

Technical Memorandum

To: PolyMet Mining EIS File 23/69-862-006-001
From: Barr Engineering Co.
Subject: Updated PolyMet Mining Baseline Surface Water Quality Information Report (RS63)
Date: June 29, 2007

Introduction

As part of the proposed PolyMet project development, baseline surface water quality monitoring was conducted in 2004 and 2006 and continues in 2007 to evaluate the water quality of water bodies adjacent to the proposed mining site and the Cliffs Erie Hoyt Lakes Plant. This document (RS63) provides a description of the PolyMet baseline monitoring program locations, water quality parameters, sampling and analysis methods, and a tabulation of water quality monitoring results. Another document, entitled *Historical Surface Water Quality Data Compilation (RS76)*, provides monitoring results for all known baseline surface water quality programs in the general proximity to the Duluth Complex. Please note that for completeness, a tabulation and statistical compilation of the PolyMet Mining baseline water quality monitoring results are provided in RS76. This document (RS76) also provides a detailed discussion of the water quality data collected by PolyMet and other entities.

Monitoring Program Overview

The PolyMet project baseline surface water quality monitoring program was developed in cooperation with the Minnesota Pollution Control Agency and the Minnesota Department of Natural Resources. The initial design of the program was implemented in April 2004. Following review of quality assured data for the first two rounds of sampling, this design was by consensus amended in July 2004. Additional amendments to further streamline the program were made in August 2004. At the request of the Minnesota Pollution Control Agency, the program was restarted in 2006. The two monitoring sites on Wyman Creek, PM5 and PM6, were not monitored in 2006 and two sites on Second Creek, PM17 and PM18, were added. The two Wyman Creek sites were eliminated because there are no further plans to develop new waste rock storage stockpiles along the creek. The PM17 and PM18 monitoring sites were added because a potential controlled direct discharge from the tailings basin to Second Creek was being given consideration at the time that monitoring was restarted. There are currently no plans to discharge to Second Creek.

In summary, the monitoring program included a total of fourteen monitoring locations scheduled for collection of eight water samples between April and November in 2004 (two sites, PM14 and PM15

were sampled only through July 2004 and then discontinued because they were later considered to be outside of the project boundaries) and 9 stations from July through November in 2006. All stations except PM5 and PM6 were monitored once in July 2006. Given the addition and removal of stations and a reduction in the number of stations monitored in 2006, it is reiterated that not all stations were monitored on all sampling dates. Monitoring is ongoing in 2007 and is scheduled to continue until November 2007.

Table 1 and Figure 1 provide a description of the monitoring locations. Table 2 lists monitoring parameters and analytical methods. Table 3 describes the scope of the monitoring program and amendments of the program as it was implemented. Baseline water quality monitoring results are tabulated in Table 4.

TABLE 1
WATER QUALITY MONITORING LOCATIONS
NORTHMET MINING PROJECT
HOYT LAKES AND BABBITT, MINNESOTA

Station ID	Description	Comments	UTM Coordinates (NAD 83)	
			Easting	Northing
PM-1	Partridge River Tributary	Upstream of mine, North Shore Mining monitoring location at rail spur crossing	15T 577499	5277278
PM-2	Partridge River, south of the North Shore #2 Crusher Road	Downstream of mine, Teck Cominco monitoring location S-4	15T 579212	5276609
PM-3	Partridge River, at the Dunka Road crossing	Downstream of mine, Teck Cominco monitoring location S-1, Copper Nickel Study location CN126	15T 580714	5274548
PM-4	Partridge River at railroad crossing east of CR 565, Hoyt Lakes if	Downstream of mine, Copper Nickel Study monitoring location CN123	15T 268106	5262707
PM-5	Wyman Creek at railroad crossing	Downstream of potential waste rock disposal location	15T 570079	5270576
PM-6	Wyman Creek at 138kv power line crossing	Upstream of potential waste rock disposal location	15T 569291	5271903
PM-7	Knox Creek at road crossing located in Section 16	Downstream of tailings basin, Cliffs Erie discharge monitoring location SD026	15T 565768	5271728
PM-8	Tailings basin seepage at power line access road culvert	Downstream of tailings basin, Cliffs Erie location SD006	15T 563680	5273335
PM-9	NW tailings basin seepage collection ditch	Downstream of tailings basin, Cliffs Erie location SD001	15T 563061	5275520
PM-10	Tailings basin NE seepage collection ditch	Downstream of tailings basin, Cliffs Erie location SD002	15T 565520	5275978
PM-11	Unnamed Creek, tributary to Embarrass River	Downstream of tailings basin, Cliffs Erie location SW003	15T 561088	5276215
PM-12	Embarrass River at CR 620 (Salo Road) Bridge	Upstream of tailings basin, Cliffs Erie location SW004	15T 570991	5280608
PM-13	Embarrass River at HWY 135 Bridge	Downstream of tailings basin, Cliffs Erie location SW005	15T 556791	5275003
PM-14	Langley Creek at old AMAX Road crossing	Teck Cominco monitoring location S-3	15T 582728	5277728
PM-15	Langley Creek at Dunka Road crossing	Teck Cominco monitoring location S-2, just upstream of Dunka River	15T 585664	5279818
PM-16	Partridge River	Just upstream of confluence of Partridge River and South Branch of the Partridge River	15T 577248	5271866
PM-17	Second Creek	Intersection of County 666 and Second Creek	15T 564256	5270038
PM-18	Second Creek	Just upstream of confluence of Second Creek and Stephens Creek (outlet of Pit 1)	15T 560622	5267442

TABLE 2
WATER QUALITY MONITORING PARAMETERS AND METHODS
FRANCONIA MINING PROJECT
ST. LOUIS AND LAKE COUNTIES, MINNESOTA

Proposed Monitoring Parameters	EPA Method No. (Per 40 CFR 136.3)	Reporting Limit	Units	Sampling Container Type	Sample Preservative	EPA Recommended Holding Times
Aluminum, Total	200.7	3	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Antimony, Total	204.2	3	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Arsenic, Total	206.2	2	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Barium, Total	200.7	10	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Beryllium, Total	210.2	0.2	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Boron, Total	200.7	35	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Cadmium, Total	213.2	0.2	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Chromium, Total	218.2	1	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Cobalt, Total	219.2	1	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Copper, Total	200.7	5	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Iron, Total	200.7	30	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Lead, Total	239.2	1	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Manganese, Total	200.7	10	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Mercury, low concentration analysis	1631	0.5	ng/L	Prepped In Lab	Prepped In Lab	26 Days
Mercury, Methyl	1631E	0.1	ng/L	Prepped In Lab	Prepped In Lab	26 Days
Molybdenum, Total	246.2	5	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Nickel, Total	200.7	5	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Palladium, Total	200.7	25	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Platinum, Total	200.7	25	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Selenium, Total	270.2	2	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Silver, Total	272.2	1	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Strontium, Total	200.7	4	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Thallium, Total	279.2	2	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Titanium, Total	283.2	10	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Zinc, Total	200.7	10	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Calcium, Total	200.7	500	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Fluoride, Total	340.2	100	µg/L	p.g 500 ml	Cool	28 Days
Magnesium, Dissolved	200.7	500	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Potassium, Total	200.7	500	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Sodium, Total	200.7	500	µg/L	p.g 500 ml	HNO ₃ <2	6 Months
Alkalinity, Total	310.1	1,000	µg/L	p.g 250 ml	Cool	14 Days
Ammonia as Nitrogen	350.1	100	µg/L	p.g 250 ml	H ₂ SO ₄ <2, cool	28 Days
Chloride, Total	325.2	500	µg/L	p.g 250 ml	Cool	28 Days
Cyanide, Total	335.2	10	µg/L	p.g 1 liter	NaOH>12, cool	14 Days
Hardness, Total as CaCO ₃	130.2	1,000	µg/L	p.g 250 ml	Cool	6 Months
Nitrate + Nitrite as Nitrogen	353.2	100	µg/L	p.g 250 ml	H ₂ SO ₄ <2, cool	28 Days
Nitrate as Nitrogen	353.2-354.1	100	µg/L	p.g 250 ml	Cool	48 Hours
Phosphorus, Total as Phosphorus	365.2	100	µg/L	p.g 250 ml	H ₂ SO ₄ <2, cool	28 Days
Phosphorus, Soluable Reactive	365.2	100	µg/L	p.g 250 ml	Cool	48 Hours

TABLE 2
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FRANCONIA MINING PROJECT
ST. LOUIS AND LAKE COUNTIES, MINNESOTA

Proposed Monitoring Parameters	EPA Method No. (Per 40 CFR 136.3)	Reporting Limit	Units	Sampling Container Type	Sample Preservative	EPA Recommended Holding Times
Solid, Total Dissolved	160.1	1,000	µg/L	p,g 250 ml	Cool	7 Days
Solids, Total Suspended	160.2	1,000	µg/L	p,g 250 ml	Cool	7 Days
Sulfate, Total as SO ₄	375.4	1,000	µg/L	p,g 250 ml	Cool	28 Days
Total Organic Carbon	415.1	1,000	µg/L	p,g 250 ml	H ₂ SO ₄ <2, cool	28 Days
Stream Flow/Discharge	---	---	cfs	---	---	---
Dissolved Oxygen, Field	---	---	mg/L	---	---	---
pH, Field	---	---	SU	---	---	---
Specific Conductance, Field	---	---	µmhos/cm	---	---	---
Temperature, Field	---	---	°C	---	---	---
Turbidity, Field (Hach Turbidimeter)	---	---	mg/L	---	---	---

Table 3: Scope of the Monitoring Program and Amendments

Sampling Objectives

Perform water sampling and flow measurements at locations adjacent to the proposed mining site, the Cliffs Erie LLC tailings basin (at existing monitoring locations required by former NPDES permit MN0054089 for the Hoyt Lakes Tailings Basin Area), and locations downstream of the tailings basin. Sampling is intended to identify baseline water quality.

