

MP00023

**Mount Polley Mining Corporation
Mount Polley Mine
Tailings Cyclone Sands Geochemical
Evaluation**

December 2, 1998





MOUNT POLLEY MINING CORPORATION

A DIVISION OF IMPERIAL METALS CORPORATION

March 9, 2000

Dr. W.A. Price
Ministry of Energy and Mines
Mines Branch
3793 Alfred Avenue
Bag 5000
Smithers, BC
V0J 2N0

Dear Dr. Price,

Please find enclosed the Tailings Cyclone Sands Geochemical Evaluation and Update pursuant to the Application to amend the M-200 permit for Stage 3 construction of the embankment to 944 metres. Please feel free to call if you have any questions.

Regards,

Don Parsons,
Mine Superintendent
Mount Polley Mining Corp

Enclosures (2)

cc: Diane Howe, MEM
Douglas Hill, MELP
Kevin Morin, MDAG

**Mount Polley Mining Corporation
Mount Polley Mine**

Tailings Cyclone Sands Geochemical Evaluation

TABLE OF CONTENTS

FRAMEWORK	1
1.0 GENERAL MINERALOGY	2
2.0 Characterization Of Composite Tailings Samples And "Mp Tails 98"	2
2.1 Sample Description and Preliminary Testing	2
2.2 Particle Size Analysis	2
2.3 Acid Base Accounting	3
2.4 Elemental Scan Results	3
2.5 Concentration of Soluble Components	4
3.0 KINETIC TESTING	4
3.1 Introduction	4
3.2 MP Tails 98 Composite (Pre-Cell Testing)	4
3.2.1 Whole Rock Analysis	5
3.2.2 Particle Size	5
3.2.3 Petrographic Examination	5
3.2.4 Solid-Phase Analyses (ABA)	6
3.2.5 Humidity Cell Testing	8
4.0 SHAKE FLASK TESTING	9
4.1 Introduction	9
4.2 Modified pH	9
4.3 Modified Rinse	10
4.4 Modified Flush	10
4.5 Attenuation Testing	11
5.0 MINTEQ MODELLING	11
6.0 ENVIRONMENTAL EFFECTS ON RECEIVING WATER QUALITY	14
6.1 During Operations	14
6.1.1 Hydraulic Modelling	14

Mount Polley Mining Corporation

Mount Polley Mine

6.1.2 Water Quality Modelling	15
6.2 Closure Considerations	16

TABLES

Table 3.2.4	Comparison of MP tails 98 Total-Metal Levels to Average Crustal Values
Table 5.1	Summary of Selected Results from MINTEQ Calculations for Mount Polley Samples
Table 6.1.2a	NE Edney Tributary (W8) Baseline Water Quality
Table 6.1.2b	Hazeltine Creek (W7) Baseline Water Quality
Table 6.1.2c	Evaluation of Water Quality Impacts Downstream of the TSF from the Utilization of Tailings Sands as Construction Fill
Table 6.2.1a	Polley Lake Watershed
Table 6.2.1b	Hazeltine Tributary Watershed

FIGURES

Figure 1.1	Cu Solubility vs % Cu in Tailings
Figure 6.1.2	Baseline Water Quality Locations

Figures Showing Solid Phase Tests on Monthly Composites & MP Tails 98

Figure A	Paste pH
Figure B	Neutralization Potential
Figure C	%Sulphur (Sulphide)
Figure D	%Sulphur (SO₄)
Figure E	Solid Phase - %Aluminum
Figure F	Solid Phase – Barium
Figure G	Solid Phase - %Calcium
Figure H	Solid Phase – Chromium
Figure I	Solid Phase – Copper
Figure J	Solid Phase - %Iron
Figure K	Solid Phase – Manganese
Figure L	Solid Phase – Molybdenum
Figure M	Solid Phase – Lead
Figure N	Solid Phase – Zinc

**Mount Polley Mining Corporation
Mount Polley Mine**

Figures Showing Shake Flask Tests on Monthly Composites & MP Tails 98

Figure AA	pH
Figure AB	Conductivity
Figure AC	Alkalinity
Figure AD	Sulphate
Figure AE	Aluminum
Figure AF	Barium
Figure AG	Calcium
Figure AH	Chromium
Figure AI	Copper
Figure AJ	Iron
Figure AK	Manganese
Figure AL	Molybdenum
Figure AM	Lead
Figure AN	Selenium
Figure AO	Zinc

Figures Showing Modified pH Shake Flask Tests on MP Tails 98

Figure BA	Conductivity
Figure BB	Alkalinity
Figure BC	Sulphate
Figure BD	Aluminum
Figure BE	Barium
Figure BF	Calcium
Figure BG	Chromium
Figure BH	Copper
Figure BI	Iron
Figure BJ	Manganese
Figure BK	Molybdenum
Figure BL	Lead
Figure BM	Selenium
Figure BN	Zinc

**Mount Polley Mining Corporation
Mount Polley Mine**

Figures Showing Modified Rinse Shake Flask Tests on MP Tails 98

Figure CA	Conductivity
Figure CB	Alkalinity
Figure CC	Aluminum
Figure CD1	Barium
Figure CF	Chromium
Figure CG	Copper
Figure CH	Iron
Figure CI	Manganese
Figure CJ	Molybdenum
Figure CK	Lead
Figure CL	Selenium
Figure CM	Zinc

Figures Showing Sequential Batch Shake Flask Tests on MP Tails 98

Figure DA	pH
Figure DB	Conductivity
Figure DC	Alkalinity
Figure DD	Sulphate
Figure DE	Aluminum
Figure DF	Barium
Figure DG	Calcium
Figure DH	Chromium
Figure DI	Copper
Figure DJ	Iron
Figure DK	Manganese
Figure DM	Lead
Figure DN	Selenium
Figure DO	Zinc

**Mount Polley Mining Corporation
Mount Polley Mine**

Figures Showing Humidity Cell Test Results

Figure Al & Ba	Aluminum & Barium Leach Rates
Figure Ca & Cr	Calcium & Chromium Leach Rates
Figure Cu & Fe	Copper & Iron Leach Rates
Figure Mn & Mo	Manganese & Molybdenum Leach Rates
Figure pH & Cond	Weekly pH & Conductivity
Figure S & NP-Remaining	Sulphur Remaining (%S) & NP Remaining (t / 1000 t)
Figure Se & Pb & Zn	Selenium, Lead & Zinc Leach Rates
Figure SO ₄ & Leachate	Leachate Recovered & Sulphate

APPENDICIES

- Appendix A ABA Testing – Tailings Monthly Composites -- 200 & + 200 Mesh
Elemental Scan – Tailings Monthly Composites -- 200 & + 200 Mesh
Shake Flask Tests – Tailings Monthly Composites -- 200 & + 200 Mesh
- Appendix B Elemental Scan – MP Tails 98
Particle Size Analysis – MP Tails 98
Petrographic Examination – MP Tails 98
Shake Flask Tests – MP Tails 98
Whole Rock Analysis, ABA, %Cu & %NSCu – MP Tails 98
- Appendix C Shake Flask Tests – Modified pH, Modified Rinse, Sequential Rinse – MP Tails 98
- Appendix D Kinetic Rates – MP Tails 98
- Appendix E References

Mount Polley Mining Corporation
Mount Polley Mine

Tailings Cyclone Sands Geochemical Evaluation

FRAMEWORK

The objective of this report is to delineate the metal leaching (ML) and acid rock drainage (ARD) potential from cycloned tailing sands and to estimate the Environmental Effects on downstream water quality from the utilization of the sand product as construction fill.

This report shows that there is no potential for ARD, and only relatively minor levels of metal leaching are expected. A mass balance spreadsheet illustrates that there would be no Environmental Effects on receiving water quality under two sensitive low flow conditions (See *Section 6.0, Environmental Effects on Receiving Water Quality*).

The British Columbia Ministries of Energy and Mines and of Environment, Lands and Parks have recently released a ‘Policy, Guidelines, and Prediction Manual’ for the prediction and control of acid rock drainage (ARD) and metal leaching (ML). Due to environmental concerns and past liabilities, ARD is the main focus of these documents, with metal leaching taking a prominent but secondary role. This approach is applicable and works well at many metal minesites in British Columbia. However, Mount Polley is a major exception, as documented in this report.

At Mount Polley, the amounts of net-acid-generating sulphide minerals like pyrite are so low, and the levels of neutralization potential (NP) are so high, that the volume of net-acid-generating rock is negligible. Furthermore, metal leaching is derived from non-sulphide minerals. This creates some challenges in prediction for Mount Polley, because the Prediction Manual is oriented towards sulphide-controlled minesites.

It is true that the Manual contains some techniques applicable to oxide-controlled metal leaching, but these techniques and their objectives have to be adapted. For oxide-controlled metal leaching, 24-hour shake flasks are important in explaining and predicting metal leaching, but they are rarely used in high-sulphide systems because the sulphides are not rapidly soluble. Also, humidity cells are designed to obtain kinetic reaction rates that are not affected by mineral solubility. However, oxide-controlled metal leaching can reach, and, at Mount Polley, has reached, solubility levels in a cell as well as in shake flasks. Therefore, the classic interpretation of geochemical testwork in British Columbia, as described in the Prediction Manual, is not directly applicable to Mount Polley. A different approach is required and, to the best of our knowledge, this approach is unique in British Columbia to Mount Polley.

Because the standard sulphide-based approach is not used to characterize the tailings cyclone sands material, the importance and contribution of each suite of geochemical tests to overall predictions are explained. Nevertheless, this report contains the initial results of some work, like a humidity cell, that is ongoing and thus some predictions may change as the testwork proceeds.

Mount Polley Mining Corporation

Mount Polley Mine

1.0 GENERAL MINERALOGY

The Mount Polley copper-gold ore deposit occurs within the Jurassic-Triassic Polley stocks, which intruded the Nicola Group volcanic rock (Minfile 1998). Hypogene ore minerals include chalcopyrite (1-3%), magnetite (4-8%), and minor pyrite. Supergene minerals include malachite (copper carbonate), native copper, cuprite (copper oxide), chalcocite, neodiginite, and covellite (copper-sulphide minerals). Thus, copper generally occurs as sulphide minerals ("copper sulphide") and as oxide/carbonate minerals ("copper oxide").

Alteration consists of an outer propylitic zone with calcite, chlorite, epidote, and pyrite and an inner potassic zone with secondary biotite and pink orthoclase (Minfile, 1998). Between these two zones is an intermediate garnet-epidote zone. Zeolites are pervasive through the alteration zones.

2.0 CHARACTERIZATION OF COMPOSITE TAILINGS SAMPLES AND "MP TAILS 98"

2.1 Sample Description and Preliminary Testing

Five (5) monthly tailings composite samples from February to June 1998 (inclusive) were submitted for preliminary characterization testwork. The total copper concentration of the tailing samples tested averaged 0.19% of which 73% is in oxide form. In terms of oxide components, the five monthly composite samples represent the highest oxide material that will pass through the concentrator. The main focus of this evaluation is to assess the geochemical characteristics of cyclone sands product as it is being considered for embankment construction material. The evaluation considers a methodology presented in a previously submitted report "*Recommended Research Program for Acid Rock Drainage (ARD) and Significant Metal Leaching Potential (ML) at the Mount Polley minesite, Phase 1*" report.

Unless otherwise specified, all analyses for ML and ARD characterization follow the requirements of the 'ARD Guidelines for Minesites in British Columbia' and 'Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia'. The preliminary characterization of the tailings cyclone sands material also include the following testwork:

- Particle Size Analysis, PSA
- Acid Base Accounting, ABA
- Metal Composition using ICP-Scan
- Concentration of Soluble Components, 24-hour Shake Flask Test.

2.2 Particle Size Analysis

Each monthly tailings sample was washed through a 200 mesh screen. Both plus and minus 200 mesh fractions were weighed and recorded. The weight retained on the +200 mesh size fraction of the five monthly tailings composite samples ranged from 32.2% to 51% with an average of 41%.

Mount Polley Mining Corporation

Mount Polley Mine

2.3 Acid Base Accounting

Both size fractions (+, -200 mesh) of the five monthly composite samples were submitted for acid base accounting. The average results and ranges are as follows:

	- 200 MESH	Range	+ 200 MESH	Range
Percent Sulphur	0.019 % S	< 0.01 – 0.04	0.054 % S	0.04 – 0.08
Paste pH	10.7	9.7 – 11.5	8.7	8.6 – 9.0
Acid-generating potential (AP) (kg CaCO ₃ /t)	0.59	<0.31 – 1.25	1.7	1.25 – 2.5
Neutralization potential (NP) (kg CaCO ₃ /t)	95.6	49 – 181	13.8	11 – 16
Net Neutralization potential (NNP) (kg CaCO ₃ /t)	94.0	48 – 180	10.7	10 – 14
NP / AP	162.0	49 – 181	8.1	7.5 – 14.0

The test results of expanded acid-base accounting (ABA) for the -200 and +200 mesh fractions showed that paste pH's were consistently above 8.5 (Figure A). The average paste pH for the +200 mesh fraction was 8.7, whereas the values were typically alkaline above 10 for the -200 mesh fraction.

The higher paste pH's for the -200 mesh fractions are also reflected in its much higher NP levels (Figure B). Both the relatively high NP and paste pH for the -200 mesh is suggestive of very reactive hydroxide minerals and /or alkaline silicate minerals (Table 1.1).

In contrast to NP, the +200 mesh fractions have higher sulphide levels than the -200 mesh fractions (Figure C). Nevertheless, even the highest sulphide level of 0.06%S (May composite, +200 mesh) yields a Sulphide Acid Potential (SAP) of less than 2 t CaCO₃ equivalent / 1000 t relative to its NP of approximately 20 t / 1000 t. As a result, this highest-sulphide +200 mesh monthly composite has an SNPR value over 10 and is thus net acid neutralizing. Therefore, all samples of all fractions are net acid neutralizing.

The solid-phase metal analyses for the monthly composites were performed using ICP after aqua-regia digestion, whereas the overall composite of "MP Tails 98" (Kinetic Cell sample) involved stronger triple-acid digestion. As a result, there were discrepancies between the relatively low monthly composites and the relatively high overall composite for metals like aluminum, barium, and manganese (e.g. Figures E, F & K).

2.4 Elemental Scan Results

The objective of the muti-element trace analysis is to provide a measure of the solid – phase levels of various metals contained in a sample. The +200 and -200 mesh fractions of the five monthly composite samples were also submitted for 32 metal determination by ICP. The average of all the copper values was 1884 ppm (0.19%) and, according to the ICP scans and the particle size information, 33.6% of the copper reported to the +200 mesh fractions (Table 1.1). The remaining assays for the samples can be found in Appendix A.

Mount Polley Mining Corporation Mount Polley Mine

2.5 Concentration of Soluble Components

The recommended test for determining soluble components of a sample is a modification of the shake flask leachate extraction procedure outlined in the *Special Waste Regulation of the British Columbia Waste Management Act*. The sample is shaken for 24-hours, using distilled water at a 3:1 deionized water to solid ratio by weight. The use of the 3:1 solution is to ensure that all the soluble products are dissolved without solubility limitations. A gentle agitation for 24 hours is to ensure continuous exposure of all surfaces and mixing of the rinse solution. Upon completion of agitation, the sample is allowed to sit for 2 hours so the suspended particles will settle. The supernatant is then filtered and submitted for the following analysis: pH, conductivity, alkalinity, acidity, sulphate and ICP low level metal scan.

All five +200 mesh fractions of the monthly tailings composite samples were subjected to shake flask testing (SFT). The supernatant from the tests had an average pH of 8.8 and an average copper value of 149 parts per billion (ppb). (L1d)

Three -200 mesh fractions of the monthly tailings composite samples (February, April and June, 1998) were also subjected to shake flask testing. The supernatant from these tests had an average pH of 11.7 and an average copper value of 125 ppb. In general, Figure 1.1 indicates that copper solubility increases proportionally with the total copper content in the tailings.

3.0 KINETIC TESTING

3.1 Introduction

Kinetic information is a critical part of drainage chemistry prediction that provides a measure of the dynamic performance or “reactivity” of the material being tested. Kevin Morin of Morwijk Enterprises Ltd. has been retained by MPM to interpret results of the Kinetic-testing program and to recommend any additional testing requirements.

From the five monthly composite samples collected, individual composites of each of the + 200 mesh and -200 mesh fractions were prepared by thoroughly wet screening and generating both size fractions. In order to represent a cyclone sands product, a composite sample was made using 23% of the -200 mesh and 77% of the +200 mesh fraction. This sample was labeled ‘MP-Tails 98’.

3.2 MP Tails 98 Composite (Pre-Cell Testing)

The overall composite of “MP Tails 98” was submitted to Chemex Labs in North Vancouver for pre-cell testing which included: expanded acid-base accounting, total-metal ICP analyses after triple-acid digestion, whole-rock analyses, mineralogical examination and shake-flask testing. (All test results can be found in Appendix B). All testing follows the Prediction Manual released by the BC Ministry of Energy and Mines (1998), and is thus consistent with

Mount Polley Mining Corporation Mount Polley Mine

the government's Policy and Guidelines for Metal Leaching and Acid Rock Drainage (ML/ARD).

3.2.1 Whole Rock Analysis

The composite tailings sample, MP Tails 98, was submitted to Chemex Labs Ltd. in North Vancouver for Whole Rock analysis of major oxides by XRF. Sample composition is as follows: 56.05% SiO₂, 16.78% Al₂O₃, 6.14% K₂O, 4.16% Na₂O, 3.64% CaO, 7.67% Fe₂O₃, 2.43% MgO, 0.56% TiO₂, 0.23% P₂O₅, 0.08% MnO, and <0.01% Cr₂O₃. These analyses agree very closely with those completed on monzonitic intrusive rocks or plagioclase porphyry, by T. Fraser in a Masters thesis on the geology of the Mount Polley Deposit (1992). Plagioclase porphyry is the dominant host lithology of the deposit. Refer to Appendix B for the certificate of analysis.

3.2.2 Particle Size

MP Tails 98 was also subjected to a particle size analysis (PSA). The sample was first wet screened through a 270-mesh screen and PSA was performed through the following size fractions: 60, 80, 100, 150 and 200 mesh. The results indicate that 77% of the sample was retained on the 200-mesh fraction, which closely simulates the material that was produced in the field. PSA information can be found in Appendix B.

3.2.3 Petrographic Examination

The composite tailings sample, MP Tails 98, was forwarded to Jeff Harris of Harris Exploration Services for mineralogical examination. A portion of the sample was used to prepare a smear-mount polished thin section.

Typical of the Mount Polley host rocks, the tailings are dominated by feldspars (77%). Weakly sericitized and argillized potassium feldspar and plagioclase are both apparent, reflecting the monzonitic composition of the host intrusive rocks. Mafic minerals include pyroxene and amphibole, possibly diopside – hedenbergite (8.5%), biotite (2.8%), chlorite (0.3%), and epidote (0.3%). Other silicates include garnet (0.5%) and sphene (trace). Carbonate, likely calcite, is identified as “sparsely scattered liberated grains”, and estimated at 0.5% of the sample.

Magnetite totals 10%, which is somewhat high but characteristic of the Mount Polley ores. Traces of chalcopyrite, pyrite, and limonite were identified at less than 0.1% of the total. Digenite or chalcocite rimmed a few grains, and a single 60-micron grain of gold was also seen.

These observations are entirely consistent with previous petrographic analyses of tailings material. One previous study by Harris (1990), describes a sample composed of 94% feldspar, 2.6% amphibole and pyroxene, 1.2% biotite, 0.2% quartz, 0.2% carbonate, 0.1% sphene, 1.0% magnetite, and 0.15% chalcopyrite with trace amounts of bornite. Appendix B contains a certificate of analysis by Jeff Harris.

Mount Polley Mining Corporation Mount Polley Mine

3.2.4 Solid-Phase Analyses (ABA)

The paste pH of this overall composite was 8.8 (Figure A), reflecting the dominant contribution (77%) from the +200 fractions but showing a slightly higher pH due to the 22% of alkaline -200 fractions. NP shows this same effect of the compositing (Figure B), with measured NP within 14% of the calculated weighted NP from the -200 and +200 composites.

Because sulphide is relatively concentrated in the +200 fractions and MP Tails 98 contains mostly the +200 fractions, its sulphide level is similar to the average +200 value (Figure C). This is also reflected in the level of leachable sulphate (Figure D). The measured values of sulphide and leachable sulphate are within 5% of the calculated weighted values based on the -200 and +200 composites.

The total-metal digestion method for the monthly composites was aqua regia, whereas MP Tails 98 was digested with the stronger triple-acid combination. As a result, levels of several metals like aluminum (Figure E), barium (Figure F), and manganese (Figure K) were significantly higher in MP Tails 98 than in the monthly composites from which it is made. Other metals showed better agreement, like calcium (Figure G), chromium (Figure h), copper (Figure I), iron (Figure J), and zinc (Figure N), with measured values often within 20% of the calculated weighted values from -200 and +200 composites. For metals included in both the ICP total-metal and the whole-rock analyses, the agreement for MP Tails 98 indicates that this sample reflects more accurately the actual metal levels instead of the monthly composites. A few metals like molybdenum (Figure L) and lead (Figure M) show anomalously low levels in MP Tails 98 compared to its monthly composites, probably reflecting higher analytical error close to the detection limits for these low-level metals.

As recommended in the BC government documents (1998), solid phase metal values for MP Tails 98 are compared to general crustal abundances. Appendix B contains the certificate of analysis by Chemex and Table 3.2.4 contains the comparison, which shows that only copper exceeds the average crustal values.

Mount Polley Mining Corporation
Mount Polley Mine

TABLE 3.2.4
Comparison of MP tails 98 Total-Metal Levels to Average Crustal Values
(crustal values taken from B.C. Government documents, 1998)

<u>Element</u>	<u>Symbol</u>	<u>Average Crustal Range (ppm)</u>	<u>MP Tails 98 (ppm)</u>
Aluminum	Al	4200-88000	93,000
Antimony	Sb	0.1-1.5	<0.2
Arsenic	As	1-13	12
Barium	Ba	0.4-2300	1490
Beryllium	Be	1-3	1
Bismuth	Bi	0.007-0.01	<2
Cadmium	Cd	0.035-0.42	0.5
Calcium	Ca	5100-312400	26,800
Cobalt	Co	0.1-150	14
Copper	Cu	4-250	1790
Iron	Fe	3800-94300	49,400
Lead	Pb	1-80	2
Magnesium	Mg	1600-204000	13,300
Manganese	Mn	390-6700	585
Mercury	Hg	0.03-0.4	0.05
Molybdenum	Mo	0.2-27	1
Nickel	Ni	2-2000	7
Phosphorus	P	170-1500	1030
Potassium	K	40-48000	5
Selenium	Se	0.05-0.6	NA
Silicon	Si	24000-368000	26.2
Silver	Ag	0.037-0.11	<0.2
Sodium	Na	400-40400	33,000
Strontium	Sr	1-2000	532
Titanium	Ti	300-13800	3,100
Vanadium	V	20-250	196
Zinc	Zn	16-165	62

Mount Polley Mining Corporation

Mount Polley Mine

3.2.5 Humidity Cell Testing

The sample, MP Tails 98, has been placed in a Sobek-like tailings humidity cell at Chemex Labs in North Vancouver. This approach is consistent with the MEM/MELP Prediction Manual.

At the time of this report, there are only six cycles available for the cell, so it has not yet stabilized geochemically. As a result, valid long-term primary-mineral rates cannot yet be calculated for the tailings. Nevertheless, dissolution of primary soluble and secondary accumulated minerals is occurring, which is providing valuable information on short-term geochemical behaviour of the tailings. For this reason, the short-term temporal trends are discussed below and the minerals likely causing the trends are discussed in Section 5.

To date, pH has remained relatively constant, just less than 9 (Figure Cell-pH & Cond). This indicates somewhat alkaline conditions and is accounted for, in part, by the monthly -200 fractions, which produced pHs approaching 12 in shake flasks (Section 4). The conductivity of the cell rinses have fallen through Week 5, but increased sharply in Week 6 (Figure Cell-pH & Cond), suggesting that the rinsing of readily soluble and/or accumulated secondary minerals has not yet ceased.

Aqueous sulphate concentrations have decreased significantly since the first week (Figure Cell-SO₄ & Leachate). The recent sulphate concentrations are equivalent to sulphate production rates of approximately 5 mg/kg/wk. At these rates, the dissolution of neutralization potential is often driven simply by the addition of water to the cells, rather than by neutralization of the generated acidity.

As expected, the neutralization potential is outlasting the sulphide (Figure Cell-S & NP-Remaining) based on the first six weeks of testing. Therefore, no net acidity is expected, which is consistent with the prediction based on ABA (Section 2.3).

Trends of weekly concentrations show variable but generally constant concentrations of aluminum and barium (Figure Cell-Al & Ba), calcium and chromium (Figure Cell-Ca & Cr), copper (Figure Cell-Cu & Fe), and lead (Figure Cell-Se & Pb & Zn). In contrast, there are trends of increasing concentrations for iron (Figure Cell-Cu & Fe) and manganese (Figure Cell-Mn & Mo). There are also trends of decreasing concentrations for molybdenum (Figure Cell-Mn & Mo), selenium, and zinc (Figure Cell-Se & Pb & Zn).

Mineralogical explanations for the short-term concentrations from this cell are explained in Section 5.

Mount Polley Mining Corporation

Mount Polley Mine

4.0 SHAKE FLASK TESTING

4.1 Introduction

Shake flasks involve the mixing and 24-hour agitation of deionized water or other solution with solids; tailings in this case. The primary objective of these tests is to reveal the amounts of various metals that will dissolve and leach over relatively short periods of time. As explained in each of the subsections below, the technique was adjusted to examine various aspects of metal leaching.

Shake-flask pH from MP Tails 98 was relatively alkaline at 9.3 (Figure AA) and generally reflects the pH from the +200 fractions that comprise 77% of it. However, it is somewhat elevated above these fractions due to the more alkaline –200 fractions. Aqueous parameters generally reflect an average of its fractions (Figures AB to AO). However, aluminum (Figure AE), Copper (Figure AI), Iron (Figure AJ), and Manganese (Figure AK), are all relatively low while Lead (Figure AM) is relatively high.

Parameters from this shake-flask test above CCME freshwater aquatic life guidelines are: aluminum, copper, lead and selenium.

In addition to this one shake flask, several series of shake flasks were also conducted on MP Tails 98 using variations in (1) aqueous pH, (2) liquid-to-solid ratios, and (3) repeated batch leaching (Figure series A, B, and C). The results from each of these three series are discussed below.

In summary, the shake-flask testing has revealed which metals and parameters will be released relatively quickly from simulated cycloned tailings at Mount Polley. Relative to CCME guidelines, the metals which could exceed guidelines under certain conditions are: aluminum, chromium, copper, selenium, and zinc. If pH is maintained indefinitely above 8.5, zinc is not predicted to be above guidelines. Also, depending on the on-site flow of pore water through the cycloned tailings, chromium and selenium may actually not exceed the guidelines. Finally, during times of extended precipitation or submergence beneath a water table (under oxygenated conditions), aluminum, copper, and zinc may actually not exceed the guidelines. Nevertheless, tailing sands process water will drain and be collected in the existing collection ponds. The pump-back system will operate in a closed manner. Environmental Effects Modelling in section 6.0 of this report focuses on the sensitivity of the receiving environment. Appendix B contains the analytical results from the MP Tails 98 Shake Flask Tests.

4.2 Modified pH

This series of shake flasks involved the adjustment of solution pH from “background” levels to as low as 7.0. The objective was to identify metals whose leaching was strongly dependent on pH in the near-neutral pH range. The modified pH testing used the standard 24-hour 3:1 deionized water to solids ratio by weight.

Mount Polley Mining Corporation

Mount Polley Mine

One series of shake-flask tests were conducted on MP Tails 98 at pH 8.7 ("background" pH with no addition of acid), 8.5, 7.0 and 6.0. The pH levels below 8.7 were obtained by adding HCl acid to maintain a relatively steady pH. These results show two basic trends for simulated cycloned tailings that had been dormant (not flushed by water) for a few weeks: (1) aqueous concentrations increasing with increasing pH (e.g., molybdenum (Figure BK) and selenium (Figure BM)), and (2) aqueous concentrations increasing with decreasing pH (e.g. Figures BA to BN including copper but not BK and BM). Relative to CCME guidelines, the metals at elevated concentrations below 8.5 (aluminum, chromium, copper, and selenium) are above the guidelines. In a following sub-section, where is an explanation of how concentrations of chromium and selenium depend on physical factors like flow rates and residence times. Appendix C contains the analytical results from the Modified pH Testing.

4.3 Modified Rinse

This series of shake flasks were conducted at various solid-to-liquid ratios. The objective was to identify metals whose leaching was strongly dependent on the relative amount of water. At some minesites, there are some metals that will dissolve quickly and to approximate the same concentration in a large range of solid-to-liquid ratios.

The second series of shake flasks used variable ratios of water to tailings solids, namely 1:1, 3:1, and 10:1. For the 3:1 ratio, there were actually two tests; one at the natural tailings pH of 8.7 and one at pH 8.5. The other ratios were also made at pH 8.5. The results indicate two basic geochemical controls on aqueous concentrations for simulated cycloned tailings that had been dormant (not flushed with water) for a few weeks: (1) kinetic control where aqueous concentrations are strongly dependent on the ratio of water-to-solids and strongly dependent on time (e.g., chromium (Figure CF), molybdenum (Figure CJ), and selenium (Figure CL)), and (2) near-equilibrium control where aqueous concentrations are not strongly dependent on the ratio of water-to-solids (e.g., Figures CA to CM including copper, but not CF, CJ, and CL).

Because concentrations of chromium and selenium are controlled by kinetics, their concentrations under on-site conditions can vary significantly with time and location. As a result, they could be under CCME guidelines in contrast to the preceding series of shake flasks which showed these two metals were above the guidelines across the pH range from 8.7 to 6.0.

4.4 Modified Flush

This series subjected tailings to repetitive shake-flask testing. The objective was to identify metals that leach to a lesser extent after the first washing. Such metals are dependent on the time between washings, during which readily leachable amounts accumulate. As a result, the on-site concentrations of these metals may depend on such processes like the rate of groundwater flow and the elapsed times between rainfall events.

Mount Polley Mining Corporation Mount Polley Mine

The third and final series of shake flasks involved repetitive, triple batch leaching of the 3:1 sample at pH 8.5 from the previous series. The results show two basic trends for simulated cycloned tailings that will be flushed with water on a regular basis: **(1) kinetic control** where aqueous concentrations decrease through the triple batch leaching and thus are strongly dependent on time e.g., sulphate (Figure DD), aluminum (DE), copper (Figure DI), iron (Figure DJ), molybdenum (Figure DL), and selenium (Figure DN), and **(2) near-equilibrium control** where aqueous concentrations are similar through each repetitive leach and thus are not strongly time dependent between flushings with water (e.g., Figures DA to DO, except the preceding Figures).

Because the preceding series of shake flasks indicated aluminum, copper, and selenium could be above CCME guidelines, this series indicates this exceedance will be dependent on the time between flushings with water. In other words, simulated cycloned tailings will produce lower aqueous concentrations of these metals during long periods of precipitation and, in the absence of redox changes, below the water table.

4.5 Attenuation Testing

Because subsurface seepage from the tailings area will pass through natural till, the till will likely adsorb or exchange some amount of metals like copper from the seepage. This means that, for some period of time, aqueous concentrations may be lower than predicted from the tailings shake flasks alone.

A till sample collected from within the tailings storage basin was submitted for laboratory attenuation testing. Interpretation will be made at a later date.

5.0 MINTEQ MODELLING

MINTEQA2 is a geochemical speciation program, maintained and distributed by the U.S. Environmental Protection Agency (Allison et al., 1990). This program requires the input of water analyses with numerous dissolved cations and anions, including all major ions. The output provides information like the distributions of metals among various dissolved aqueous complexes and the saturation indices for various relevant minerals.

For saturation indices (SI), a positive value ($SI > 0$) indicates the water is supersaturated with respect to the mineral and this mineral should then precipitate from the water. On the other hand, a negative SI indicates the water is undersaturated and the mineral should dissolve if in contact with the water. In reality, there are many reasons a perfect value of 0.0 is rarely attained when water is equilibrium with a mineral, and thus some “error bar” must be included in SI values. Furthermore, several minerals have site-specific solubilities, so an SI of -1.0 relative to a “textbook” value may actually be at equilibrium at a specific site. All this means is that some care is required in interpreting MINTEQ results.

Mount Polley Mining Corporation Mount Polley Mine

For the Mount Polley tailings geochemical study, 13 water analyses were entered into MINTEQ (Table 5-1), using its preprocessor PRODEFA2. These analyses ranged from tailings-pond water, to two cycles from the humidity cell (Section 3.2.5 to numerous shake-flask tests (Section 4) using various solids and liquids. For most waters, tenorite ($\text{Cu}(\text{OH})_2$) was often close to equilibrium and thus this mineral is the main control on aqueous copper concentrations at Mount Polley. Another common copper mineral, malachite, was often significantly undersaturated and thus not limiting aqueous copper concentrations.

For most waters, calcite and/or dolomite were close to saturation, except for two shake flasks artificially driven to pH 9 and 10 by $\text{Ca}(\text{OH})_2$. Therefore, calcite and dolomite are often the primary controls on pH and alkalinity in Mount Polley waters.

Other minerals often close to saturation were barite (BaSO_4), which limits aqueous barium concentrations, and gibbsite ($\text{Al}(\text{OH})_3$) or a related, more soluble form, which limits aqueous aluminum.

The pQ values in Table 5-1 reflect the solubility of ferric iron. PQ values between 37 and 39 often indicate the precipitation of relatively soluble ferric-hydroxides from water, whereas pQ values between 38-41 often reflect the dissolution of more crystalline iron oxides into water. The anomalously low values, often below 37, for Mount Polley waters suggest there are significant amounts of colloidal and/or suspended iron which incorrectly appear as "dissolved" iron in water analyses.

For some waters, other carbonate minerals were often close to equilibrium (see footnotes to Table 5-1). These included magnesite (MgCO_3), strontiarite (SrCO_3), otavite (CdCO_3), and witherite (BaCO_3).

With this knowledge of the minerals that control aqueous concentrations of some metals, predictions of those concentrations can be made under various natural and engineered conditions. In particular, aqueous concentrations of copper can be predicted using the solubility of tenorite incorporating any changes to pH and alkalinity.

Mount Polley Mining Corporation
Mount Polley Mine

TABLE 5-1

Summary of Selected Results from MINTEQ Calculations for Mount Polley Samples

	Sample	pH	Cu (mg/L)	Balance ¹	Barite	Calcite	Dolomite	Tenorite	Malachite	Gibbsite	pQ
1	Tailings Pond Supernatant 12-August-98 ²	8.0	0.222	5.8%	NA	+0.2	-0.1	+0.3	+0.2	+2.9	33.4
2	MP Tails 98; Humidity Cell Cycle 1	8.8	0.0586	50%	+0.5	+0.2	-0.3	+0.0	-1.8	+0.7	35.6
3	MP Tails 98; Humidity Cell Cycle 6	8.7	0.0696	0.5%	-0.5	+0.3	-0.1	+0.1	-1.5	+0.7	34.7
4	SFT: MP Tails 98 w/ DI water	9.3	0.010	4.5%	-0.6	+0.4	+0.1	-0.7	-4.0	-0.2	35.7
5	SFT: MP Tails 98 with HCl to pH 8.5; 1 st of 3 rinses	8.5	0.0653	2.7%	-0.5	-0.2	-1.1	+0.1	-1.5	+0.8	34.6
6	SFT: MP Tails 98 with HCl to pH 8.5; 3 rd of 3 rinses	8.4	0.0196	40%	-1.1	+0.3	-0.3	-0.5	-2.3	+0.4	36.1
7	SFT: Tailings slurry with $\text{Ca}(\text{OH})_2$ to pH 9.0 ³	9.0	0.0159	13 %	+0.4	+1.0	+1.4	-0.2	-2.1	-0.3	36.5
8	SFT: Tailings slurry with $\text{Ca}(\text{OH})_2$ to pH 10.0 ³	10.0	0.0047	15%	+0.3	+1.3	+2.2	-1.1	-5.3	-2.1	37.5
9	SFT: Dried tailings slurry w/ DI water; 1 st rinse	9.0	0.0357	8.0%	-0.0	+0.1	-0.3	+0.5	-1.1	+0.6	34.6
10	SFT: Tailings supernatant with till ⁴	8.5	0.0178	16%	+0.0	+0.7	+0.9	-0.5	-2.3	+0.6	34.3
11	SFT: Humidity-cell effluent composite with till	8.3	0.0114	0.8%	-0.9	+0.3	+0.1	-0.7	-2.5	+0.6	34.5
12	SFT: April Tailings Composite; +200 fraction	8.8	0.194	7.8%	-0.7	-0.1	-0.7	+0.5	-0.8	+0.9	34.2
13	SFT: June Tailings Composite; -200 fraction ⁵	11.8	0.074	82%	-0.4	+2.5	+0.1	+0.1	-5.5	-2.2	39.3
14	¹ This indicates the total charge-balance error for the analysis; = [(anions-cations)/(anions+cations)] *100%; values above 10% are typically considered unbalanced and thus one or more major species was not (1) analyzed accurately or (2) analyzed at all.										
15	² For this sample, only total concentrations were available, except for copper.										
16	³ These samples, forced to pH 9 and 10 by $\text{Ca}(\text{OH})_2$, were close to equilibrium with several carbonate minerals, namely huntite ($\text{Mg}_3\text{Ca}(\text{CO}_3)_4$) [at pH 10 only], magnesite (MgCO_3), strontianite (SrCO_3), and otavite (CdCO_3).										
17	⁴ This sample was also close to equilibrium with magnesite (MgCO_3) and otavite (CdCO_3).										
18	⁵ This sample was also close to equilibrium with strontiarite (SrCO_3) and witherite (BaCO_3).										

Mount Polley Mining Corporation

Mount Polley Mine

6.0 ENVIRONMENTAL EFFECTS ON RECEIVING WATER QUALITY

6.1 During Operations

6.1.1 Hydraulic Modelling

In order to evaluate water quality impacts on Hazeltine Creek and NE Edney Tributary from the utilization of tailings cyclone sands, hydraulic modeling of the following creek flow conditions were generated: mean, 1 in 20 year Dry, and 1 in 20 year Wet. Using mean and standard deviation precipitation data as well as applying monthly runoff coefficients, flow discharges were calculated for Hazeltine Creek (W7) and NE Edney Tributary (W8) for each of the above mentioned flow conditions.

Polley Lake, which drains into Hazeltine Creek (W7), has a watershed of approximately 30 km². Polley Lake constitutes about 4 km² while the remaining 26 km² is forested land. The forested area has an average slope of 30%. The NE Edney Tributary (W8) drains a watershed area of approximately 1.5 km², all of which is forested. The terrain in this area is mostly flat and marshy.

Monthly runoff coefficients were calculated for each of the watersheds. Evaporation data was calculated for the lake as well as forested areas. Lake evaporation is assumed to be 100% of measured while evaporation of forested areas is assumed to be 30% of measured evaporation. The following formula gives monthly runoff coefficients:

$$\text{% Runoff Coefficient (RC)} = \frac{\text{Creek Discharge}}{(\text{Precipitation} - \text{Evaporation})}$$

1 in 20 year Dry and Wet conditions were used to determine extremes in each of the watersheds. Using mean monthly precipitation data along with their respective standard deviations, dry and wet monthly precipitation values were produced. The following formula gives the 1 in 20-year events:

$$x = x \pm K * s$$

where: (x) is the mean annual precipitation
K is a factor equal to **1.645** for a 1 in 20-year event
s is the standard deviation from the mean

Monthly runoff coefficients, precipitation data, and discharge values for Hazeltine Creek and NE Edney Tributary are presented in Tables 6.1.1a and 6.1.1b.

Mount Polley Mining Corporation

Mount Polley Mine

6.1.2 Water Quality Modelling

The conceptual *Cycloned Sands Construction* (CSC) design considers that the largest proportion of the tailing sands material will be hydraulically placed directly into the embankment fill slopes. Knight Piesold will submit a conceptual design report as a separate document. The construction of the downstream slope will be accomplished by discharging the single stage cyclone underflow directly. Process water from the sands will drain and be collected in the existing collection ponds for recovery. The pump-back system will operate in a closed manner.

A seepage flow of 0.0015 l/s from the cyclone placement operation was estimated by Knight Piesold s using a typical permeability.

The most efficient means of estimating what the Environmental Effects of the CSC may have on downstream water quality is to examine those periods and conditions when receiving water flow are at their lowest. These impacts are most likely to occur when the minor amount of seepage reports Edney Creek Tributary 1 (W7) and Hazeltine Creek (W8) during 1 in 20 year dry condition and also in September when the receiving water discharge rates are at their lowest.

In summary, the assumptions used in modeling impacts to receiving water quality are as follows:

- The potential un-recovered seepage reporting to the receiving environment; 0.0015 l/s
- Leachate water quality results of the MP Tails-98 kinetic test. (Cycle 3)
- Creek flows are based on a 1 in 20 year dry condition.
- September is used as the most sensitive month for measuring environment effects..
- No attenuation considered from local till.

6.1.2.1 Mass Balance Model Inputs

The Environmental Effects model was based on an arithmetic model which superimposed kinetic cell leachate water quality to the baseline receiving water concentrations, this enabled a resulting receiving downstream water quality concentration to be predicted:

$$Rc = \frac{[(Bc \times Bq) + (Ec \times Eq)]}{Rq}$$

Where: Bc = Baseline Concentration (mg/l)
 Bq = Background Flow (m³/s)
 Ec = Seepage Concentration (mg/l)

Eq = Seepage Flow (m³/s)
 Rc = Resulting Concentration (mg/l)
 Rq = Resulting Flow ($Bq + Eq$) (m³/s)

Mount Polley Mining Corporation Mount Polley Mine

Baseline water quality for both Hazeltine Creek (W7) and Edney Tributary (W8) were collected during the 1989 –1990 sampling campaign and more recently in 1995 and 1996 prior to mine start-up. Tables 6.1.2a and 6.1.2b present the results of the baseline water samples while Figure 6.1.2 shows their sampling location.

A mean Copper value of 0.0041parts per million (ppm) was measured for both sample locations W7 and W8 during baseline study. This value is above the *Approved and Working Criteria for Water Quality (AWCWQ)* and/or the *Canadian Council of Ministers of the Environment Criterias (CCME)*. Baseline iron also exceeded *AWCWQ* and *CCME* at W7.

Tailings cyclone sands drainage water quality were taken from cycle 3 of the MP-Tails 98 kinetic test. The kinetic cell has been running since the first week of September 1998 and producing relatively stable water quality chemistry.

6.1.2.2 Results of the Water Quality Model

The mass balance model illustrates that there would be no Environmental Effects on the receiving water quality under a 1 in 20 dry year and also during the month of September when receiving water flows are at there lowest. See Table 6.1.2c.

The model is based on a “worst case” flow scenario and therefore should be recognized that there will be no water quality impact on the receiving environment under normal and even extreme operating conditions.

6.2 Closure Considerations

Implementing CSC will result in no fundamental change to the original Reclamation Plan. The downstream slope will be reclaimed with salvaged soil and vegetated to meet stability and esthetic requirements. A cover design will be formulated through the initiation and success a of field test trial research program (1999).

Knight Piésold Ltd.
CONSULTING ENGINEERS

1400 - 750 West Pender St Tel: +1 (604) 685-0543
Vancouver, BC V6C 2T8 Fax: +1 (604) 685-0147
CANADA Fax: +1 (604) 687-2203

DATE: Nov. 23/98 FILE NO.: 10162/11.01
TIME:
OPERATOR:
REF NO.: 8/3086
SENDER: Ken Embree PAGES: 1 of 2
APPROVED:

TO: Mount Polley Mining Corporation **FAX :** (250) 790-2268
ATTN: Ron Martel
SUBJECT: Seepage Estimate

Ron,

Further to my call of Nov. 20/98, the following is a summary of the seepage estimate to groundwater for cyclone sand on the downstream side of the embankment(s).

