APPENDIX D**

## **RESULTS OF EFFLUENT CHARACTERIZATION**

### **AS PER PARAGRAPH 15(1)(a)**

No effluent samples were collected during the 1<sup>st</sup> Quarter of 2004 as there was no effluent discharge.  
No Acute Lethality Testing conducted during the quarter as there was no effluent being discharged.