Sampling Locations

Sixteen preliminary monitoring locations were selected that are associated with the proposed mining site, a waste rock pile, discharge monitoring locations of the Cliffs Erie LLC tailings basin and plant, and receiving waters downstream of the Cliffs Erie LLC tailings basin. Two stations were added on Second Creek in 2006.

Station ID	Initial Scope	Changes to Scope	Monitoring Event When Change Occurred	Reference Documentation of Changes
PM-1	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Molybdenum, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Discontinued	July 2006	

Station ID	Initial Scope	Changes to Scope	Monitoring Event When Change Occurred	Reference Documentation of Changes
PM-2	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Molybdenum, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
PM-3	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Molybdenum, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
Monitoring Restarted in 2006, Continued Monitoring in 2007	July 2006			

Station ID	Initial Scope	Changes to Scope	Monitoring Event When Change Occurred	Reference Documentation of Changes
PM-4	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Molybdenum, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Restarted in 2006, Continued Monitoring in 2007	July 2006	
PM-5	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Molybdenum, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Removed from list of monitoring stations	August 2004	E-mail from Jim Scott to Richard Clark on Friday, August 20, 2004
PM-6	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Molybdenum, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Removed from list of monitoring stations	August 2004	E-mail from Jim Scott to Richard Clark on Friday, August 20, 2004

Station ID	Initial Scope	Changes to Scope	Monitoring Event When Change Occurred	Reference Documentation of Changes
PM-7	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cyanide, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Barium, Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Molybdenum, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Restarted in 2006, Continued Monitoring in 2007	July 2006	
PM-8	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cyanide, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Barium, Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Molybdenum, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Discontinued	July 2006	

Station ID	Initial Scope	Changes to Scope	Monitoring Event When Change Occurred	Reference Documentation of Changes
PM-9	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cyanide, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Barium, Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Molybdenum, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Discontinued	July 2006	
PM-10	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cyanide, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Barium, Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Molybdenum, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Restarted in 2006, Continued Monitoring in 2007	July 2006	

Station ID	Initial Scope	Changes to Scope	Monitoring Event When Change Occurred	Reference Documentation of Changes
PM-11	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cyanide, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Barium, Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Molybdenum, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Discontinued	July 2006	
PM-12	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cyanide, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Barium, Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Molybdenum, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Restarted in 2006, Continued Monitoring in 2007	July 2006	

Station ID	Initial Scope	Changes to Scope	Monitoring Event When Change Occurred	Reference Documentation of Changes
PM-13	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Beryllium, Boron, Cadmium, Chromium, Cyanide, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Barium, Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Molybdenum, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Restarted in 2006, Continued Monitoring in 2007	July 2006	
PM-14	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cyanide, Molybdenum, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Removed from list of monitoring stations	August 2004	E-mail from Jim Scott to Richard Clark on Friday, August 20, 2004
PM-15	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cyanide, Molybdenum, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Removed from list of monitoring stations	August 2004	E-mail from Jim Scott to Richard Clark on Friday, August 20, 2004

Station ID	Initial Scope	Changes to Scope	Monitoring Event When Change Occurred	Reference Documentation of Changes
PM-16	Water quality monitoring for all parameters and methods in Table 2 (except methyl mercury)	Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Molybdenum, Ammonia-N, Strontium, and Titanium removed from parameters list	July 2004	PolyMet Draft Revised Sampling Parameters and Analysis
		Aluminum, Nickel, and Zinc changed from total to dissolved	August 2004	
		Copper, Lead, Platinum, Palladium, Selenium, Silver, Thallium, and Dissolved Nickel changed to lower detection limits (EPA Method 200.8)	August 2004	
		Cobalt changed from total to dissolved and to be analyzed in September and November	September 2004	
		Chemical Oxygen Demand, Total Organic Carbon, Iron, Manganese, Nitrate, Phosphorus, Potassium, Total Suspended Solids, and Turbidity to be analyzed in September and November	September 2004	
		Platinum and Palladium removed from parameters list	September 2004	
		Methyl Mercury added to parameters list for September and November	September 2004	
		Monitoring Restarted in 2006, Continued Monitoring in 2007	July 2006	
PM17	Water quality monitoring for all parameters and methods in Table 2	none		Monitoring plan submitted to MPCA on August 18, 2006
PM18	Water quality monitoring for all parameters and methods in Table 2	none		Monitoring plan submitted to MPCA on August 18, 2006

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Alkalinity Total																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	92	52	42	32	13	110	62	346	220	186	260	108	16	26	70	48		
May 2004	96	46	42	30	16	92	60	372	290	232	398	150	20	36	84	48		
June 2004	93	98.1	80.1	74	34	142	94	422	286	336	414	228	41.3	74.4	100	89.6		
July 2004	92.3	111	98.8	96.2	63.5	184	138	420	348	340	403	309	75.7	130	156	154		
August 2004	93	92.6	151	91.6	95			424	342	338	410	344	152	174				
September 2004	96.8	66.1	65.5	61.5	41.5			414	287	304	399	219	45	96.4				
October 2004	93.4	65	58.1	45.8	37.2			405	317	273	410	216	36.8	84.7				
November 2004	106	35.7	66.3	56.7	32			420	327	303	408	233	47.4	80.9				
July 2006	98.9	114	107	104	92			446	369	405	428	281	79	99.8				
August 2006			99.8	101	88.5			453			438		69.8	108			373	359
September 2006			96.8	52.4	103			457			424		81.4	135			448	354
October 2006			85	93.5	88.6			453			427		58.6	160			419	315
November 2006			88.6	853	74.8			451			397		38.4	107			399	339
March 2007			130	98.2	102			421			316		39.1	155			169	309
April 2007			46.7	43.9	37.9			353			326		21.6	41.0			165	146
May 2007			57.0	38.1	44.0			316			380		52.5	53.1			228	225
Aluminum																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<10	34.5	64	116	140	14.4	10.3	11.6	40.7	26.8	10.5	21.7	122	337	19.7	44.3		
May 2004	10.1	70.7	95.2	125	232	11.9	79.4	<10	19	21.9	<10	34.2	121	356	11.4	63.7		
June 2004	11.8	13	49.9	60.4	1550	31.4	267	18.4	<10	27.6	12.4	35.2	104	166	17.5	26.6		
July 2004	25.8	25.9	58.1	44.7	107	90.8	52.9	46.4	33.6	48.4	37	72.7	101	129	39.4	39.4		
August 2006								<25			<25							
September 2006								<25			<25						<25	<25
October 2006								<25			<25							
November 2006								<25			<25						<25	<25
March 2007								34.7			230							
April 2007								30.1			<25							
May 2007								41.7			<25						34.2	46.9

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Aluminum filtered																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
August 2004	33.9	46.4	40.4	43.5	48.3			63.7	40.5	52.4	51.9	52	44.3	43.9				
September 2004	<25	83.8	62.5	87.7	127			<25	<25	<25	<25	30.8	93.5	81.4				
October 2004	<25	37.6	64	87.2	84.8			<25	<25	<25	<25	<25	85.9	76.2				
November 2004	<25	49.1	63.6	65	124			<25	<25	<25	<25	26.7	143	433				
July 2006	28.1	52.5	45	<25	66.8			37.2	<25	29.2	<25	55.9	75.6	76.3				
Antimony																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		
May 2004	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		
June 2004	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		
July 2004	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		
September 2006																	<3	<3
November 2006																	<3	<3
May 2007																	<3	<3
Arsenic																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	6.8	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
May 2004	<2	<2	<2	<2	<2	<2	<2	<2	2.2	<2	<2	<2	<2	<2	<2	<2		
June 2004	6.6	<2	<2	<2	<2	<2	<2	<2	4.6	<2	<2	<2	<2	<2	<2	<2		
July 2004	11.7	<2	<2	<2	<2	<2	<2	<2	7.2	<2	<2	<2	<2	<2	<2	<2		
September 2006																	2.6	<2
November 2006																	<2	<2
May 2007																	<2	<2

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Barium																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<10	<10	<10	<10	<10	<10	<10	15.6	11.9	18.3	39.5	13.4	<10	14.3	10.8	<10		
May 2004	<10	<10	<10	<10	<10	<10	<10	19.5	11	22.7	87.5	18.7	<10	16.5	13.6	<10		
June 2004	<10	12.3	12.7	<10	20.1	<10	15.4	23.7	12.9	35.6	107	26.3	18	30.7	15.9	12		
July 2004	<10	16.2	17.2	<10	<10	14.6	16.9	22	18.6	29.6	93.6	34.6	27.2	41.7	22	19.1		
September 2004								21.2	16.6	34.8	104	24	18.7	30.6				
November 2004								21.8	13.5	23.1	90.4	17.8	<10	26.5				
July 2006								26.2	18.9	39.8	74.6	34.5	29.9	34				
August 2006								25.2			98.2							
September 2006								23.7			148						21.8	18.3
October 2006								22			128							
November 2006								25			119						22.2	12.3
March 2007								27.2			42.2							
April 2007								22.1			94.8							
May 2007								20.4			96.2						18.8	13.1
Beryllium																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
May 2004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
June 2004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
July 2004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
September 2006																	<0.2	<0.2
November 2006																	0.2	0.2
May 2007																	<0.2	<0.2