Seepage was estimated using Darcy's Law;

q = kia, where q = flow rate
k = permeability
i = hydraulic gradient (h/l)
a = area

The following parameters were used;

k = 1×10^{-8} cm/sec (based on typical in-situ field and lab permeability test results
(max 1×10^{-6} and min 1×10^{-10} cm/sec were identified)

i = 1 = unit hydraulic gradient
(this is conservative for the cyclone sand which will drain and has a drainage layer at the base)

a = 15,000 m² (60m wide for full footprint by 250 m long)

Calculations are on the next page.

○ Seepage Rate:

$$q = kia$$

For $k = 1 \times 10^{-8} \text{ cm/sec}$ (**Typical Permeability**)

$$q = 1 \times 10^{-10} \text{ m/s} \times 1 \times 15,000 \text{ m}^2 = 1.5 \times 10^{-6} \text{ m}^3/\text{sec} = 0.0015 \text{ l/sec}$$

For $k = 1 \times 10^{-10} \text{ cm/sec}$ (**Minimum Permeability**)

$$q = 1 \times 10^{-12} \text{ m/s} \times 1 \times 15,000 \text{ m}^2 = 1.5 \times 10^{-8} \text{ m}^3/\text{sec} = 0.000015 \text{ l/sec}$$

For $k = 1 \times 10^{-6} \text{ cm/sec}$ (**Maximum Permeability**)

$$q = 1 \times 10^{-8} \text{ m/s} \times 1 \times 15,000 \text{ m}^2 = 1.5 \times 10^{-4} \text{ m}^3/\text{sec} = 0.15 \text{ l/sec}$$

So, the seepage will be low, with a range from 0.000015 to 0.15 l/sec. This applies only to an area that is in operation, where cycloning is occurring. The flow rate is directly proportional to the area and I have assumed an area which may vary.

○ The seepage estimate may vary significantly. For instance, seepage may be even lower because much of the Main Embankment foundation has artesian pore pressures that will prevent seepage from entering the groundwater. Artesian pore pressures exist in piezometers at Plane A (4 of 5 foundation piezometers A2-PE2-01, 06, 07, 08), Plane B (2 of 3 foundation piezometers AB-PE2-01, 02, 06) and Plane C (3 of 5 foundation piezometers C2-PE2-01, 02, 06). On the other hand, seepage may be higher if near surface higher permeability zones are covered. (We have seen from construction of the Stage 2B haul road that the near surface till is quite extensive, however.)

Also, as we discussed, this seepage rate applies only to an active area and will drop to zero after deposition has stopped and the sand has drained.

I hope this helps.

Regards,

Ken Embree

Mount Polley Mining Corporation
Mount Polley Mine

Table 1.1
Tailings' Characteristics

Month	Mess Size	% Weight	% Cu	% SCu	% NSCu	% Total Cu	NP / MPA	pH	*Leachate Cu (ug/l)
February	-200	49	0.232				49.00	11	121.5
	+200	51	0.1375				14.00	8.7	99.9
March	Average		0.18475	0.07	0.13	0.2	31.5	9.85	110.7
	-200	65.3	0.28				181.00	-	-
April	+200	34.7	0.1875				11.00	8.5	172.5
	Average		0.233375	0.06	0.2	0.26	96	8.5	172.5
May	-200	56.8	0.249				112.00	12.4	181
	+200	43.2	0.178				13.00	8.8	193.5
June	Average		0.2135	0.07	0.16	0.23	62.5	10.6	187.25
	-200	67.8	0.138				53.00	-	-
June	+200	32.2	0.1113				8.00	9.1	139.5
	Average		0.1255	0.05	0.08	0.13	30.5	9.1	139.5
June	-200	56.2	0.201				83.00	11.8	74
	+200	43.8	0.168				7.50	9	138.5
Average		0.1845	0.07	0.12	0.19	0.19	45.25	10.4	106.25

*Note: 24 - hour, 3:1 Shake Flask Test

Mount Polley Mining Corporation
Mount Polley Mine

Table 6.1.1a
Polley Lake Watershed

Month	Monthly Runoff Coefficient (%)	Monthly Precipitation				Polley Lake WS (RC = by month) Mean (L/s)	20 Year Dry (L/s)	20 Year Wet (L/s)
		KP Data (mm)	20 Year Dry (mm)	20 Year Wet (mm)	Standard Deviation (mm)			
January	3.09	75.5	31.1	119.9	27.0	26.1	10.8	41.5
February	9.84	58.1	12.5	103.7	27.7	70.9	15.3	126.5
March	28.87	44.5	22.3	66.7	13.5	143.9	72.1	215.7
April	42.67	43.1	8.7	77.5	20.9	212.9	43.1	382.7
May	158.49	50.6	25.3	75.9	15.4	898.2	448.5	1347.9
June	37.83	81.5	32.6	130.4	29.7	356.8	142.9	570.7
July	5.29	65.7	20.6	110.8	27.4	38.9	12.2	65.6
August	12.17	83.1	24.4	141.8	35.7	113.3	33.2	193.3
September	4.51	60.4	15.8	105.0	27.1	31.5	8.3	54.8
October	3.56	60.4	5.0	130.0	42.3	24.1	2.0	51.9
November	5.96	57.3	26.4	88.2	18.8	39.5	18.2	60.8
December	2.51	74.8	14.1	135.5	36.9	21.0	4.0	38.0
Average	26.23	62.92	19.90	107.11	26.87	164.76	67.54	262.46

Month	Polley Lake WS (RC = by month)		
	Mean (L/s)	20 Year Dry (L/s)	20 Year Wet (L/s)
January	26.1	10.8	41.5
February	70.9	15.3	126.5
March	143.9	72.1	215.7
April	212.9	43.1	382.7
May	898.2	448.5	1347.9
June	356.8	142.9	570.7
July	38.9	12.2	65.6
August	113.3	33.2	193.3
September	31.5	8.3	54.8
October	24.1	2.0	51.9
November	39.5	18.2	60.8
December	21.0	4.0	38.0
Average	164.76	67.54	262.46

Mount Polley Mining Corporation
Mount Polley Mine

Table 6.1.1b
NE Edney Tributary Watershed

Month	Monthly Runoff Coefficient (%)	Monthly Precipitation			Standard Deviation (mm)	NE Edney Tributary WS (RC = by month) Mean (L/s)	20 Year Dry (L/s)	20 Year Wet (L/s)
		Mean (mm)	KP Data (mm)	20 Year Dry (mm)	20 Year Wet (mm)			
January	0.00	75.5	31.1	119.9	27.0	0.00	0.0	0.0
February	1.11	58.1	12.5	103.7	27.7	0.4	0.1	0.7
March	148.54	44.5	22.3	66.7	13.5	37.0	18.5	55.5
April	132.12	43.1	8.7	77.5	20.9	33.0	6.7	59.2
May	39.87	50.6	25.3	75.9	15.4	11.3	5.6	17.0
June	2.49	81.5	32.6	130.4	29.7	1.2	0.5	1.9
July	5.29	65.7	20.6	110.8	27.4	1.9	0.6	3.3
August	12.17	83.1	24.4	141.8	35.7	5.7	1.7	9.7
September	4.51	60.4	15.8	105.0	27.1	1.6	0.4	2.7
October	3.56	60.4	5.0	130.0	42.3	1.2	0.1	2.6
November	79.22	57.3	26.4	88.2	18.8	26.3	12.1	40.4
December	4.77	74.8	14.1	135.5	36.9	2.0	0.4	3.6
Average	36.14	62.9	19.9	107.1	26.9	10.1	3.9	16.4

	NE Edney Tributary WS (RC = by month) Mean (L/s)	20 Year Dry (L/s)	20 Year Wet (L/s)
	0.00	0.0	0.0

Mount Polley Mining Corporation
Mount Polley Mine

Table 6.1.2a

Parameter	NE EdneyTributary (W8) Baseline Water Quality Data						96	Average
	89 - '90		95		96			
pH	8.24	7.74	7.85	6.85	7.35	7.15	6.77	7.87
Conductivity	348	180	134	60	103	77.5	52	232
TDS	320	150	110	50	70	59	58	200
Hardness	4.7	3	11.5	8	5.3	4.6	30.5	147
TSS	204	101	70.8	23.4	38.3	39.4	23.8	119
Alkalinity	3.6	1.2	1.1	2.5	4.6	0.5	3.2	82.9
Sulphate					0.5	1	3.4	3.9
Ammonia, Nitrogen	0.0025	0.1	0.0025	0.006	0.0025	0.015	0.0025	82.8
Nitrate	0.0025	0.0025	0.019	0.03	0.056	0.088	0.144	2.8
Nitrite	0.001	0.0005	0.0005	0.0003	0.0009	0.007	0.004	
T-Phosphorus	0.023	0.038	0.013	0.038	0.023	0.022	0.052	
AI	0.064	0.22	0.29	0.73	0.18	0.33	0.45	
Antimony								
Arsenic	0.0012	0.0005	0.0004	0.0003	0.0003	0.0005	0.0005	
Beryllium								
Cad								
Chrom								
Cobalt								
Cu	0.0005	0.004	0.006	0.004	0.003	0.004	0.005	
Fe	0.16	0.39	0.44	0.82	0.52	0.38	0.531	
Pb	0.0005	0.0005	0.0005	0.001	0.0005	0.002	0.0005	
Manganese								
Mercury	0.00007	0.000025	0.00014	0.000025	0.00009	0.00002	0.00005	
Moly								
Ni								
Selenium								
Silver								
Titanium								
Vanadium								
Zinc	0.0025	0.0025	0.0025	0.006	0.0025	0.0025	0.0025	0.0034

Mount Polley Mining Corporation
Mount Polley Mine

Table 6.1.2b

Parameter	Hazelton Creek (W7) Baseline Water Quality Data										96	Average
	89 - '90		89 - '90		95		95		96			
pH	7.45 95.3	7.24 120	7.25 171	7.53 184	7.84 170	7.83 110	7.55 105	7.22 90	7.47 84.1	7.57 88.6	6.79 96.3	7.78 102
Conductivity	53.5	78.2	85	170	140	134	105	84.1	102	99.5	133	122
TDS								67	68	66	89	89
Hardness	4.7	3.3	3.3	4.7	3.3	0.5	3.3	44.2	39.4	49.3	46.5	48.9
TSS	4.7 48.3	3.3 63	3.3 102	4.7 104	3.3 0.5	0.5	4	0.5	4	4.6	3	3.3
Alkalinity	0.5	2.2	0.5	0.5	1	73	52.9	35.9	44.4	46.5	47.9	66.9
Sulphate						1	5.3	6.1	4.8	5.1	4.6	3.2
Ammonia, Nitrogen	0.018	0.007	0.011	0.0025	0.019	0.005	0.015	0.0025	0.0025	0.0025	0.0025	0.007
Nitrate	0.02	0.032	0.054	0.0025	0.0025	0.2	0.196	0.043	0.021	0.0025	0.0025	0.048
Nitrite	0.0005	0.008	0.006	0.007	0.001	0.011	0.006	0.005	0.003	0.002	0.003	0.004
T-Phosphorus	0.018	0.011	0.036	0.039	0.023	0.025	0.036	0.019	0.017	0.013	0.023	0.023
AI												
Antimony												
Arsenic	0.0003	0.00005	0.0007	0.0009	0.0003	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005
Beryllium												
Cad												
Chrom												
Cobalt												
Cu	0.003	0.003	0.002	0.001	0.002	0.019	0.003	0.005	0.004	0.005	0.005	0.008
Fe	0.11	0.04	0.4	0.33	0.37	0.23	0.453	0.223	0.124	0.098	0.124	0.155
Pb	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
Manganese												
Mercury												
Moly												
Ni												
Selenium												
Silver												
Titanium												
Vanadium												
Zinc	0.0025	0.0025	0.0025	0.0025	0.0025	0.006	0.005	0.0025	0.0025	0.0025	0.0025	0.0030

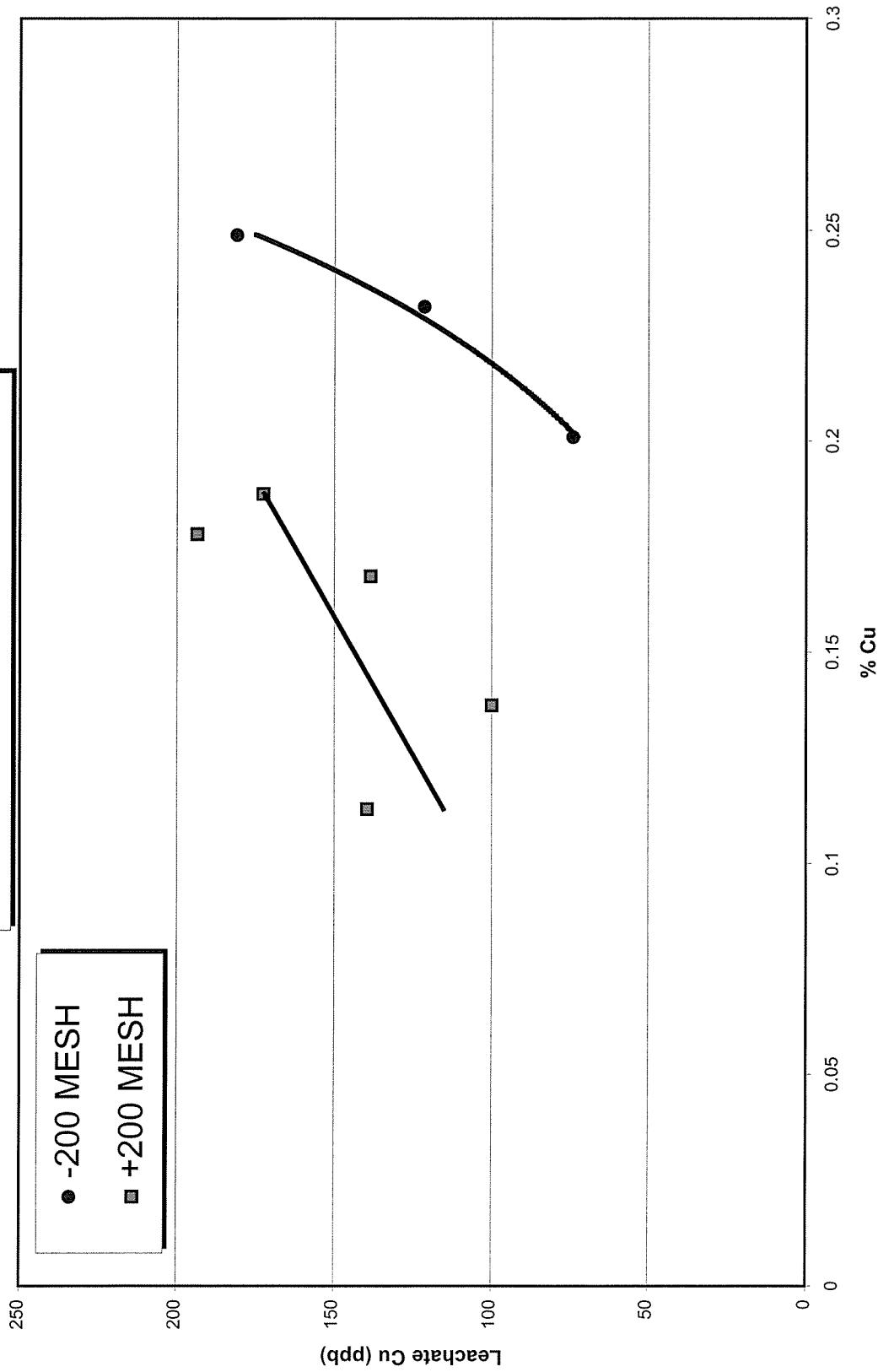
Mount Polley Mining Corporation
Mount Polley Mine

Table 6.1.2c
Evaluation of Water Quality Impacts Downstream of the TSF from the Utilization of Tailings Sands as Construction Fill

		W8 Tributary 1, Background												W7 Hazeline, Background												AWCQW	CCME								
Parameter	Bq (m³/s)	TSF Seepage		Resulting W8 Tributary 1						Bq (m³/s)	TSF Seepage		Resulting W7 Tributary 1						Bq (m³/s)	TSF Seepage		Resulting W7 Tributary 1						AWCQW	CCME						
		Bc (mg/l)	Eq (m³/s)	Rq (m³/s)	Rc (mg/l)	20 year dry	Average	20 year wet	20 year dry		Eq (m³/s)	Rq (m³/s)	Rc (mg/l)	20 year dry	Average	20 year wet	20 year dry	Eq (m³/s)		Rq (m³/s)	Rc (mg/l)	20 year dry	Average	20 year wet											
pH	0.0004	0.0016	0.0027	7.63	0.0000015	8.6	0.0004015	0.0016015	0.0027015	7.63	7.63	7.63	0.0315	0.0083	0.0548	7.43	0.0000015	8.6	0.0315015	0.0083015	0.0548015	7.43	7.43	7.43	122.00	122.00	122.00	6.5-9.0	6.5-9.0						
Conductivity	0.0004	0.0016	0.0027	150.6	0.0000015	136	0.0004015	0.0016015	0.0027015	150.5	150.59	150.59	0.0315	0.0083	0.0548	122.0	0.0000015	136	0.0315015	0.0083015	0.0548015							+10% or 10%	+10% or 10%						
Total Dissolved Solids	0.0004	0.0016	0.0027	112	0.0000015	-	0.0004015	0.0016015	0.0027015				0.0315	0.0083	0.0548	89.0	0.0000015		0.0315015	0.0083015	0.0548015														
Hardness	0.0004	0.0016	0.0027	82.9	0.0000015	-	0.0004015	0.0016015	0.0027015				0.0315	0.0083	0.0548	48.9	0.0000015		0.0315015	0.0083015	0.0548015														
Total Suspended Solids	0.0004	0.0016	0.0027	3.5	0.0000015	-	0.0004015	0.0016015	0.0027015				0.0315	0.0083	0.0548	3.3	0.0000015		0.0315015	0.0083015	0.0548015														
Alkalinity, CaCO ₃	0.0004	0.0016	0.0027	80.3	0.0000015	52	0.0004015	0.0016015	0.0027015	80.2	80.3	80.3	0.0315	0.0083	0.0548	63.5	0.0000015	52	0.0315015	0.0083015	0.0548015	63.50	63.50	63.50	3.12	3.12	3.12	100							
Sulphate	0.0004	0.0016	0.0027	3.9	0.0000015	14	0.0004015	0.0016015	0.0027015	3.9	3.9	3.9	0.0315	0.0083	0.0548	3.12	0.0000015	14	0.0315015	0.0083015	0.0548015														
Ammonia, Nitrogen	0.0004	0.0016	0.0027	0.009	0.0000015	-	0.0004015	0.0016015	0.0027015				0.0315	0.0083	0.0548	0.007	0.0000015		0.0315015	0.0083015	0.0548015									fn(pH+temp)	1.37-2.2				
Nitrate, (NO ₃)	0.0004	0.0016	0.0027	0.043	0.0000015	-	0.0004015	0.0016015	0.0027015				0.0315	0.0083	0.0548	0.048	0.0000015		0.0315015	0.0083015	0.0548015									200	0.06-0.6				
Nitrite, (NO ₂)	0.0004	0.0016	0.0027	0.008	0.0000015	-	0.0004015	0.0016015	0.0027015				0.0315	0.0083	0.0548	0.004	0.0000015		0.0315015	0.0083015	0.0548015									0.060					
Total Phosphorus	0.0004	0.0016	0.0027	0.04	0.0000015	-	0.0004015	0.0016015	0.0027015				0.0315	0.0083	0.0548	0.023	0.0000015		0.0315015	0.0083015	0.0548015														
Aluminum	0.0004	0.0016	0.0027	0.337	0.0000015	0.277	0.0004015	0.0016015	0.0027015	0.337	0.337	0.337	0.0315	0.0083	0.0548	0.187	0.0000015	0.277	0.0315015	0.0083015	0.0548015	0.187	0.187	0.187								0.05			
Antimony	0.0004	0.0016	0.0027	0.0005	0.0000015	0.0005	0.0004015	0.0016015	0.0027015	0.0005	0.0005	0.0005	0.0315	0.0083	0.0548	0.0005	0.0000015	0.0005	0.0315015	0.0083015	0.0548015	0.0001	0.00050	0.0005								0.05	0.05		
Arsenic	0.0004	0.0016	0.0027	0.004	0.0000015	0.007	0.0004015	0.0016015	0.0027015	0.004	0.004	0.004	0.0315	0.0083	0.0548	0.003	0.0000015	0.007	0.0315015	0.0083015	0.0548015	0.0003	0.0003	0.0003								0.003	0.003		
Beryllium	0.0004	0.0016	0.0027	0.025	0.0000015	0.0025	0.0004015	0.0016015	0.0027015	0.025	0.0025	0.0025	0.0315	0.0083	0.0548	0.003	0.0000015	0.0025	0.0315015	0.0083015	0.0548015	0.0025	0.0025	0.0025										0.0053	
Cadmium	0.0004	0.0016	0.0027	0.001	0.0000015	0.0005	0.0004015	0.0016015	0.0027015	0.001	0.001	0.001	0.0315	0.0083	0.0548	0.0001	0.0000015	0.0005	0.0315015	0.0083015	0.0548015	0.0001	0.0001	0.0001										0.002-0.0018	
Chromium	0.0004	0.0016	0.0027	0.0026	0.0000015	0.0035	0.0004015	0.0016015	0.0027015	0.0026	0.0026	0.0026	0.0315	0.0083	0.0548	0.0007	0.0000015	0.0035	0.0315015	0.0083015	0.0548015	0.0007	0.0007	0.0007									0.002-0.02	0.002-0.02	
Cobalt	0.0004	0.0016	0.0027	0.0005	0.0000015	0.0008	0.0004015	0.0016015	0.0027015	0.0005	0.0005	0.0005	0.0315	0.0083	0.0548	0.0008	0.0000015	0.0008	0.0315015	0.0083015	0.0548015	0.0008	0.0008	0.0008									0.05		
Copper	0.0004	0.0016	0.0027	0.004	0.0000015	0.051	0.0004015	0.0016015	0.0027015	0.043	0.041	0.041	0.0315	0.0083	0.0548	0.004	0.0000015	0.051	0.0315015	0.0083015	0.0548015	0.040	0.040	0.040										0.0040	0.0040
Iron	0.0004	0.0016	0.0027	0.503	0.000001																														

Mount Polley Mining Corporation
Mount Polley Mine

Figure 1.1
Cu Solubility vs %Cu in Tailings



Note: Graphing data is from Table 1.1 - Leachate Cu (ug/l) vs %Cu.

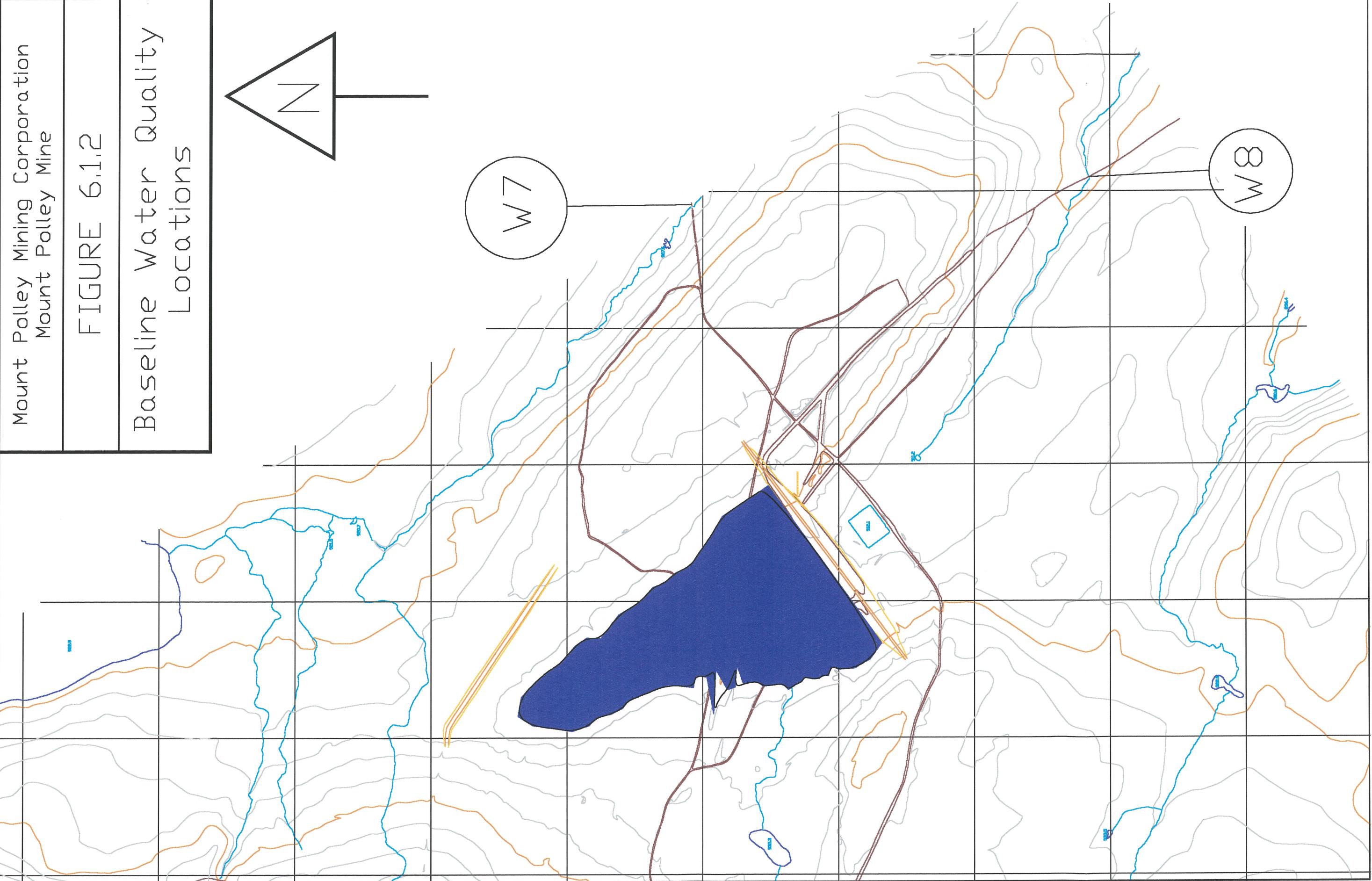


Figure A

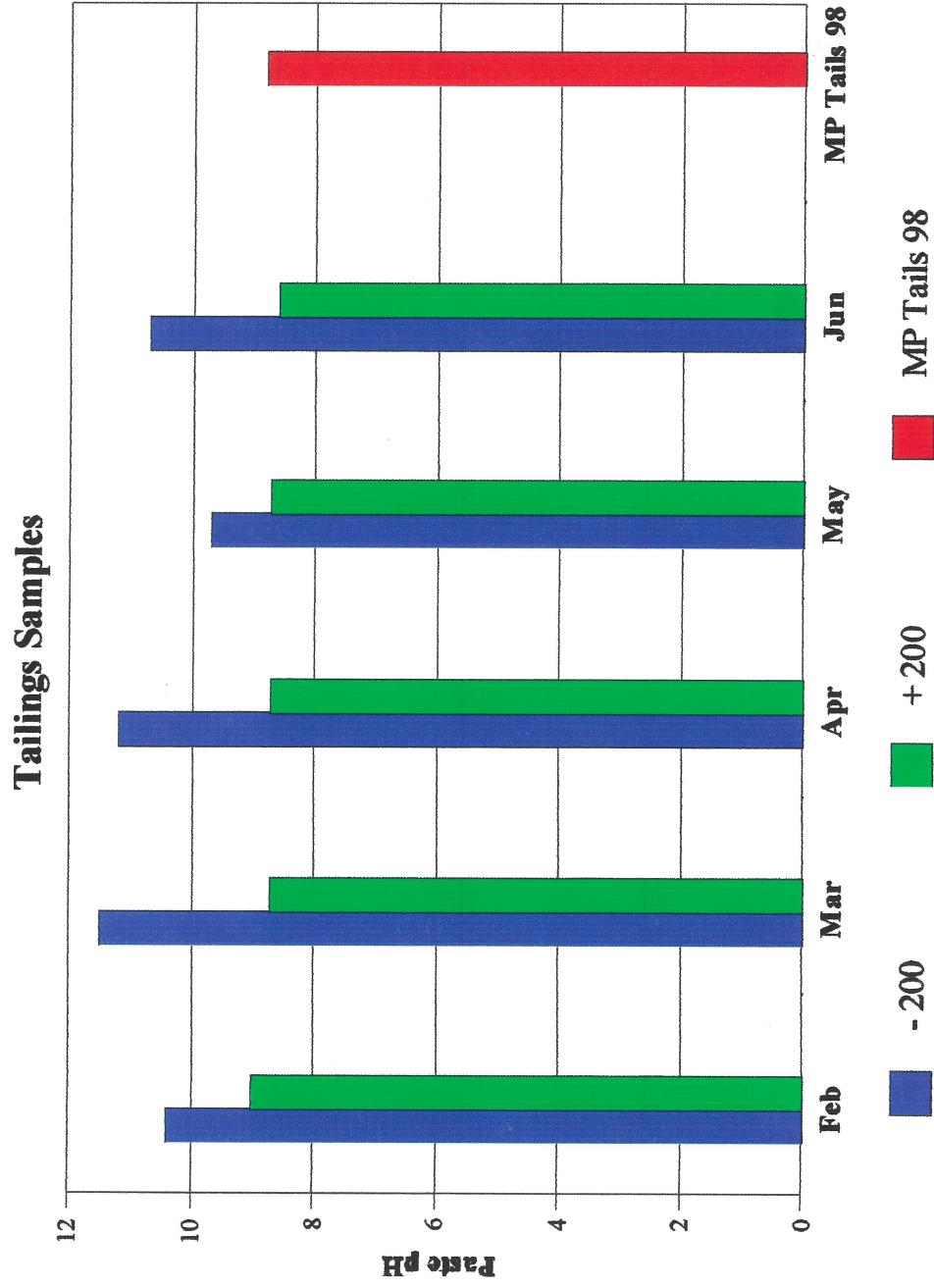


Figure C

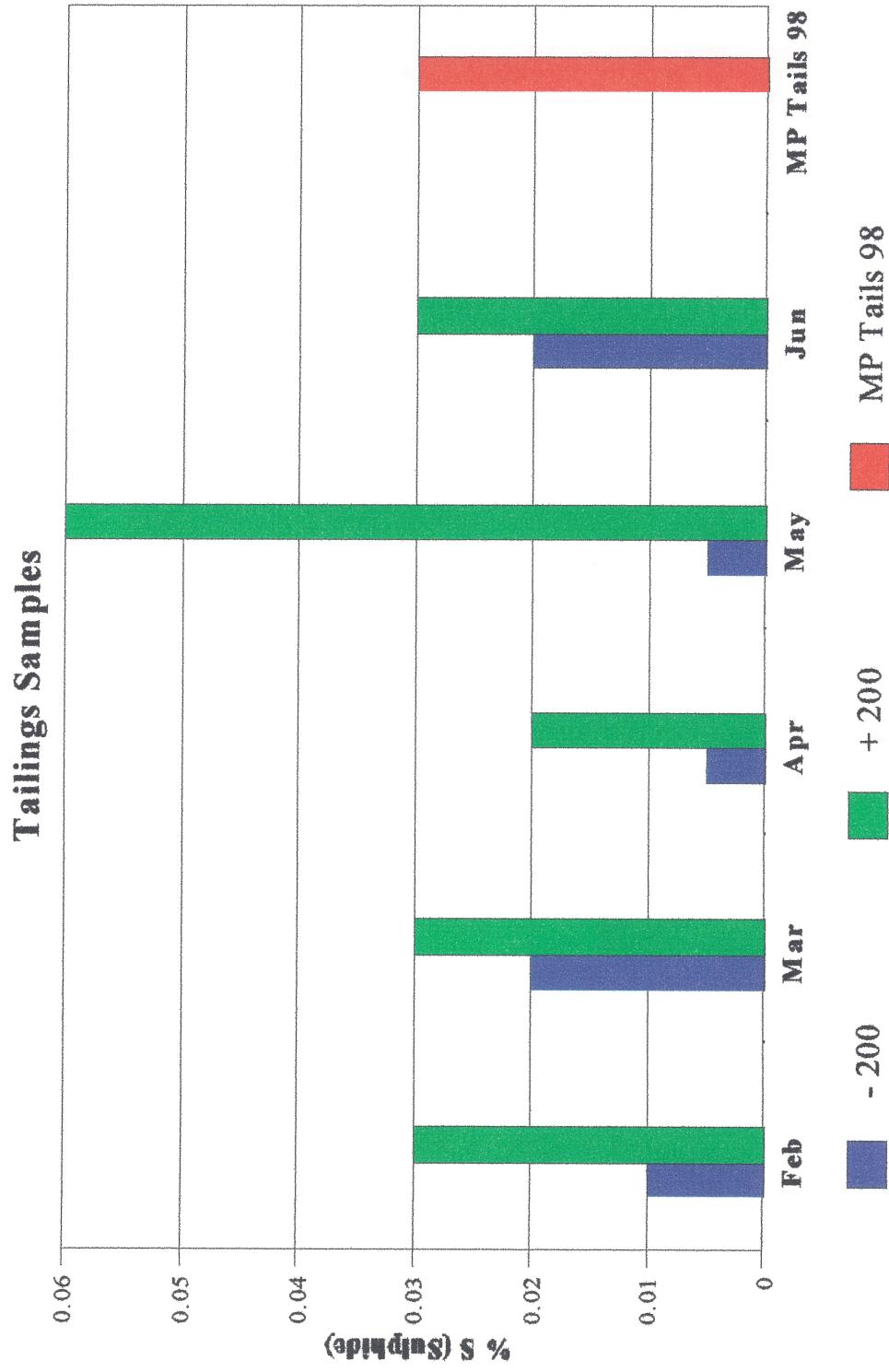
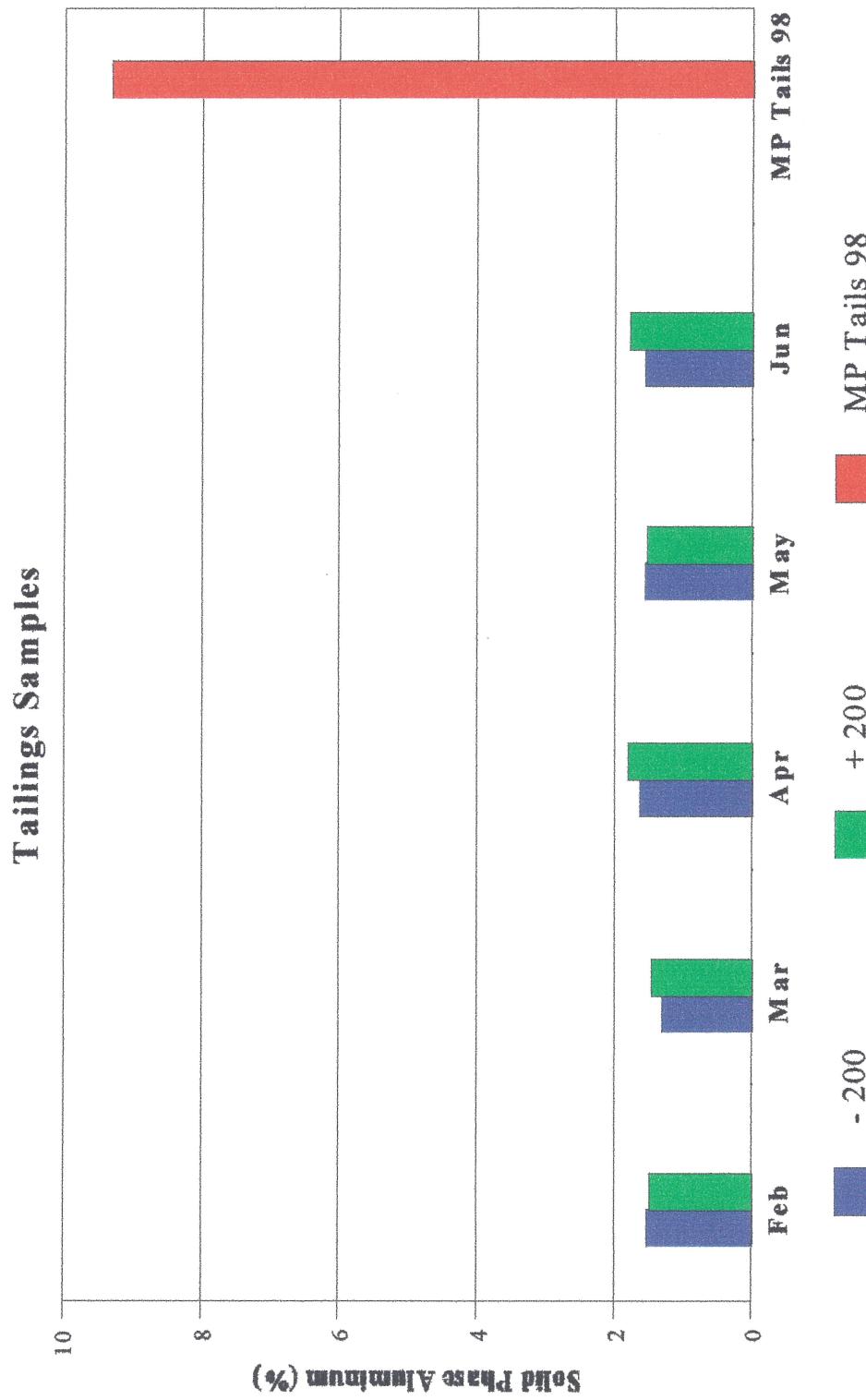
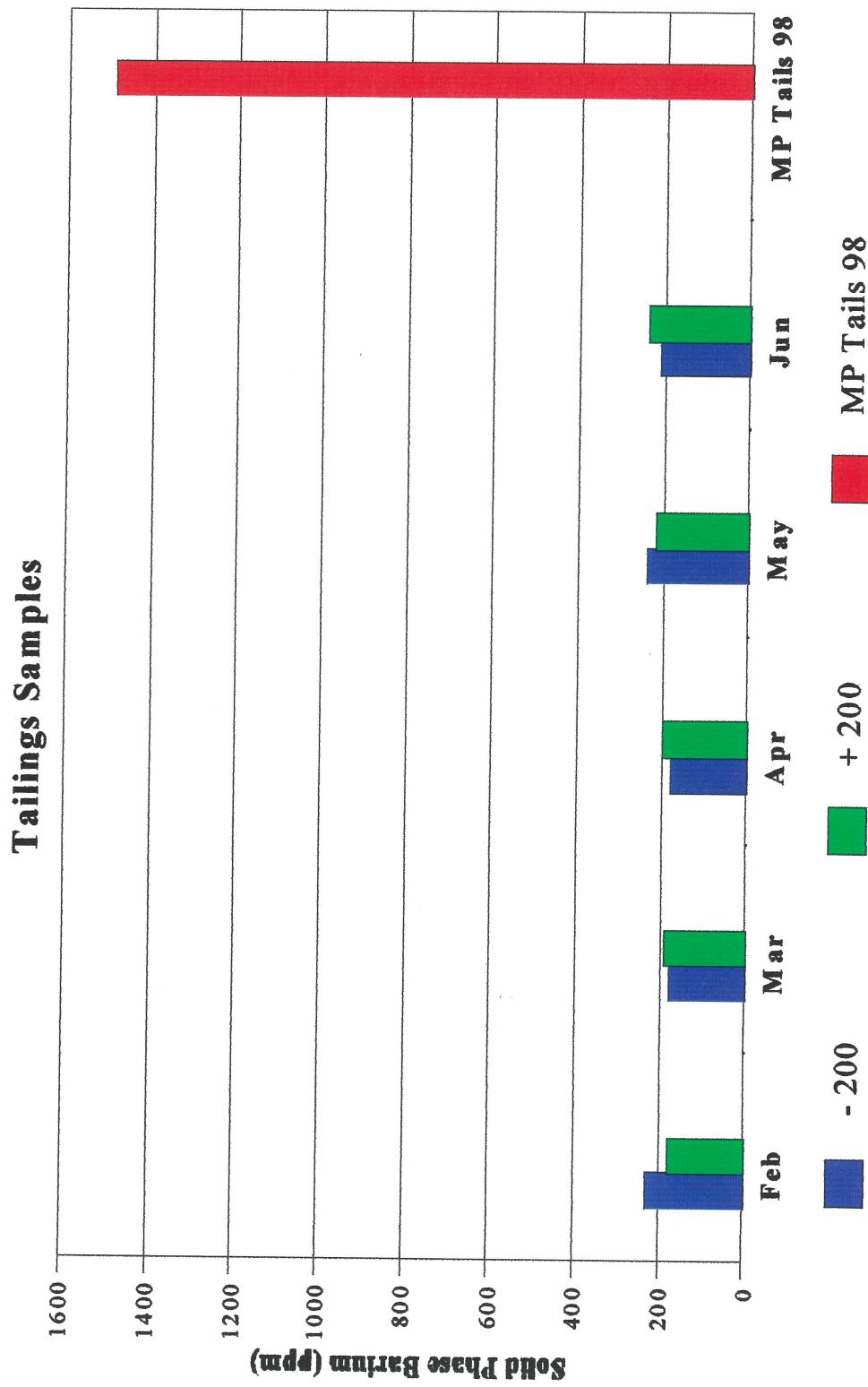


Figure E



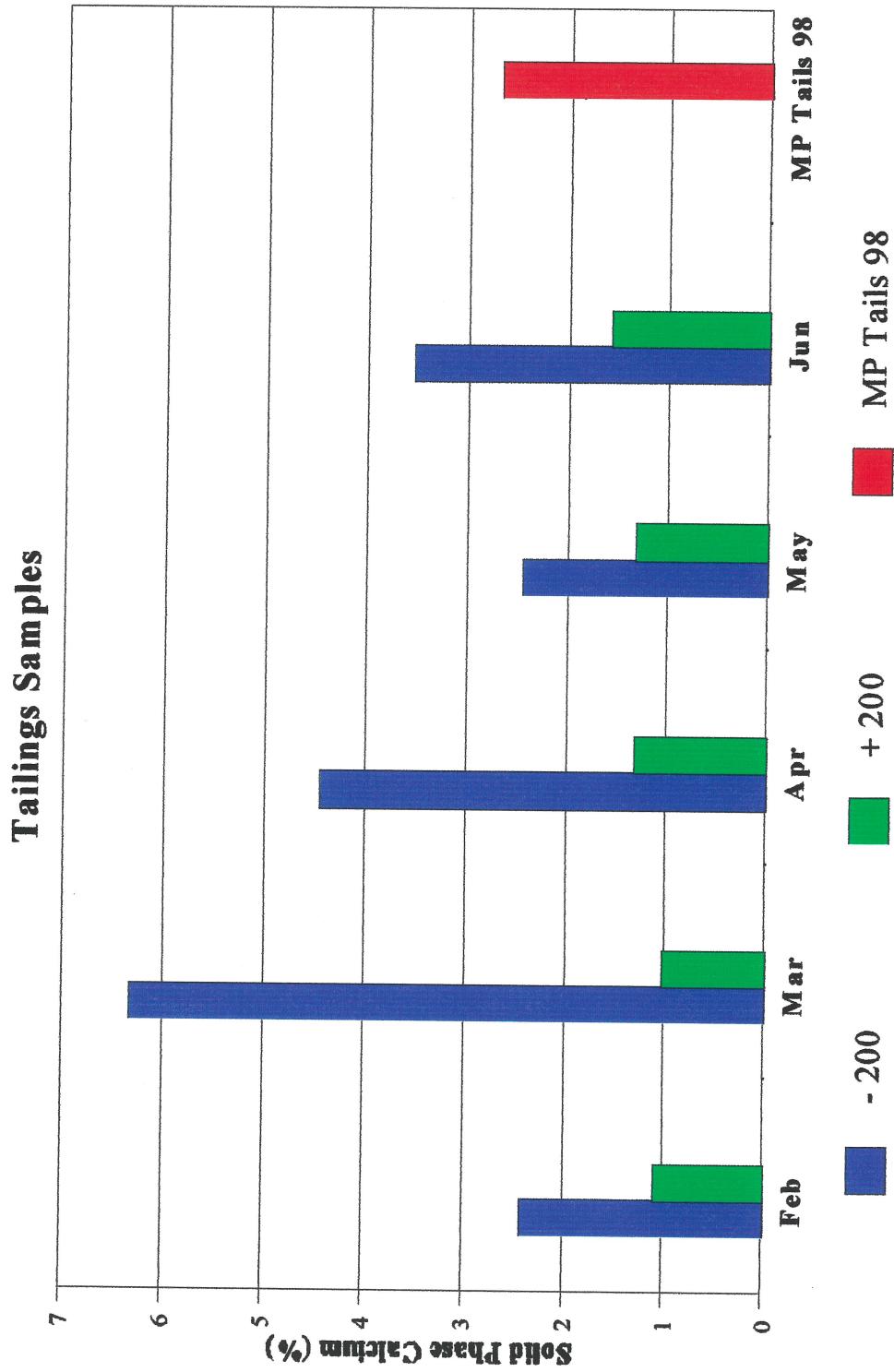
Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure F