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18	
Boron																			
ug/L																			
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
April 2004	80.9	<35	<35	<35	<35	55	<35	198	226	242	225	129	<35	46	186	125			
May 2004	99.6	37.7	48.7	42.9	<35	43.7	<35	225	292	320	312	180	<35	<35	232	103			
June 2004	88.8	87.1	85.6	73.8	<35	59	40.7	246	300	375	349	240	<35	44.9	242	188			
July 2004	95.4	85	93.2	88.3	57.8	67.9	<35	248	382	395	344	307	<35	68.9	292	284			
August 2004	108	61.9	64.2	71.2	60														
September 2004	116	55.5	58.5	45.7	<35														
October 2004	93.5	50	50.9	50.2	<40								<35						
November 2004	93	44.5	72.3	51.6	<35														
July 2006	88.5	87.1	104	109	92														
August 2006								255			397								
September 2006								230			325						167	97.7	
October 2006								267			369								
November 2006								246			295						168	73.2	
March 2007								242			213								
April 2007								214			256								
May 2007								186			291						173	96.4	
Cadmium																			
ug/L																			
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
April 2004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2		
May 2004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
June 2004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
July 2004	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
September 2006																		<0.2	<0.2
November 2006																		<0.2	<0.2
May 2007																		<0.2	<0.2

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Calcium	mg/L																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	24.1	14.3	11.6	9	3.9	24.3	16.1	62.2	37.5	33.8	39.4	19	4.6	7	24.1	17.7		
May 2004	25.3	12.8	11.2	8.9	4.9	26.5	16.4	64	41.5	40.1	54.8	25	5.3	8.1	26.8	14.9		
June 2004	24.9	25.3	21.5	17.7	9.5	30.8	20.1	75.1	34.4	55.7	57.7	35.3	11.2	16.3	33.3	27.9		
July 2004	23.1	27.8	24.5	23.2	14	35.4	28.1	72.5	34.2	53.3	55.1	39.9	19.3	26.2	37.6	36.2		
August 2004	25.3	25.4	23	22.6	17.6			75.6	40.3	61.4	58.2	38.2	18.9	31.9				
September 2004	24.5	18.8	17	14	8.2			71.9	38.8	57.6	53.4	31.2	12.2	17.2				
October 2004	23.4	17.2	14.9	11.7	8.9			70.4	44.3	51	52.3	32.2	9.1	14.5				
November 2004	23.7	17.5	14.7	13.3	7.1			77.2	49.6	56.1	55.4	34.4	7.9	14.6				
July 2006	25.9	27.6	26.5	26.3	21			79.1	40.4	68.1	59.2	38.5	21.4	22.8				
August 2006			25.6	27.2	23.8			83.3			68.6		19.6	28.7			69.7	35.5
September 2006			25.8	24.2	23			77.7			55		21.5	33.4			70.3	34
October 2006			24.2	23.9	21.9			78.5			59.8		18.2	30.7			72.9	34.8
November 2006			23.7	23.6	20.4			82.4			61.5		12.6	27.4			75.6	36.5
March 2007			33.1	26.2	25.5			77.9			47.7		10.1	33			44.2	44.9
April 2007			14.5	12.8	10.7			71.5			53.4		9.85	10.8			40	21.2
May 2007			15.8	11.7	11.6			59.1			56.5		7.92	12.6			60.7	32.6

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Chloride																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	0.9	1.2	2.9	2.1	1.1	2.1	1.1	17.2	17.1	18.3	16.4	9.5	2.1	3.8	53.9	34.3		
May 2004	1.2	1.4	3.1	2.4	1.1	1.9	0.8	19.7	23.3	21.7	27.4	12.6	2.3	4.7	49.6	23		
June 2004	1.6	1.4	2.8	2.5	1.6	2.2	0.8	20.5	23.1	23.1	26.6	16.5	3	4.2	58.2	42.7		
July 2004	1.8	0.7	3.2	2.7	2	1.8	0.7	20.7	29.5	23.1	24.7	20.1	3.4	6.7	59.6	56.3		
August 2004	1.8	2	3.4	3.5	2.2			19.7	30	32.4	27.1	25.4	4.7	11.5				
September 2004	1.9	3.4	4.4	3.9	2.5			21	20.9	27.6	24.9	18.2	5.8	8.4				
October 2004	1.8	2.5	4.2	3.3	2.4			19.1	22.7	27.3	24.6	19.5	5.1	8.1				
November 2004	1.5	2.5	6.6	5.7	2.1			21	24.7	29.8	31.4	20.2	3.4	8.2				
July 2006	1.81	1.4	6.61	7.76	11.3			19.4	27.2	18.5	22.5	13.7	3.76	4.59				
August 2006			12.4	13.2	9.71			18.6			24		7.5	5.4			20.9	10.7
September 2006			10.7	16	13			17.8			22.9		5.59	6.2			20.8	11.2
October 2006			15.7	15.7	8.73			17.7			25.8		7.89	12.7			22.1	14.4
November 2006			9.9	9.46	8.93			17.9			27.9		7.24	94.8			23.2	15
March 2007			19.3	11.4	7.89			15.6			16.8		10.4	18.5			25.1	11.9
April 2007			5.64	4.71	4.16			13.6			18.7		3.23	4.95			12.1	6.27
May 2007			8.9	7.61	6.68			12.5			22.7		4.45	6.17			15.5	8.54
Chromium																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<1	1.5	1.4	2.5	1	<1	<1	1.2	1.5	1.1	1.3	<1	2.3	4.3	<1	1.9		
May 2004	<1	<1	<1	1.5	1.1	<1	<1	<1	<1	<1	<1	1.5	1.4	1.5	<1	<1		
June 2004	<1	<1	<1	<1	2.6	<1	1.4	1.7	1.2	1.1	<1	<1	<1	<1	<1	<1		
July 2004	<1	<1	<1	1.5	<1	<1	1.6	<1	1	1.4	1.2	1.4	1.5	1.4	<1	<1		
September 2006																	<2.5	<2.5
November 2006																	<2.5	<2.5
May 2007																	<2.5	<2.5

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Cobalt																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<1	<1	<1	<1	<1	7.8	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
May 2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
June 2004	<1	<1	<1	<1	2.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
July 2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.1	<1		
August 2006			<1	<1	<1								<1	<1			<1	<1
September 2006			<1	<1	<1								<1	<1			<1	<1
October 2006			<1	<1	<1								<1	<1			<1	<1
November 2006			<1	<1	<1								<1	<1			<1	<1
March 2007			<1	<1	<1								<1	<1			<1	<1
April 2007			<1	<1	<1								<1	<1			<1	<1
May 2007			<1	<1	<1								<1	<1			<1	<1
Cobalt filtered																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September 2004	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1				
November 2004	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1				
July 2006	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1				
September 2006			<1	<2.5	<2.5								<1	<1			<1	<1
November 2006			<1	<1	<1								<1	<1			<1	<1
May 2007			<1	<1	<1								<1	<1			<1	<1

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
COD	mg/L																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	24	40	55	41	54	2.8	28	2.3	5.7	5.1	22	22	52	21	33	52		
May 2004	<1	38	40	46	33	16	22	3	14	11	12	21	27	40	16.5	24		
June 2004	14	26	16.5	30	71	25	46	<2	19	32	19	17	47	36	21	31		
July 2004	2.2	14.2	19.5	25	46	24	30	4.5	13.5	14.3	6.8	37	46	28	10.8	21		
September 2004	9	65.2	62	77	88.5			16.5	8	25	19	31	63.2	56.2				
November 2004	4	27	38	48	85			10	9	16	24	22	41.4	35.3				
July 2006	<10	<10	35.8	19	53.5			17	25	84.4	31.4	48	44	59				
August 2006								17			17.0							
September 2006								17			38						27	38
October 2006								13.0			38.0							
November 2006								17.0			38.0						17.0	27.0
March 2007								13.0			26.0							
April 2007								54.0			76.0							
May 2007								27.0			48.0						42.0	42.0

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Copper																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
May 2004	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
June 2004	<5	<5	<5	<5	<5	<0.8	<5	<5	<0.8	<5	<0.8	<5	<5	<5	<5	<5	<5	<5
July 2004	1.9	<0.8	<0.8	1.4	1.2	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<3	<0.9	1.6	<0.8	1.3		
August 2004	1.4	<0.66	0.75	1.1	1.1			0.68	<0.66	0.86	0.71	<0.66	<0.66	1.1				
September 2004	0.95	<0.66	0.85	1.4	1.5			<0.66	<0.66	0.71	<0.66	1.2	1	1.5				
October 2004	<0.66	<0.66	1.5	1.5	1.1			0.67	<0.66	<0.66	<0.66	1.4	1.2	1.3				
November 2004	<0.66	<0.66	0.75	1.4	1.4			0.92	0.8	0.67	<0.66	1	0.91	1.2				
July 2006	2.5	1.1	<0.7	<0.7	2.6			1.8	3.1	1.5	2.5	1.6	1	1.6				
August 2006			0.94	0.90	0.86			0.60			0.51		0.54	1.2			0.94	2.5
September 2006			0.56	0.58	0.83			1			0.52		0.70	1.3			0.93	1.3
October 2006			0.49	0.85	2.6			1.1			0.89		2.8	1.2			1.1	1.4
November 2006			0.45	0.43	0.66			0.72			0.53		0.51	1.1			0.84	1.1
March 2007			0.71	6.3	2.0			1.3			4.0		1.4	1.5			2.2	0.91
April 2007			1.4	2.5	1.3			<0.7			<0.7		1.5	2.0			0.92	<0.7
May 2007			1.1	2.0	1.5			0.71			1.4		1.5	1.2			1.0	<0.7
Copper filtered																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September 2006			0.86	1.1	0.68								1.9	1.6			1.4	1.8
November 2006			1.1	1.5	1.3								1.5	1.3			2.5	2.3
May 2007			1.7	2.7	2.1								3.0	1.8			2.1	<0.7