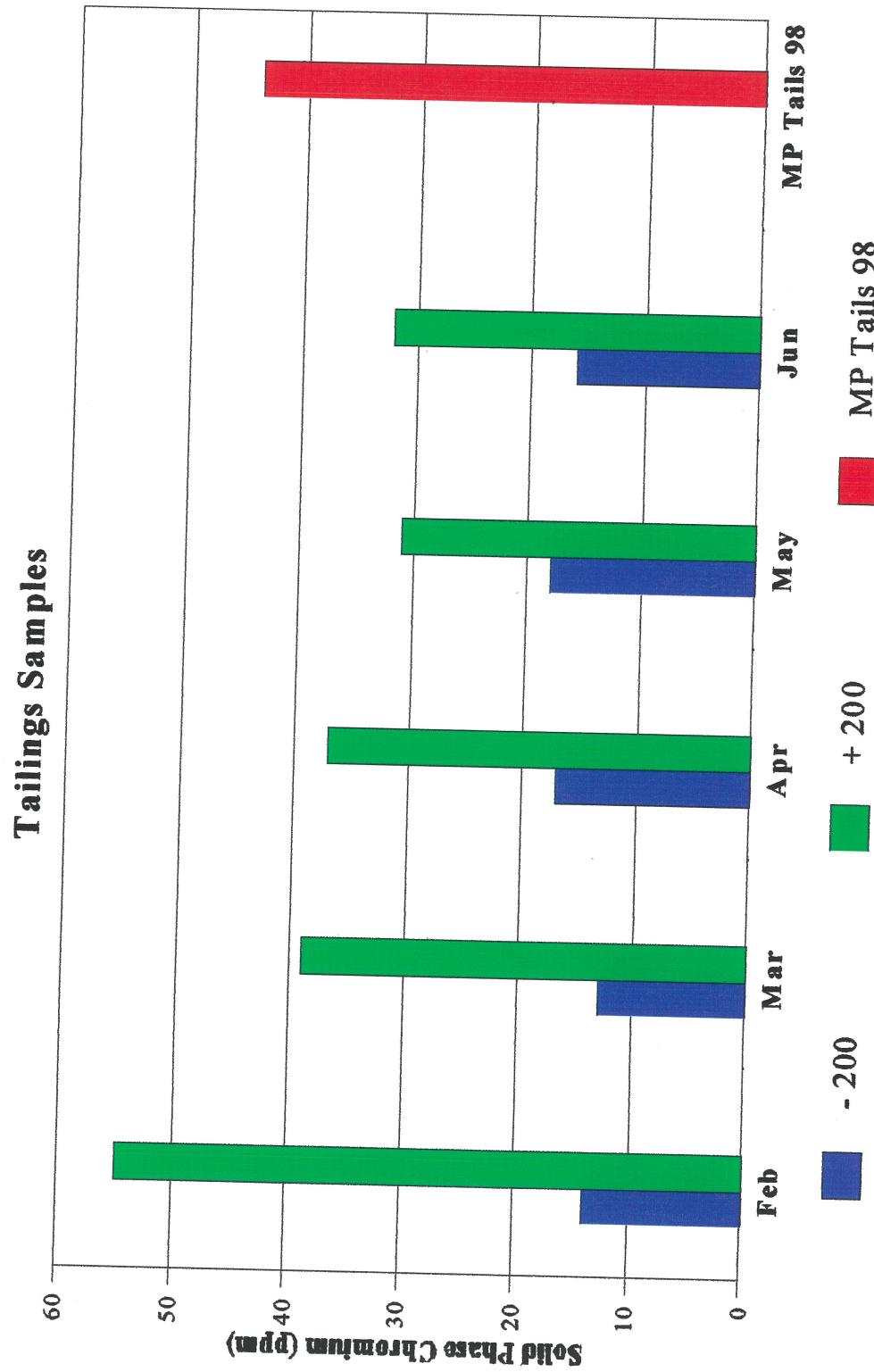
Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure G



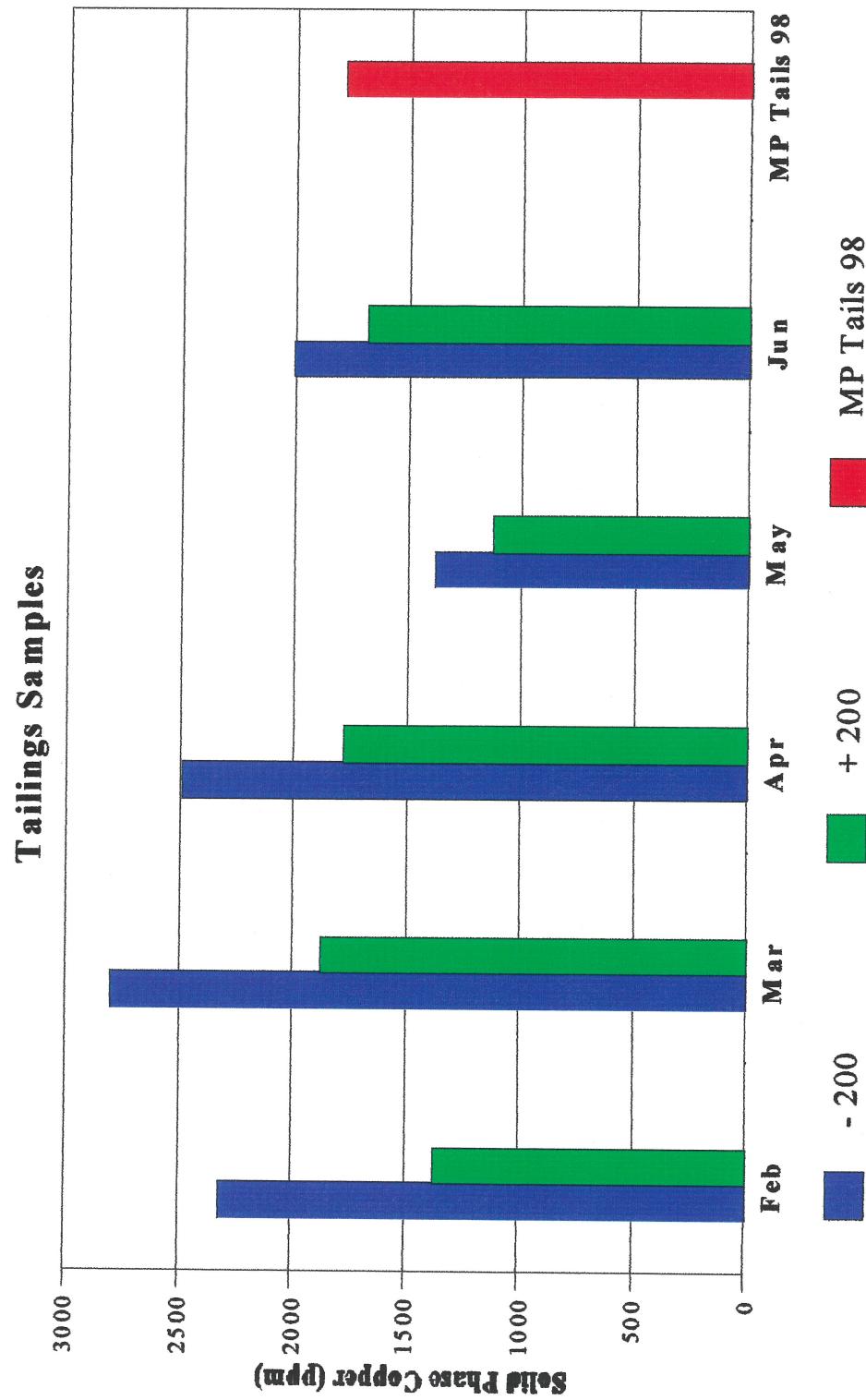
Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure H



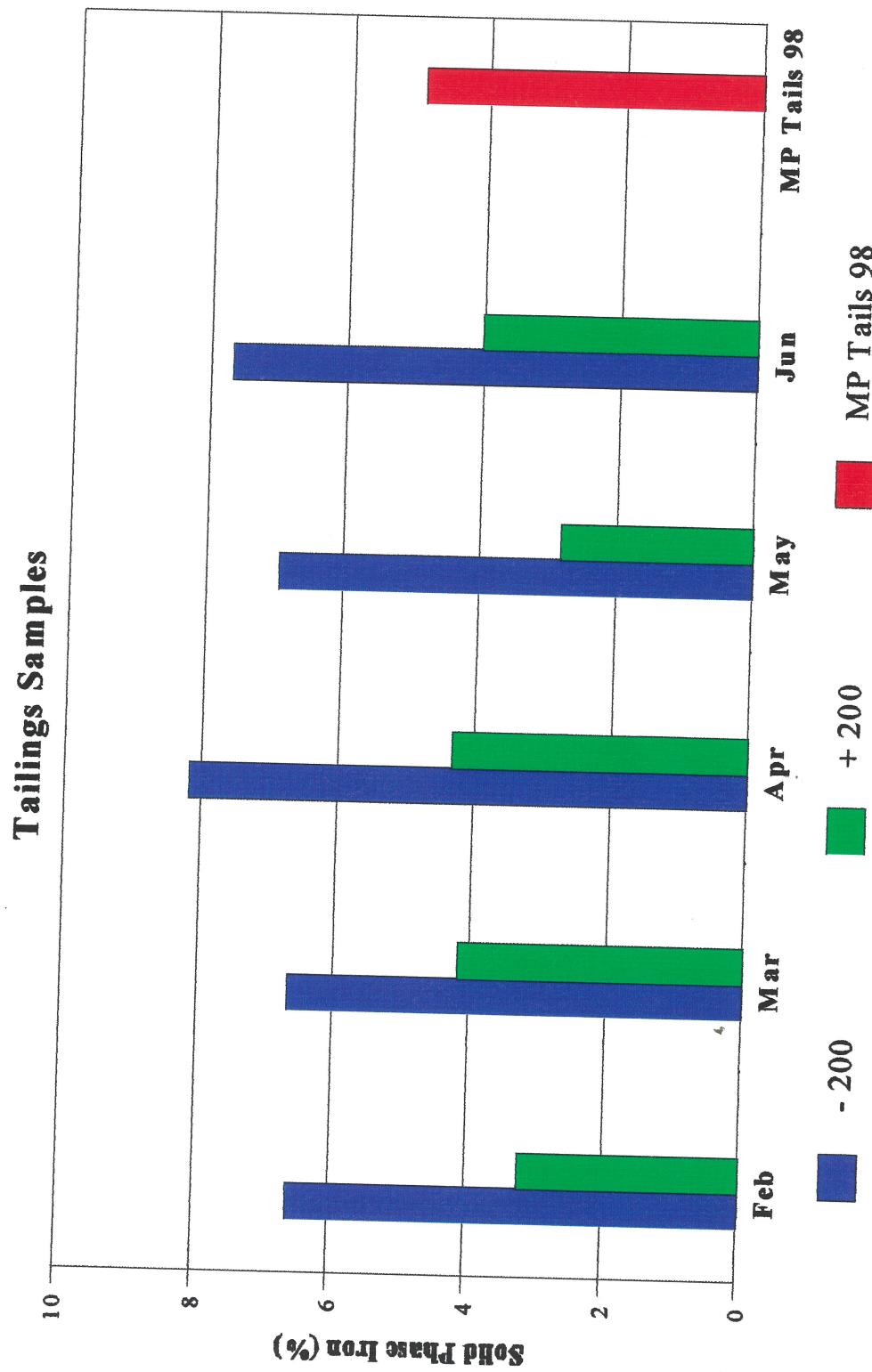
Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure I



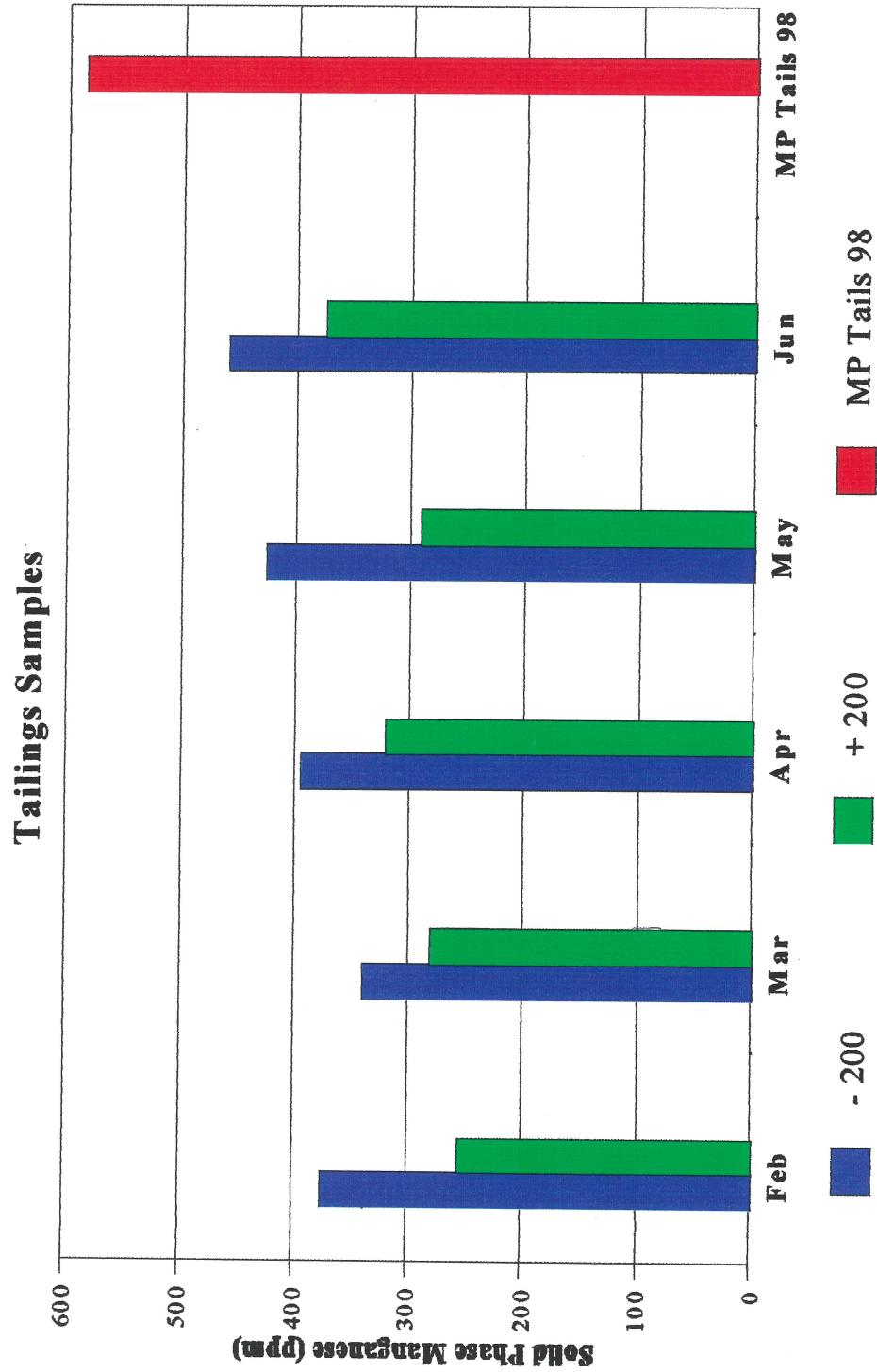
Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure J



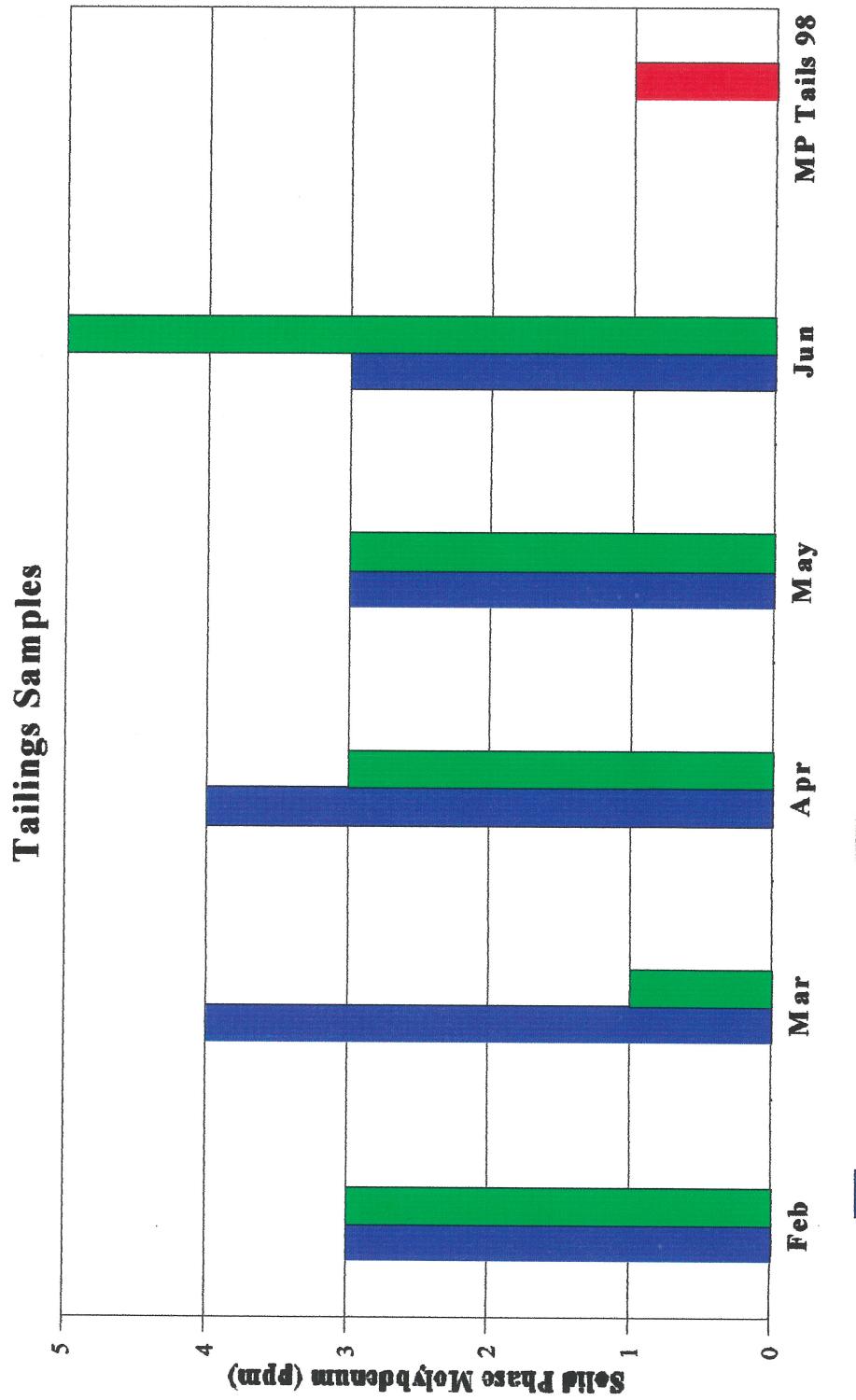
Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure K



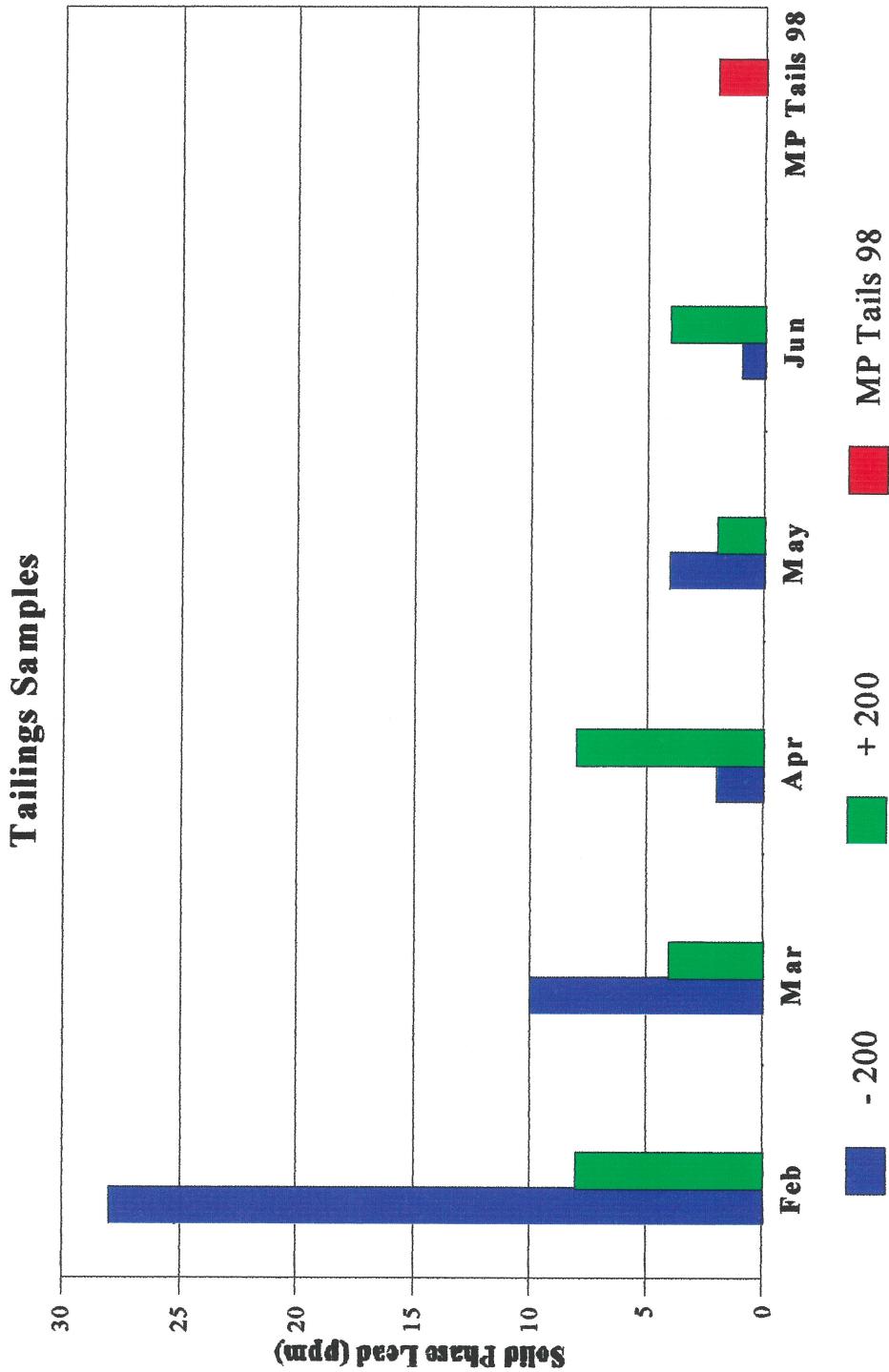
Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure L



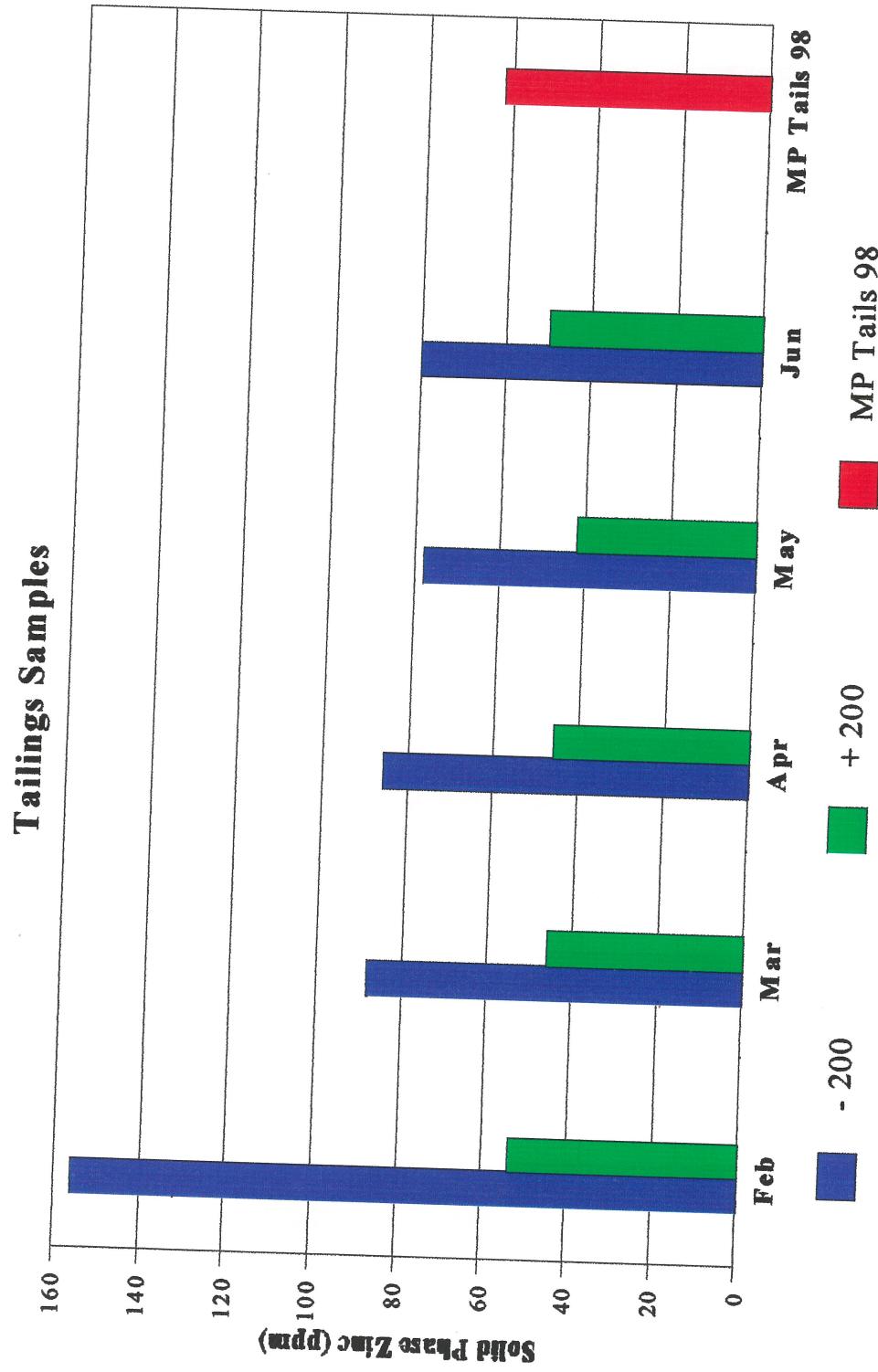
Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure M



Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure N



Note: MP Tails 98 was digested with the stronger triple-acid combination.