Table 4. PolyMet Baseline Water Quality Data

Wednesday, June 27, 2007

Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Cyanide	mg/L																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	9.9	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
May 2004	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
June 2004	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
July 2004	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
September 2006																	<0.02	<0.02
November 2006																	<0.02	<0.02
May 2007																	<0.02	<0.02
Flow (cfs)	cfs																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004			34.0	19.6	286.6	2.4	0.3	1.2	2.0	0	0	6.6	26.8	242.8	9.5	10.6		
May 2004	0	24.8	19.8	53.9	207.9	0.4	0	1.8	1.8	0	0	12.3	30.5	236.9	8.5	6.4		
June 2004		5.8	8.6	4.7	7.6	0.3		1.6	0.7			3.5	0.7	16.5	4.9	2.7		
July 2004	0	1.6	6.0	3.6	2.7	0.04	0	1.3	1	0	0	1.2	1.2	7.2	2.1	0.8		
August 2004	---	---	7.9	3.4	5.5			1.6	1	---	---	1.2	0.8	7.3				
September 2004	---	0.18	9.4	13.4	26.7			1.5	1.1	---	---	2.3	1.5	29.6				
October 2004		2.8	6.3	19.1	57.1			1.4	1			4.7	12.7	59.9				
November 2004		0.1	2.2	2.7	21.3			0.4	0.4			4.5	4	32.3				
July 2006	See NSM	18.65	18	20.5	4			0.9	0.5	0	0	2.8	3.9	33.9				
August 2006			19.7	27.6	26.3			0.5			0		4.4	15.2			0	1.11
September 2006			20.8	13.2	28.4			0.9			0		0	30.2			0	0.84
October 2006			10.5	0.7	5.9			0.2			0		1.6	7.8			0	0.98
November 2006			22.1	37	11.1			0.5			0		1	17.9			0	0.9
March 2007			7.7	1	0			0.8			0		3.2	20.4			1.78	11.8
April 2007			53.4	29.05	164.1			1.2			0		39.8	212			1.26	22.37
May 2007			51.4		90.6			2.5			0		30.7	140.2			3.97	14.71

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek		Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Fluoride																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	0.12	<0.1	0.1	<0.1	<0.1	0.1	<0.1	2.7	1.6	1.12	1	0.84	0.1	0.18	0.17	0.11		
May 2004	0.16	0.14	0.12	0.1	<0.1	0.13	0.19	3.4	2.5	1.6	2	1.1	0.11	0.22	0.19	0.14		
June 2004	0.15	0.14	0.14	<0.1	<0.1	0.1	0.11	3.2	2.5	1.6	2.2	1.7	0.15	0.32	0.2	0.16		
July 2004	0.17	0.17	0.17	0.16	0.16	0.17	0.17	3.3	3	1.8	2.4	2	0.2	0.46	0.27	0.25		
August 2004	0.14	0.14	0.14	0.16	0.11			3.7	3.1	1.9	2.4	2.2	0.14	0.81				
September 2004	0.14	0.12	0.12	0.12	0.12			3.3	2.1	1.5	2.3	1.9	0.13	0.37				
October 2004	0.13	0.1	<0.1	<0.1	0.1			3.2	2.3	1.3	1.6	1.3	0.1	0.31				
November 2004	0.11	<0.1	0.1	0.15	<0.1			3.3	2.4	1.4	1.8	1.3	<0.1	0.26				
July 2006	0.15	0.12	0.16	0.17	0.16			3.16	2.75	1.5	2.01	1.48	0.17	0.27				
August 2006			<0.1	<0.1	<0.1			2.64			1.62		<0.1	0.22			1.6	0.11
September 2006			<0.1	0.12	0.1			2.76			1.88		<0.1	0.24			2.11	0.16
October 2006			0.16	0.1	0.1			2.85			1.8		0.18	0.61			2.23	0.29
November 2006			<0.1	<0.1	0.1			2.73			1.64		0.1	2.28			1.99	<0.1
March 2007			0.11	<0.1	0.1			2.49			1.01		<0.1	0.4			0.79	0.44
April 2007			0.12	0.1	<0.1			2.15			1.31		<0.1	0.16			0.97	0.19
May 2007			<0.1	<0.1	<0.1			2.04			1.84		<0.1	0.15			1.5	0.12
Hardness Total (calc)																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July 2006	110	112	110	109	93.4			564	482	479	421	308	83.4	119				
August 2006			110	116	103			603			480		78.5	179			577	738
September 2006			113	106	103			578			385		87.2	214			568	674
October 2006			107	106	97.9			583			418		73.4	194			581	721
November 2006			104	105	92.5			595			418		54.8	190			577	742
March 2007			139	109	112			556			332		41.5	228			304	635
April 2007			62.6	56.9	50.2			491			358		48.5	61.6			274	335
May 2007			67.4	52.5	55			411			378		34.1	70.9			414	530

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Hardness, Calcium & Magnesium, mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	77.5	44.4	37.5	30.3	16.9	120	67	349	256	213	222	109	19	35.6	91.9	68.3		
May 2004	81	38.5	35.7	30.2	20.1	121	63.2	364	301	241	320	149	18.6	37.6	101	58		
June 2004	80.5	76.2	65.5	55.7	34.8	156	76.2	437	300	322	339	223	34.1	73.7	125	105		
July 2004	102	109	100	95.5	65.9	213	136	506	380	398	386	323	77.1	139	182	175		
August 2004	108	99.8	95	92.3	78.2			510	389	434	396	314	75.7	193				
September 2004	105	75	70.1	58.9	40.7			481	314	390	369	237	51.1	102				
October 2004	101	67.7	61.6	50.3	41.2			486	367	350	361	246	39.6	87.3				
November 2004	102	69.3	62.3	57.6	36.3			536	393	416	361	264	34.2	84.7				
Iron mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<0.03	0.54	0.89	0.87	0.64	0.34	0.45	0.2	0.49	0.23	0.49	0.59	0.46	0.73	0.34	0.38		
May 2004	<0.03	0.71	1.27	0.9	0.97	0.24	0.92	0.25	0.29	0.25	0.42	0.33	0.5	0.72	0.28	0.48		
June 2004	0.04	1.06	1.77	1.52	5.27	0.43	4.48	0.28	0.44	0.28	0.32	0.22	3.43	1.75	0.52	0.64		
July 2004	0.03	1.6	2.49	1.62	2.1	1.32	2.23	0.16	0.49	0.22	0.25	0.48	2.26	1.7	1.28	0.9		
August 2006								.324			.309							
September 2006								.269			.425						.144	.559
October 2006								.236			.459							
November 2006								.234			.390						.153	.368
March 2007								.470			4.020							
April 2007								.466			.432							
May 2007								.691			.247						.223	.570
Iron filtered mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September 2004	0.03	2.21	2.15	1.81	1.72			0.09	0.18	0.11	0.06	0.53	2.55	1.34				
November 2004	0.05	1.13	1.21	1.33	1.25			0.15	0.13	0.13	0.13	0.34	1.14	1.49				
July 2006	0.06	1.27	1.45	1.41	2.03			0.18	0.23	0.3	0.15	0.21	1.66	2.08				

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Lead	ug/L																	
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
May 2004	<1	<1	<1	<1	1.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
June 2004	<1	<1	<1	<1	12.3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
July 2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
August 2004	<0.3	<0.3	<0.3	<0.3	1.6			<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3				
September 2004	<0.3	0.6	<0.3	<0.3	0.77			<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3				
October 2004	<0.3	<0.3	<0.3	<0.3	<0.3			<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3				
November 2004	<0.3	0.3	0.33	<0.3	0.35			<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.63				
July 2006	<0.6	<0.6	<0.6	<0.6	<0.6			<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6				
September 2006																	0.13	0.12
November 2006																	<0.1	<0.1
May 2007																	<0.6	<0.6

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Magnesium	mg/L																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	10.1	5.6	4.9	4.1	2.7	20.3	10.4	62.2	41.3	39.7	41.5	19.8	2.9	6.1	13.6	10.2		
May 2004	10.4	4.7	4.6	4.1	3.1	19.7	9.4	65.3	58.1	43.9	57.9	27.2	2.6	6.2	14.7	8.6		
June 2004	10.5	9.3	8.1	7.1	5	26.8	11.2	78.8	60.4	58	61.4	41.3	4.2	12	18.3	15.3		
July 2004	10.8	9.7	9.5	9.1	7.5	30.3	16	78.8	71.4	64.2	60.2	54.3	7	17.8	21.3	20.6		
August 2004	10.8	8.8	9.1	8.7	8.3			77.8	70	67.9	60.6	53	6.9	27.4				
September 2004	10.5	6.8	6.7	5.8	4.9			73.2	52.7	59.7	57.2	38.5	5	14.4				
October 2004	10.2	6	5.9	5.1	4.6			75.2	62.1	54.1	56	40.1	4.1	12.4				
November 2004	10.3	6.2	6.2	5.9	4.5			83.3	65.4	67	54	43.2	3.5	11.7				
July 2006	11	10.5	10.6	10.6	9.97			89	92.6	75.2	66.5	51.5	7.3	15				
August 2006			11.3	11.6	10.5			96			75.1		7.17	26			98.1	158
September 2006			11.7	11.2	11			93.3			60.2		8.13	31.6			95.4	143
October 2006			11.3	11.3	10.5			93.9			65.3		6.8	28.4			96.8	154
November 2006			11	11.1	10.1			94.6			64.1		5.67	29.6			94.2	158
March 2007			13.6	10.7	11.8			87.8			51.6		3.96	35.4			47	127
April 2007			6.38	6.05	5.68			75.9			54.4		5.8	8.39			42.2	68.6
May 2007			6.78	5.64	6.34			64			57.7		3.48	9.57			63.7	109

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Manganese	mg/L																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	0.01	0.08	0.1	0.09	0.03	0.23	0.09	0.3	0.09	0.05	0.58	0.05	0.02	0.03	0.06	0.07		
May 2004	<0.01	0.05	0.12	0.07	0.06	0.07	0.15	0.18	0.07	0.04	0.78	0.04	0.02	0.04	0.06	0.13		
June 2004	0.01	0.08	0.22	0.22	0.78	0.14	0.71	0.18	0.31	0.09	0.88	0.08	0.17	0.17	0.12	0.24		
July 2004	0.01	0.29	0.43	0.18	0.2	0.84	0.76	0.13	0.33	0.09	1.16	0.18	0.34	0.2	0.34	0.25		
September 2004	0.01	0.17	0.17	0.1	0.11			0.16	0.19	0.17	1.38	0.06	0.1	0.09				
November 2004	0.01	0.18	0.12	0.13	0.05			0.36	0.11	0.09	0.35	0.04	0.11	0.14				
July 2006	<10	147	184	110	160			410	110	50	550	118	379	93				
August 2006								230			1160							
September 2006								255			2950						16	113
October 2006								362			866							
November 2006								586			1090						34.9	125
March 2007								582			1100							
April 2007								423			840							
May 2007								493			683						161	88.3

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Mercury Low Level																		
ng/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	0.8	2.7	3.4	4.5	6.6	1.4	<0.5	0.7	1.5	1.4	1.6	1.6	6.5	4.9	1.9	3.2		
May 2004	2.2	3.7	2.7	2.5	2.9	2.6	1.6	1.4	1.7	6.6	2.1	3	6.7	4.3	1.1	3.6		
June 2004	0.7	<4	<4	<4	<4	<4	7.9	<4	<4	<4	<4	<4	<4	<4	<4	<4		
July 2004	<10	<10	<10	<5	<10	<5	7	<5	<5	<5	<5	<10	<10	<10	<10	<10		
August 2004	0.9	2.5	3.8	2.8	3.6			1.1	1.2	1.3	1.4	3.8	2.5	3				
September 2004	<4	<4	<4	<8	<8			<8	<8	<8	<8	<4	9.9	<4				
October 2004	<10	<10	<10	<10	<10			<10	<10	<10	<10	<10	<10	<10				
November 2004	<10	<10	<10	<5	<5			<5	<5	<5	<5	<10	<10	<10				
July 2006	<2	3	2	<2	<2			<2	<2	3	<2	3	2	3				
August 2006			<2.0	1.7	2.0			0.5			1.2		2.7	<2.0			<2.0	<2.0
September 2006			<8	1.1	1.1			0.6			2.3		<8	<8			<8	<8
October 2006			<2	<2	<2			<2			3		3	<2			<2	2
November 2006			<2	<4	<4			<4			<4		<2	<2			<2	<2
March 2007			<4	4.5	<2			<2			3.3		5.3	<4			4.1	<4
April 2007			7.8	6.8	4.2			<2.0			<2.0		9.9	9.2			4.9	7.2
May 2007			<4.0	5.2	<4			<4			<4		5.5	<4.0			<4.0	<4.0
Methyl Mercury																		
ng/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
September 2006			0.300	0.260	0.081			<0.025			0.637		0.323	0.176			0.136	0.171
November 2006			0.061	<0.056	<0.056			0.124			0.098		0.160	0.146			<0.056	0.091
May 2007			0.240	0.346	0.383			<0.056			0.354		0.346	0.311			0.207	0.302

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Molybdenum																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<5	<5	<5	<5	<5	<5	<5	20.4	34.6	19.8	13	16.9	<5	<5	<5	<5		
May 2004	<5	<5	<5	<5	<5	<5	<5	22.5	59.6	30	27.9	20.2	<5	<5	<5	<5		
June 2004	<5	<5	<5	<5	<5	<5	<5	26.6	81.6	21.7	35.4	28.2	<5	<5	<5	<5		
July 2004	<5	<5	<5	<5	<5	<5	<5	27	77.2	22.7	35.1	29.3	<5	<5	7.3	<5		
September 2004								29.9	44	19.7	31.6	18.4	<5	<5				
November 2004								26.6	44.2	17.3	15	20.4	<5	<5				
July 2006								35.4	46.4	25.6	26.5	15.8	<5	<5				
August 2006								33.5			20.1							
September 2006								31.8			22.2						10.2	<5
October 2006								32.6			18.7							
November 2006								30			15						15	<5
March 2007								23			16							
April 2007								23			13							
May 2007								18.7			15.7						10.5	<10
Nickel																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
May 2004	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
June 2004	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
July 2004	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		
August 2006			0.37	0.42	0.97			1.1			1.6		0.97	1.5			2.0	1.9
September 2006			0.44	0.46	0.69			0.73			0.94		0.85	1.6			1.8	1.6
October 2006			0.29	0.44	0.53			1.0			1.5		0.78	1.0			1.1	1.1
November 2006			0.24	0.3	0.46			1.1			1.5		0.55	1.1			1.2	0.88
March 2007			0.79	4.7	1.1			1.2			1.7		0.75	0.87			1.8	0.72
April 2007			1.0	1.6	0.99			1.1			1.4		1.0	2.0			1.4	0.6
May 2007			1.1	1.4	1.4			1.4			2.3		1.6	1.4			2.1	0.91

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Nickel filtered																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
August 2004	1.2	0.67	2.2	1.4	1.4			1.9	1.7	2.1	2	0.73	2.2	1.7				
September 2004	<0.6	1.1	2.4	3.5	3.6			1.2	1.1	0.81	2.5	0.78	1.9	1.6				
October 2004	<0.6	<0.81	1.6	1.8	2			1	1.2	1	1.4	0.91	2.5	1.3				
November 2004	0.62	0.91	1.5	1.3	1.9			1	0.76	<0.6	1.1	<0.75	1.1	2.5				
July 2006	<0.6	<0.6	0.8	0.8	2.2			1.4	0.8	0.8	2.5	0.9	2.8	2				
September 2006			0.56	0.84	1.9								1.3	1.6			2.5	1.6
November 2006			0.27	1.1	0.57								0.68	1.2			2.4	1.7
May 2007			1.3	1.5	1.4								1.6	1.5			2.3	1.0
Nitrite Plus Nitrate																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	0.14	<0.1	<0.1	<0.1	0.14	0.75	<0.1	<0.1	0.17	0.12	<0.1	0.11	<0.1	0.15	3.9	2.1		
May 2004	0.2	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.7	0.86		
June 2004	0.2	<0.1	<0.1	<0.1	0.13	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	0.12	0.12	1.7	0.74		
July 2004	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
September 2004	0.16	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
November 2004	<0.1	<0.1	<0.1	<0.1	0.11			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
Nitrogen Ammonia																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
May 2004	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
June 2004	<0.1	<0.1	<0.1	0.14	0.17	0.13	0.14	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
July 2004	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
September 2006																	<0.1	<0.1
November 2006																	0.18	<0.1
May 2007																	<0.1	<0.1

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Nitrogen Nitrate+Nitrite																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
July 2006	<0.1	<0.1	<0.1	<.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
September 2006																	<0.1	<0.1
November 2006																	<0.1	<0.1
May 2007																	0.44	<0.1
Oxygen, Dissolved																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	15.2	12.8	12.1	10.2	10.9	10.7	7.9	11.8	10.3	11.7	10.2	10.4	11.8	9.9	12.2	11.9		
May 2004	9.30	7.2	11.2	11.4	10.6	12.1	9.3	12.4	10.7	7.7	8.7	10.55	7.71	10.4	9.9	10.2		
July 2006	9.58	2.89	7.2									6.5	3.39	5.73				
August 2006			7.55	7.77	6.62			7.97			4.17		4.5	7.1			6.55	6.74
September 2006			9.02	2.66	4.25			5.07			2.37		4.8	7.6			7.58	10.03
October 2006			11.66	11.7	9.32			10.52			6.2		8.55	11.25			10.6	9.58
November 2006			13.81	14.81	13.32			10.15			7.07		11.23	12.2			10.33	15.01
March 2007			13.1	11.95	10.4			13.88			6.1		9.34	11.08			10.96	10.93
April 2007			13.86	10.54	10.5			11.40			6.02		10.74	12.20			10.2	12.1
May 2007			4.9	4.7	5.26			4.9			4.62		4.2	4.8			6.3	4.4
Palladium																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
May 2004	<25	<25	<25	<25	<25	<25	<25	<250	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
June 2004	<25	<25	<25	<25	<25	<25	<25	<250	<250	<250	<250	<25	<25	<25	<25	<25	<25	<25
July 2004	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
August 2004	<0.3	<0.3	<0.3	<0.3	<0.3			<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3				
September 2006																	<0.1	<0.1
November 2006																	<0.1	<0.1
May 2007																	<0.1	<0.1