Figure AB

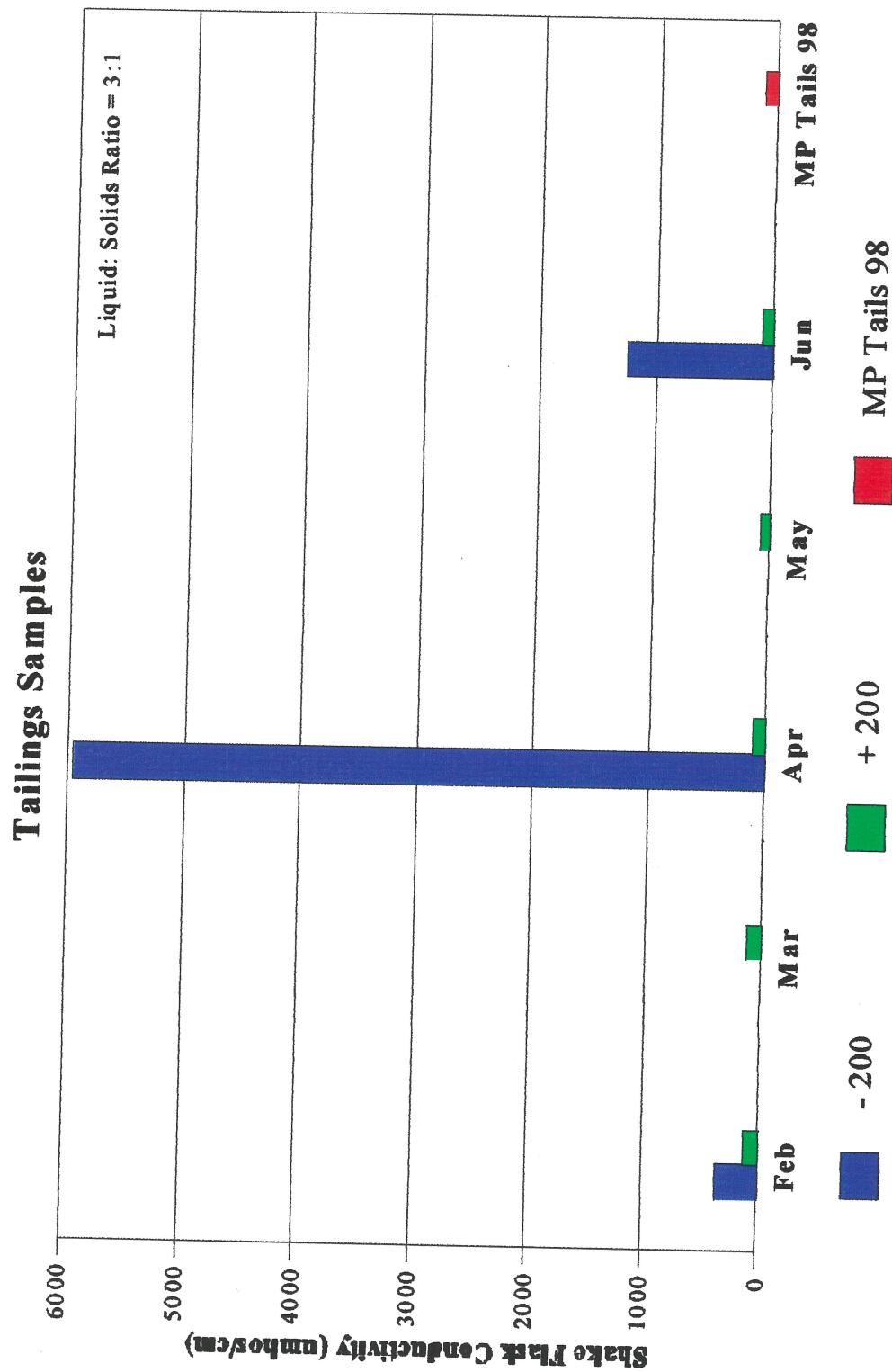


Figure AC

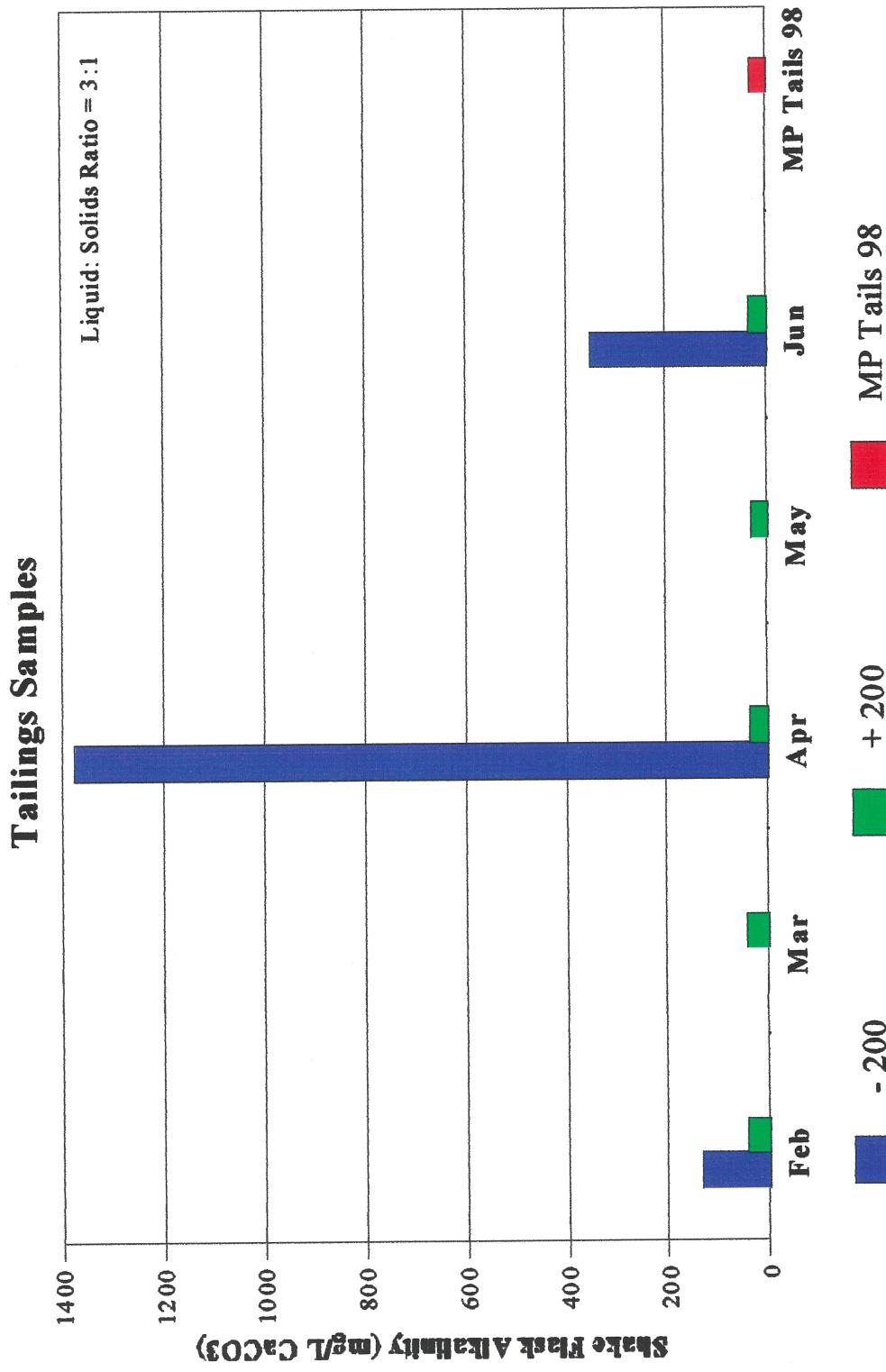


Figure AD

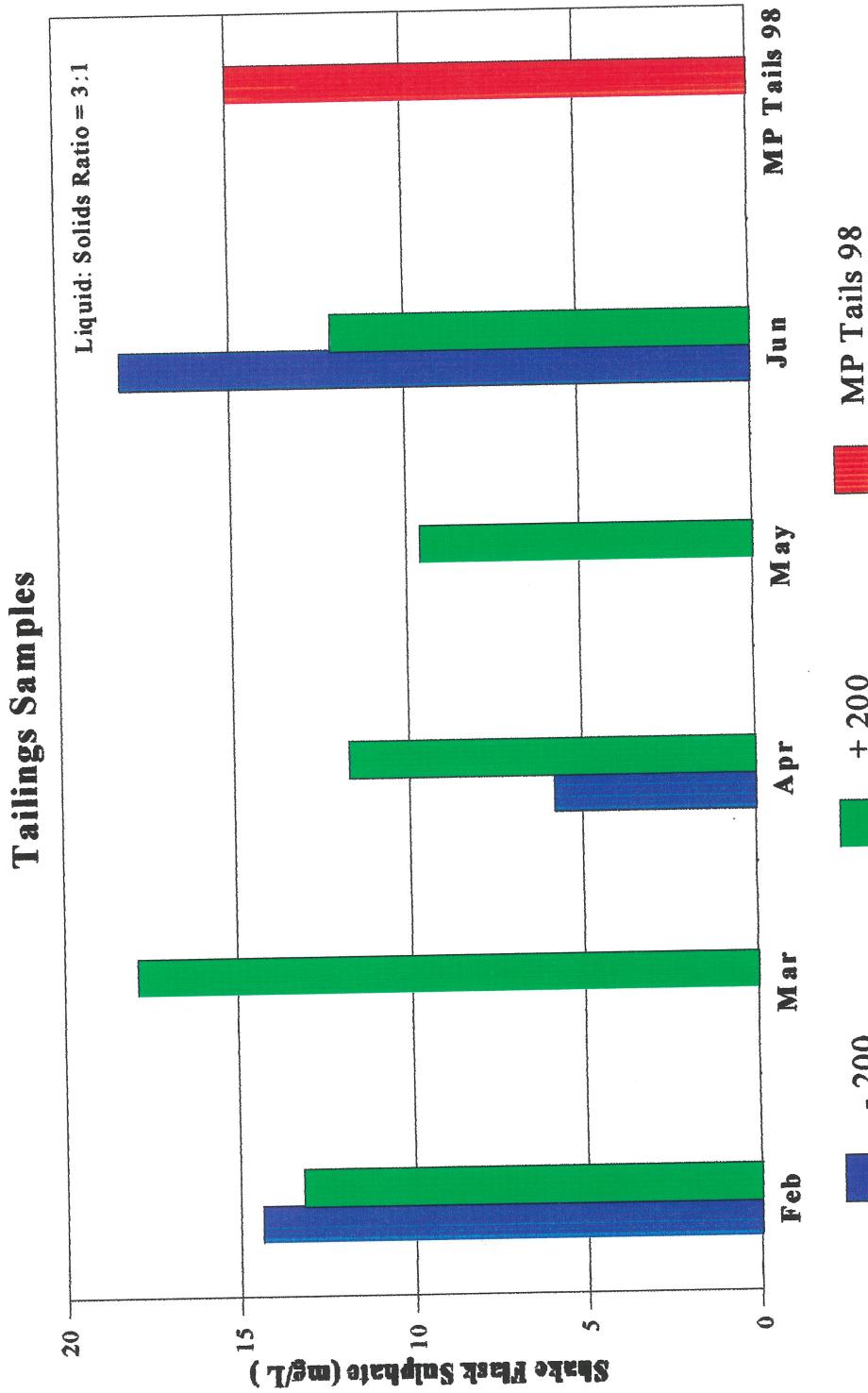


Figure AE

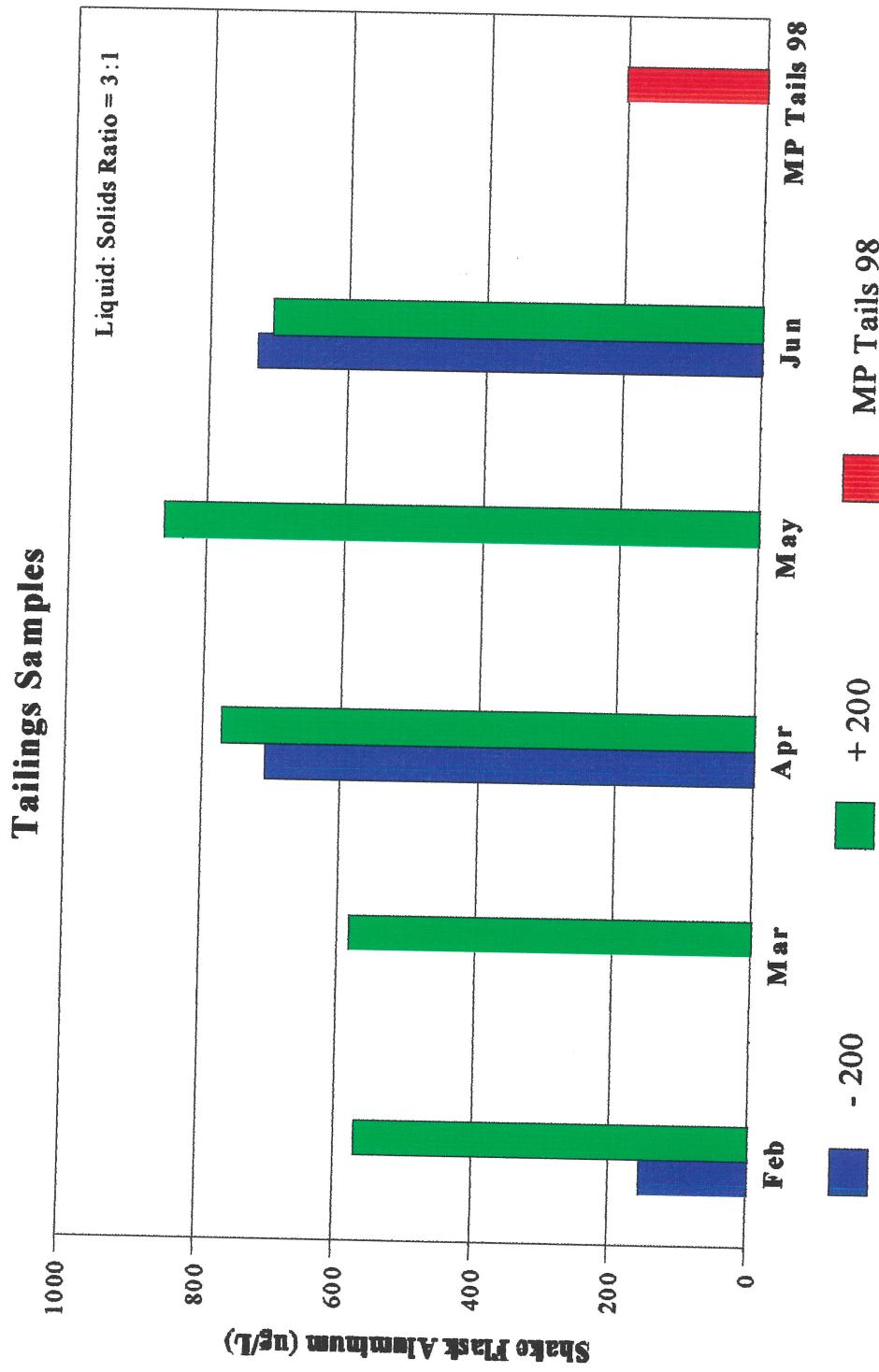


Figure AF

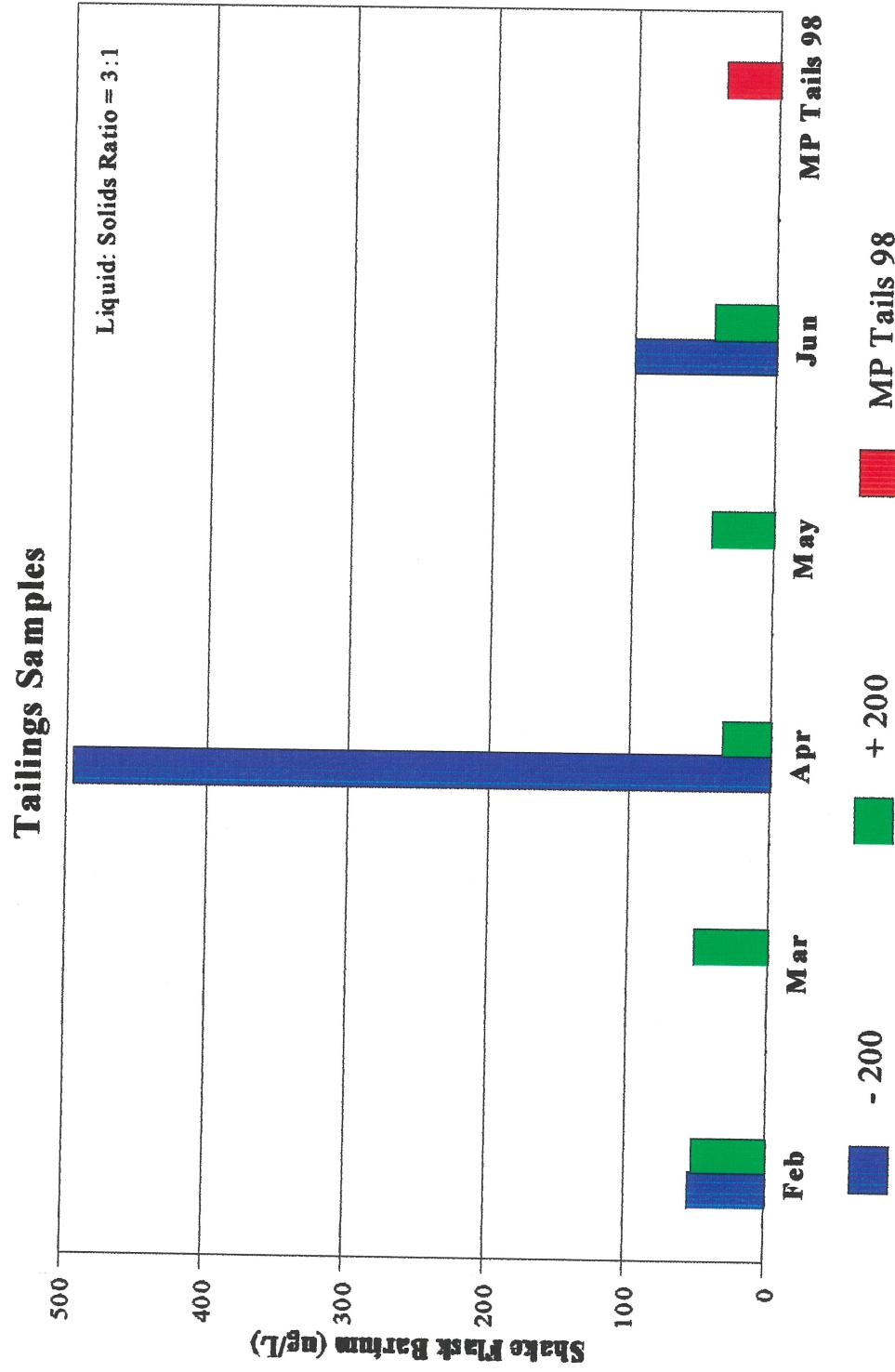


Figure AG

Tailings Samples

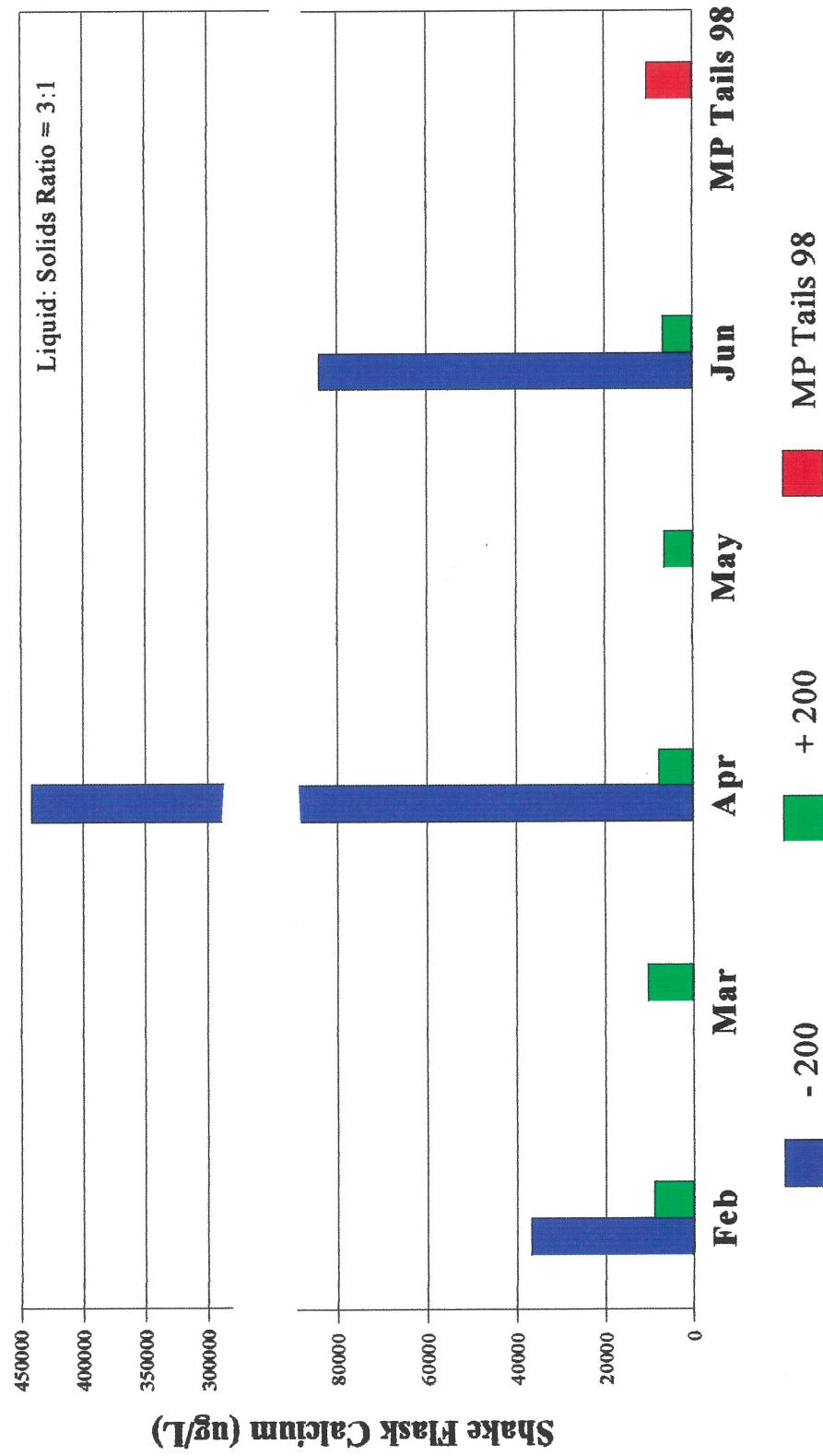


Figure AH

Tailings Samples

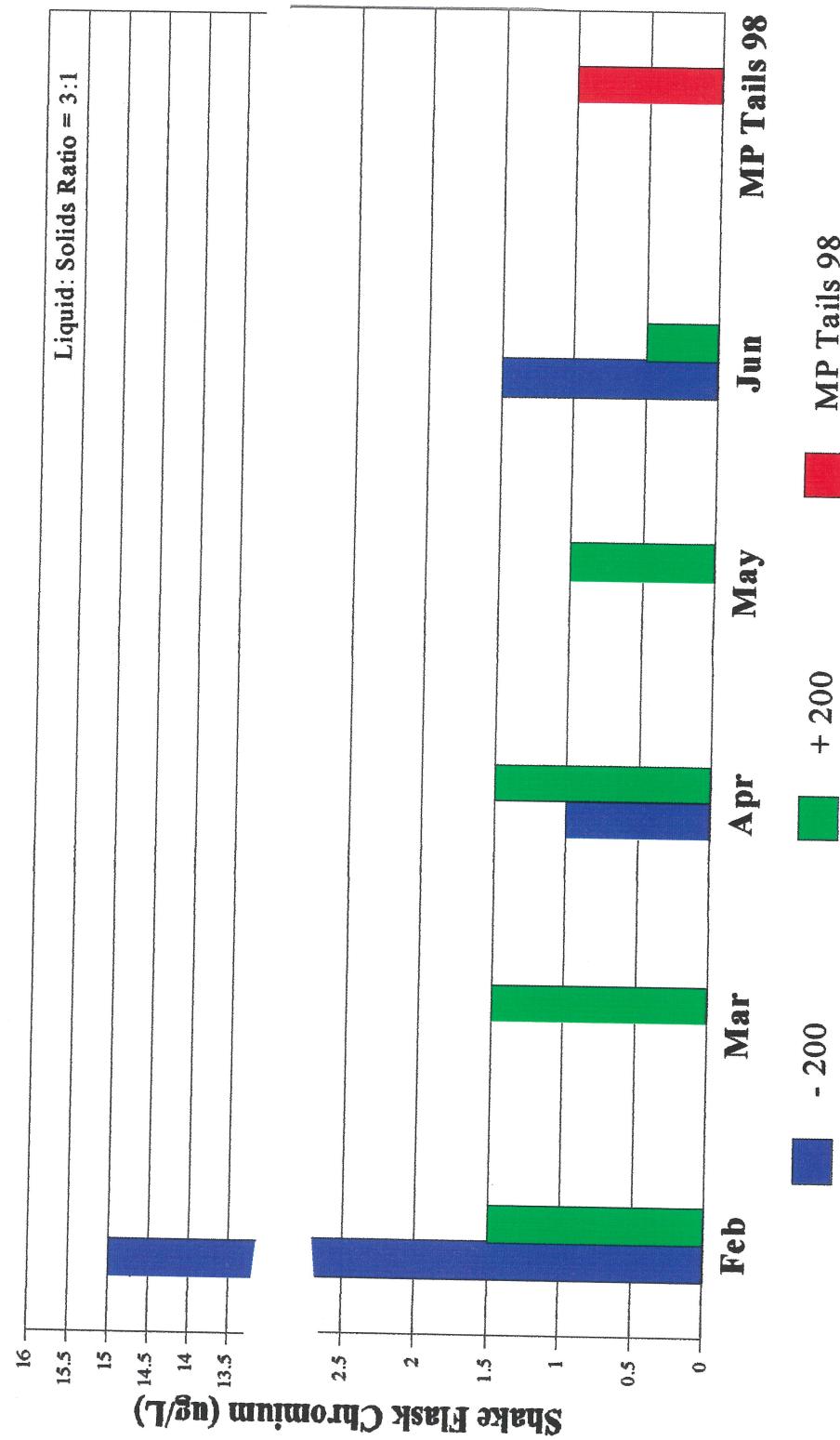


Figure A1

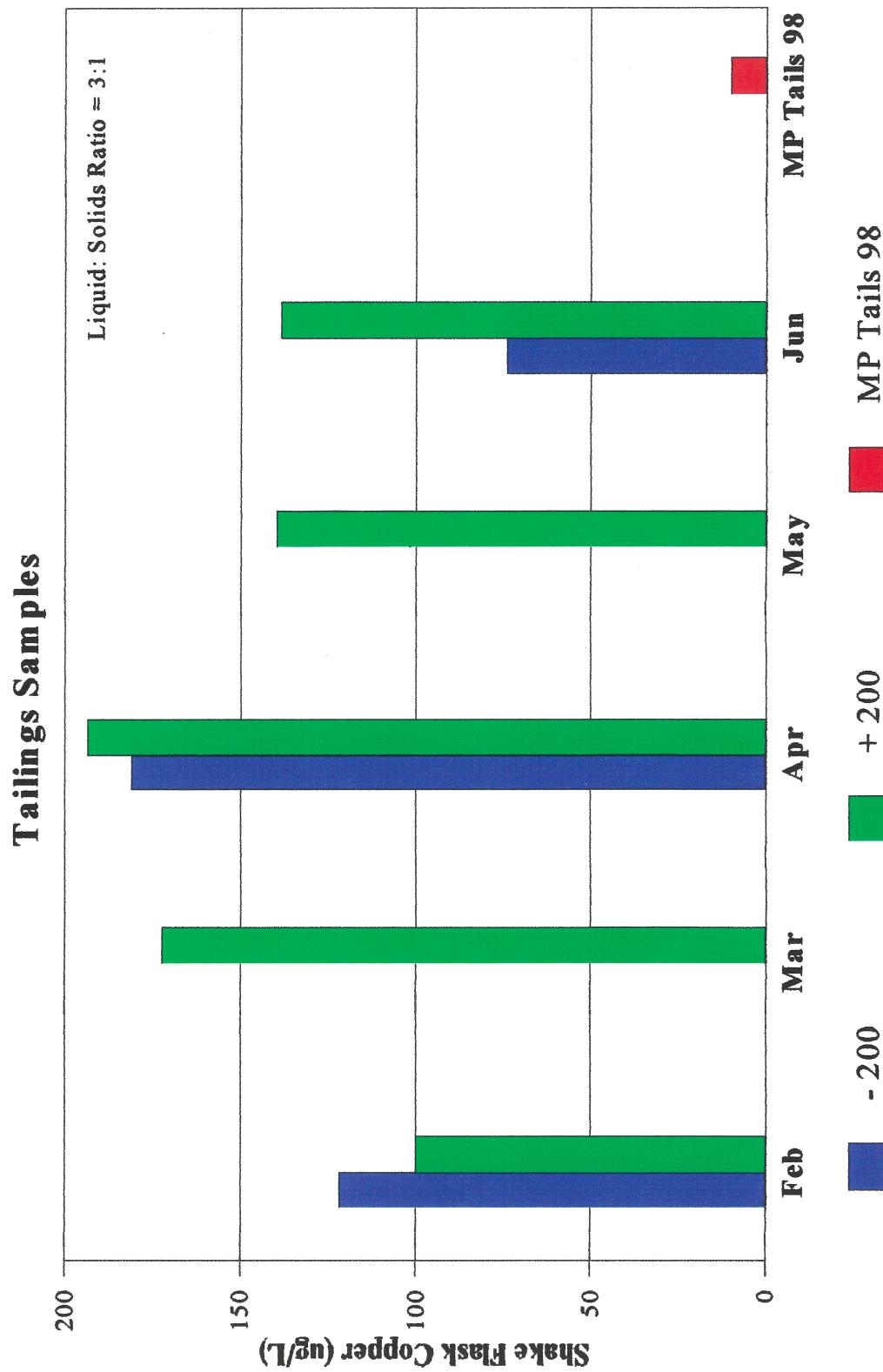


Figure AJ

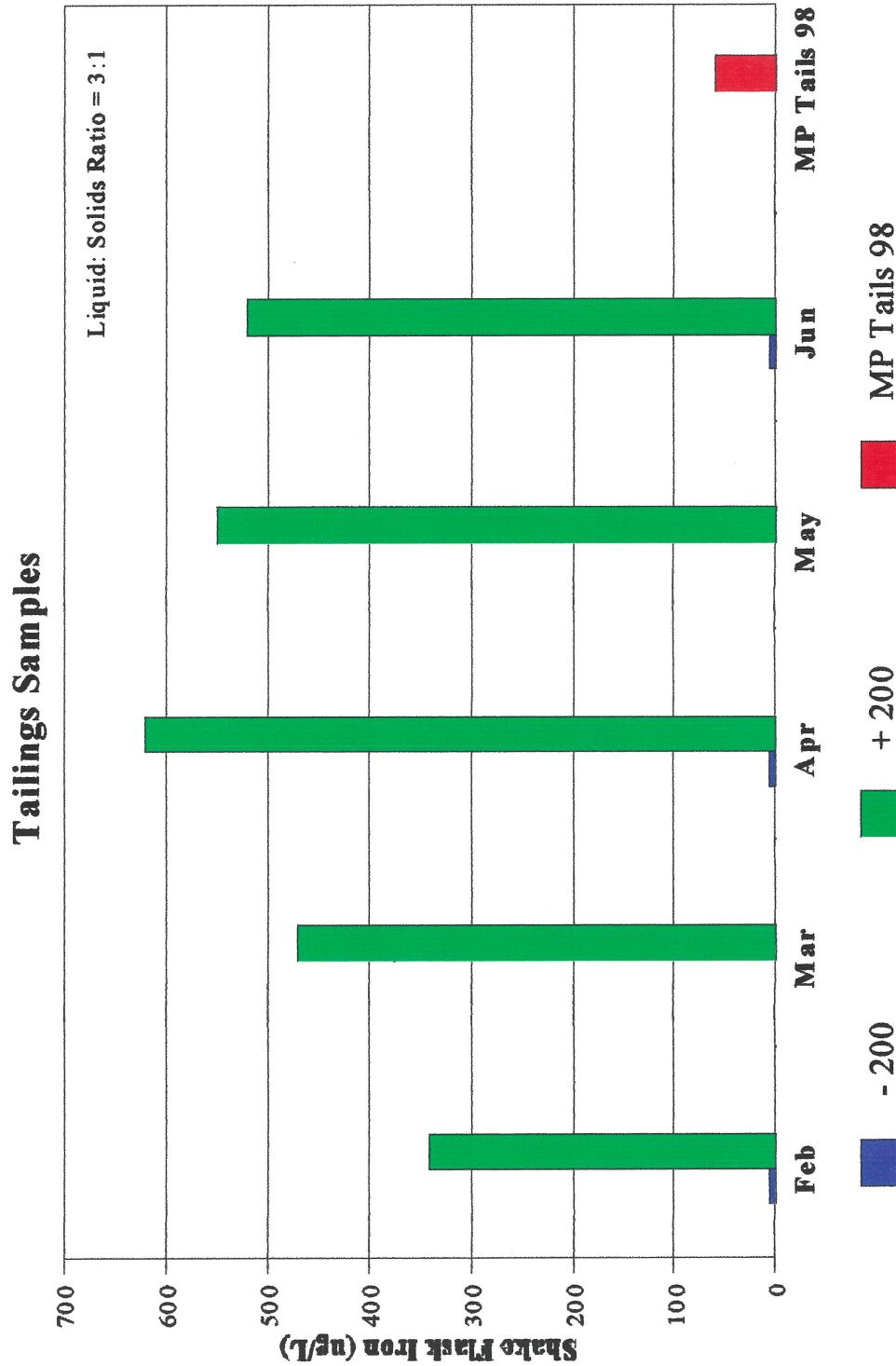


Figure AK

Tailings Samples

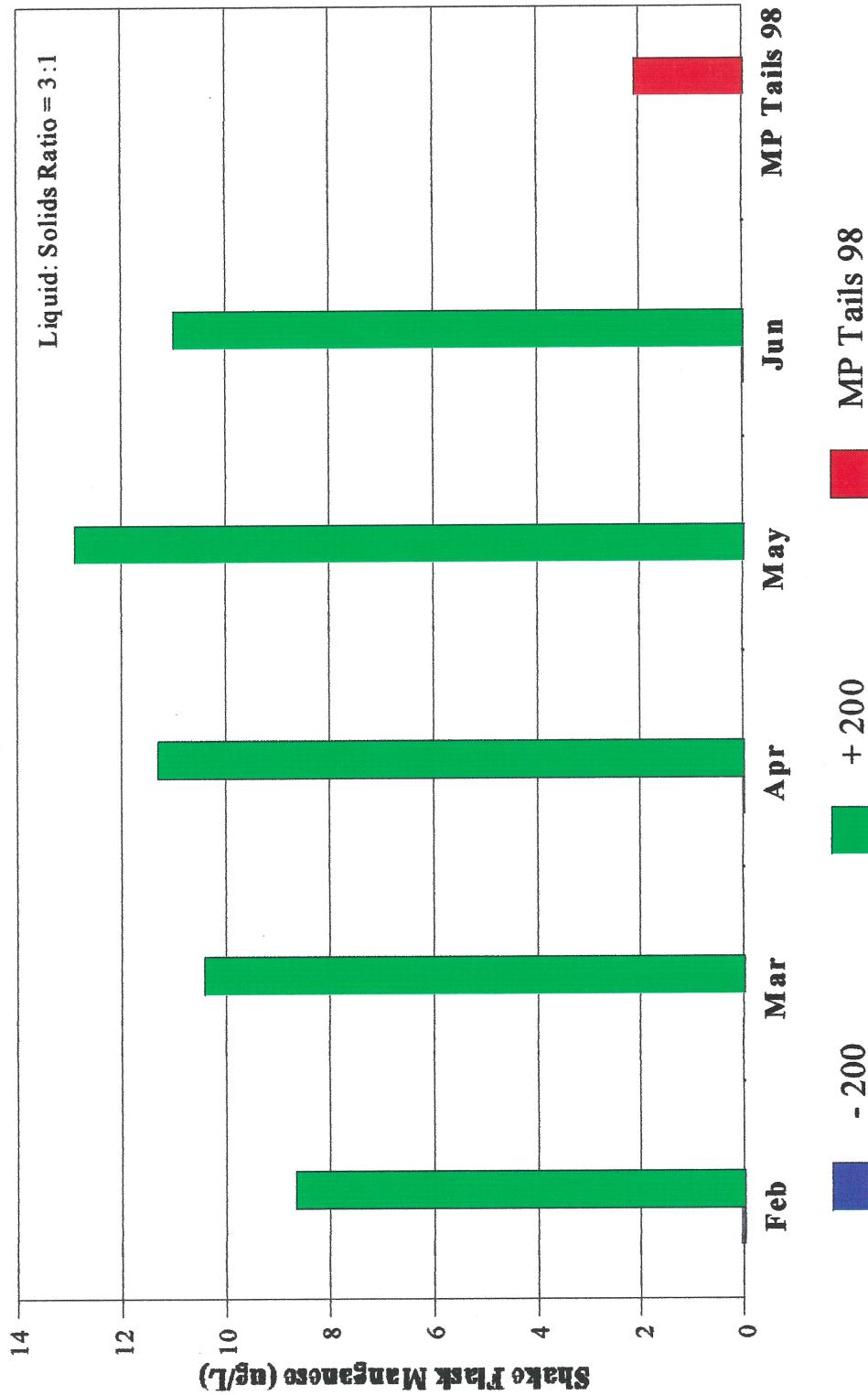


Figure A1

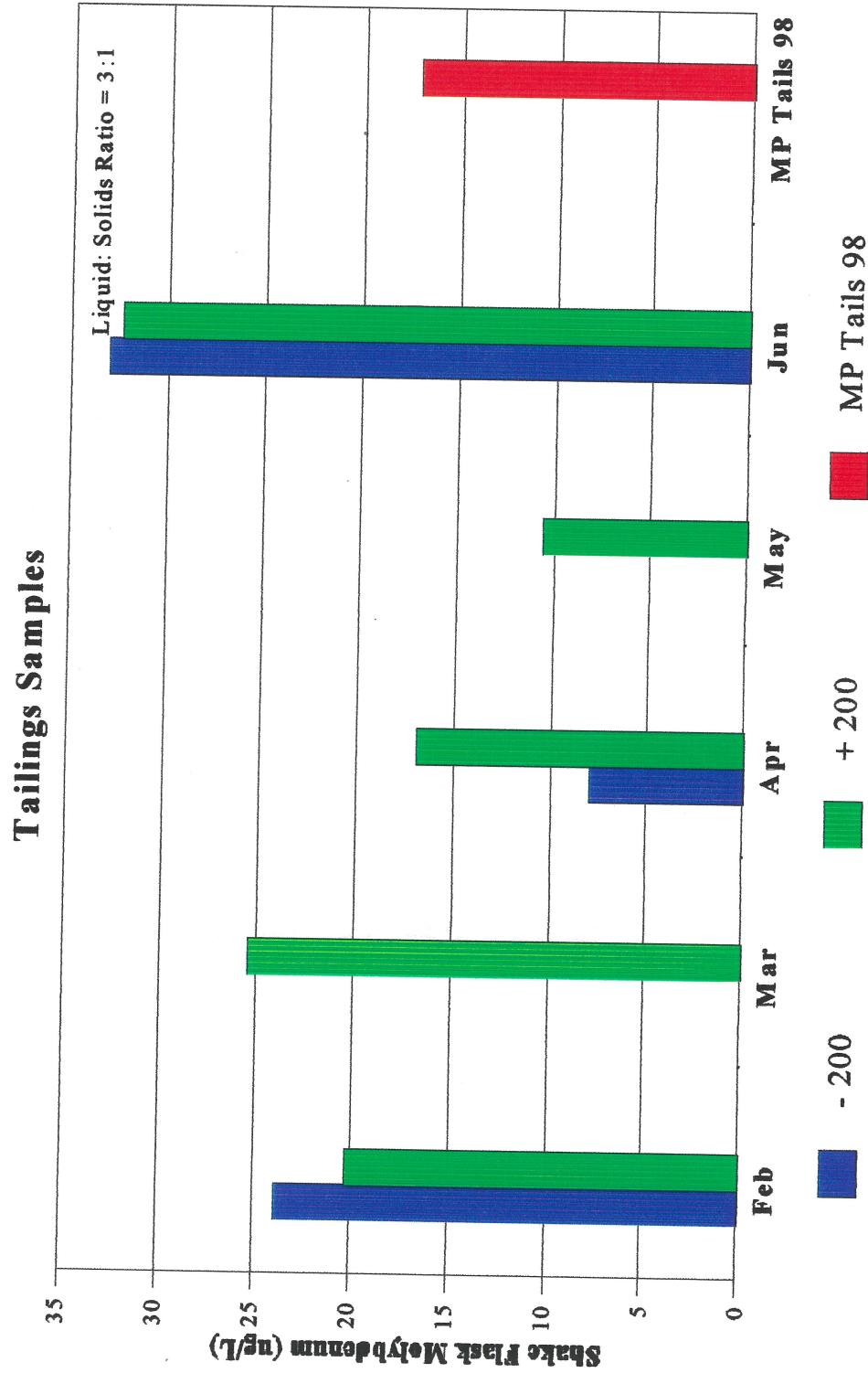


Figure AM

Tailings Samples

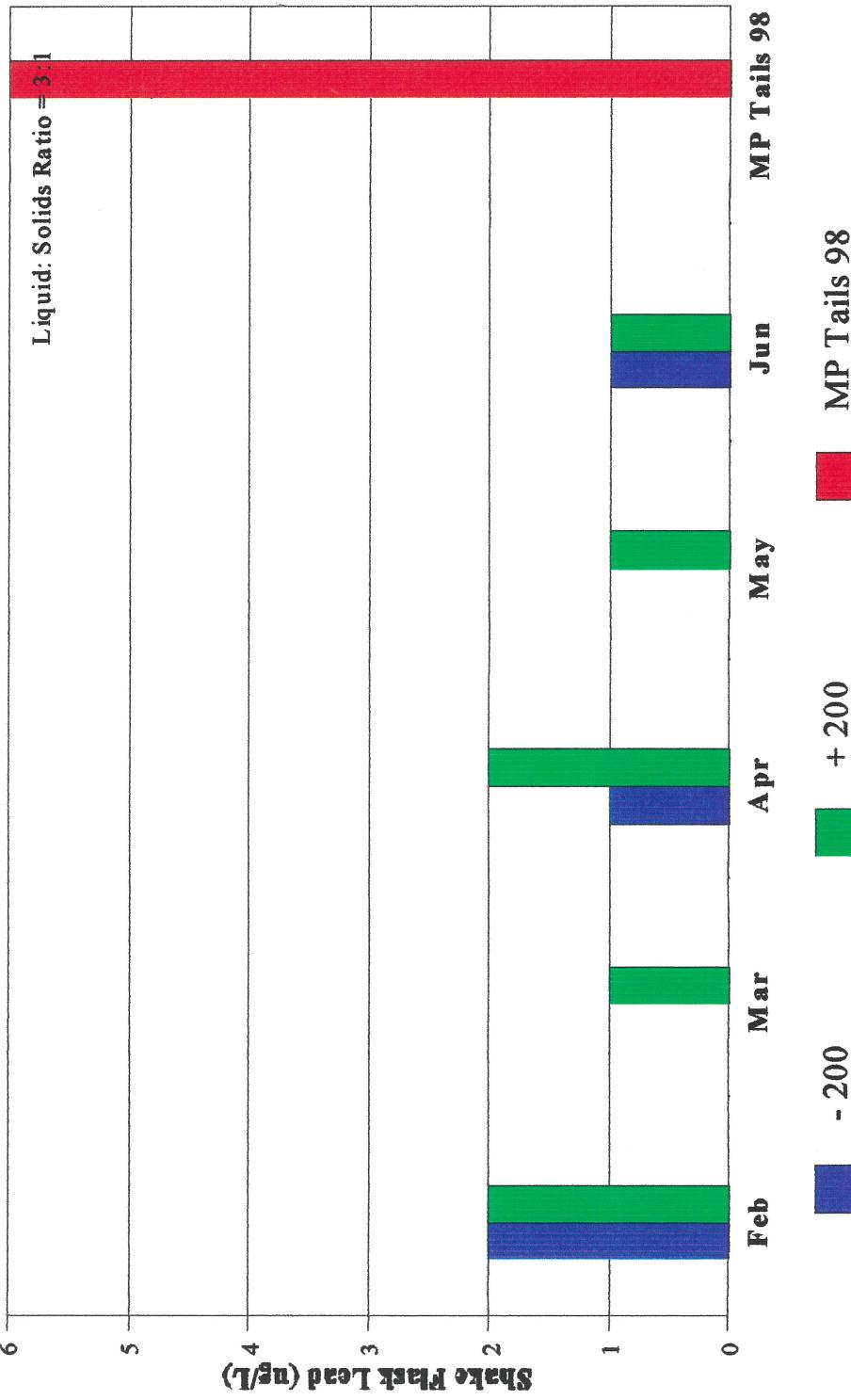


Figure AN

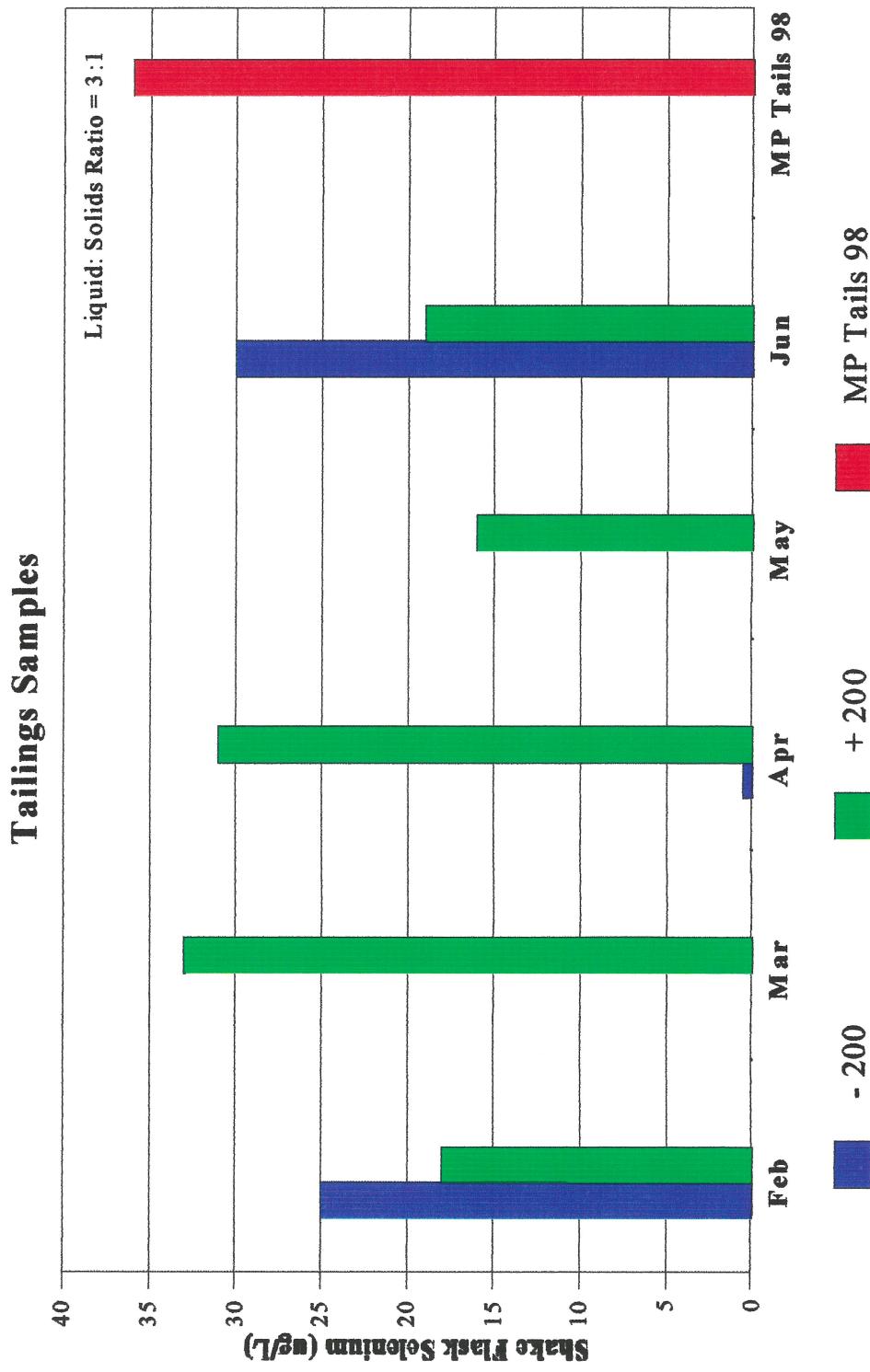


Figure AO

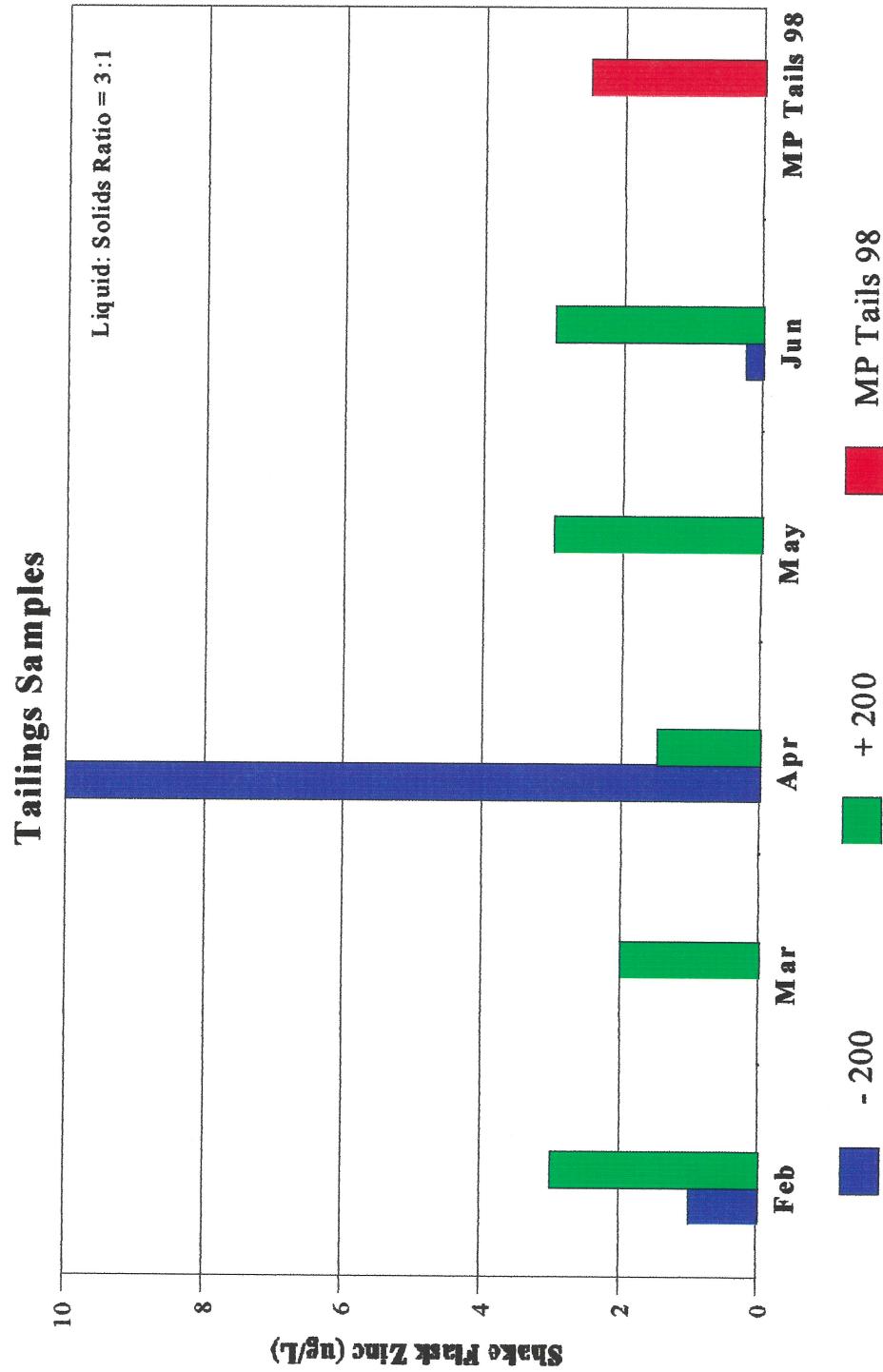