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
pH	SU																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	7.6	7	6.8	6.8	6.8	6.7	6.5	7.9	7.9	7.7	7.4	7.7	6.5	7.1	7	6.8		
May 2004	8.1	6.8	6.9	7.1	7.2	7.8	7.4	7.9	8	7.6	7.6	7.7	6.5	6.8	7.2	7		
June 2004	8.3	7.5	7.7	7.7	7.3	7.7	7.4	8.1	7.8	7.8	7.7	8.1	7.3	7.4	7.5	7.9		
July 2004	8.2	6.8	7.2	7.1	7.4	7.1	7	7.8	7.7	7.7	7.2	7.7	6.9	7.5	7.2	7.1		
August 2004	8	6.9	7.1	7.3	7.5			8.3	8.1	8.3	7.9	7.9	7.2	7.4				
September 2004	7.7	7.6	7.4	7.2	7.1			8.1	7.9	7.8	7.7	7.3	7.3	7.2				
October 2004	8.4	7.6	7.3	7.3	7.4			8.2	8.2	8.2	8	8.1	7	7.7				
November 2004	8.3	7	7.4	8	7.2			8.7	8.5	8.6	7.9	8	7	7.6				
July 2006	8.5	7.3	7.6	8.1	8.1			8.2	8.4	8.2	8.3	8	7.2	8				
pH (Field)	NA																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	8.0	7.8	8.0	8.1	7.4	7.7	7.7	7.8	8.3	8.2	8.1	8.3	7.6	8.6	7.9	7.4		
May 2004	8.44	7.14	7.52	7.84	7.92	8.25	8.05	8.23	8.38	7.99	7.87	8.05	6.7	7.92	7.50	7.65		
June 2004	8.73	7.55	7.95	8.14	7.67	7.76	7.64	8.23	8.05	7.95	7.66	8.24	7.37	7.93	7.65	8.10		
July 2004	8.66	7.24	7.56	7.74	7.58	7.30	7.42	8.09	7.84	8	7.4	7.81	7.64	7.81	7.47	7.32		
August 2004	8.23	6.97	7.18	7.57	7.8			7.88	7.81	7.9	7.42	7.9	7.13	7.54				
September 2004	8.19	7.43	7.36	7.35	7.34			7.88	7.77	7.71	7.6	7.61	7.36	7.55				
October 2004	8.04	7.74	7.74	7.74	8.19			7.84	7.79	7.79	7.76	7.8	6.9	7.84				
November 2004	8.2	7.56	7.74	6.01	7.8			7.75	7.96	7.63	7.6	7.75	7.81	7.82				
July 2006	8.46	7.2	7.5	7.87	7.59			7.94	7.92	7.54	7.34	7.89	7.25	7.6				
August 2006			7.35	7.63	7.95			8.06			7.82		7.43	7.6			7.96	7.85
September 2006			7.38	7.7	7.94			7.99			7.58		7.18	7.69			8.28	8.02
October 2006			7.98	7.97	8.45			8.34			8.2		7.92	8.24			8.48	8.46
November 2006			7.13	7.18	7.84			7.48			7.14		6.87	7.27			7.45	7.54
March 2007			7.67	7.6	7.85			8.17			7.55		7.7	7.56			7.74	7.5
April 2007			7.04	7.37	7.6			8.06			7.62		6.58	6.98			7.44	7.27
May 2007			7.7	8.3	7.96			8			7.7		7.7	7.5			7.8	7.6

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Phosphorous																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	<0.1	<0.1	<0.1	0.14	<0.1	0.11	<0.1	<0.1	0.14		
May 2004	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
June 2004	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
July 2004	0.14	0.2	0.18	<0.1	0.15	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.22	0.18	0.18	0.17		
September 2004	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	0.2	0.14	<0.1				
November 2004	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
July 2006	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
August 2006			<0.1	<0.1	<0.1								<0.1	<0.1			<0.1	<0.1
September 2006			<0.1	<0.1	0.21								<0.1	<0.1			<0.1	<0.1
October 2006			<0.1	<0.1	<0.1								<0.1	<0.1			<0.1	<0.1
November 2006			<0.1	<0.1	<0.1								<0.1	<0.1			0.19	0.1
March 2007			<0.1	<0.1	<0.1								<0.1	<0.1			<0.1	<0.1
April 2007			<0.1	0.1	<0.1								<0.1	<0.1			<0.1	<0.1
May 2007			<0.1	<0.1	<0.1								<0.1	<0.1			<0.1	<0.1
Phosphorous Soluble Reactive																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
July 2006	<0.02	<0.02	<0.02	<0.02	<0.02			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02				
Platinum																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25		
May 2004	<25	<25	<25	<25	<25	<50	<25	<25	<250	<125	<250	<250	<25	<25	<125	<25		
June 2004	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25		
July 2004	<25	<25	<25	<25	<25	<25	<25	<250	<250	<125	<250	<250	<25	<25	<25	<25		
August 2004	<0.25	<0.25	<0.25	<0.25	<0.25			<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25				
September 2006																	0.02	<0.02
November 2006																	<0.02	<0.02
May 2007																	<0.1	<0.1

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Potassium																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	2.5	2	2	1.6	1	5.7	2	8	7.6	6.8	5.71	3.7	1.1	2.2	4	3.4		
May 2004	2.6	1.9	1.9	1.4	0.6	4.7	2.1	8.5	10.6	9.1	8.3	4.8	<0.5	1.5	4.1	2.5		
June 2004	2.7	2.1	2.1	1.6	0.8	6.4	1.2	8.4	9.8	6.2	7.7	5	<0.5	2.2	3.4	3		
July 2004	2.7	1.8	1.7	<2.5	1	6.3	1.4	9.4	12.2	4.7	<10	5.7	1.1	2.9	4.6	3.6		
September 2004	3	2.3	1.9	1.8	0.9			8.6	9.8	7.9	8.2	6.5	0.9	2.9				
November 2004	2.7	2.2	2.2	1.9	0.7			10.7	13.1	8.5	8.1	6.9	0.6	2.38				
July 2006	2.38	1.72	1.93	1.94	1.74			8.28	12.7	4.38	7.12	4.97	1.26	2.12				
August 2006								9.18			8.91							
September 2006								9.27			6.69						7.85	12.5
October 2006								9.36			7.26							
November 2006								8.5			6.27						9.43	11.4
March 2007								8.43			6.23							
April 2007								7.11			5.57							
May 2007								6.27			6.03						6.72	9.66
Selenium																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
May 2004	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
June 2004	<10	<10	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<10	<2	<10	<2	<2	<2
July 2004	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
August 2004	<3.6	<3.6	<3.6	<3.6	<3.6			<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6			
September 2004	<3.6	<3.6	<3.6	<3.6	<3.6			<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6			
October 2004	<3.6	<3.6	<3.6	<3.6	<3.6			<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6			
November 2004	<3.6	<3.6	<3.6	<3.6	<3.6			<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6			
July 2006	<1.0	<1.0	<1.0	<1.0	<1.0			<1.0	<1.0	<1.0	<1.0	<1.0	<1	<1.0				
September 2006																	0.51	0.58
November 2006																	0.51	<0.5
May 2007																	1.2	<1

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Silver	ug/L																	
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
May 2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
June 2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
July 2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		
August 2004	<0.24	<0.24	<0.24	<0.24	<0.24			<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24				
September 2004	<0.24	<0.24	<0.24	<0.24	<0.24			<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24				
October 2004	<0.24	<0.24	<0.24	<0.24	<0.24			<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24				
November 2004	<0.24	<0.24	<0.24	<0.24	<0.24			<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24				
July 2006	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				
September 2006																	<0.2	<0.1
November 2006																	<0.2	<0.2
May 2007																	<0.2	<0.2

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Sodium	mg/L																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	4.1	2.2	2.3	1.9	1.2	13.6	4.7	44.7	39.3	35.1	51.3	18.3	2.2	5.2	25.8	16.6		
May 2004	4.6	2.3	2.7	2.4	1.7	10.6	5	48.1	66.9	44.7	78.1	28.7	2.5	6.4	27.6	12.6		
June 2004	4.8	3.9	3.9	3.2	2.1	17.5	4.8	51.6	60.7	48.3	82.4	41.4	2.7	9.9	32.3	23		
July 2004	4.7	3.6	4.2	4	2.8	17.2	5.8	58.1	71.1	59.9	74.4	57.5	3	16.1	41.5	37.4		
August 2004	4.8	3.3	3.7	3.8	3.3			58.7	83.2	61.4	79.7	59.4	3.4	28.3				
September 2004	4.8	2.6	2.9	2.5	1.9			57.4	58.2	45.3	72.1	37.3	3.4	13.6				
October 2004	5	2.8	3	2.5	2.1			50.1	70.3	50.8	87.3	40.2	3.3	12.8				
November 2004	5.7	3.3	4.7	3.6	2.2			52.4	61.4	52	82.9	43.4	3.2	12.2				
July 2006	4.51	4.42	7.02	7.7	8.77			47.9	76.2	47.1	76	42.8	3.29	10.2				
August 2006								55			88.4							
September 2006								50.8			76.1						43.8	14.5
October 2006								52.9			83.5							
November 2006								50.5			76.9						45.4	14.8
March 2007								46.8			55.4							
April 2007								39.9			59.4							
May 2007								34.2			73.1						28.2	11.3