Figure BA

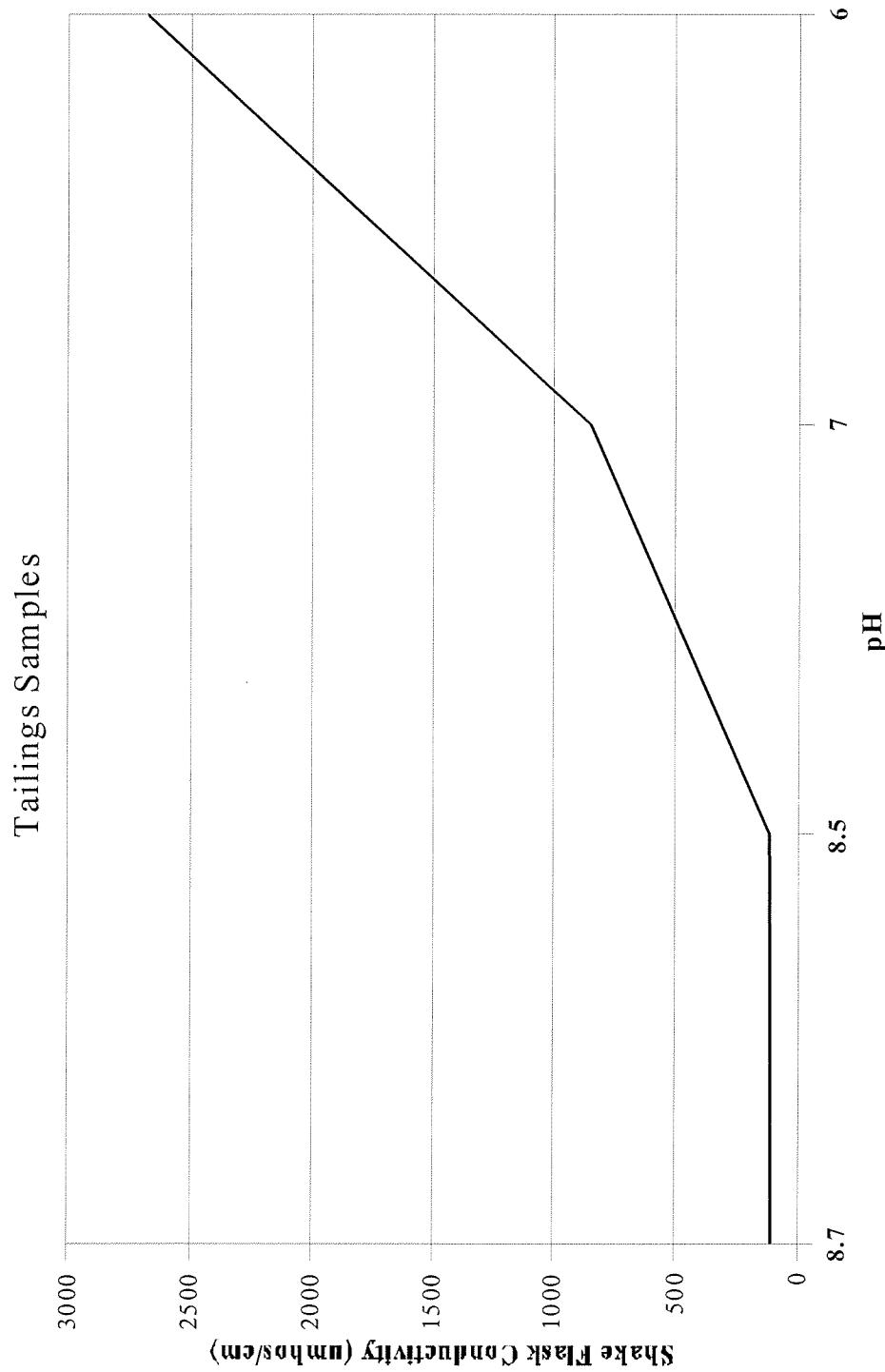


Figure BB

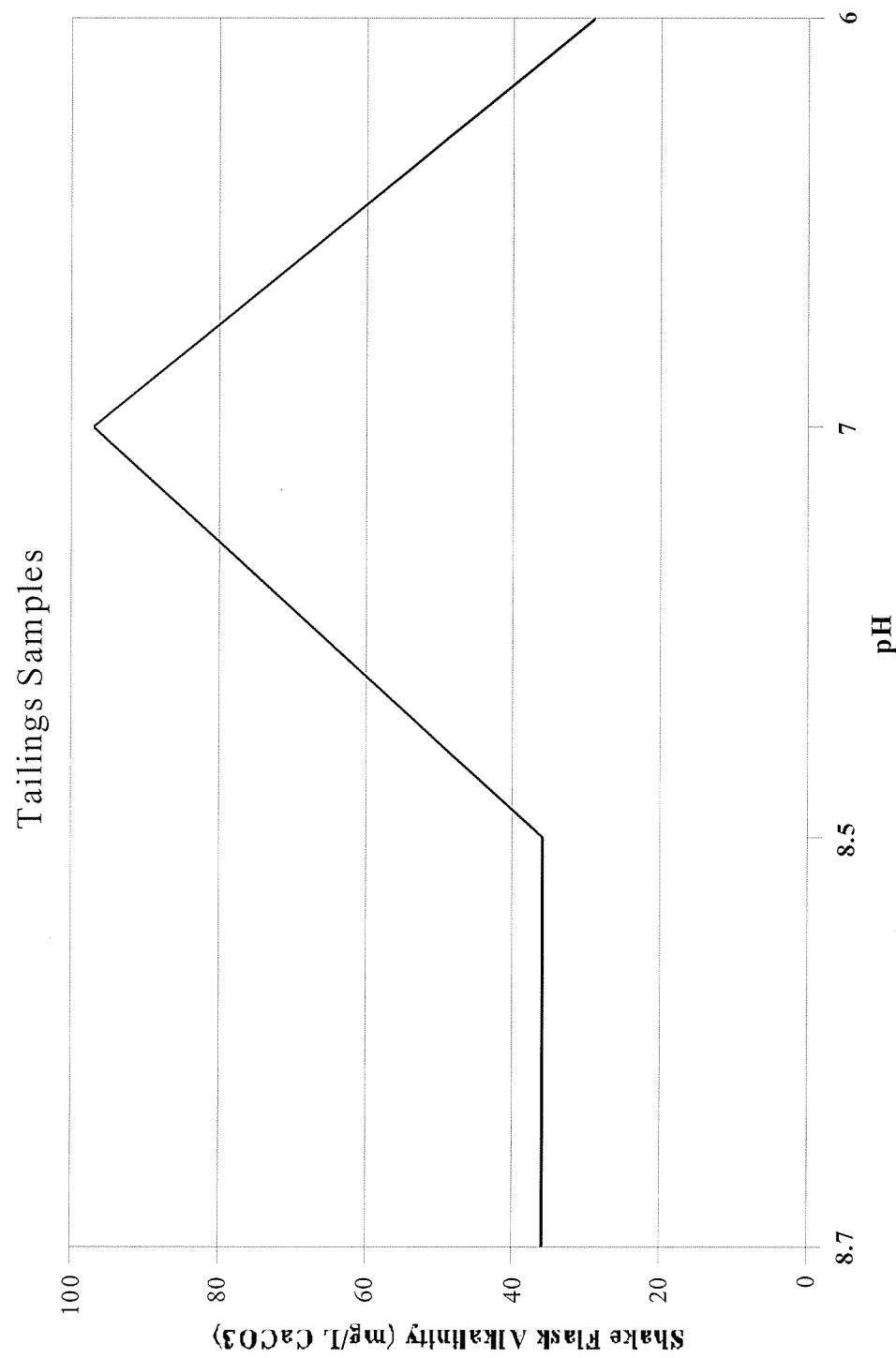


Figure BC

Tailings Samples

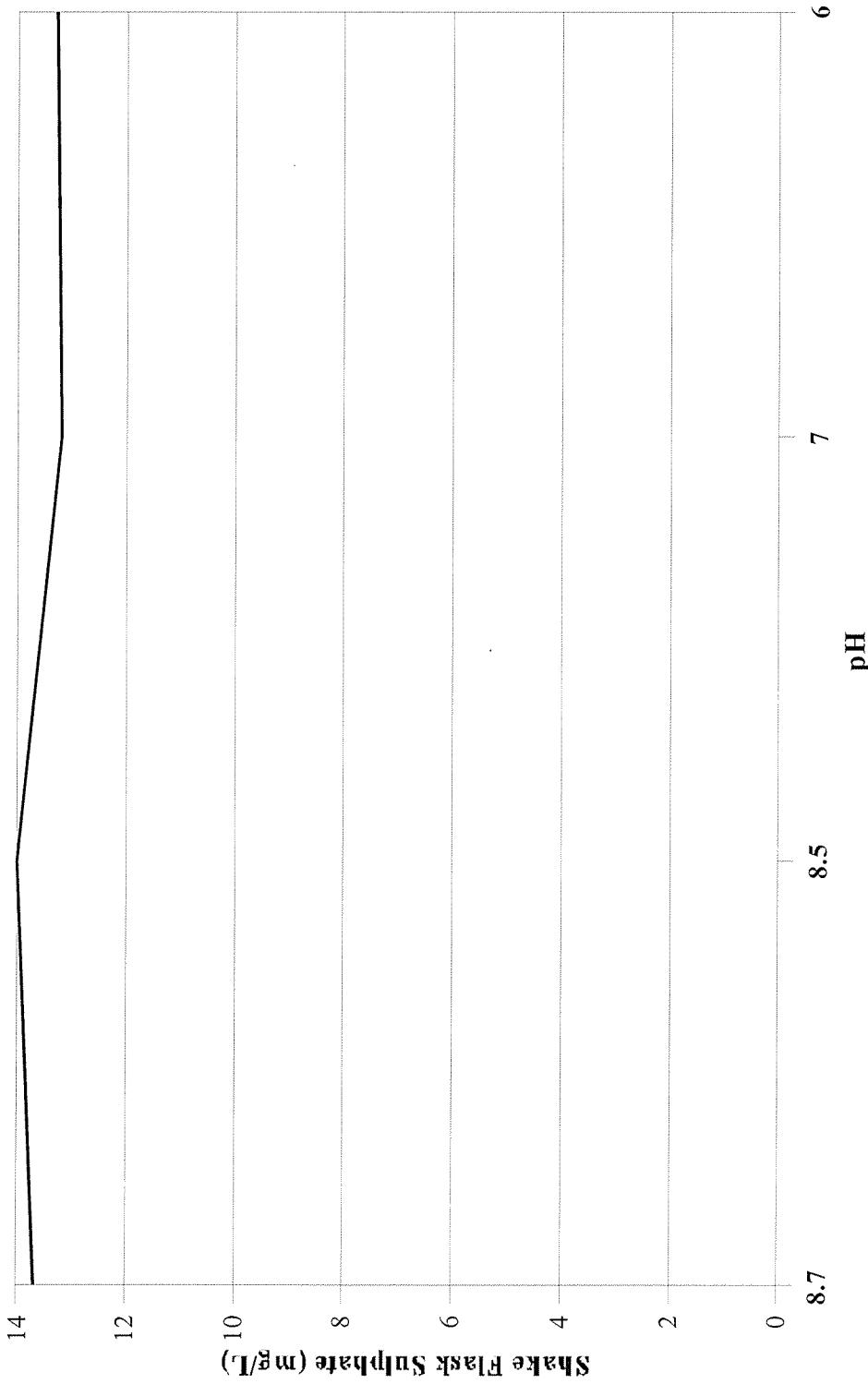


Figure BD

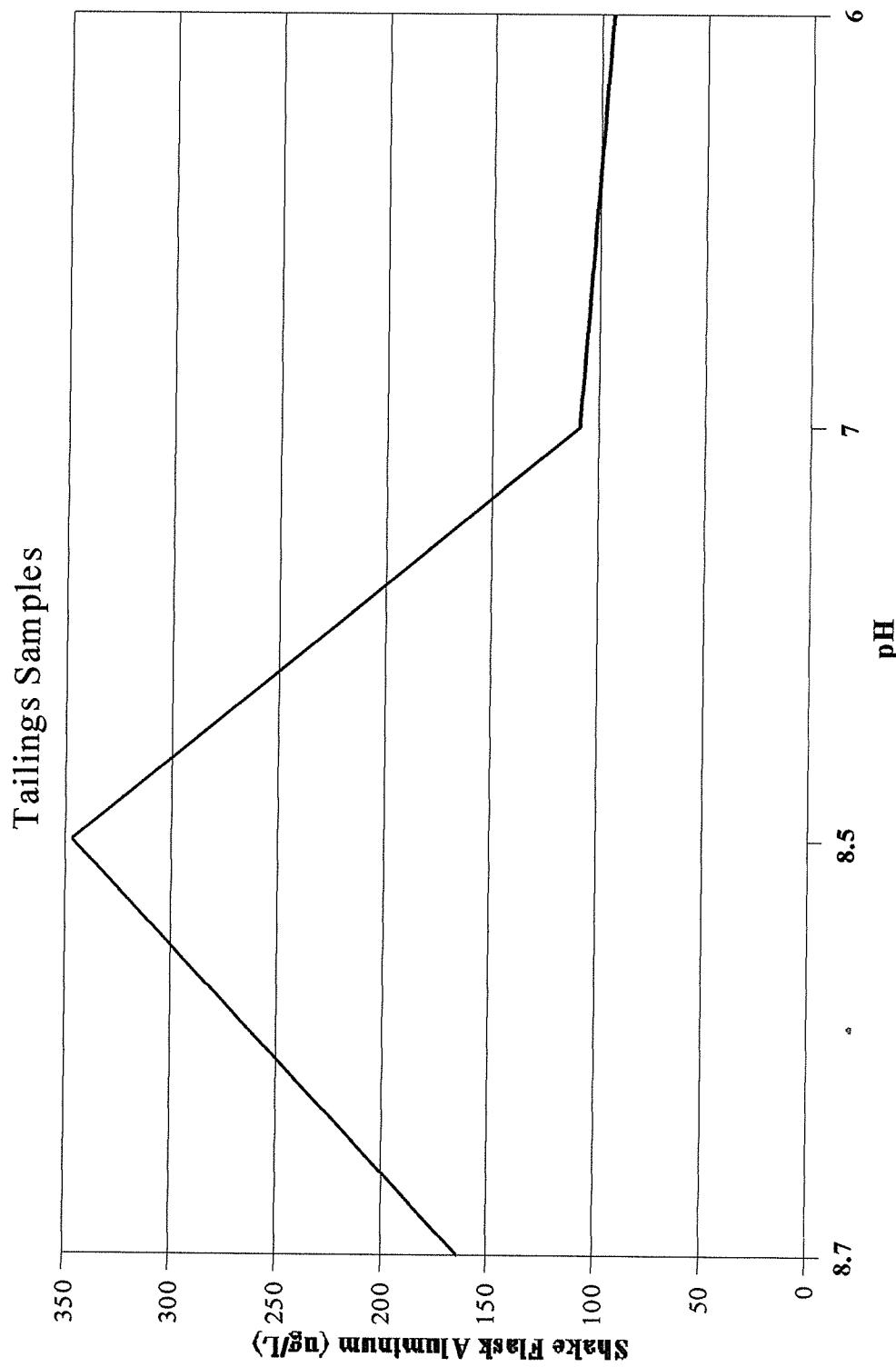


Figure BE

Tailings Samples

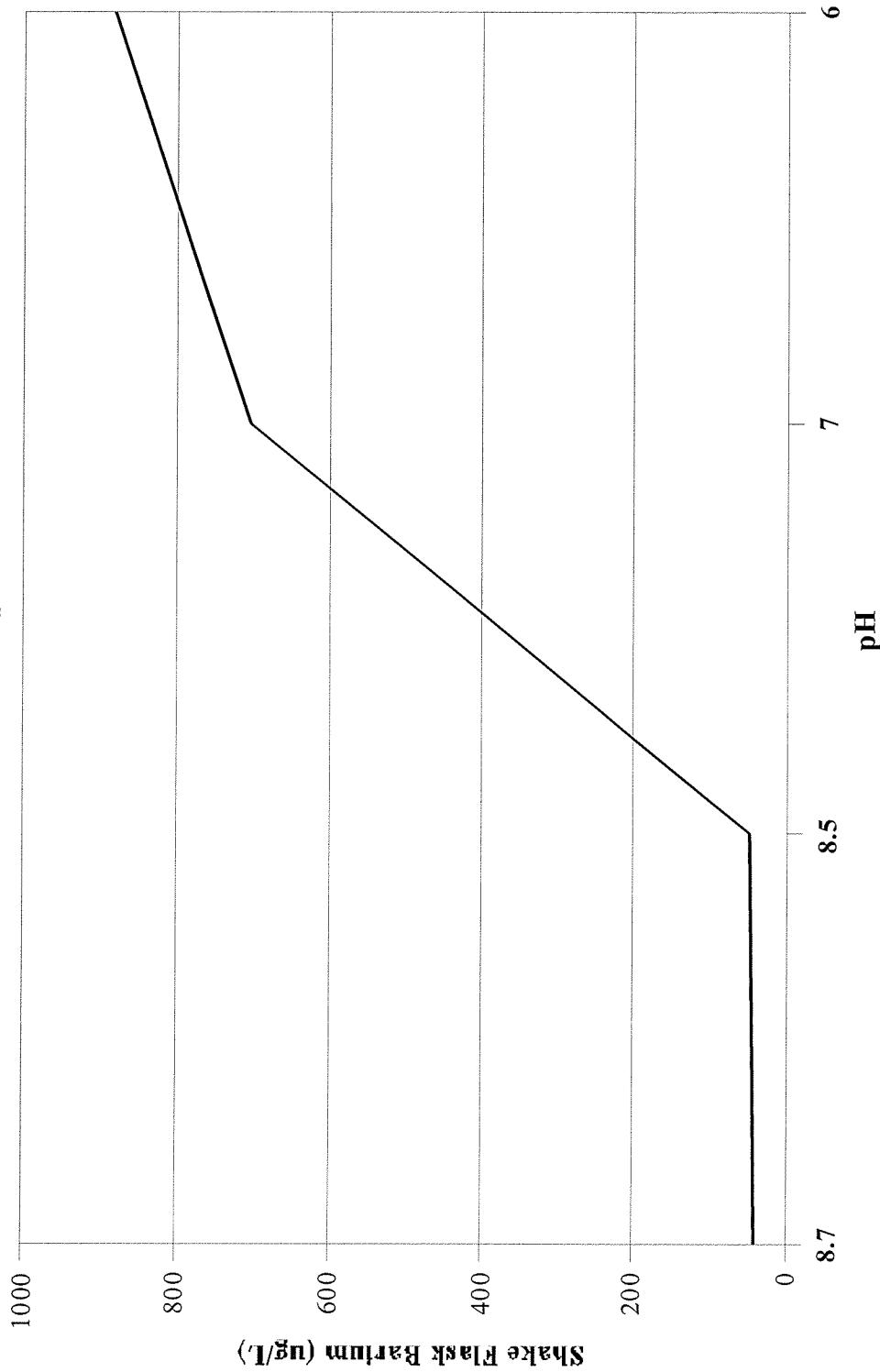


Figure BF

Tailings Samples

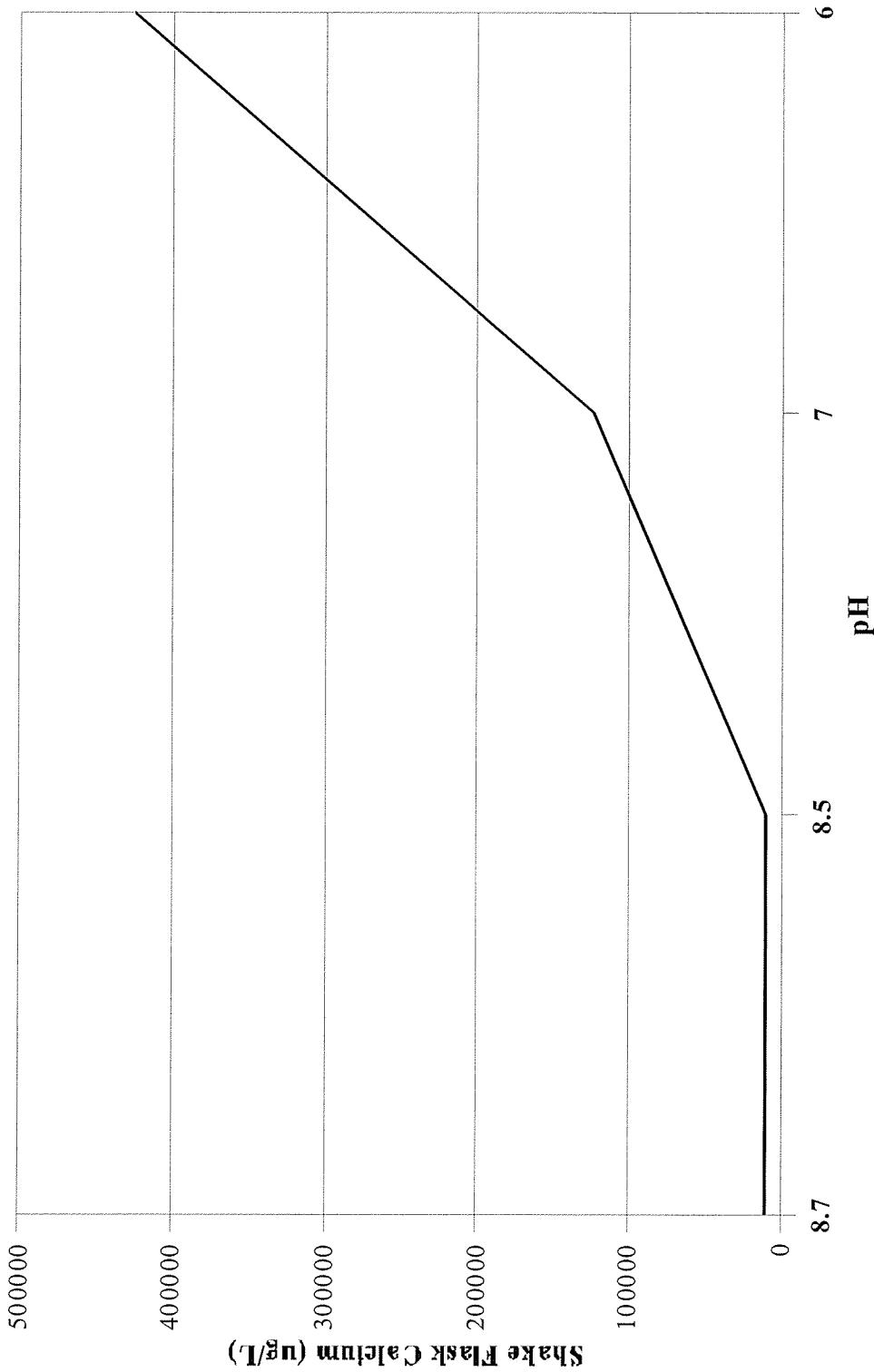


Figure BG

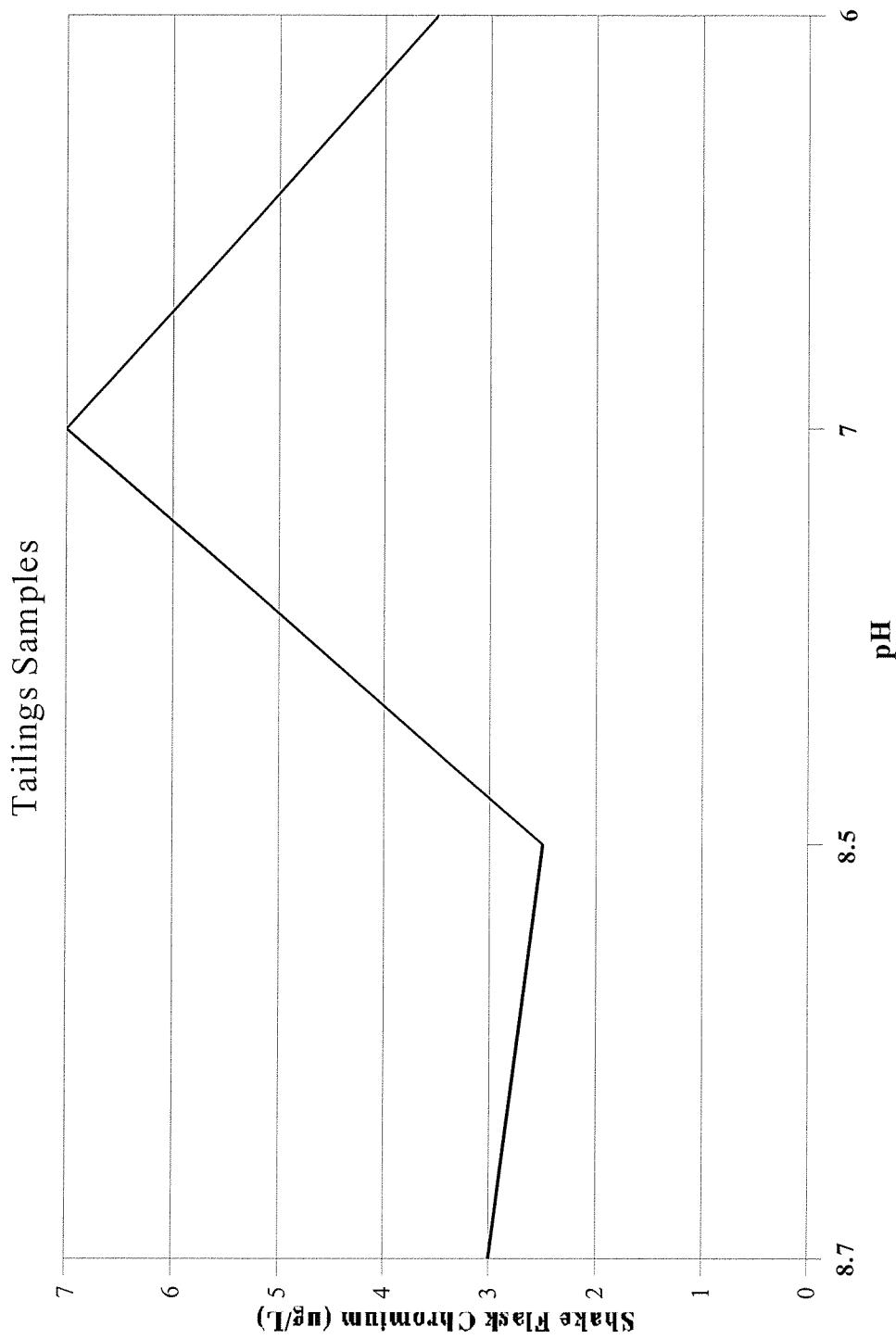


Figure BH

Tailings Samples

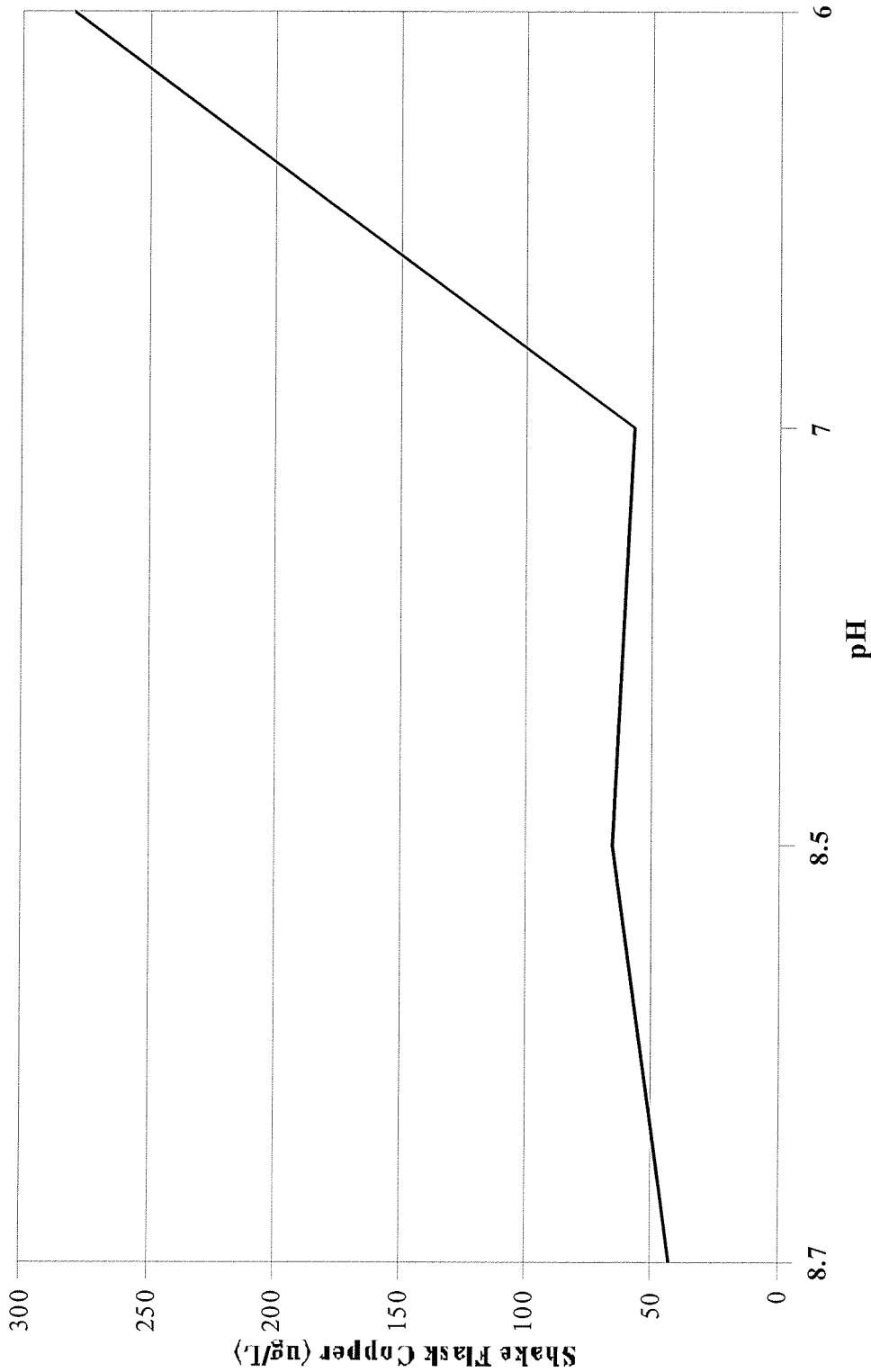


Figure BI

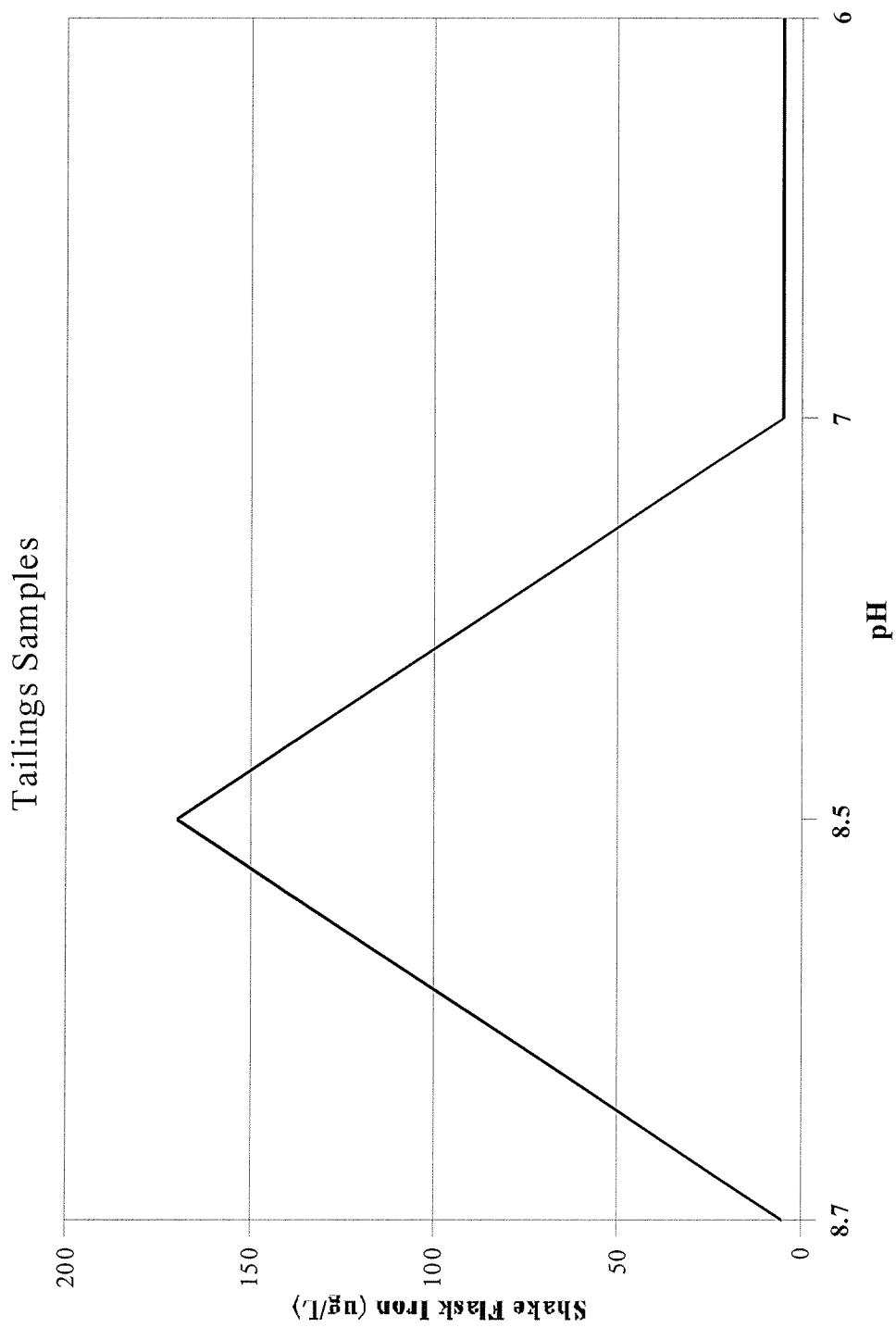


Figure BJ

Tailings Samples

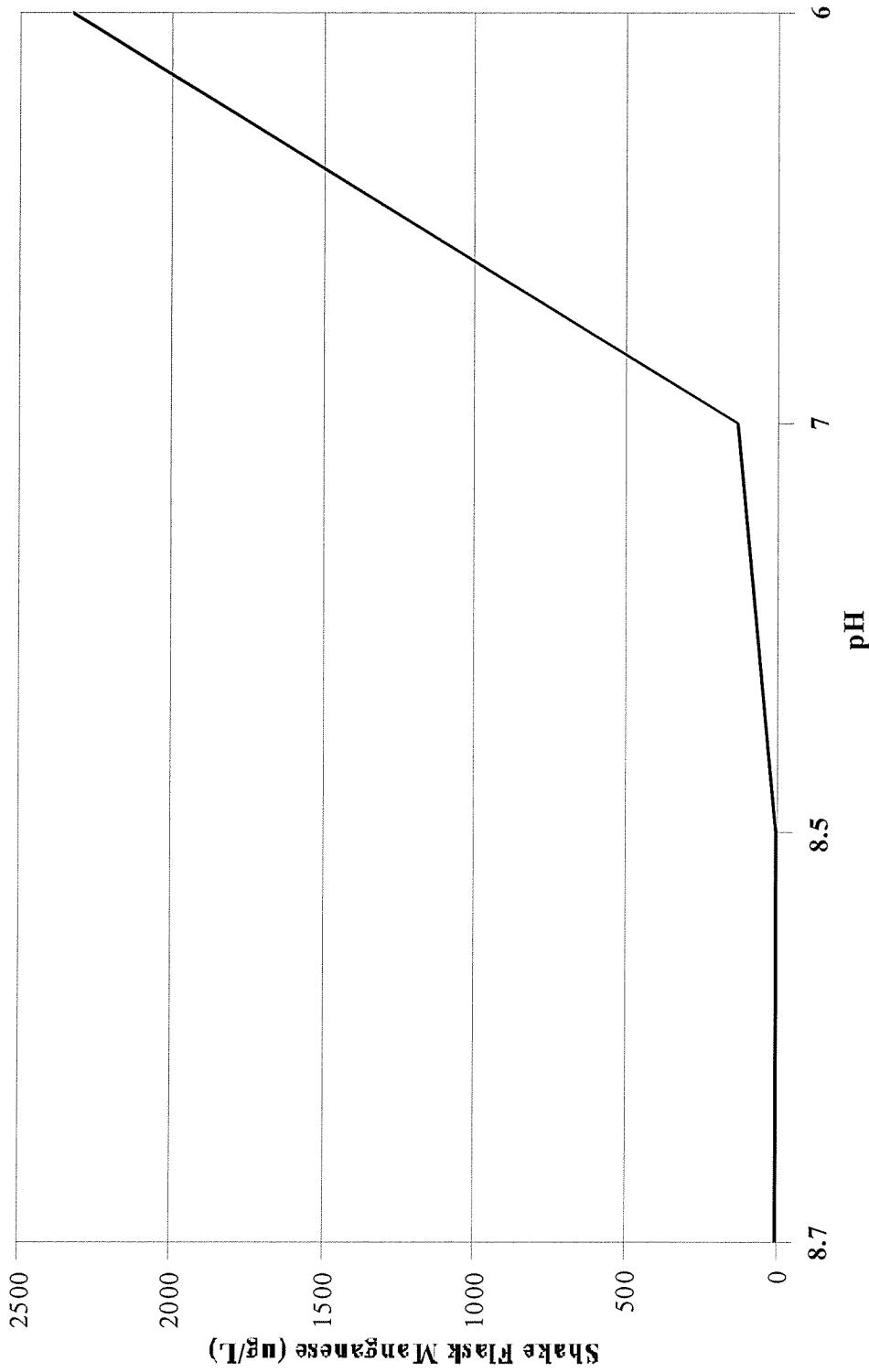


Figure BK

Tailings Samples

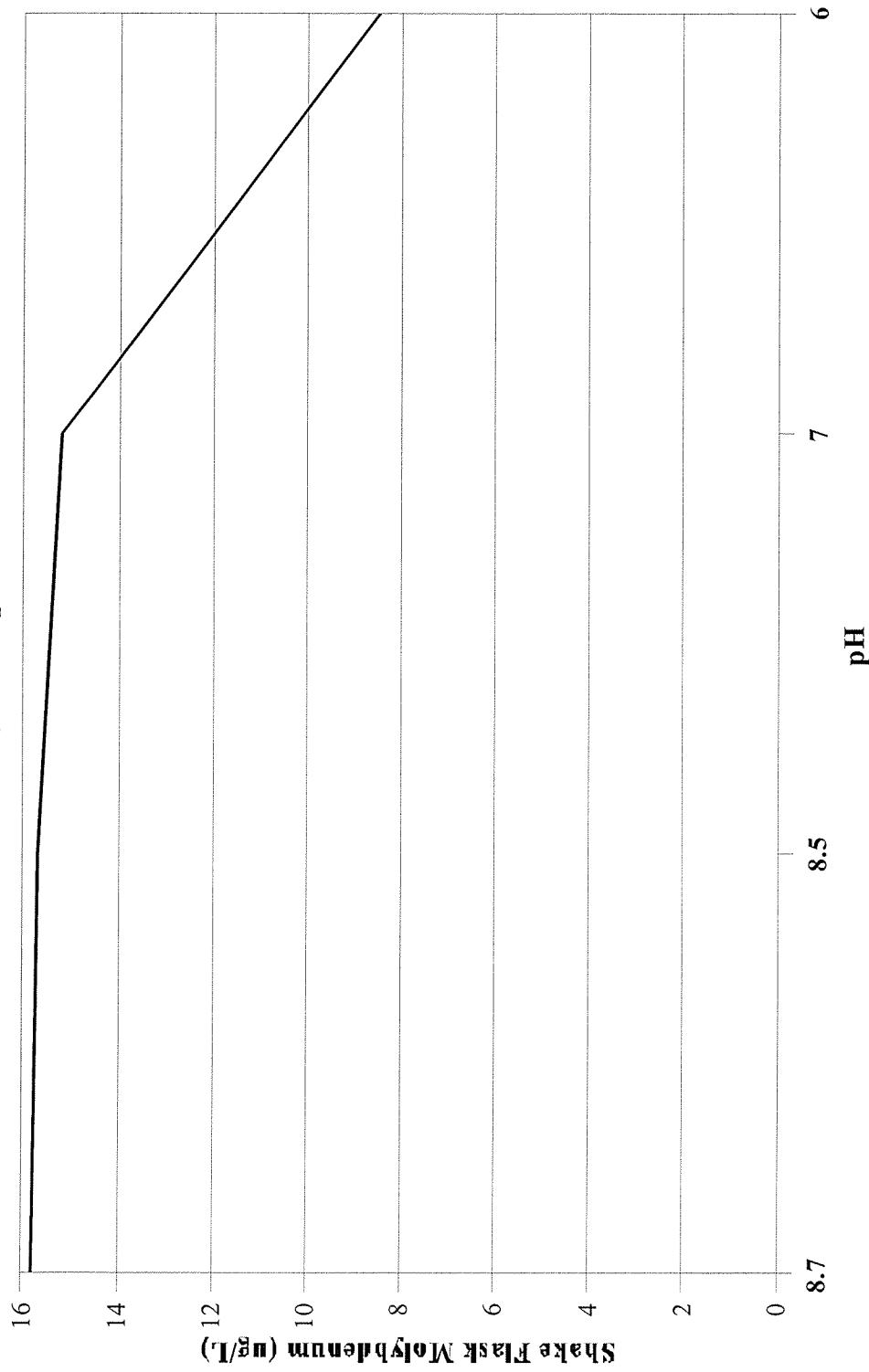


Figure BL

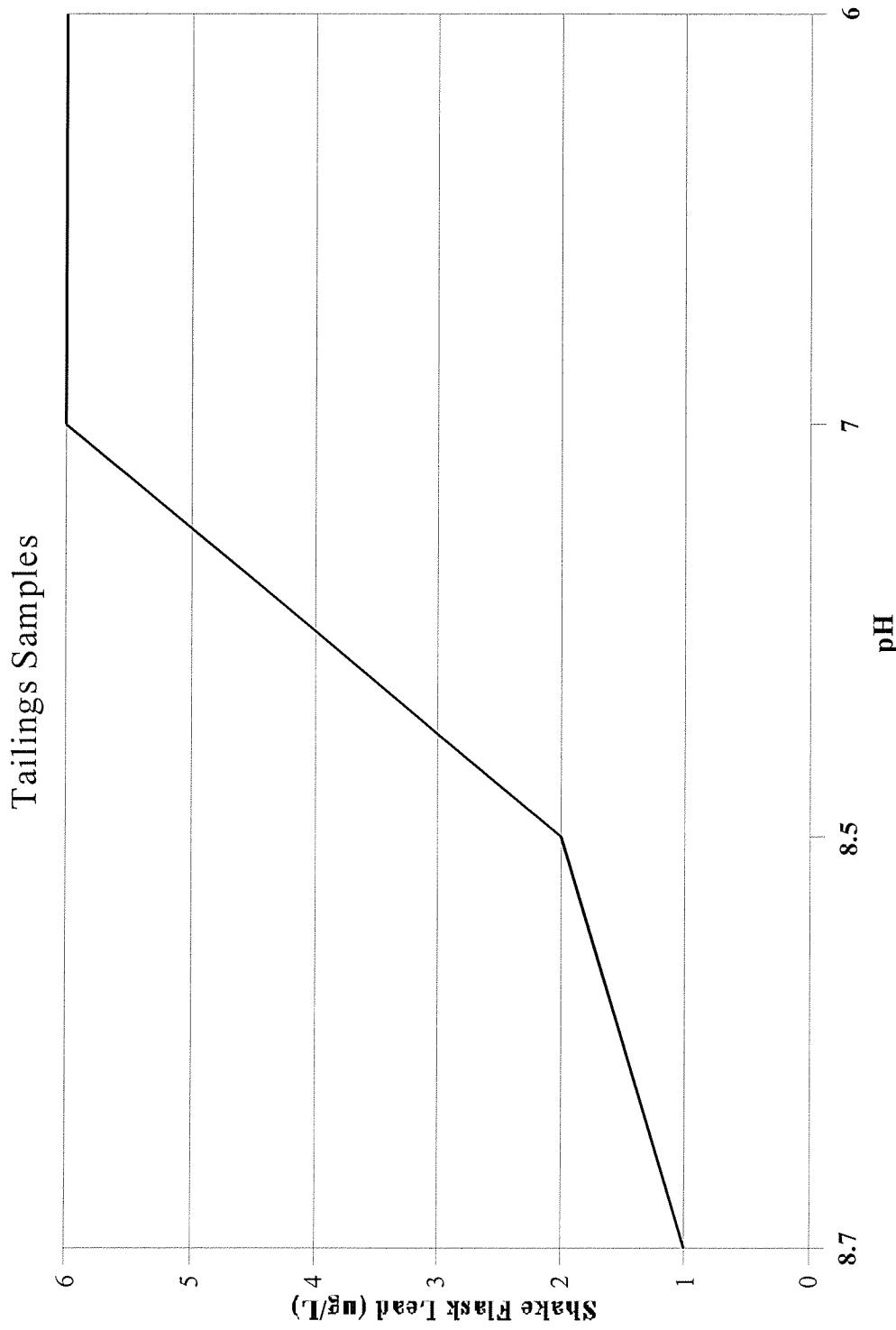


Figure BM

Tailings Samples

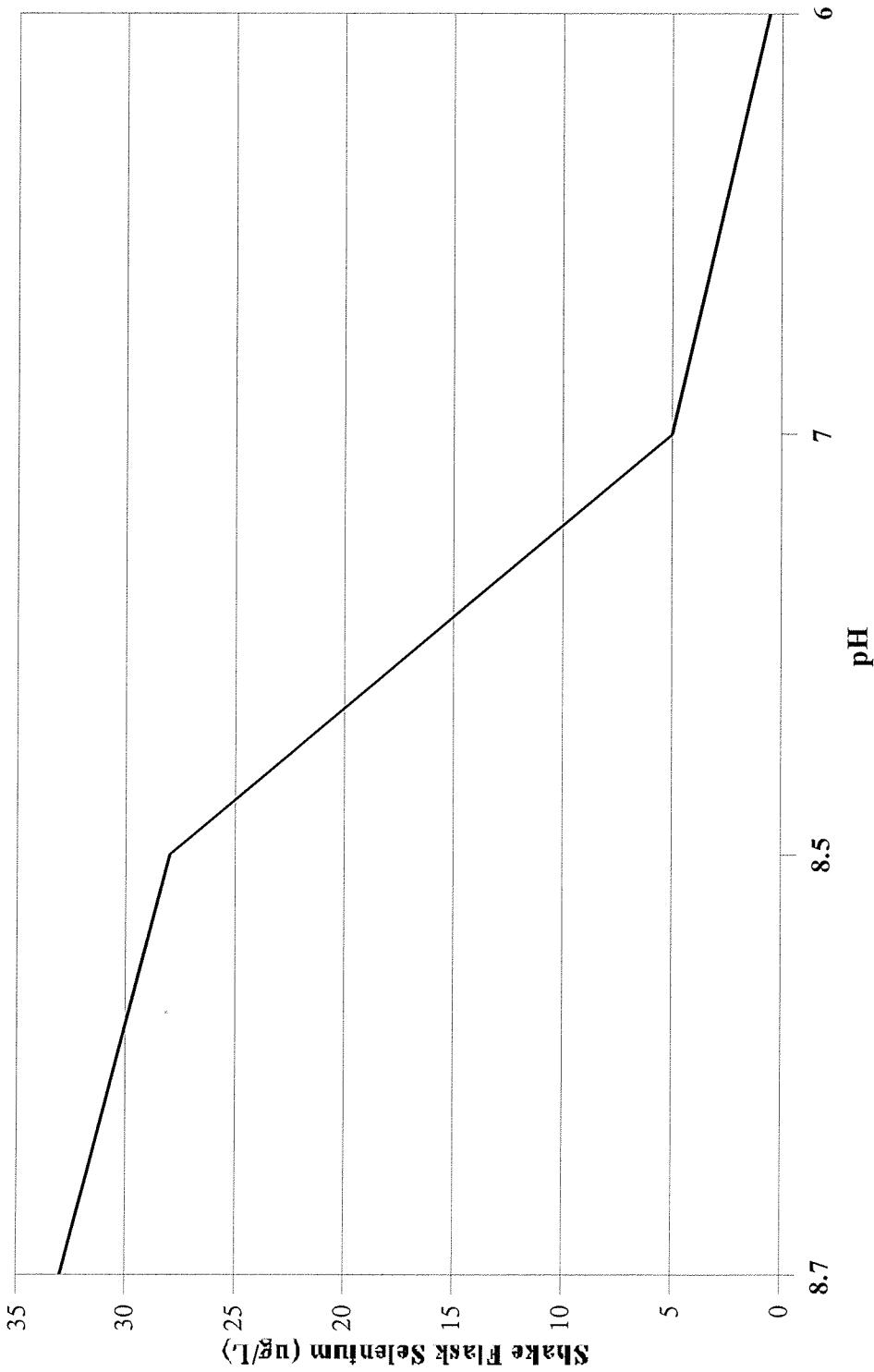