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Solids Filterable (TDS)	mg/L																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	107	80	75	66	56	204	94	533	362	325	373	186	46	68	211	137		
May 2004	116	78	76	69	58	204	114	541	484	416	548	254	62	88	231	135		
June 2004	144	137	139	111	155	260	350	726	523	530	607	389	197	205	266	233		
July 2004	93	106	120	110	90	258	157	615	572	516	567	402	110	176	273	268		
August 2004	116	115	107	136	93			685	626	912	617	465	105	290				
September 2004	131	136	125	119	108			632	465	540	554	355	118	193				
October 2004	100	100	88.6	103	93			632	551	522	568	370	101	156				
November 2004	123	109	102	106	89			651	557	571	514	382	86	151				
July 2006	130	140	149	143	149			707	702	642	621	421	145	184				
August 2006			165	314	340			1540			1360		142	290			764	939
September 2006			175	166	151			785			649		121	339			748	849
October 2006			176	146	155			759			654		145	326			736	839
November 2006			163	138	122			774			628		100	285			708	821
March 2007			199	173	168			665			457		111	48.0			384	704
April 2007			133	120	122			583			509		120	154			368	417
May 2007			133	117	87			512			562		105	152			545	617

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Solids Nonfilterable (TSS)																		
	mg/L																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	3	<1	<1	5	2	<1	1	<1	7	<1	6	1	2	12	1	6		
May 2004	<1	<1	2.7	11	10	4	13	10	9.3	12	7	1.3	<1	9	2.7	1.3		
June 2004	2	1	2	<1	8	2	15	<1	2	<1	2	<1	1	6	1	<1		
July 2004	1	7	6	2	2	7	8	1	2	5	5	5	3	5	4	3		
September 2004	1	15	3	4	4			4	3	5	2	2	2	13				
November 2004	<1	1	3	<1	2			2	2	1	10	1	<1	11				
July 2006	<1	1	3	6	9			8	5	7	5	8	4	5				
August 2006								3			3							
September 2006								4			55						5	5
October 2006								1			7							
November 2006								1			3						6	5
March 2007								4.4			44							
April 2007								5.2			3.6							
May 2007								8			6						2	3
Specific Conductance (lab)																		
	uhmos/cm																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	229	133	109	85.6	47.1	360	195	914	652	592	680	347	56	110	395	270		
May 2004	233	111	105	81.6	51.9	356	186	954	868	719	1010	450	54.2	123	419	216		
June 2004	233	212	183	154	83	435	194	1030	865	878	1030	642	93.4	222	478	384		
July 2004	304	274	252	244	179	592	335	1320	1250	1120	1270	999	210	408	696	681		
August 2004	254	218	207	204	167			1140	1080	996	1090	867	187	472				
September 2004	291	154	152	127	86.2			1110	852	925	1020	639	116	276				
October 2004	238	157	137	110	87.9			1090	953	884	1030	658	96	248				
November 2004	242	167	161	150				1140	1010	1020	1050	695	81.9	238				
July 2006	236	230	243	238	212			1120	1120	965	1020	708	163	256				

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Specific Conductivity (Field)																		
uOhm/CM																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	214	117	92	72	35	338	178	891	632	569	603	333	37	94	378	249		
May 2004	225.6	111	105	81.0	59.0	358	182	951	868	716	1023	445	53	117	412	214		
June 2004	215.2	196	171	145	78.2	403.6	181.1	977	815	822	968	602	87.2	207.2	442.5	357.8		
July 2004	221.1	213.1	196.5	182.7	126.9	449.0	254.4	1006	975	868	965	730	149.2	305.2	516	496		
August 2004	245.7	218	198.8	198.4	161.7			1143	1075	1001	1140	870	166.2	473.8				
September 2004	246.9	152.4	151.8	126.9	85.5			1107	846	935	1022	623	115.3	269				
October 2004	231.1	150.8	133.4	107	98.8			1063	935	865	1002	639	94.4	242				
November 2004	233.5	164.6	156.1		79.8			1088	949	910	1016	676		227				
July 2006	244.8	240.8	252.7	250.3	227.1			1190	1180	1075	1358	743	179.2	274.4				
August 2006			278.1	275.9	240.7			1229			1170		160.3	424.1			1167	1288
September 2006			250.5	265.5	257			1140			980		181.7	463			1148	1199
October 2006			258.7	263.2	233			1163			1016		151.4	450.7			1222	245
November 2006			245.7	232.5	220.8			1125			1014		121.8	434.8			1162	1200
March 2007			169.2	286.2	250.2			1017			864		126	290.8			911.76	1103
April 2007			80.6	141	121.4			899			844		66.0	93.9			647	608
May 2007			157	126	140			817			922		777	166			825	919
Strontium																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	148	76	59.6	45.2	17.3	92.3	52.3	232	179	179	176	95.1	17.6	29.1	197	133		
May 2004	156	67.2	61.5	47.4	22.4	103	57.7	259	211	220	269	139	20.8	34.5	238	121		
June 2004	161	145	120	96.6	48.1	132	73.7	321	206	326	284	206	40.6	65.7	296	238		
July 2004	161	156	137	128	67.7	147	101	287	199	307	259	229	61.9	104	326	305		
August 2006								361			357							
September 2006								315			277						289	105
October 2006								292			272							
November 2006								333			291						294	103
March 2007								290			187							
April 2007								270			230							
May 2007								232			268						229	96.8

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek		
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Sulfate	mg/L																	
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	19.3	10.2	<1	4.7	<1	58.9	26.2	131	93.2	87	78.5	45.5	5.3	17.2	26	19.4		
May 2004	20.7	9.9	10.7	9.7	8.1	76.2	29.2	138	152	209	143	61.2	6.9	15.4	32.3	15.1		
June 2004	22.5	6.2	6.1	8.7	8.5	85.1	7.7	156	155	126	113	85.6	8.9	28.4	39.3	29.2		
July 2004	22	0.13	0.41	<1	0.78	62.1	3.3	154	165	126	115	72.5	0.5	24.6	32.5	27.3		
August 2004	19.6	<1	1.4	<1	<1			149	147	146	124	115	<1	46.6				
September 2004	21.4	<1	1.3	1.6	1.6			<1	137	173	117	76.6	1.1	30				
October 2004	26.1	8.8	8.7	9.9	8.6			196	184	124	132	103	8.5	35.4				
November 2004	24	8.6	7.5	9.6	10.2			234	229	231	175	147	6.5	32.6				
July 2006	22.9	11.8	10.4	9.36	5.14			184	225	123	116	82	2.47	27.4				
August 2006			12.8	12.4	6.79			196			126		2.3	89.3			230	358
September 2006			11.8	9.8	8.77			185			97.1		1.39	94.7			195	352
October 2006			15.8	13	14.7			197			105		8.19	52.7			188	360
November 2006			22.7	22	20			191			110		8.41	688			202	371
March 2007			13.2	10.5	11.8			169			92.5		3.03	106			110	293
April 2007			12.5	11.7	11.8			139			92.6		18.2	21.7			110	163
May 2007			14.9	12.6	15.4			132			102		5.78	28			210	291

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Thallium																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
May 2004	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
June 2004	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
July 2004	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		
August 2004	0.63	<0.4	<0.4	<0.4	<0.4			0.54	<0.4	<0.4	0.46	<0.4	<0.4	<0.4				
September 2004	<0.4	<0.4	<0.4	<0.4	<0.4			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4				
October 2004	<0.4	<0.4	<0.4	<0.4	<0.4			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4				
November 2004	<0.4	<0.4	<0.4	<0.4	<0.4			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4				
July 2006	<0.4	<0.4	<0.4	<0.4	<0.4			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4				
September 2006																	<0.1	<0.05
November 2006																	<0.1	<0.1
May 2007																	<0.4	0.56
Titanium																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	13	<10	<10		
September 2006																	<20	<20
November 2006																	<20	<20
May 2007																	<10	<10

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
TOC																		
mg/L																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	1.8	9.5	14.5	15.6	20.3	4	5.6	4.5	4.6	5.8	5.7	7.4	14.7	15.1	6.6	10.4		
May 2004	1.9	15.3	16.9	19.4	20.6	6.1	8.6	5	5.8	7.2	6.4	9.8	19.5	18.3	7	13.3		
June 2004	2.3	6.4	10.5	14.3	22.8	9.1	14.3	4.9	6.9	8.5	6.8	9.8	24.3	17.4	7.2	9.9		
July 2004	2.1	8.5	12.7	12.3	19.4	11	15.2	4.7	6.7	10	5.6	12.4	18.1	13.6	8.6	10.8		
September 2004	2.4	25.9	25.9	29.5	33			5.1	5.5	9.4	6.8	14.4	29.4	25.7				
November 2004	1.9	12.7	13.2	16.5	24.2			5.2	4.9	6.2	9.4	8.6	20.4	16.8				
July 2006	2.4	7	9.1	10.3	19			5.7	6.2	18.5	6.9	15.4	21.7	22.5				
August 2006			6.8	7.3	13.5			4.8			7.2		17.6	19.2			10.1	10
September 2006			6.2	8.2	8.6			4.9			8		12.1	16.5			8.7	10.9
October 2006			7.7	7.0	6.6			4.2			8.6		14.8	14.8			7.1	9.2
November 2006			4.8	6.7	10			5.9			9		13.9	14.6			6.7	7.4
March 2007			6.7	11.0	9.9			5.7			8.9		15.7	14.2			11.4	8.0
April 2007			22.8	21.8	18.9			5.9			8.4		28.5	29.2			11.8	12.9
May 2007			19.8	25.7	21.7			6.9			9.1		29.6	24.2			12.7	9.9
Turbidity																		
NTU																		
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
April 2004	1.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0	4.0	1.0	7.0	3.0	1.0	5.0	1.0	1.0		
May 2004	1.2	1.2	3.4	4.0	3.0	3.0	6.0	1.0	2.0	2.0	4.0	1.2	1.1	3.0	0.7	1.6		
July 2006	0.47	3.65	4.9	3.17	4.86			2	1.34	2.35	1.62	2.3	2.98	4.48				
August 2006																	1.5	2.21
September 2006																	1.25	3.49
October 2006																	1.4	0.5
November 2006																	1.7	2.1
March 2007																	3.7	4.62
April 2007																	1.6	1.6
May 2007																	0.9	1.1