Figure BN

Tailings Samples

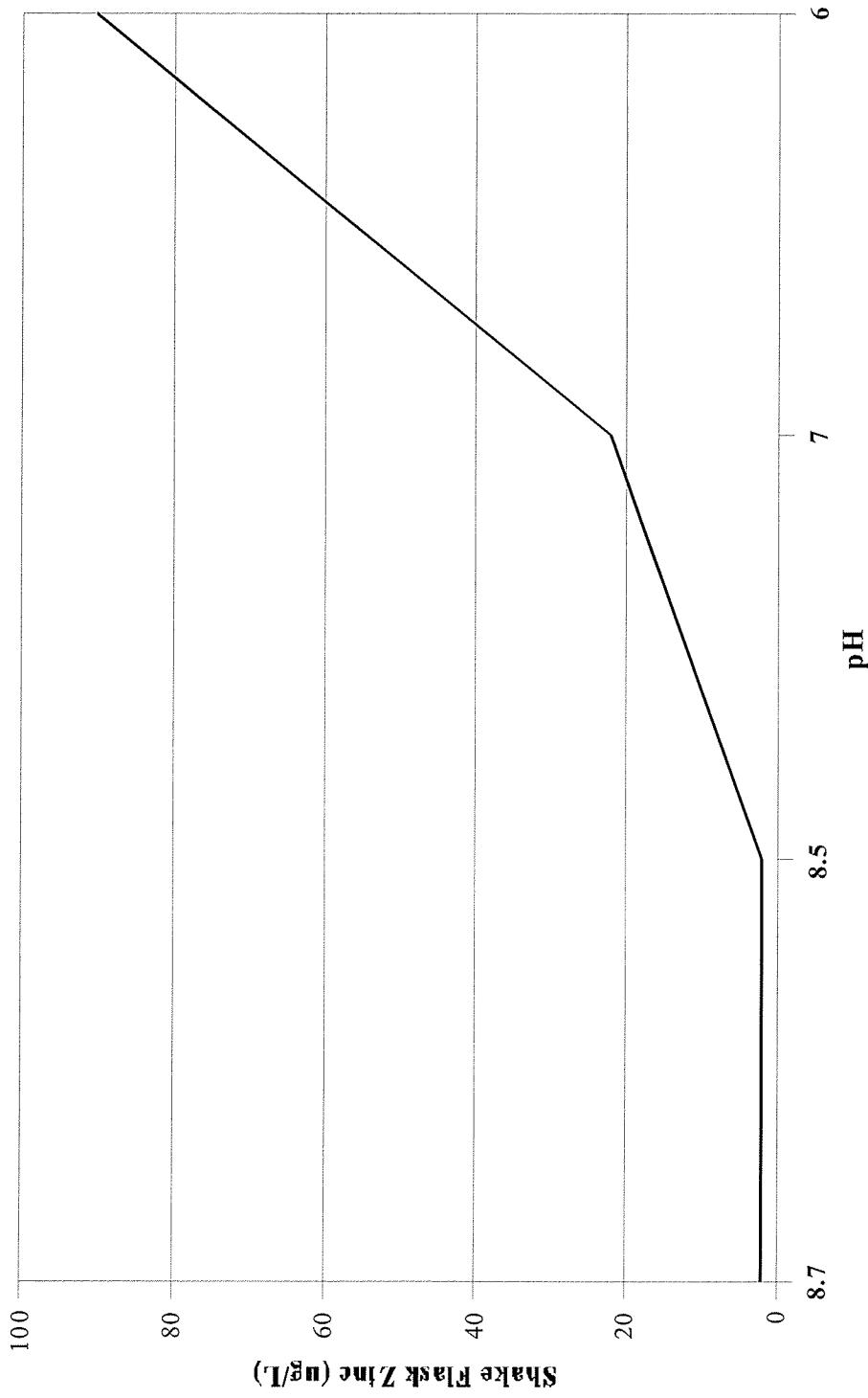


Figure CA

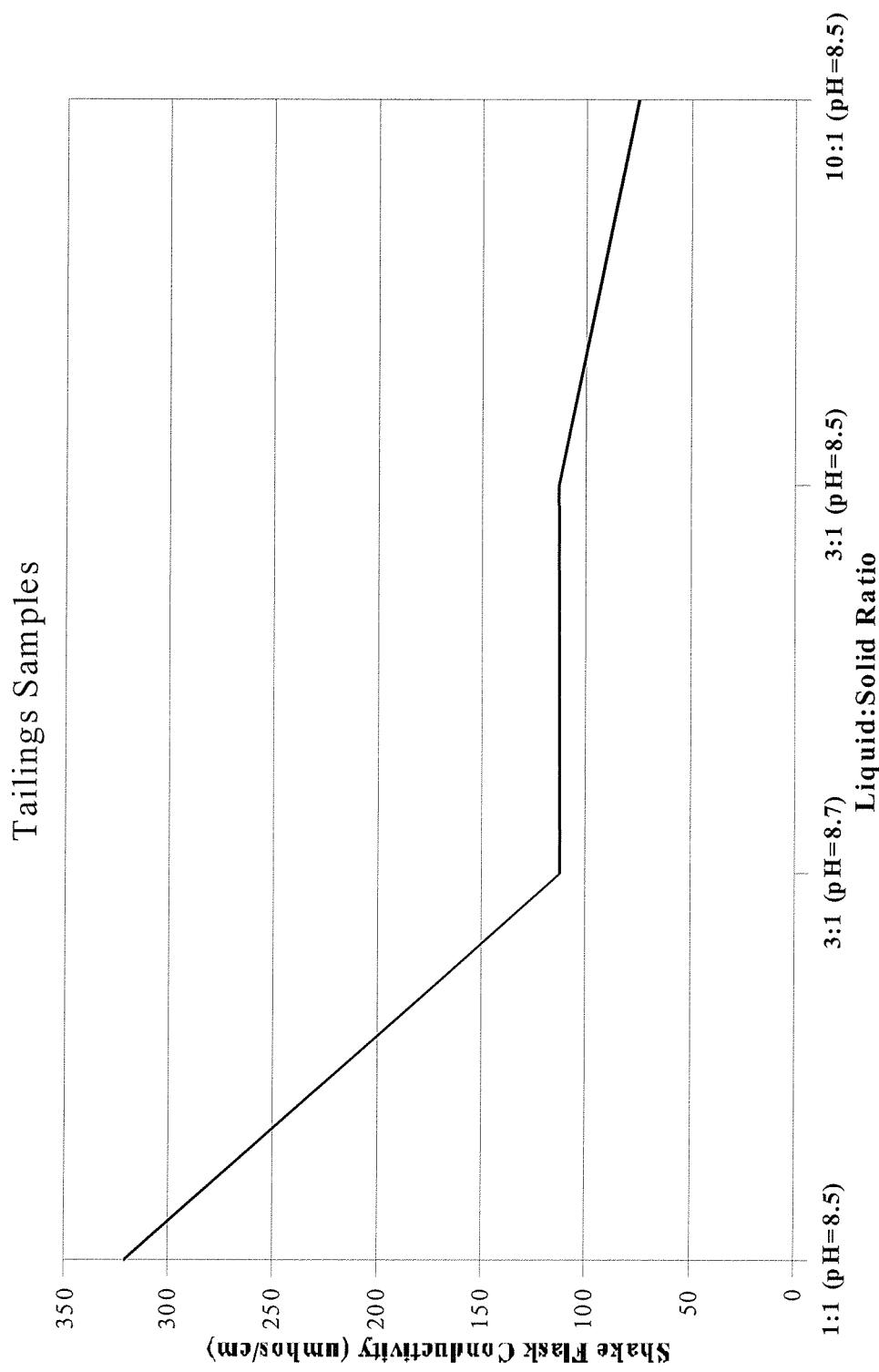


Figure CB

Tailings Samples

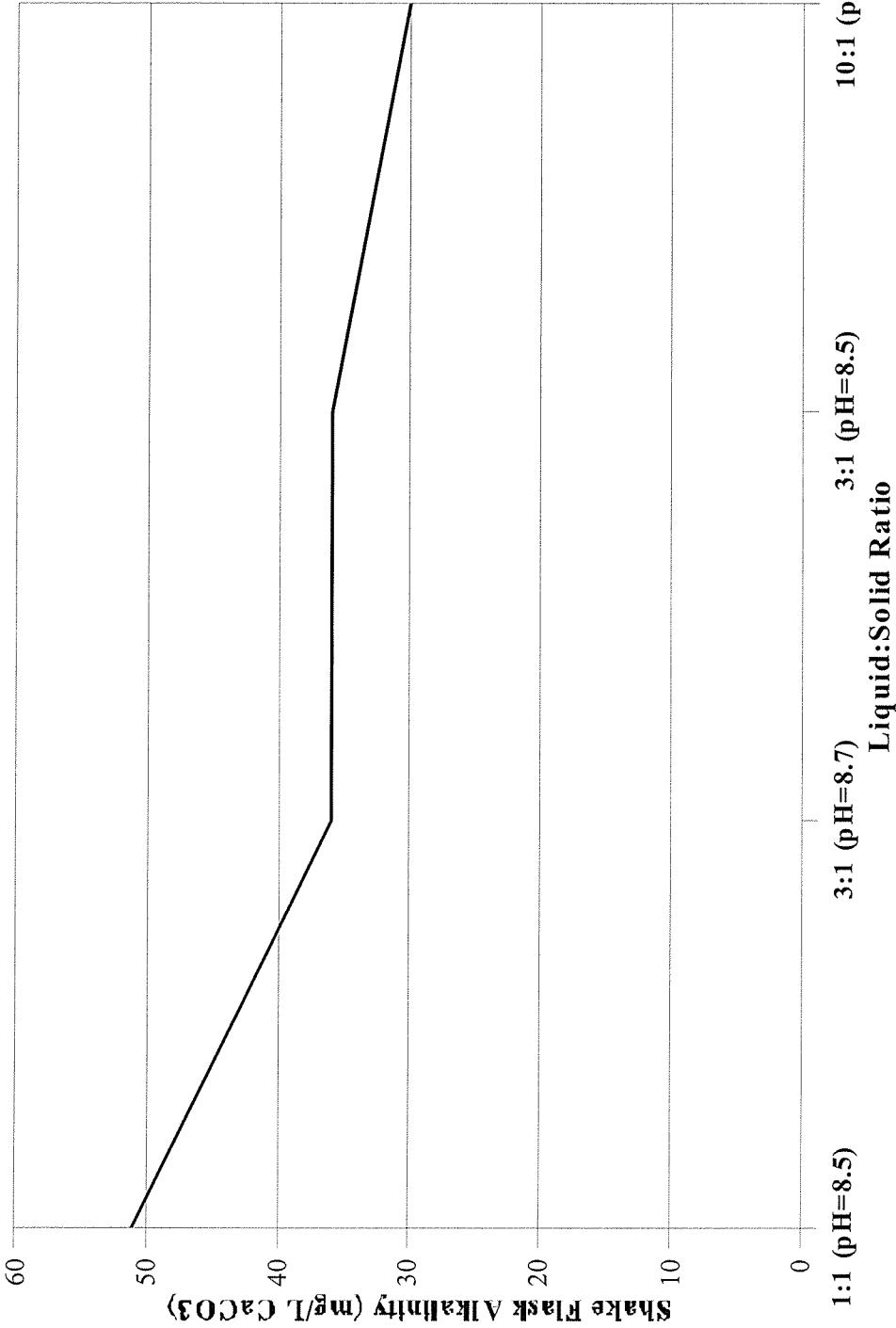


Figure CC

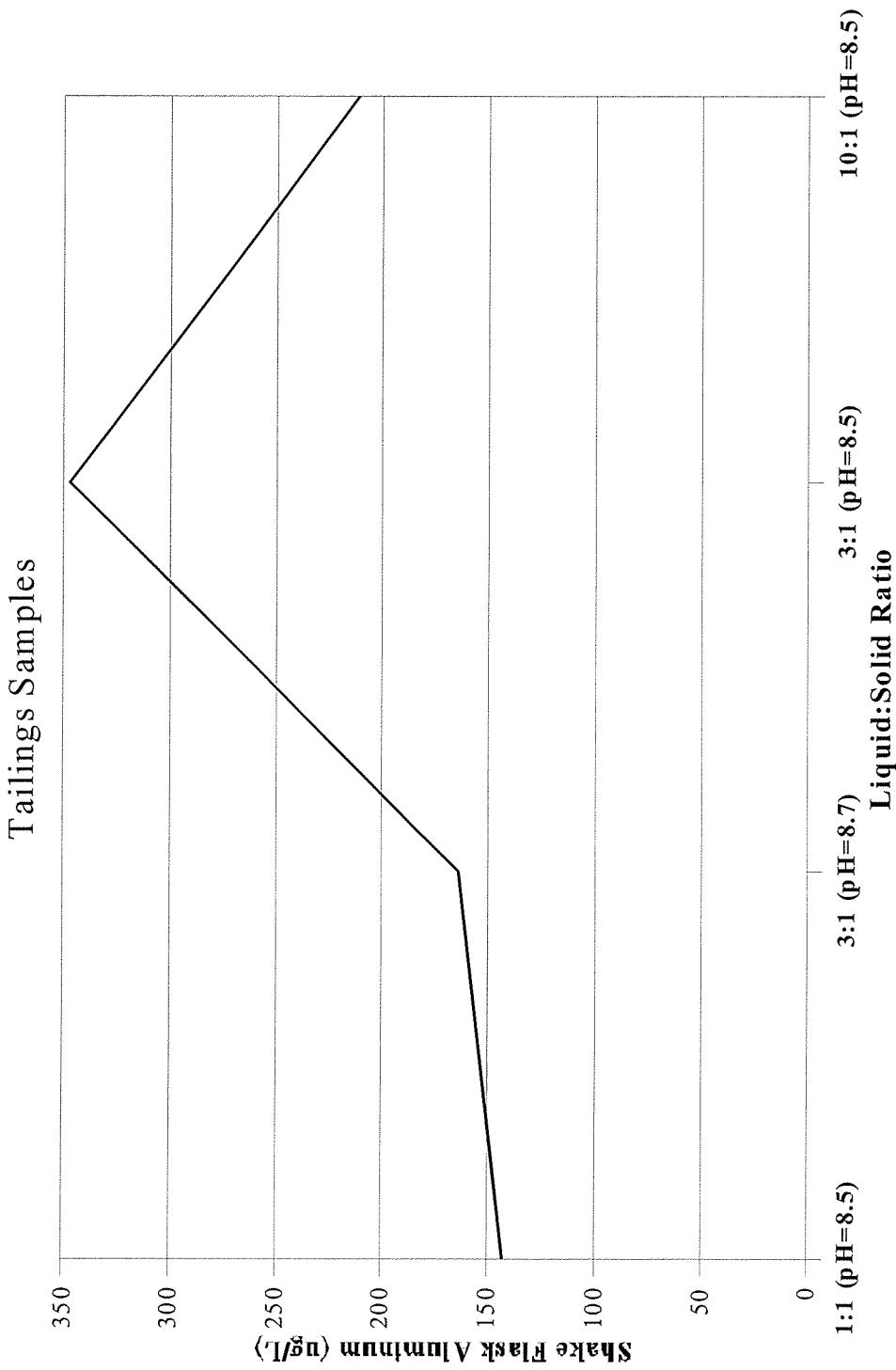


Figure CD1

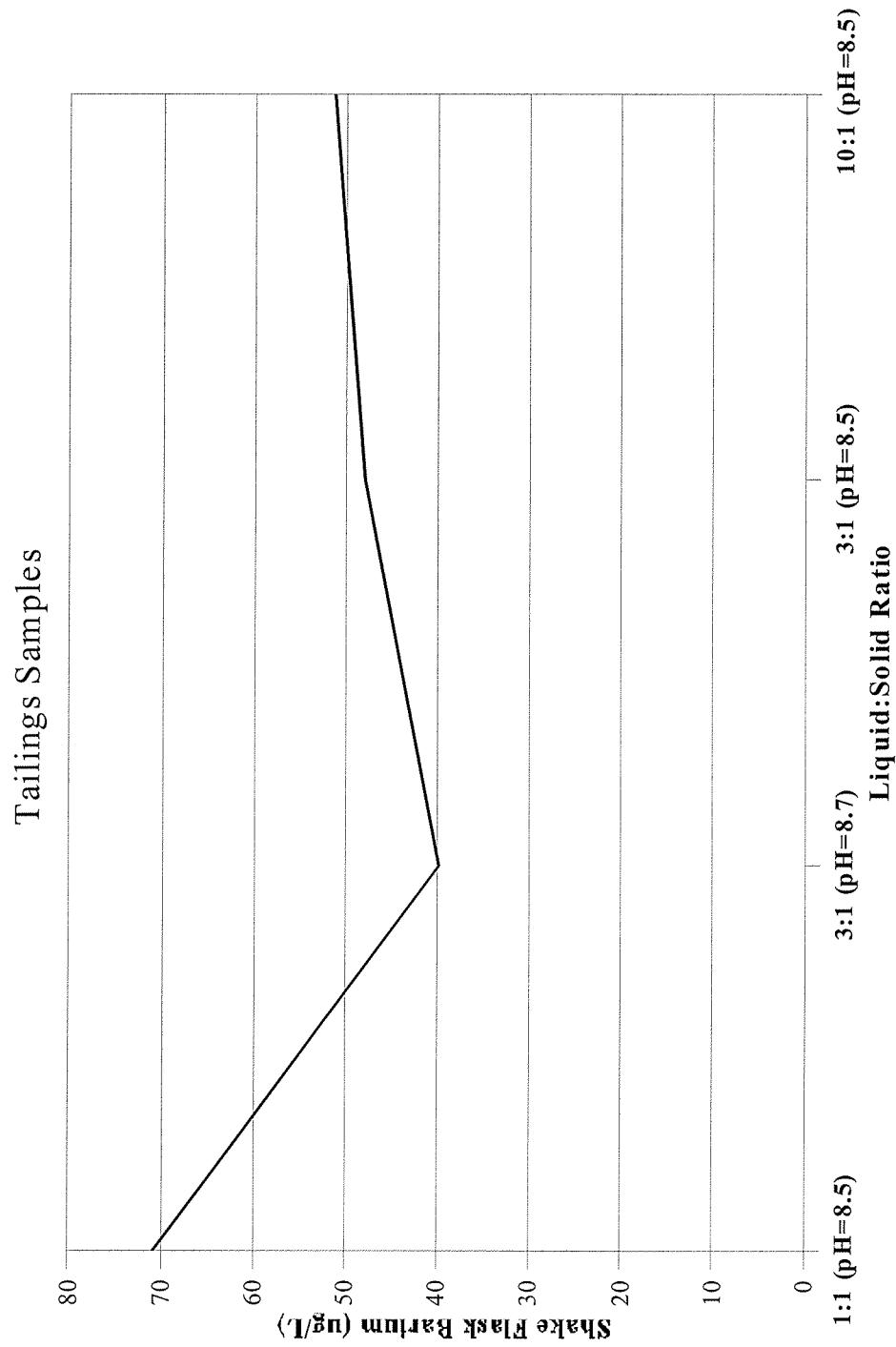


Figure CE

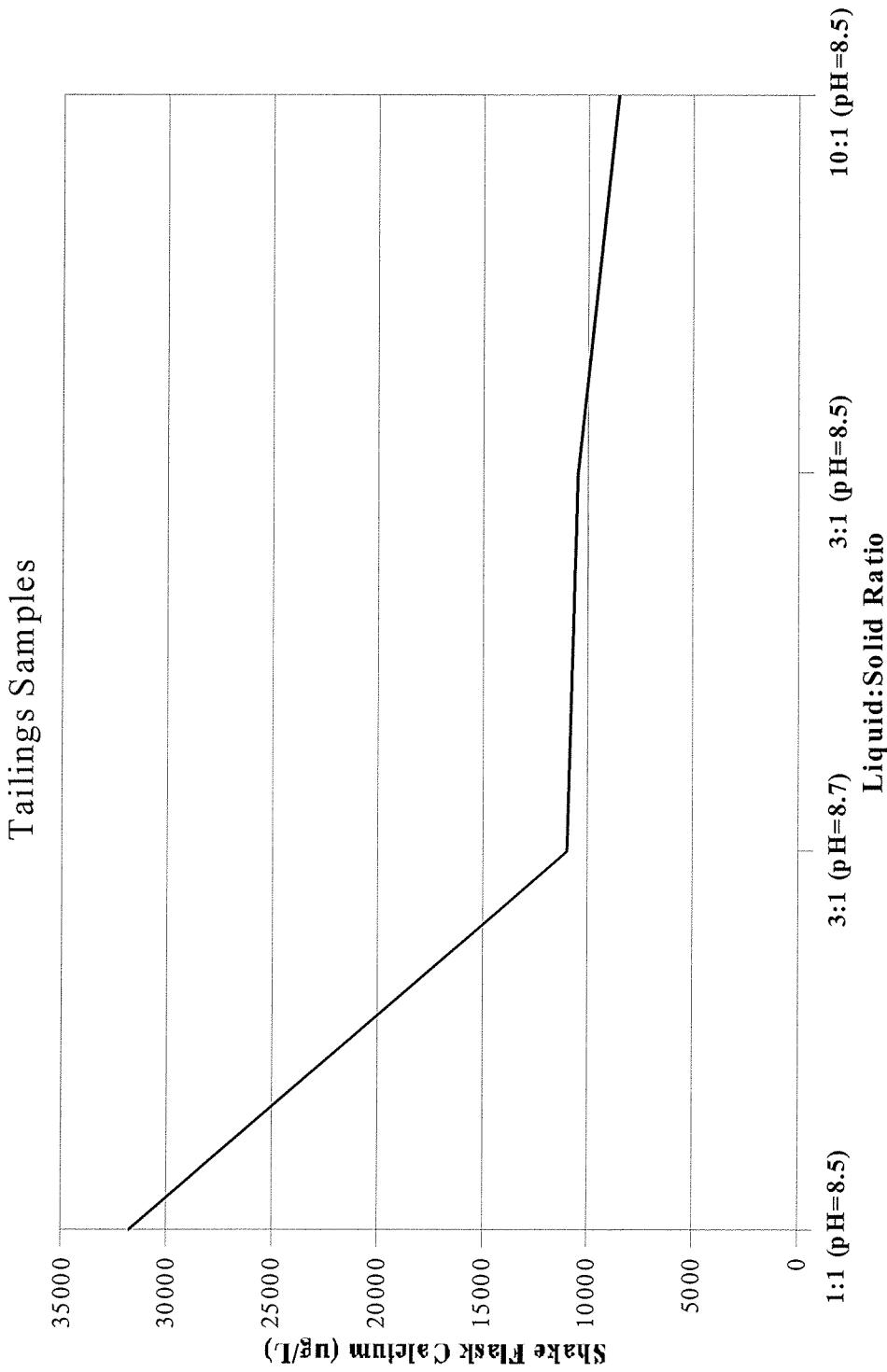


Figure CF

Tailings Samples

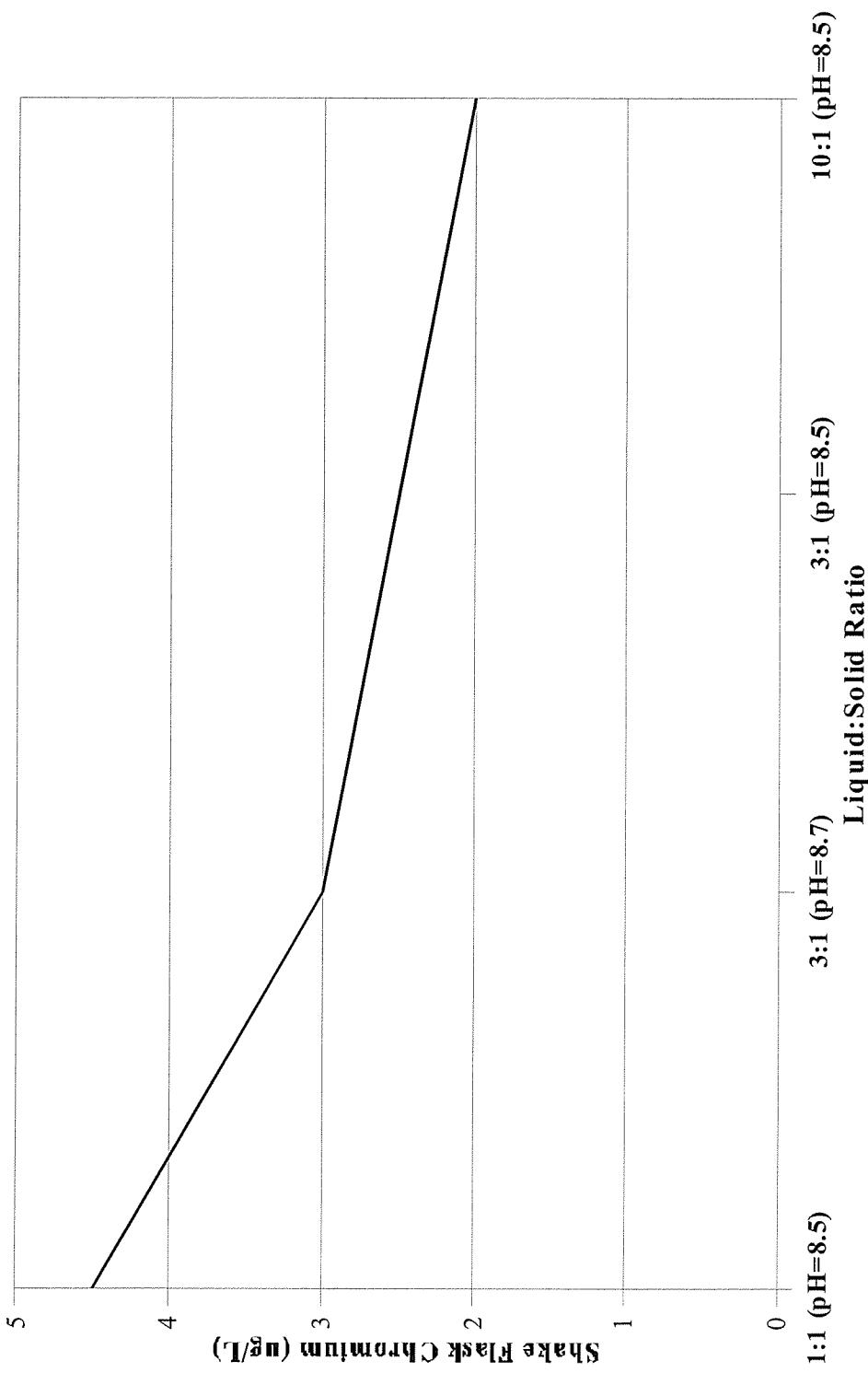


Figure CG

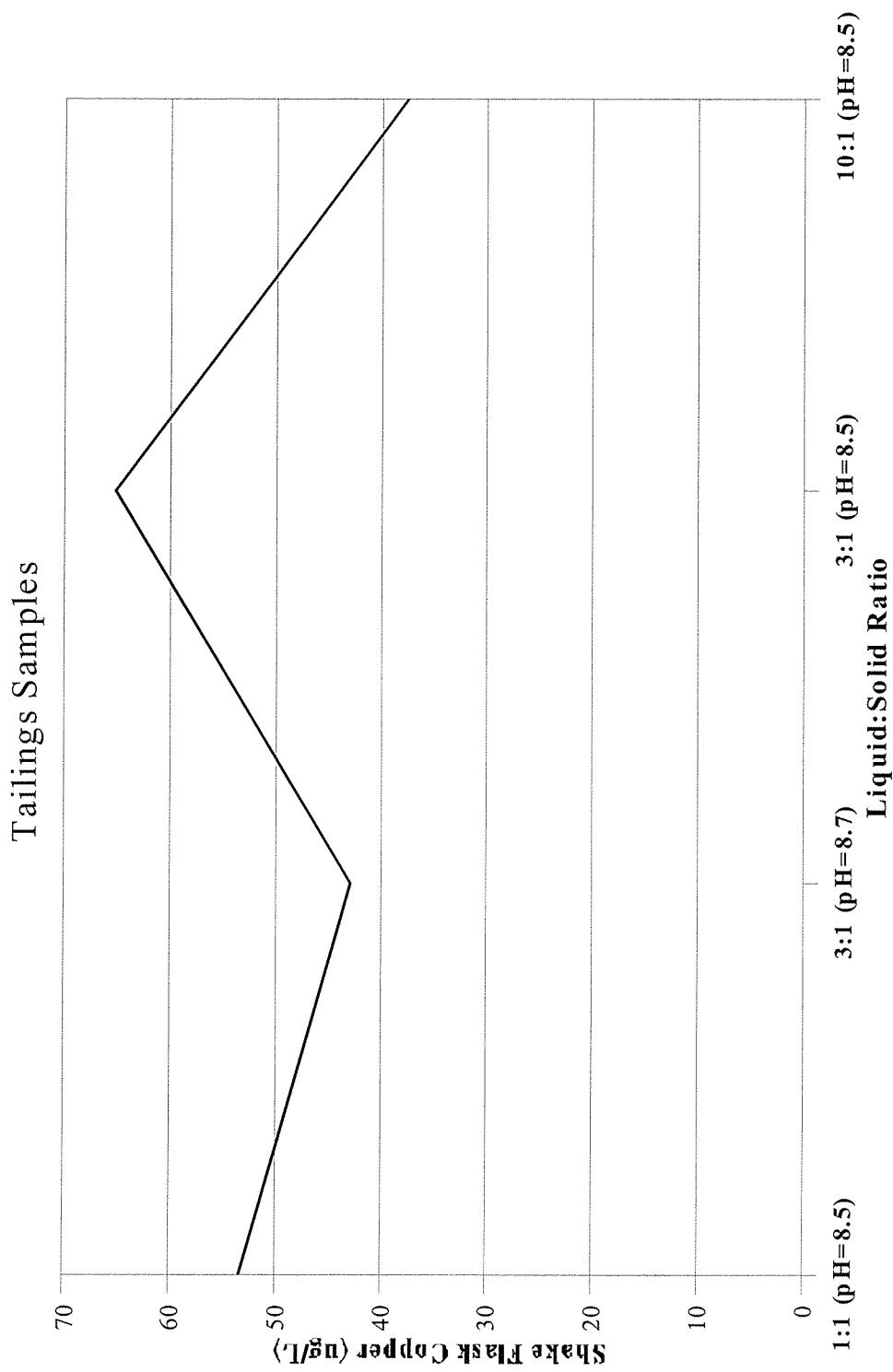


Figure CH

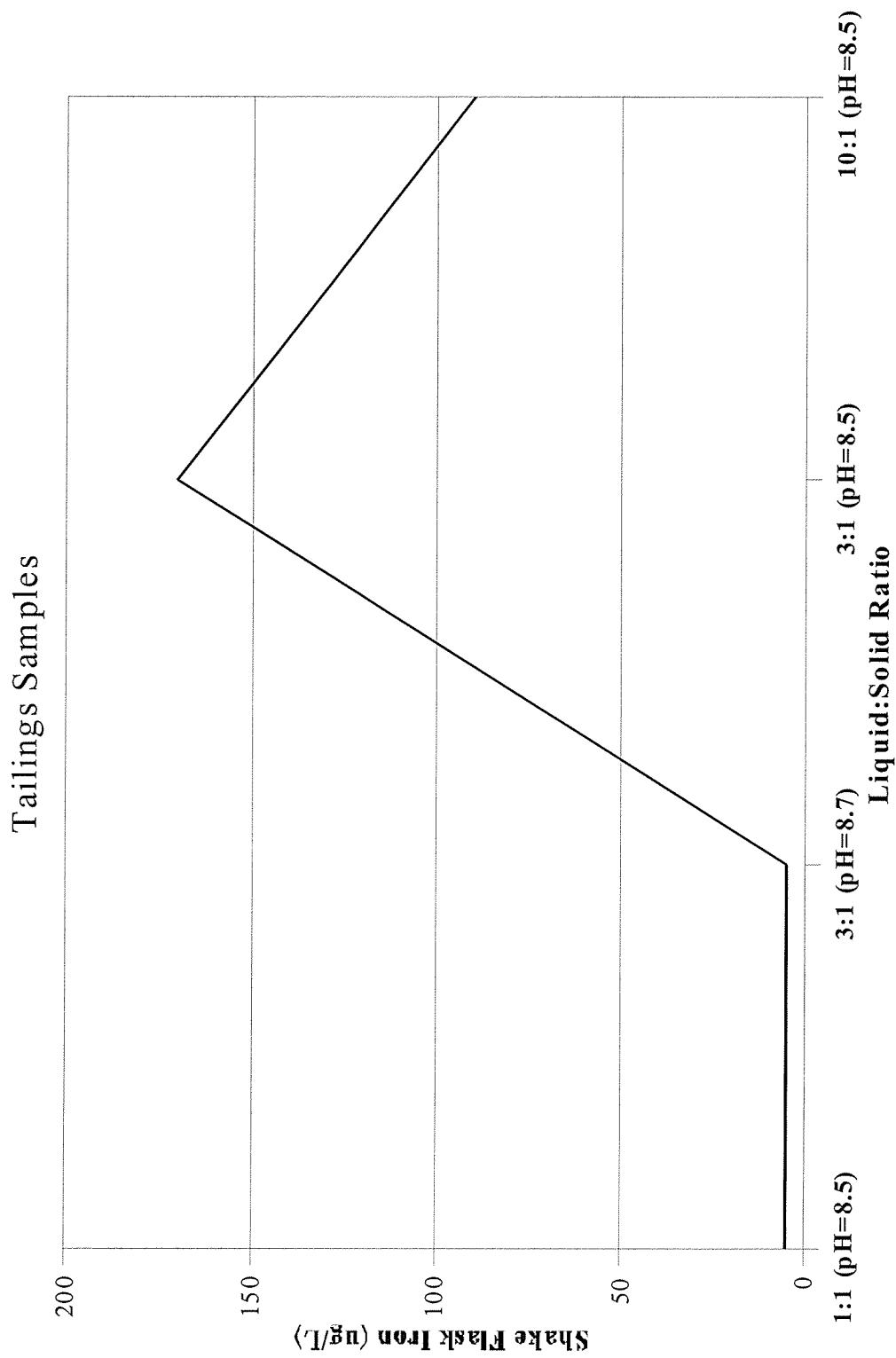


Figure CI

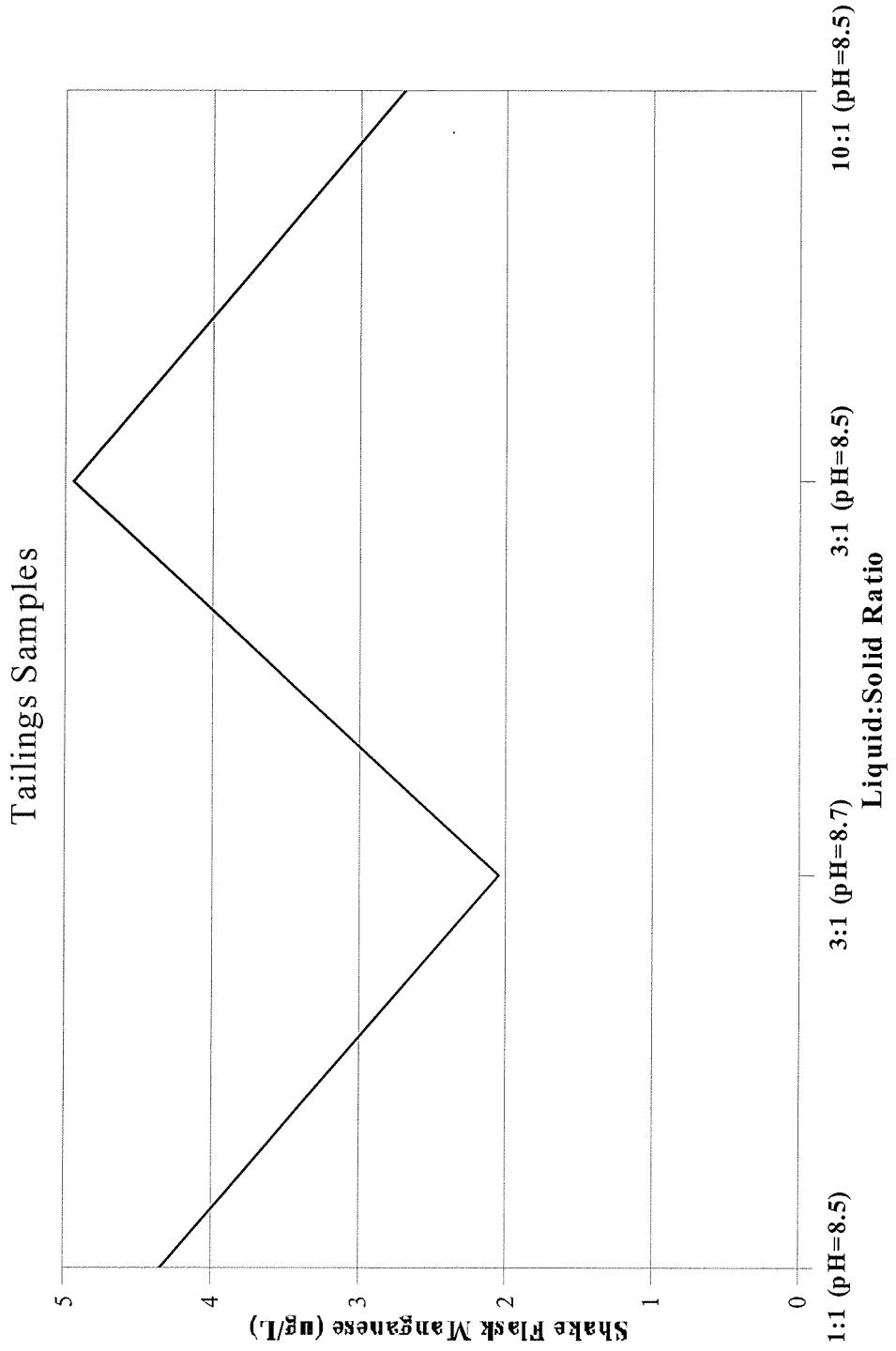


Figure CJ

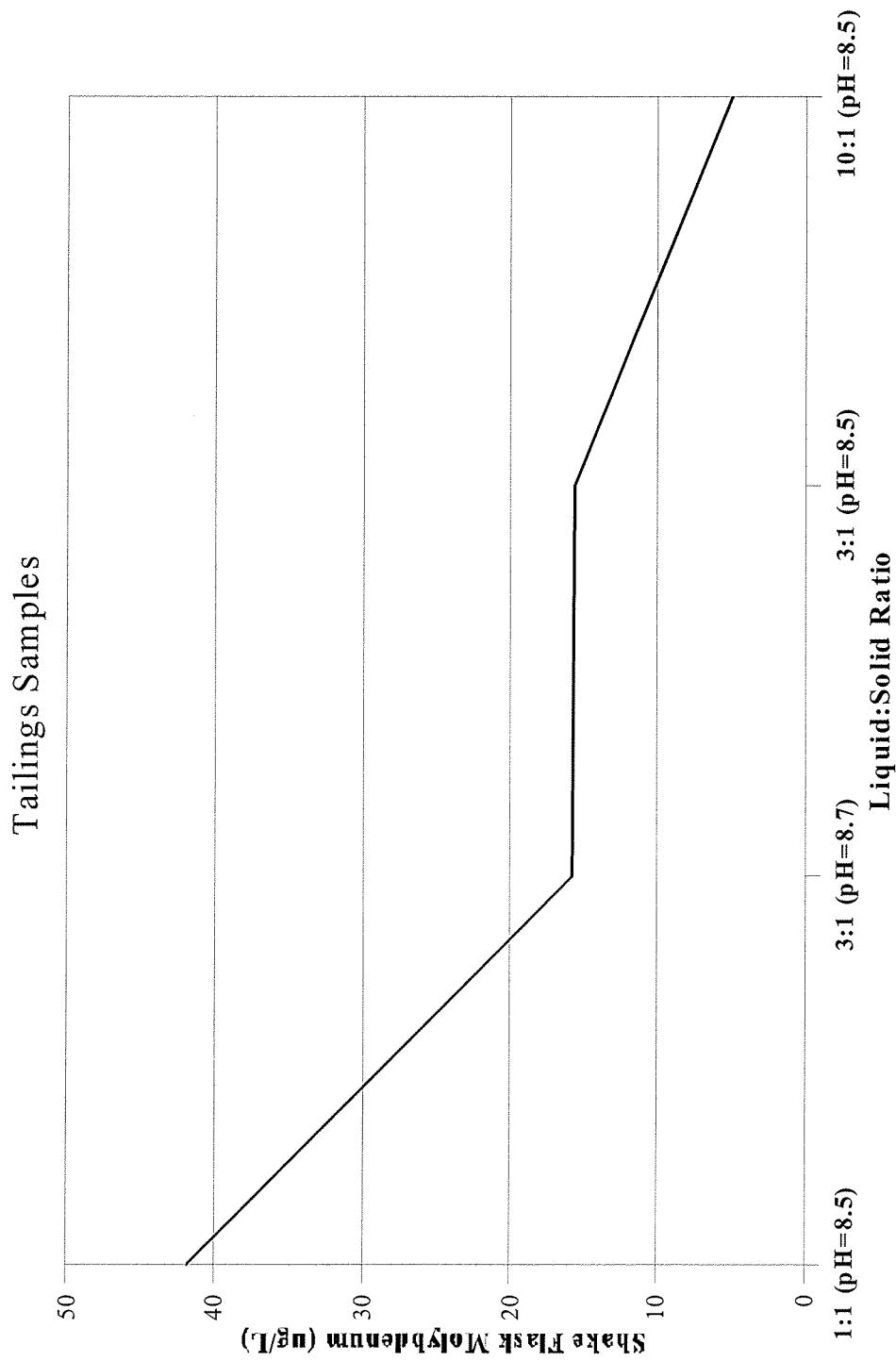


Figure CK

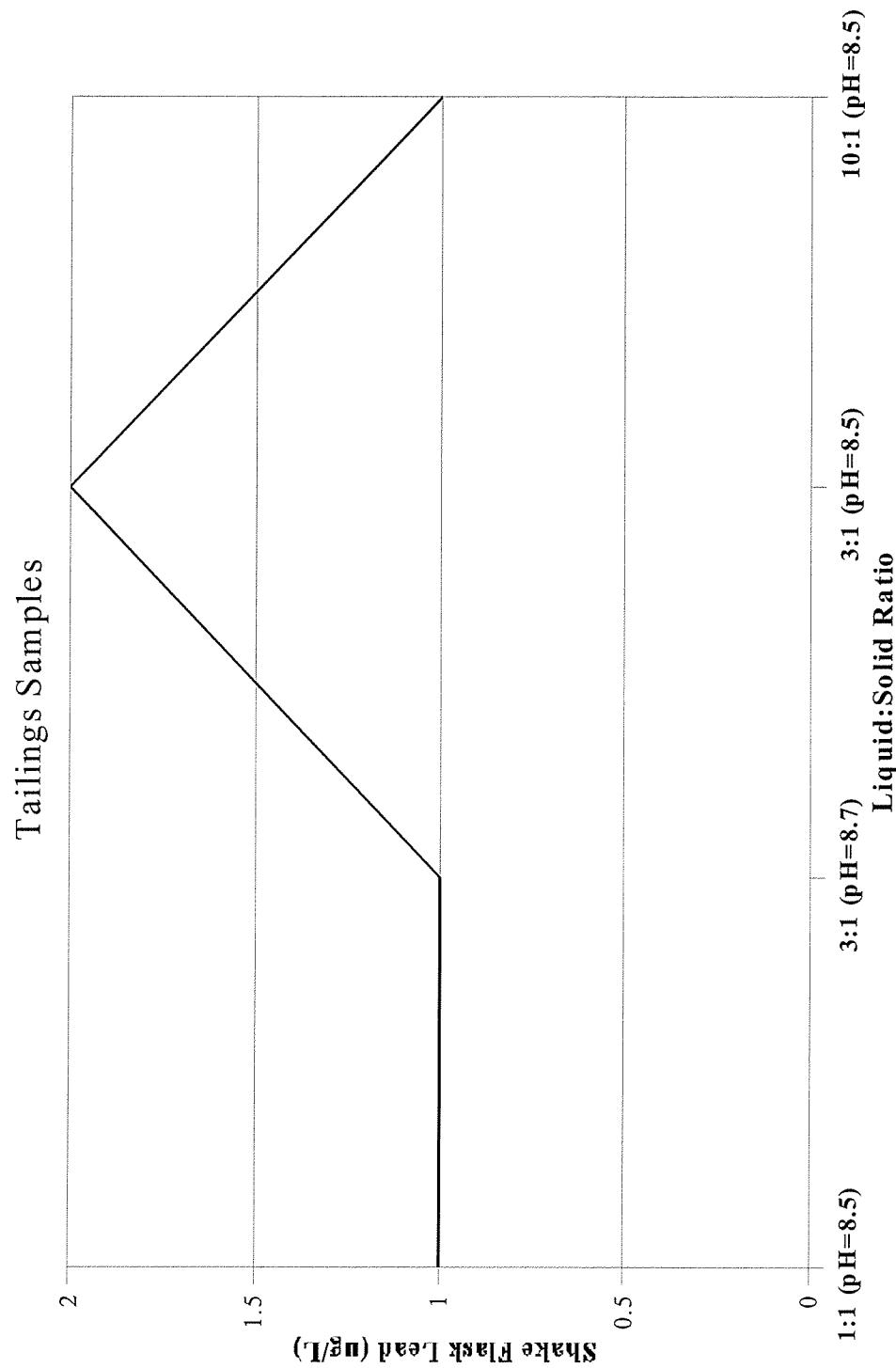


Figure CL

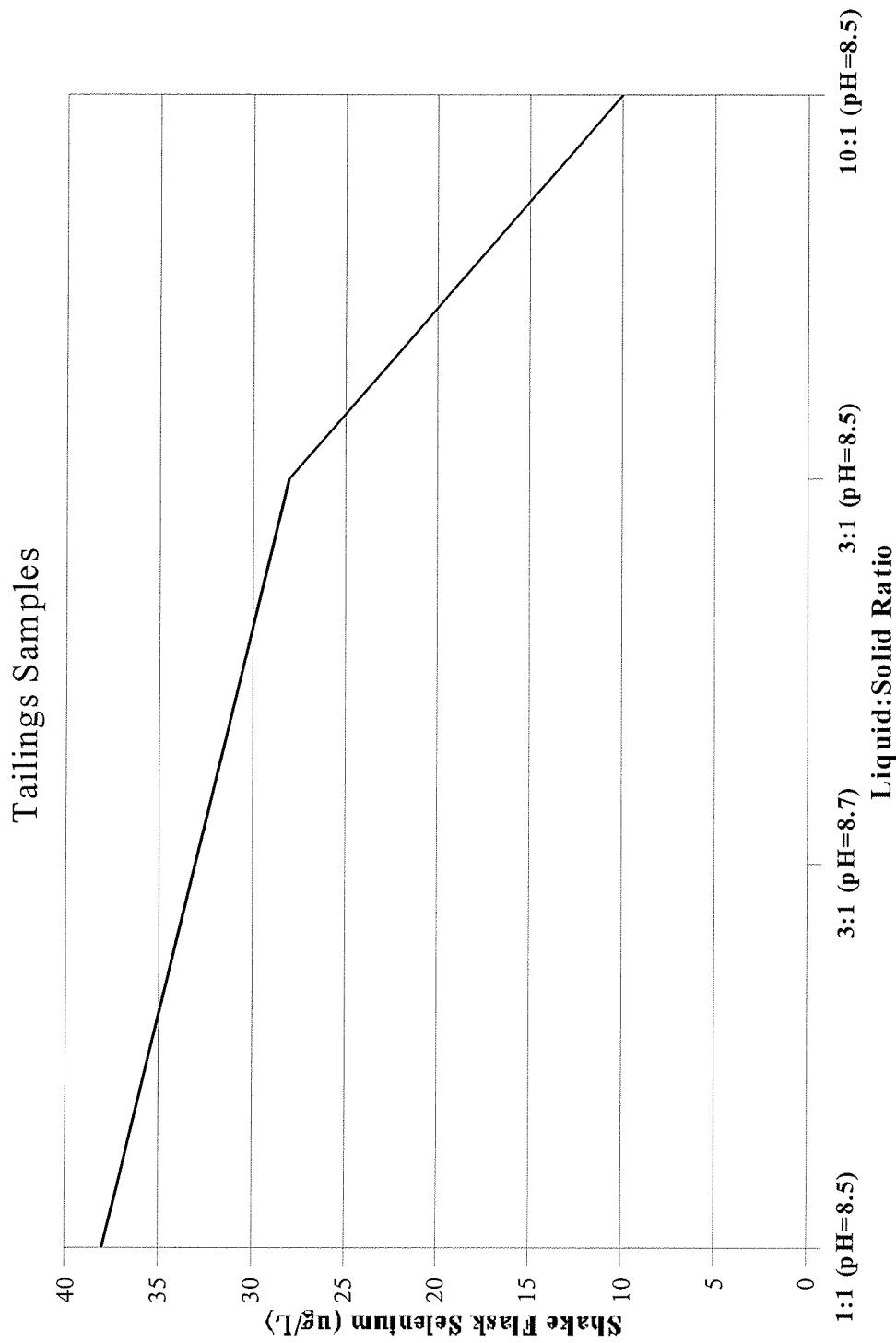


Figure CM

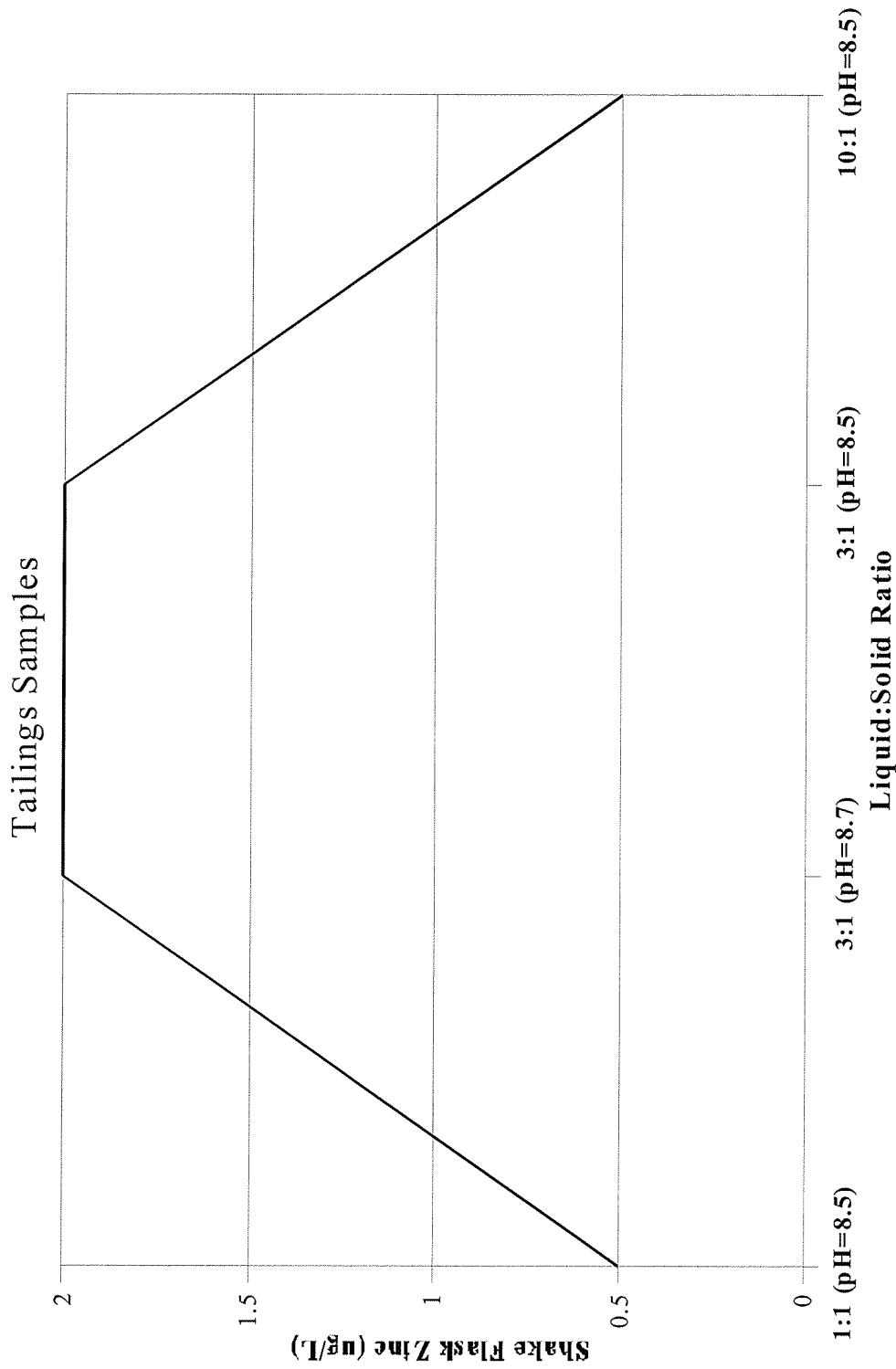
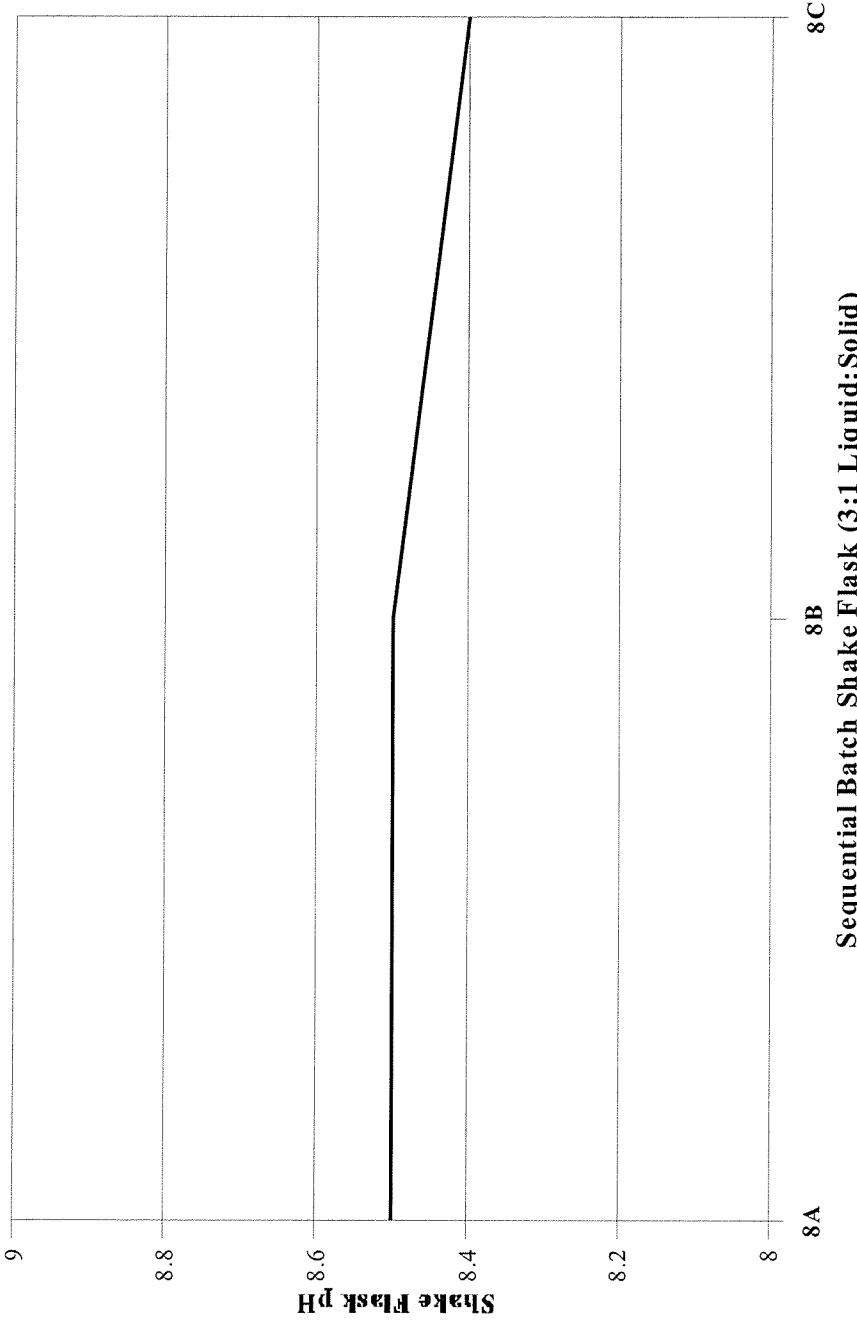