Table 4. PolyMet Baseline Water Quality Data

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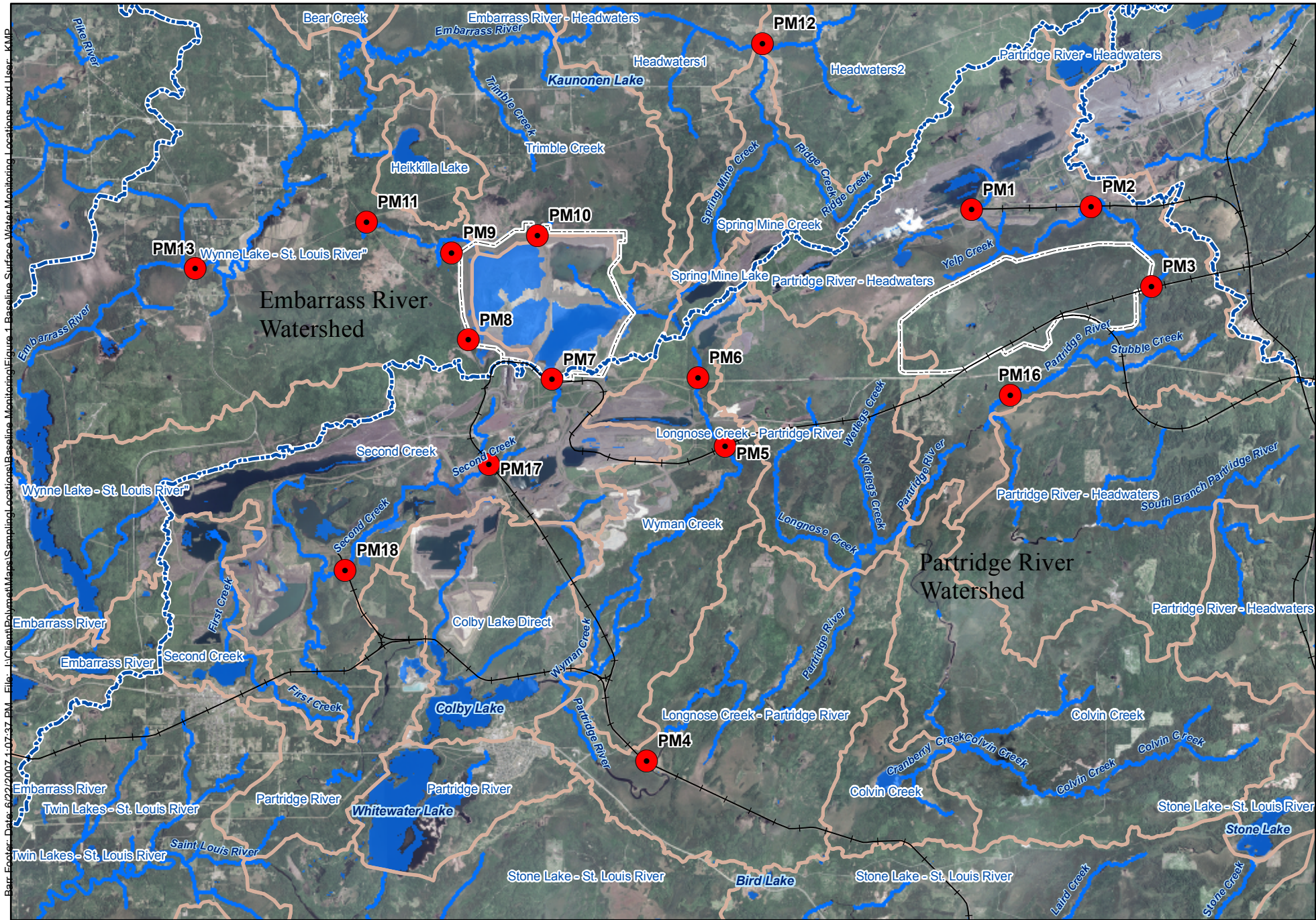
Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek	Tailings Basin				Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Water Temperature (Field)																		
°C																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	4.1	0.6	1.4	1.8	0.9	2.3	0.5	3.6	3.7	0.3	1.6	1.3	2.2	1.8	0.8	2.7		
May 2004	13.5	11.6	12.8	11.6	12.9	14.5	13.6	11.9	13.8	10.3	12.7	12.8	10.5	10.8	11.9	12.6		
June 2004	16.3	18.0	18.0	16.3	19.5	18.1	16.3	13.9	16.0	15.4	15.3	16.2	14.1	15.4	15.1	18.4		
July 2004	21.4	20.5	19.8	20.7	21.4	20.0	18.5	15.8	19.5	17.6	17.1	20.7	19	20.7	19.5	19.7		
August 2004	20.8	18.4	16.9	16.4	16.2			12.8	13	14.1	14.3	14.8	19.9	14.4				
September 2004	13.1	12.7	12.3	13.4	16.9			12.5	15.4	15.4	14.6	13.7	12.3	13.2				
October 2004	9.1	8.5	8	7.6	7.8			6.1	7.6	6.3	7.9	7.1	7.7	6.8				
November 2004	4	1.7	1.1	0.1	1.4			2.1	4.6	3.8	4.6	3	0.5	1.1				
July 2006	21.1	20.3	20.7	20.6	24.4			17.9	22.8	18.7	15.4	24.4	20.9	23				
August 2006			17.4	17.8	20.2			15.9			18.5		16.6	18.3			17.7	18.9
September 2006			10.4	12.1	13.8			9.2			12		10.5	11.4			10	12
October 2006			2.3	3.2	4.8			2.5			5.4		2.6	2.5			2.3	21.1
November 2006			3.8	2.5	4.6			6.8			4.5		4	4.2			4.2	5.8
March 2007			0.2	0.3	0.8			4.6			2.3		0.4	0.4			0.5	0.2
April 2007			4.1	5.1	10.4			11.6			8.7		2.5	5.3			5.6	7.6
May 2007			10.8	12.4	12.5			8.9			11.8		11.2	12.8			14.9	16.1
Zinc																		
ug/L																		
<u>Water Quality Limit</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April 2004	<10	<10	<10	<10	11.1	<10	<10	<10	11.2	<10	15.4	<10	<10	<10	<10	17.2		
May 2004	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
June 2004	<10	<10	<10	<10	16.3	10.2	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
July 2004	10.3	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
August 2006			<25	<25	<25			<25			<25		<25	<25			<25	<25
September 2006			<25	<25	<25			<25			<25		<25	<25			<25	<25
October 2006			<25	<25	<25			<25			<25		<25	<25			<25	<25
November 2006			<25	<25	<25			<25			<25		<25	<25			<25	<25
March 2007			<25	78.7	80.1			<25			32.5		<25	<25			38.7	<25
April 2007			<25	<25	<25			<25			<25		<25	<25			<25	<25
May 2007			<25	25.1	<25			<25			<25		<25	<25			<25	<25

Table 4. PolyMet Baseline Water Quality Data

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Sample Date	Mine				Colby Inlet	Wymann Creek		Knox Creek		Tailings Basin			Emb Riv Up	Emb Riv Dn	Langely Creek		Second Creek	
	PM-1	PM-2	PM-3	PM-16	PM-4	PM-5	PM-6	PM-7	PM-8	PM-9	PM-10	PM-11	PM-12	PM-13	PM-14	PM-15	PM-17	PM-18
Zinc filtered	ug/L																	
<u>Water Quality Limit</u>	-	-	-	-	-			-	-	-	-	-	-	-				
August 2004	12.6	<10	<10	<10	<10			20.6	<10	<10	<10	<10	<10	<10				
September 2004	<10	<10	<10	<10	12			19.6	<10	<10	12.8	<10	13.1	<10				
October 2004	<10	21.7	<10	<10	<10			42	12.4	<10	<10	<10	<10	<10				
November 2004	10.7	12.3	16.4	18.1	11			17.6	12.1	12.3	32.8	14.7	17.9	17.7				
July 2006	29	26.5	52.7	<25	82.9			82.5	<25	64	<25	41.2	27.1	<25				
September 2006			44.1	47.9	<25								<25	<25			<25	<25
November 2006			<25	<25	71.3								104	51.2			<25	<25
May 2007			<25	32.6	<25								<25	<25			41.6	<25



Borr_Encoder: Date: 6/29/2007 1:07:37 PM File: J:\Client\Polymet\Maps\SamplingLocations\Baseline_Water_Monitoring_Locations.mxd User: KMP

- Surface_Water_Monitoring_Sites_RS63
- Major Watersheds
- Minor Watersheds

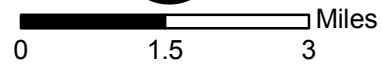


Figure 1
 SURFACE WATER MONITORING
 LOCATIONS
 PolyMet