Figure DA

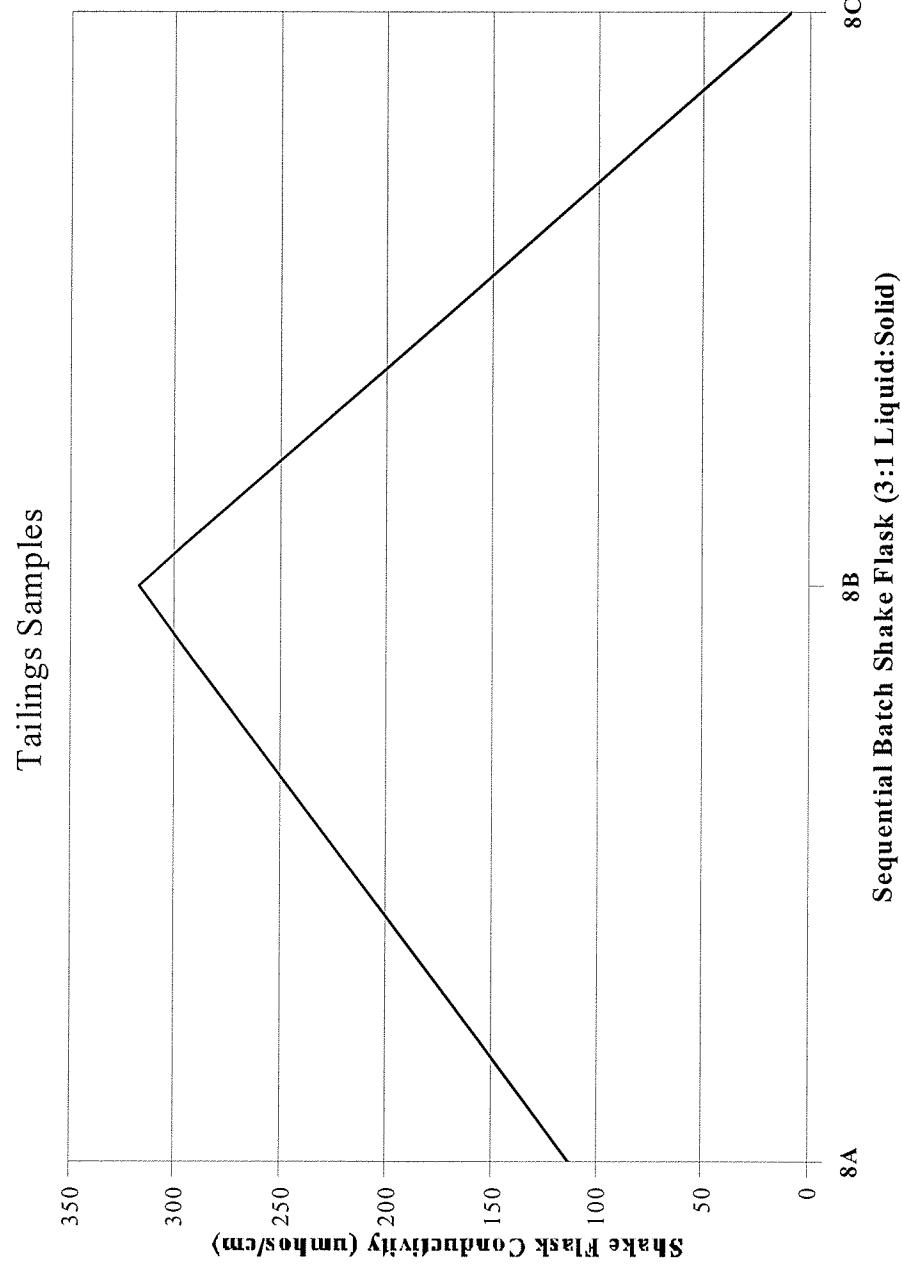
Tailings Samples



Sequential Batch Shake Flask (3:1 Liquid:Solid)

8A 8B 8C

Figure DB



Sequential Batch Shake Flasks (3:1 Liquid:Solid)

Figure DC

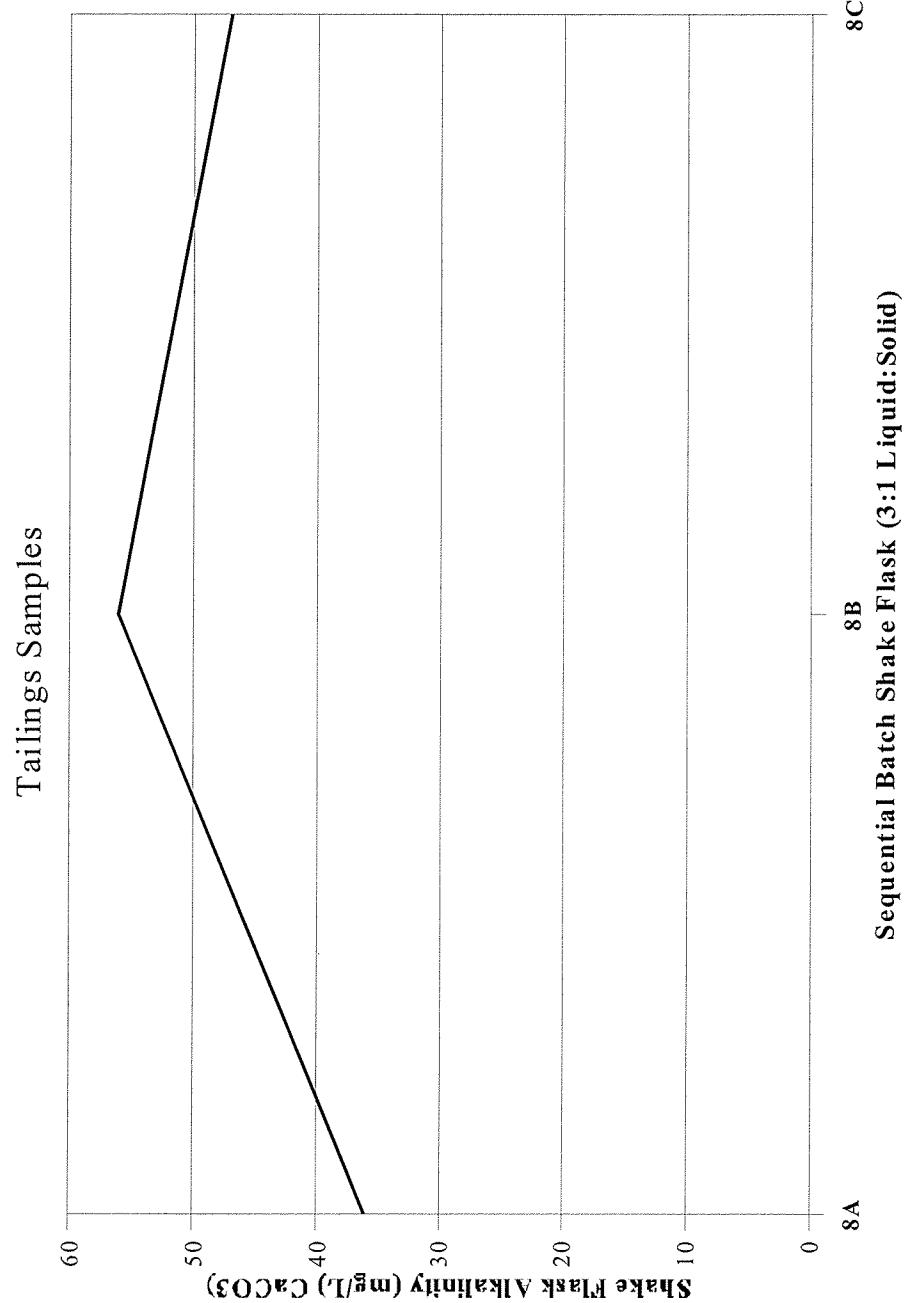
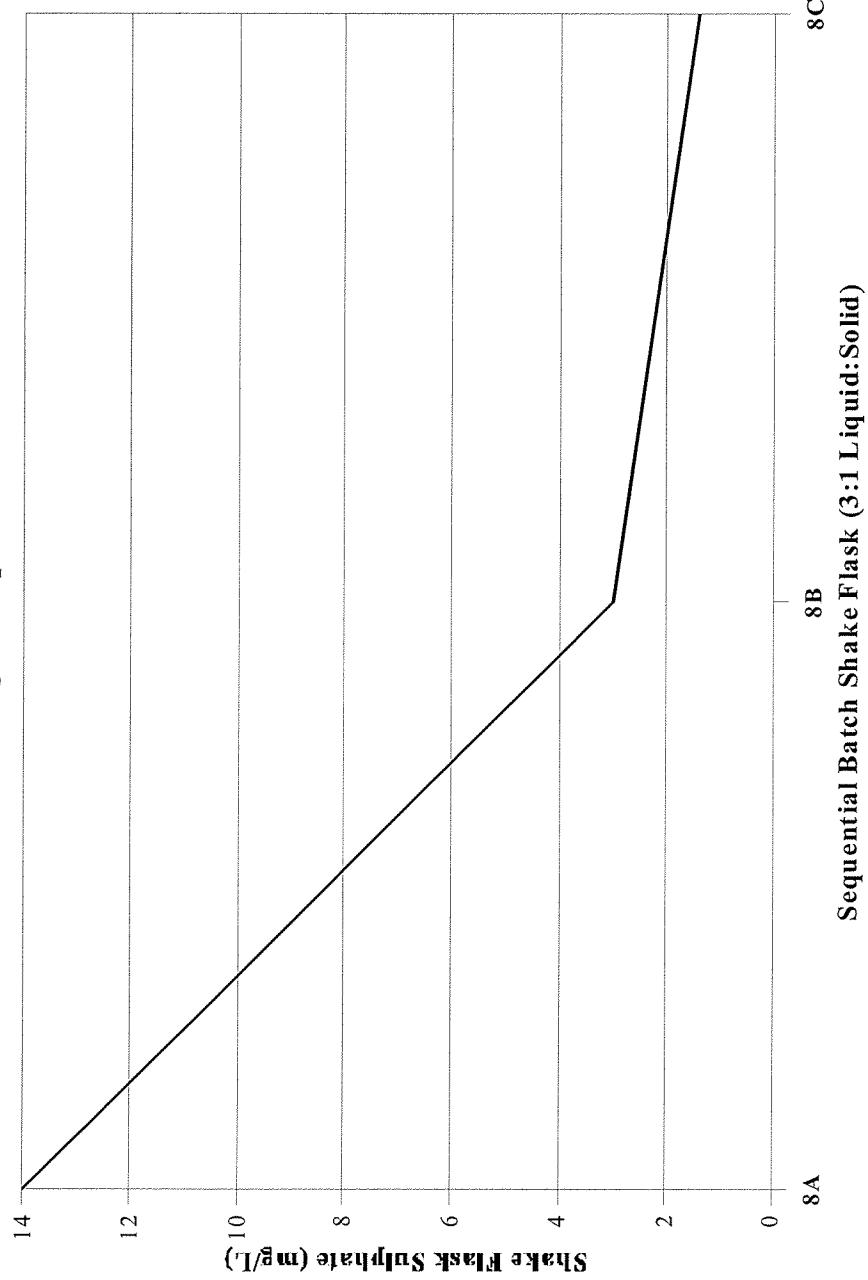


Figure DD

Tailings Samples



Sequential Batch Shake Flask (3:1 Liquid:Solid)

Figure DE

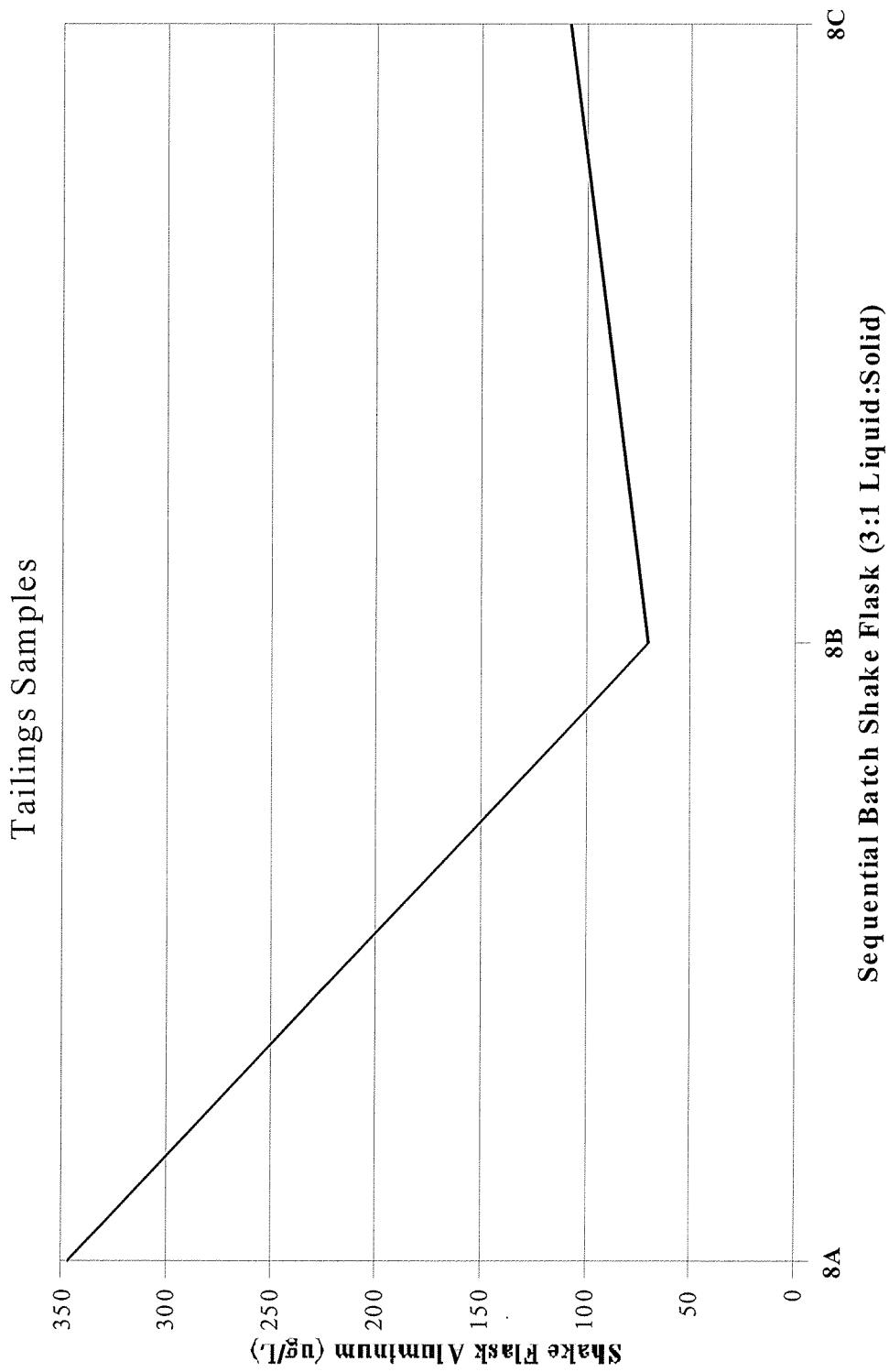


Figure DF

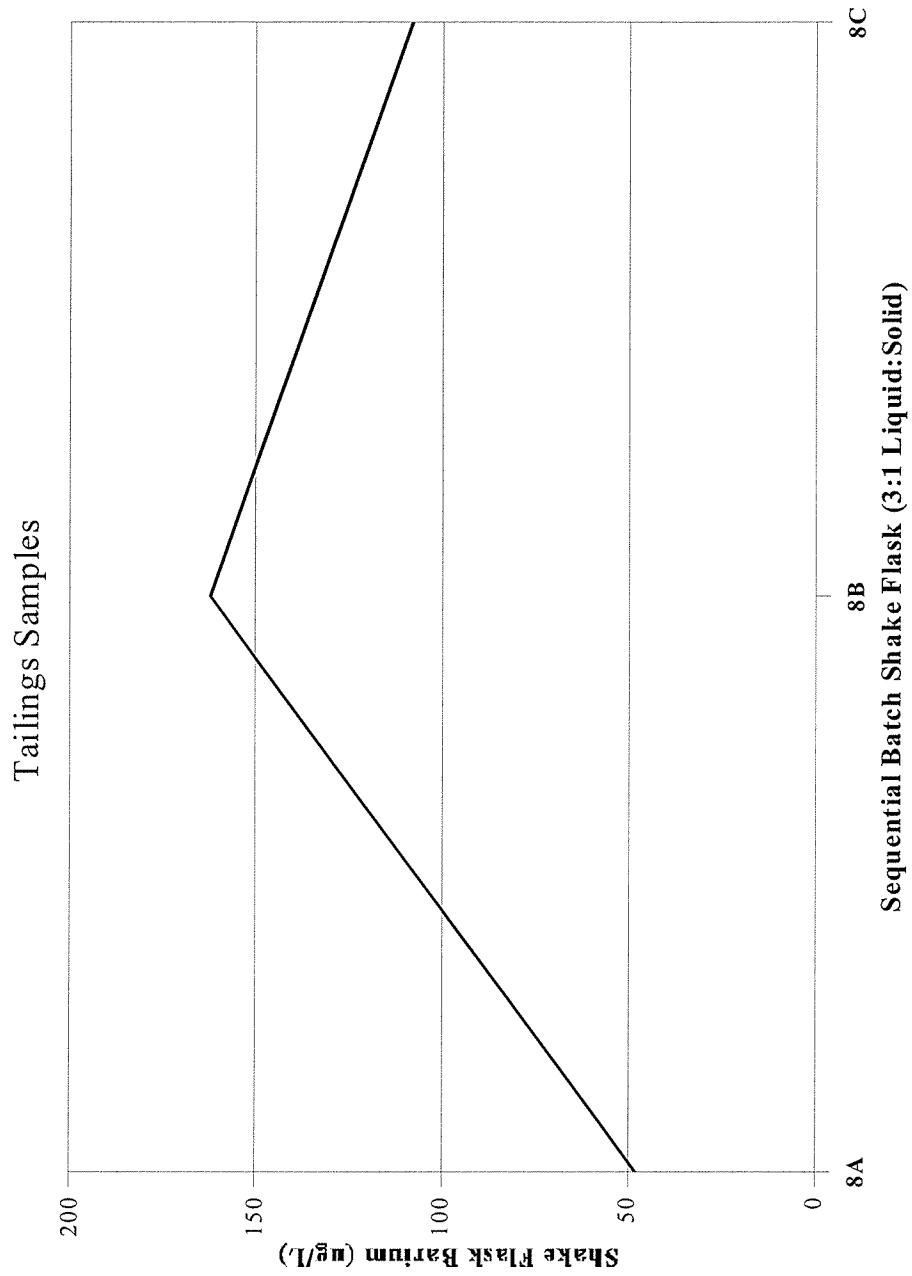


Figure DG

Tailings Samples



Sequential Batch Shake Flask (3:1 Liquid:Solid)

Figure DH

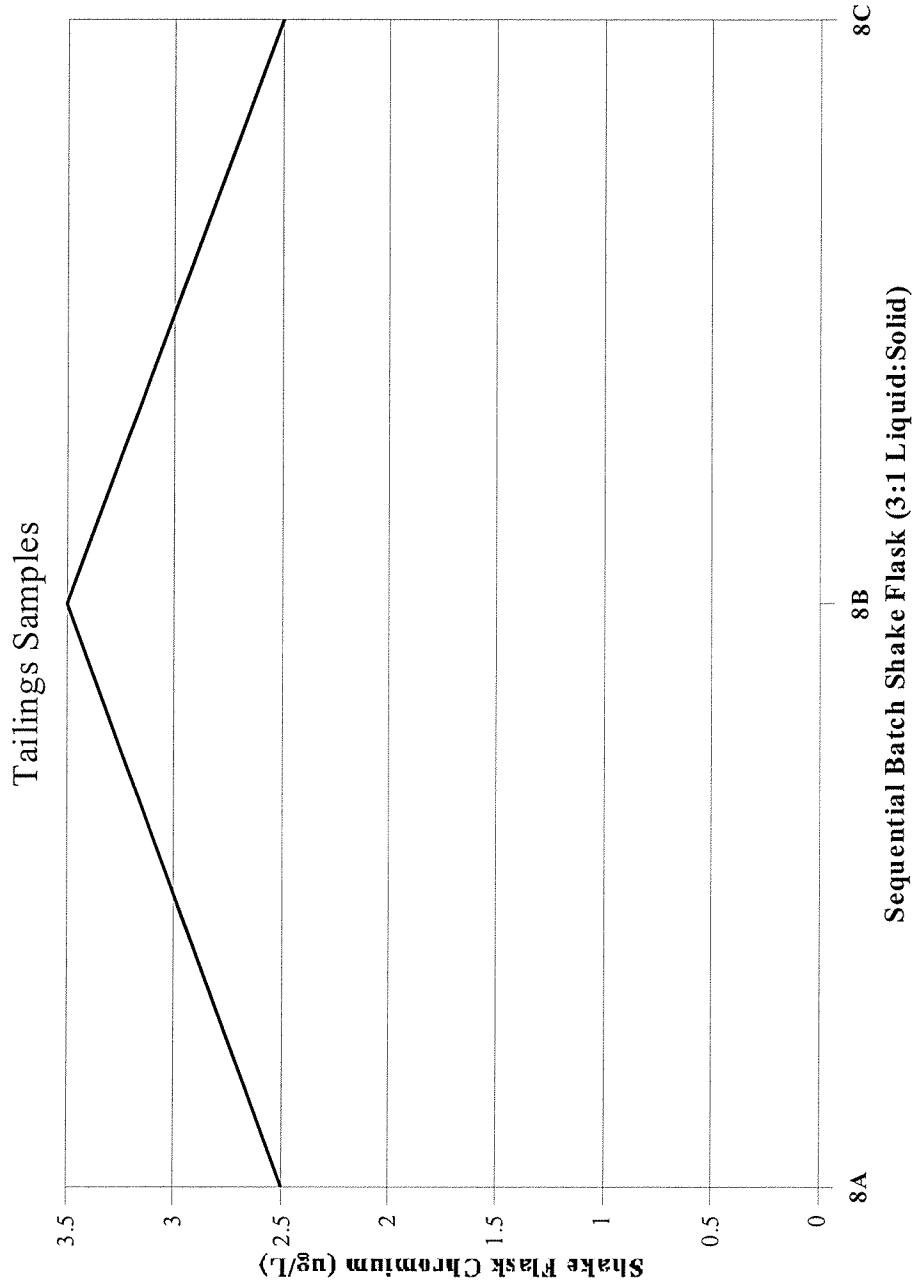


Figure DI

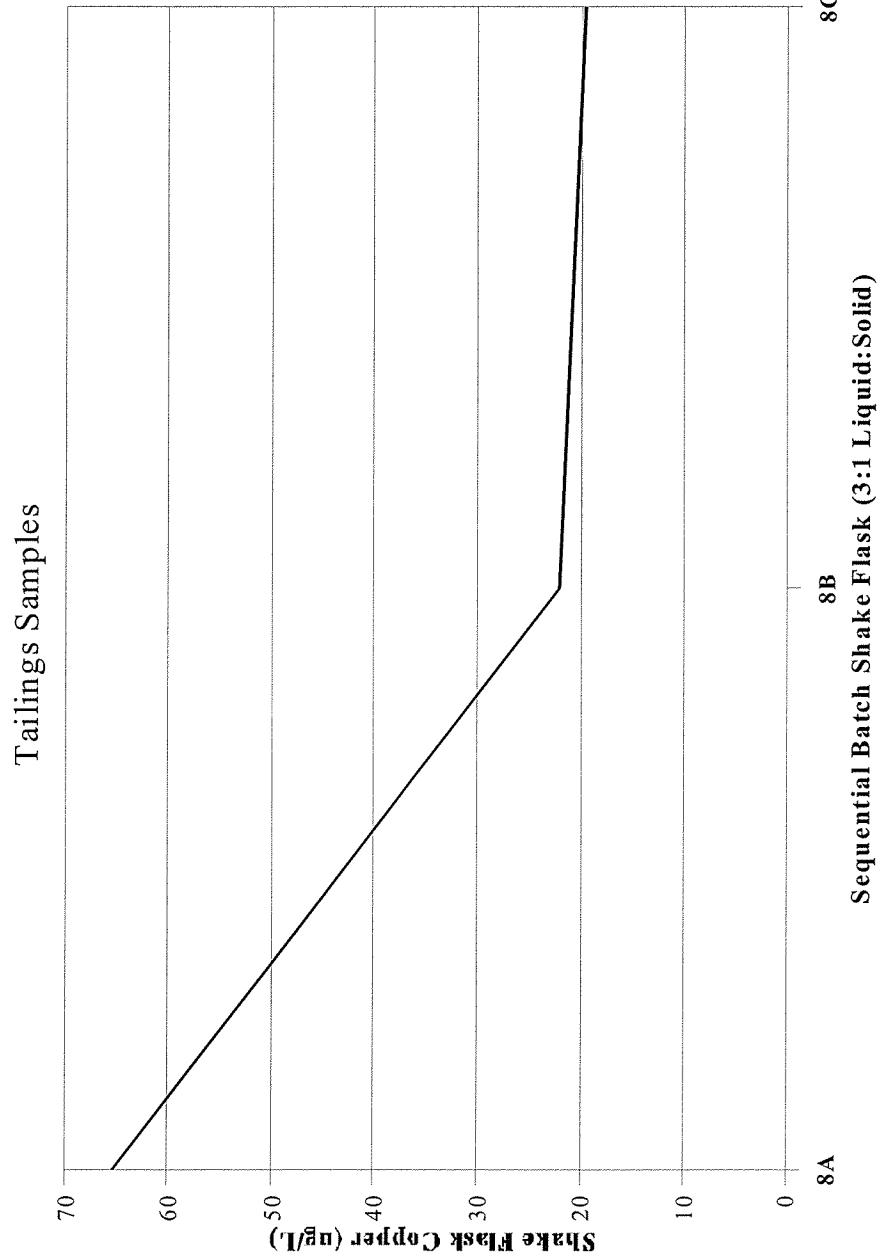


Figure DJ

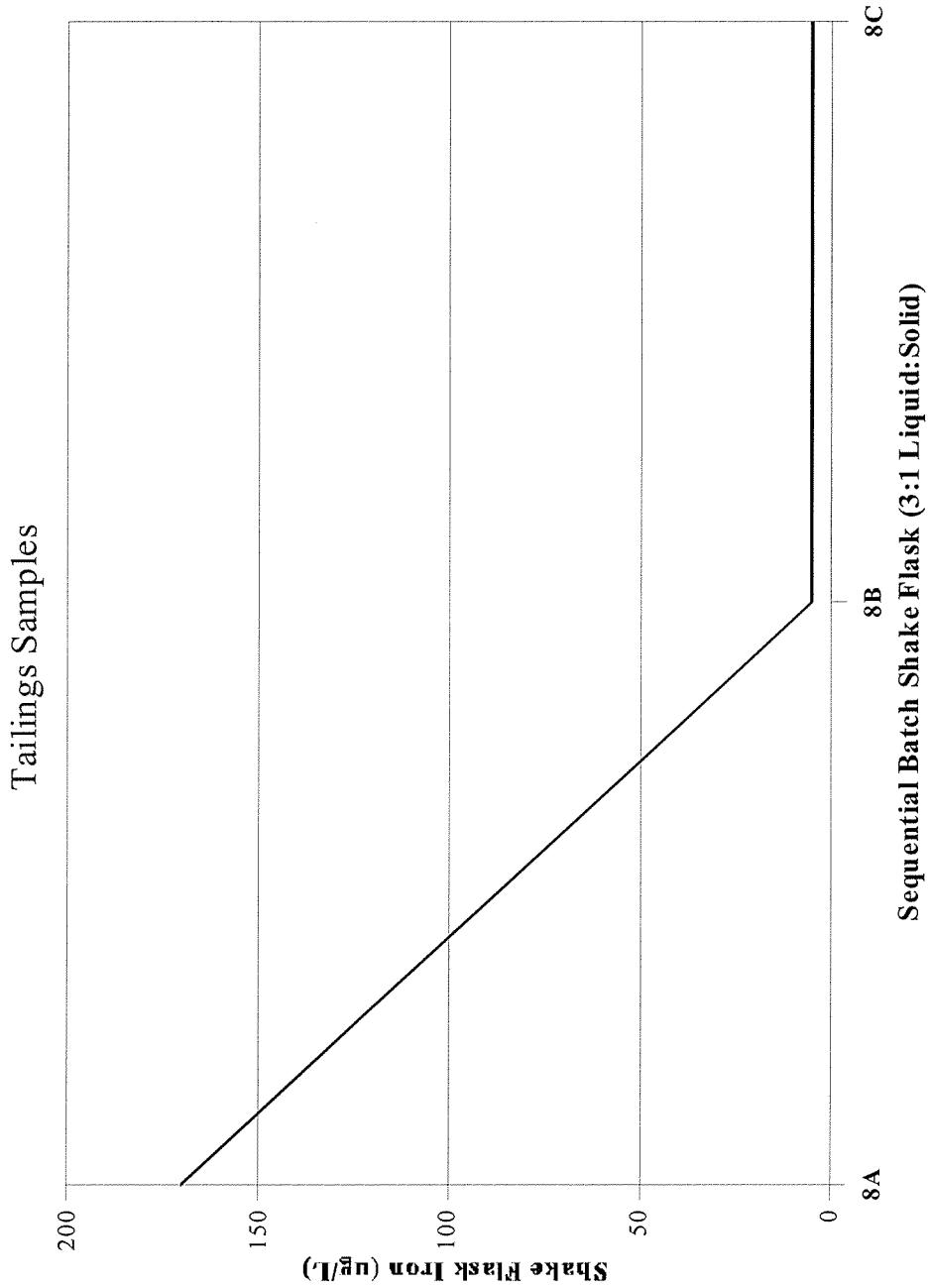


Figure DK

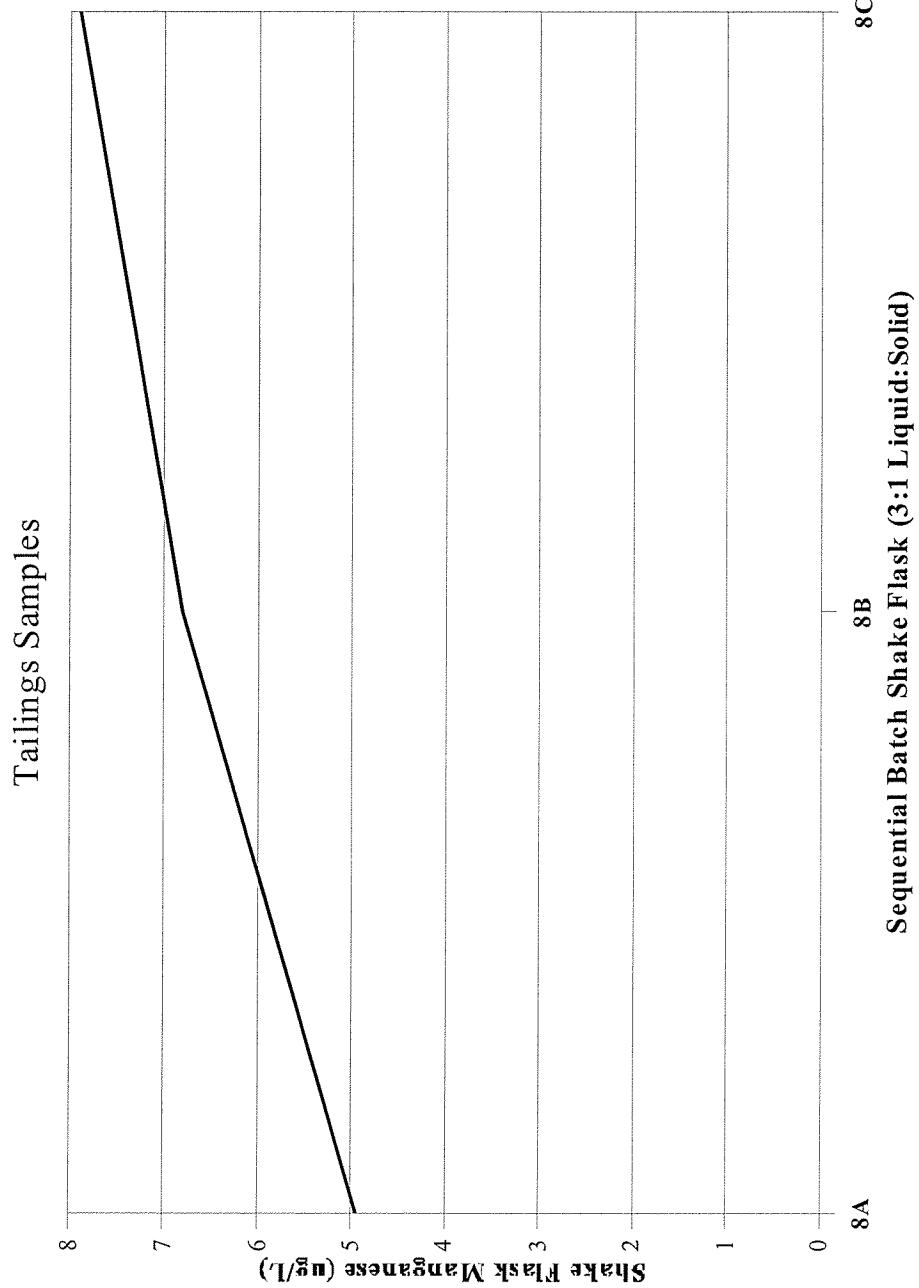
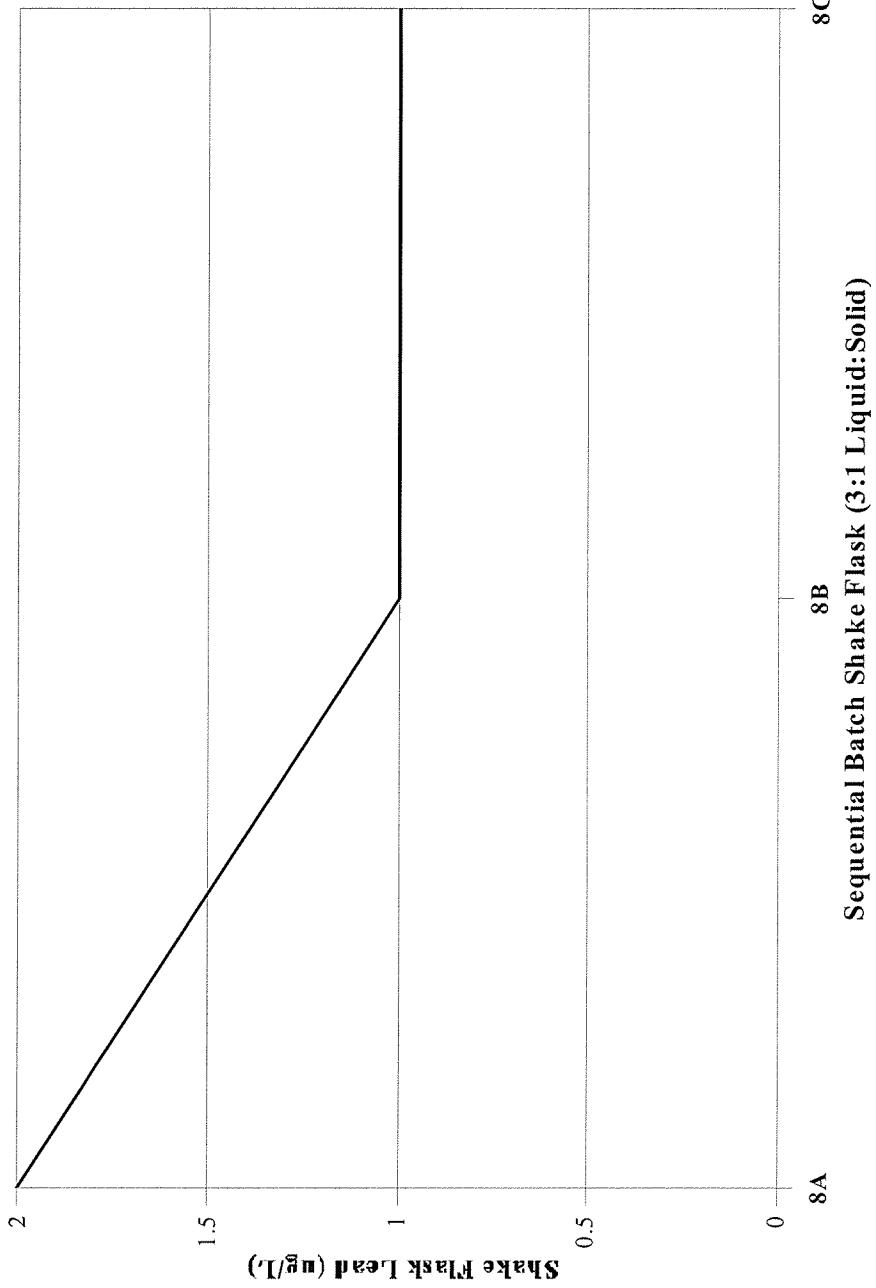


Figure DM

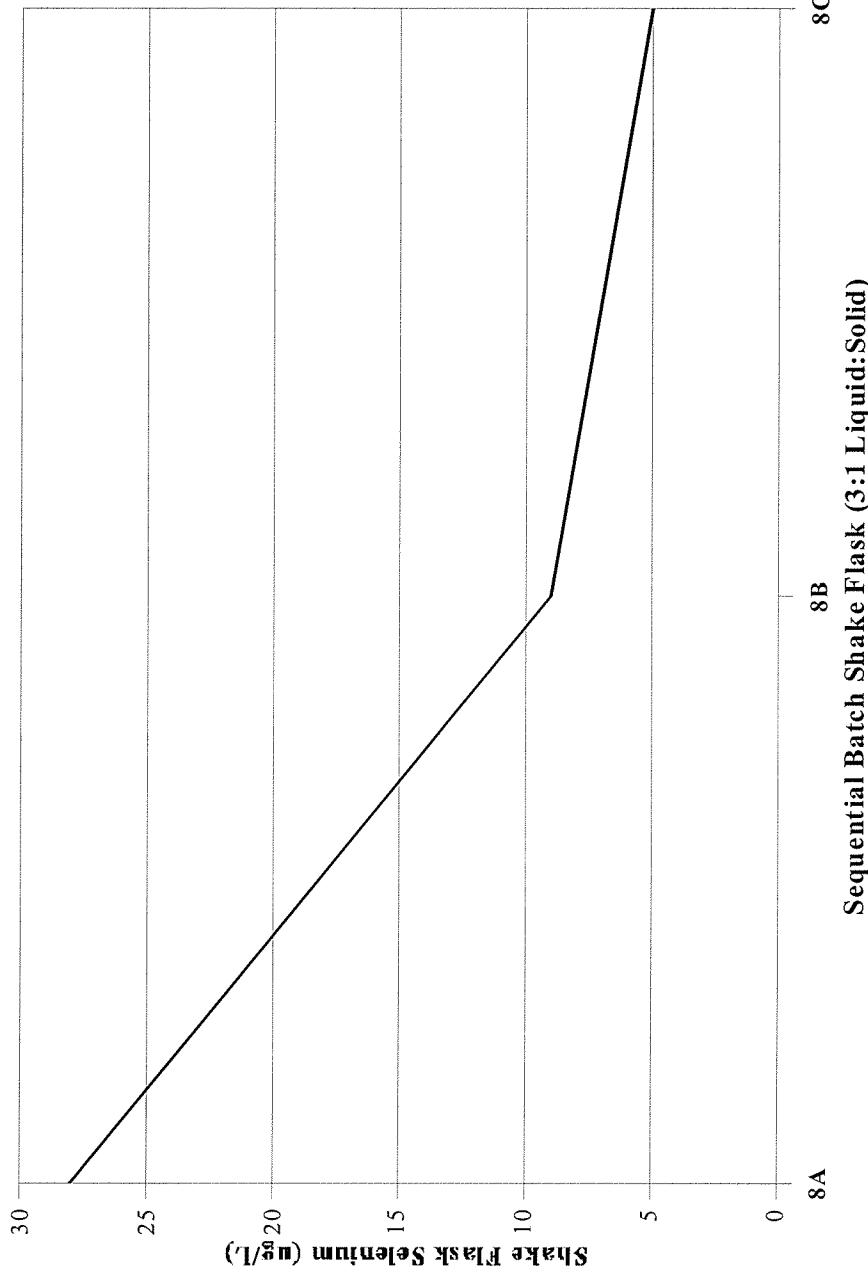
Tailings Samples



Sequential Batch Shake Flask (3:1 Liquid:Solid)

Figure DN

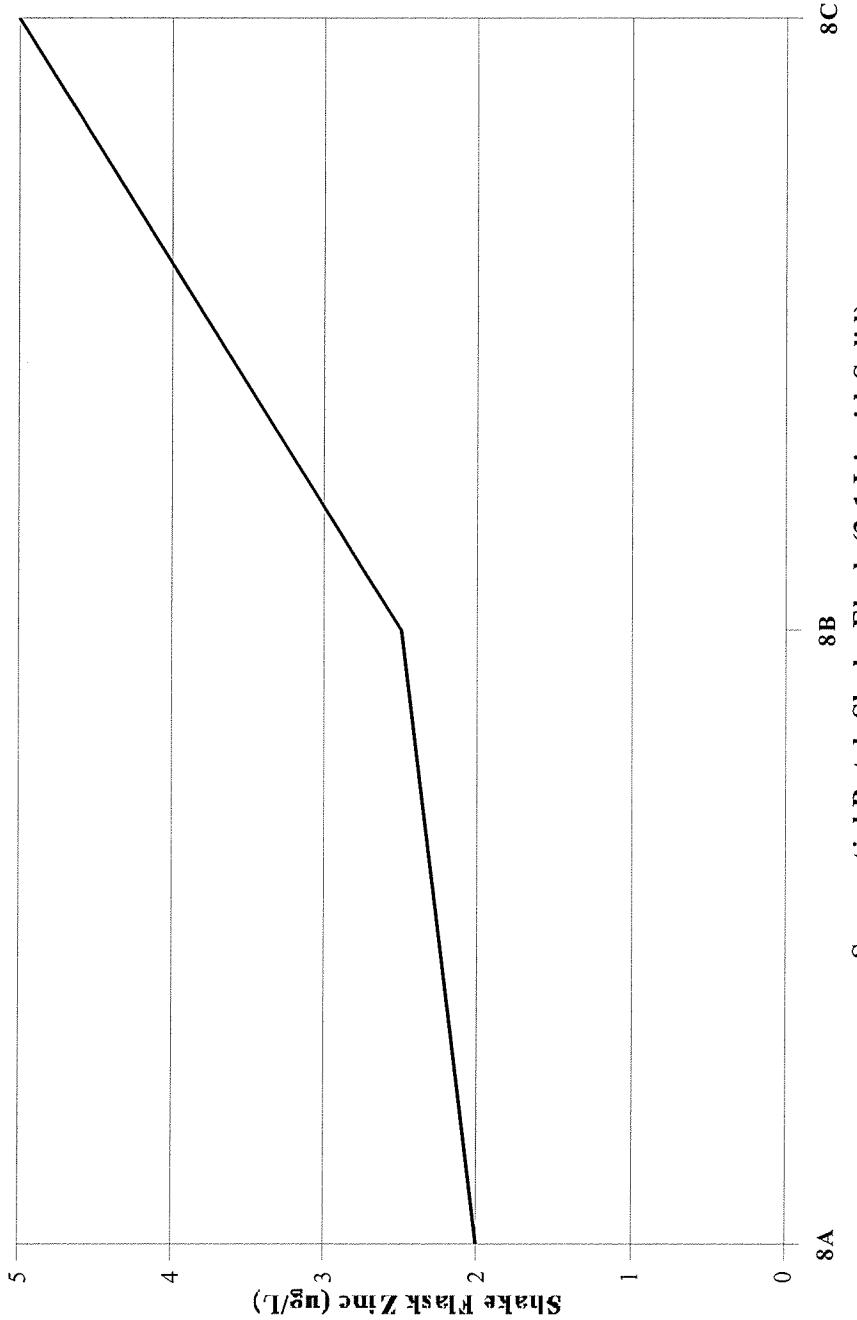
Tailings Samples



Sequential Batch Shake Flask (3:1 Liquid:Solid)

Figure DO

Tailings Samples



Sequential Batch Shake Flask (3:1 Liquid:Solid)

Figure Cell-Al & Ba

**Mount Polley Mine Humidity Cell - MP Tails 98
Aluminum & Barium Leach Rates vs Cycle**

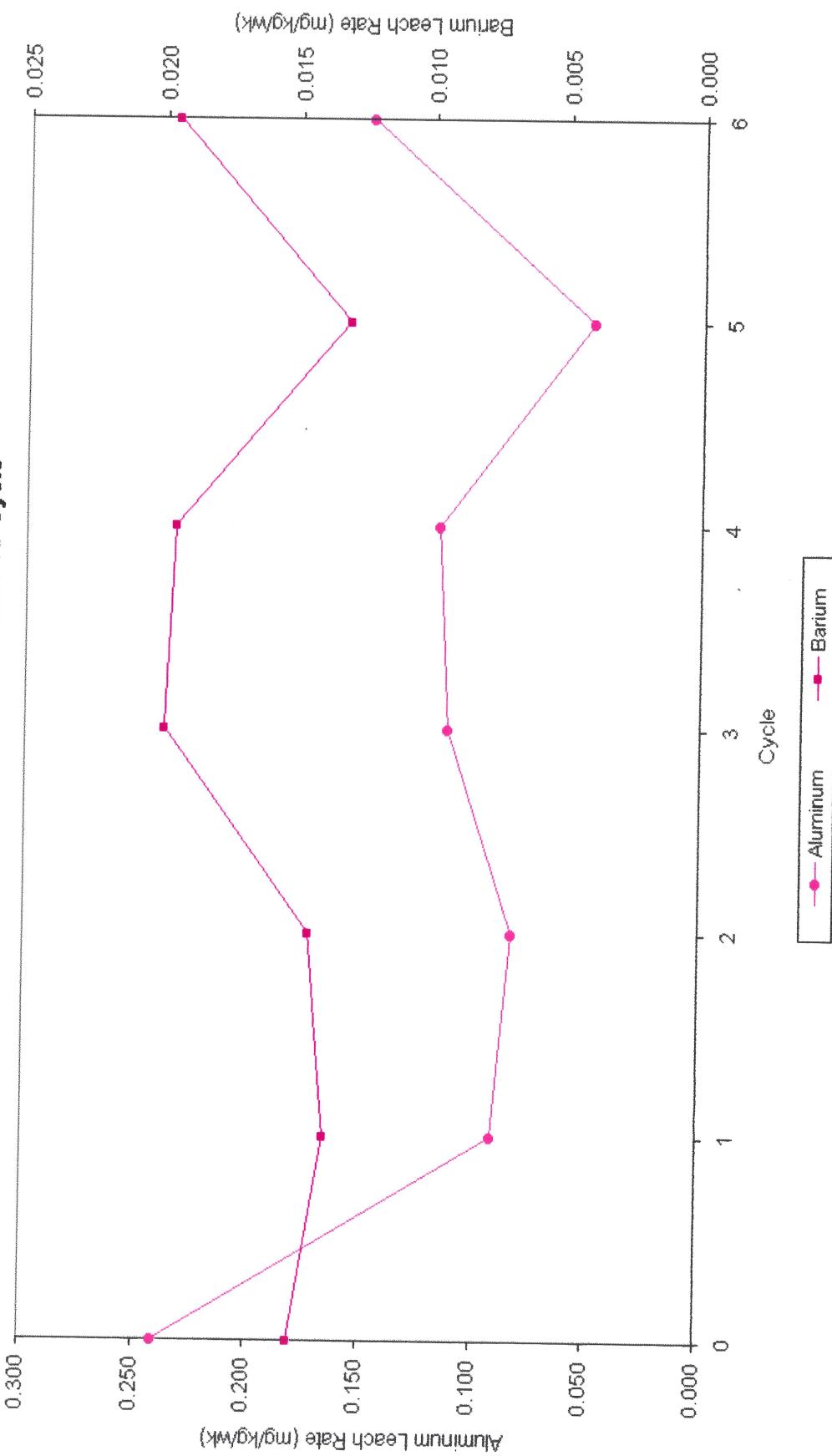


Figure Cell-Cu & Fe

Mount Polley Mine Humidity Cell - MP Tails 98
Copper & Iron Leach Rates vs Cycle

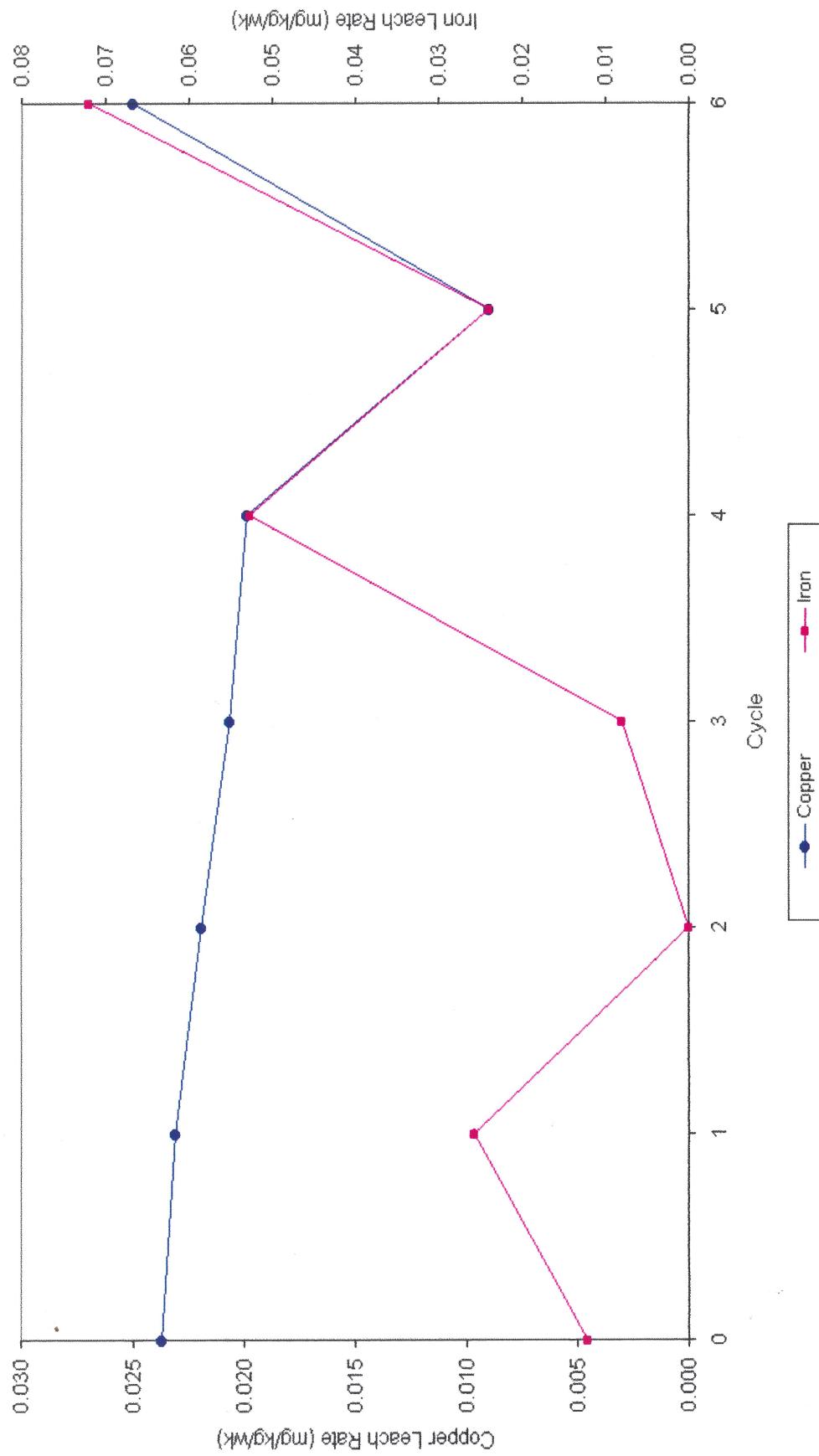


Figure Cell-Mn & Mo

**Mount Polley Mine Humidity Cell - MP Tails 98
Manganese & Molybdenum Leach Rates vs Cycle**

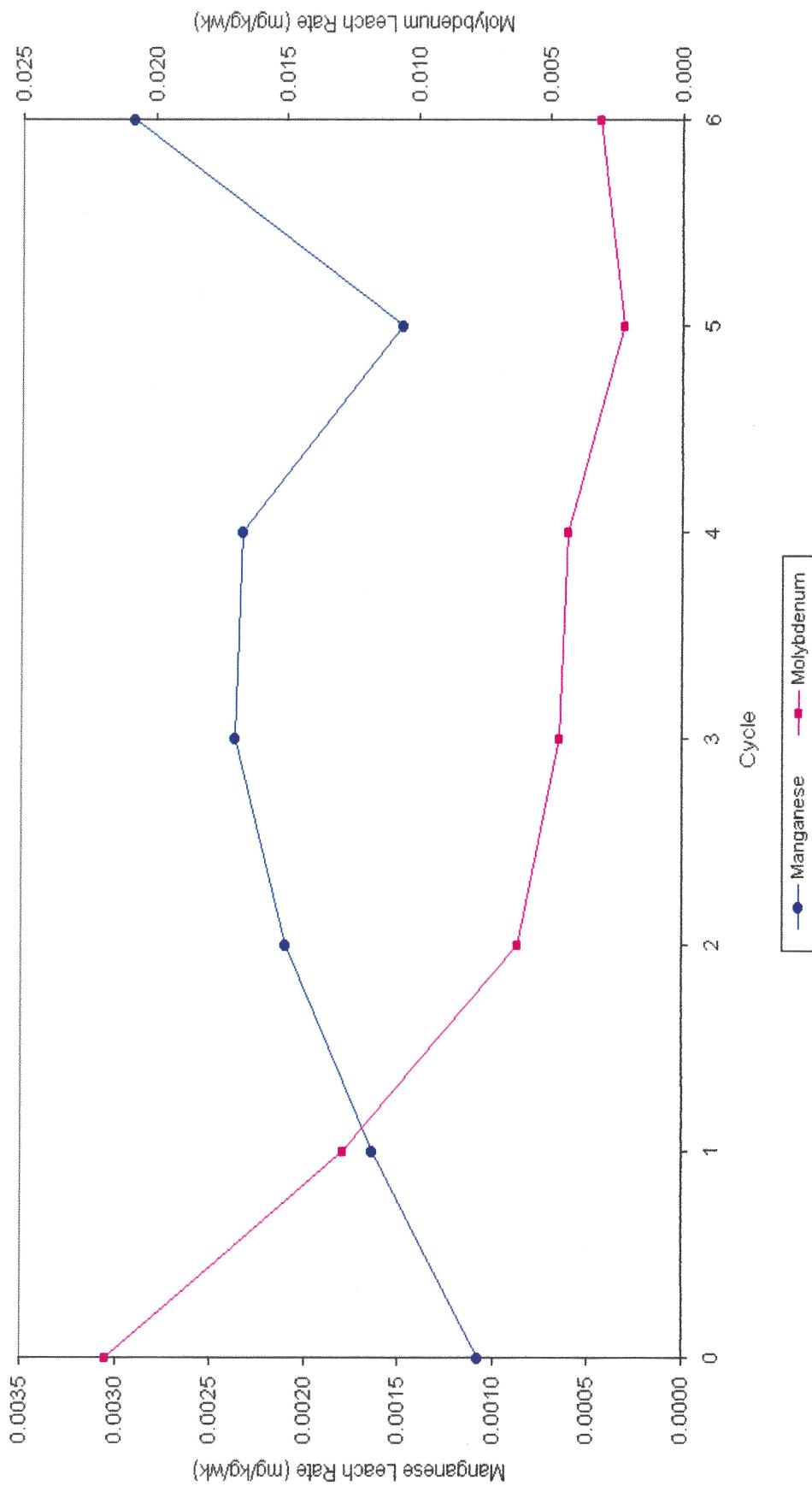


Figure Cell-pH & Cond

Mount Polley Mine Humidity Cell - MP Tails 98

Weekly pH & Conductivity vs Cycle

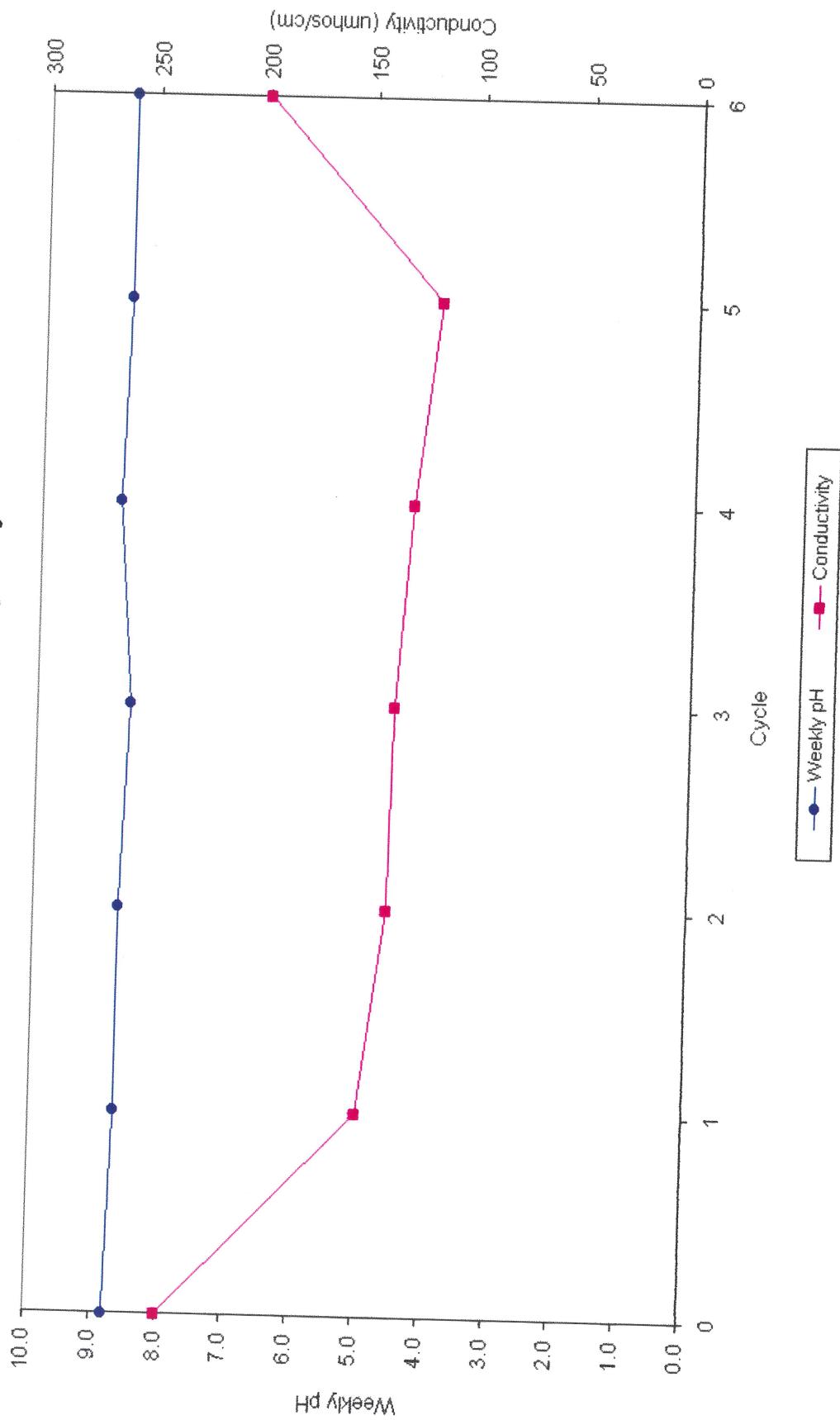


Figure Cell-Se & Pb & Zn

**Mount Polley Mine Humidity Cell - MP Tails 98
Selenium, Lead & Zinc Leach Rates vs Cycle**

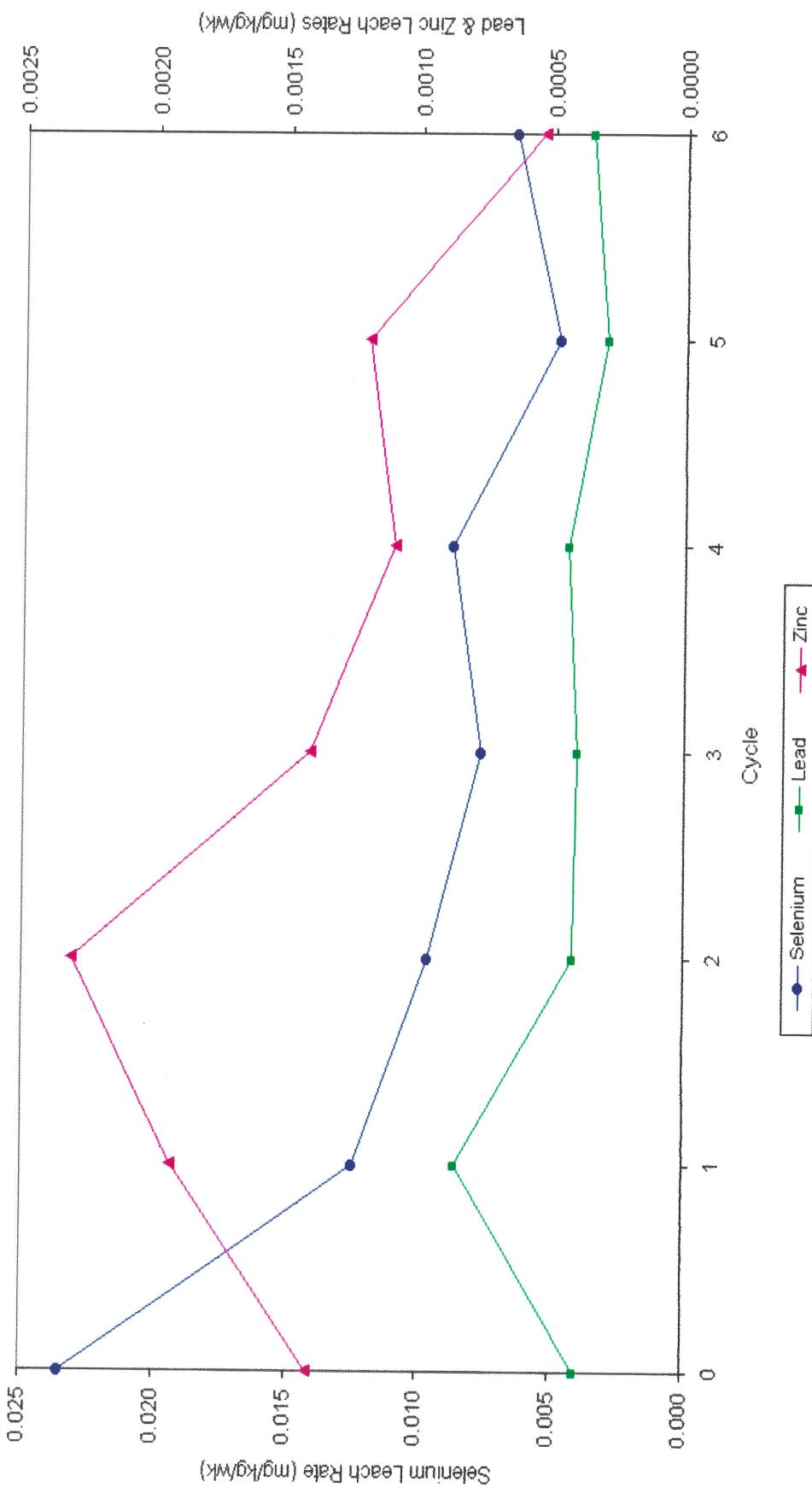
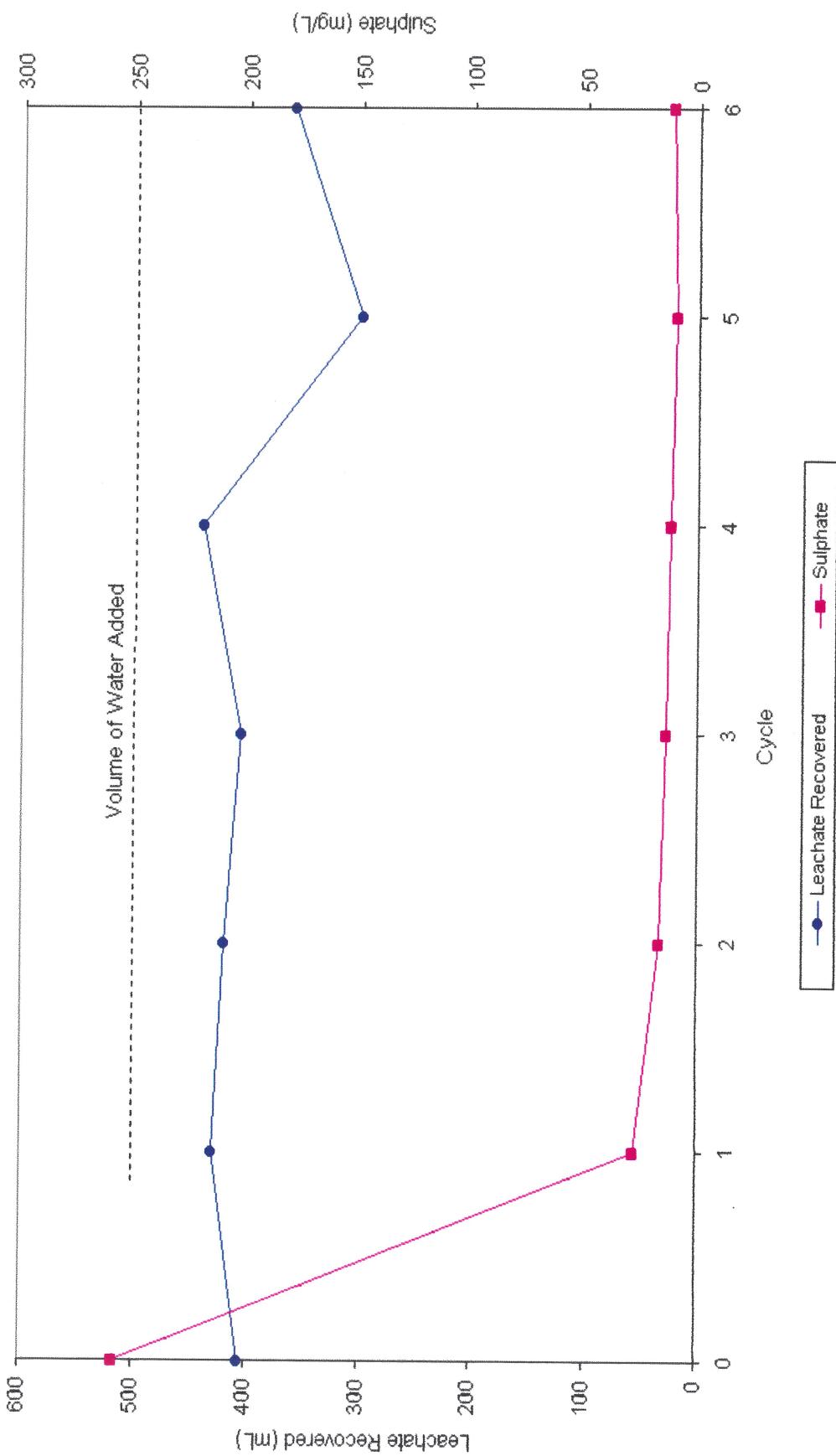


Figure Cell-SO₄ & Leachate

**Mount Polley Mine Humidity Cell - MP Tails 98
Leachate Recovered & Sulphate vs Cycle**



Appendix A

ABA Testing
Tailings Monthly Composites
-200 & +200 Mesh



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: RESCAN ENVIRONMENTAL SERVICES LIMITED

A98263

6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2J3

Comments: ATTN:DARCY McDONALD

CERTIFICATE A9826336

(VF) - RESCAN ENVIRONMENTAL SERVICES LIMITED

Project: 547-1
P.O. #:

Samples submitted to our lab in Vancouver, BC.
This report was printed on 10-AUG-98.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
299	10	Pulp; prepped on other workorder

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
1119	10	Paste pH	POTENTIOMETER	0.0	14.0
379	10	S %: HNO ₃ -bromide digestion	GRAVIMETRIC	0.01	100.00
1379	10	Sulfate S %: Dilute HCl leach	GRAVIMETRIC	0.01	100.00
1066	10	sulfide S %: Total S - sulfate S	CALCULATION	0.01	100.00
1380	10	S %: Leco furnace	LECO-IR DETECTOR	0.01	100.0
368	10	CO ₂ %: Inorganic	LECO-GASOMETRIC	0.2	100.0
1117	10	Maximum potential acidity	CALCULATION	1	4000
1118	10	Neutralization Potential	TITRATION	-1000	1000
1970	10	Net neutralization Potential	CALCULATION	-2000	2000
1971	10	Neutraliz. pot. acidity ratio	CALCULATION	-10.0	1000.0
3731	10	Fizz test		1	10000



Chemex **Labs** **Ltd.**

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave.,
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: RESSCAN ENVIRONMENTAL SERVICES LIMITED
6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2J3

Project: 547-1
Comments: ATTN:DARCY McDONALD

Page Number :1
Total Pages :1
Certificate Date: 10-AUG-98
Invoice No.: 19826336
P.O. Number :
Account :VF

CERTIFICATE OF ANALYSIS

A9826336

SAMPLE	PREP CODE	PASTE pH	S %	S % * Sulfate	S % ** Sulfide	S % Total	^L CO2 % Inorg	Max Pot Acid **	Neutral Poten**	Net Neu Poten**	Ratio NP/MPA	Fizz Test	
TLS FEB98 CP-200	299 --	10.4	0.02	0.01	0.01	0.04	1.7	1	49	48	• 49.00	2	
TLS FEB98 CP-200	299 --	9.0	0.05	0.02	0.03	0.03	0.4	1	14	13	• 14.00	1	
TLS MAR98 CP-200	299 --	11.5	0.02	< 0.01	0.02	0.02	0.03	5.3	1	181	180	181.00	3
TLS MAR98 CP+200	299 --	8.7	0.04	0.01	0.03	0.03	< 0.2	1	11	10	11.00	1	11
TLS APR98 CP-200	299 --	11.2	< 0.01	< 0.01	< 0.01	0.03	3.4	1	112	111	112.00	3	
TLS APR98 CP+200	299 --	8.7	0.04	0.02	0.02	0.03	0.4	1	13	12	13.00	1	
TLS MAY98 CP-200	299 --	9.7	0.01	< 0.01	0.01	0.03	1.6	1	53	52	53.00	3	
TLS MAY98 CP+200	299 --	8.7	0.08	0.03	0.06	0.05	0.5	2	16	14	8.00	2	
TLS JUN98 CP-200	299 --	10.7	0.04	0.02	0.02	0.03	2.5	1	83	82	83.00	3	
TLS JUN98 CP+200	299 --	8.6	0.06	0.03	0.03	0.05	0.4	2	15	13	7.50	1	

NOTE: * HYDROCHLORIC ACID SOLUBLE SULFATE
NOTE: ** UNITS = KILOGRAMS CaCO₃ EQUIVALENT PER METRIC TONNE (Kg/MT)
NOTE: ■ NITRIC ACID SOLUBLE SULFIDE

CERTIFICATION:

Said testing

Appendix A

Elemental Scan
Tailings Monthly Composites
-200 & +200 Mesh



Analytical Chemists * Geochimists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: RESCAN ENVIRONMENTAL SERVICES LIMITED

6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2S3

A9826335

Comments: ATTN:DARCY MCDONALD

CERTIFICATE

A9826335

(VF) - RESCAN ENVIRONMENTAL SERVICES LIMITED

Project: 547-1
P.O. #:

Samples submitted to our lab in Vancouver, BC.
This report was printed on 8-AUG-98.

SAMPLE PREPARATION		
CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
208	5	Assay ring to approx 150 mesh
225	5	Run as received
4251	8	Microsplitting charge
229	10	ICP - AQ Digestion charge

* NOTE 1:
The 32 element ICP package is suitable for trace metals in soil and rock samples.
Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al,
Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti,
Tl, W.

The 32 element ICP package is suitable for trace metals in soil and rock samples.
Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al,
Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti,
Tl, W.

ANALYTICAL PROCEDURES					
CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
2118	10	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
2119	10	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
2120	10	As ppm: 32 element, soil & rock	ICP-AES	2	10000
2121	10	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
2122	10	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
2123	10	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
2124	10	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
2125	10	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
2126	10	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
2127	10	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
2128	10	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
2150	10	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
2130	10	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
2131	10	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
2132	10	K %: 32 element, soil & rock	ICP-AES	0.01	10.000
2151	10	La ppm: 32 element, soil & rock	ICP-AES	10	10000
2134	10	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
2135	10	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
2136	10	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
2137	10	Na %: 32 element, soil & rock	ICP-AES	0.01	10.000
2138	10	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
2139	10	P ppm: 32 element, soil & rock	ICP-AES	10	10000
2140	10	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
2141	10	SB ppm: 32 element, soil & rock	ICP-AES	2	10000
2142	10	Sc ppm: 32 elements, soil & rock	ICP-AES	1	10000
2143	10	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
2144	10	Ti %: 32 element, soil & rock	ICP-AES	0.01	10.000
2145	10	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
2146	10	U ppm: 32 element, soil & rock	ICP-AES	10	10000
2147	10	V ppm: 32 element, soil & rock	ICP-AES	1	10000
2148	10	W ppm: 32 element, soil & rock	ICP-AES	10	10000
2149	10	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000



To: RESCAN ENVIRONMENTAL SERVICES LIMITED
6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2J3

Project: 547-1
Comments: ATTNDARCY MCDONALD

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave.,
British Columbia, Canada
PHONE: 604-984-0221 FAX: 604-984-0218

Page Number :1-A
Total Pages :1
Certificate Date: 08-AUG-98
Invoice No.: 19826335
P.O. Number:
Account :VF

CERTIFICATE OF ANALYSIS A9826335

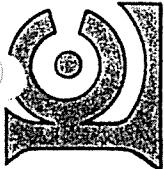
SAMPLE	PREP CODE	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
TLS FEB98 CP-200	2251251	< 0.2	1.55	3.0	230	< 0.5	< 2	2.43	0.5	17	14	2320	6.62	< 10	< 1	0.15	< 10	1.01	375	3
TLS FEB98 CP+200	2084251	< 0.2	1.48	4	180	< 0.5	< 2	1.10	< 0.5	10	55	1375	3.23	< 10	< 1	0.28	< 10	0.75	255	3
TLS MAR98 CP-200	2251229	< 0.2	1.32	8	180	< 0.5	< 2	6.33	0.5	15	13	2800	6.67	< 10	< 1	0.15	< 10	0.93	340	4
TLS MAR98 CP+200	2084251	0.4	1.46	2	190	< 0.5	< 2	1.02	< 0.5	12	39	1875	4.18	< 10	< 1	0.32	< 10	0.76	280	1
TLS APR98 CP-200	2251251	< 0.2	1.64	10	180	< 0.5	< 2	4.45	< 0.5	19	17	2490	8.18	< 10	< 1	0.18	< 10	1.07	395	4
TLS APR98 CP+200	2084251	< 0.2	1.82	8	200	< 0.5	< 2	1.31	< 0.5	13	37	1780	4.32	< 10	< 1	0.35	< 10	0.88	320	3
TLS MAY98 CP-200	2251229	< 0.2	1.56	6	240	< 0.5	< 2	2.44	< 0.5	17	18	1380	6.93	< 10	< 1	0.18	< 10	1.01	425	3
TLS MAY98 CP+200	2084251	< 0.2	1.53	4	220	< 0.5	< 2	1.32	< 0.5	10	31	1130	2.82	< 10	< 1	0.30	< 10	0.70	290	3
TLS JUN98 CP-200	2251251	< 0.2	1.57	10	210	< 0.5	< 2	3.53	< 0.5	18	16	2010	7.68	< 10	< 1	0.19	< 10	1.05	460	3
TLS JUN98 CP+200	2084251	0.2	1.78	8	240	< 0.5	< 2	1.57	< 0.5	13	32	1680	4.03	< 10	< 1	0.38	< 10	0.88	375	5

AUG 31 1998

CERTIFICATION: Mark Bielle

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
 212 Brooksbank Ave., North Vancouver
 British Columbia, Canada V7J 2C1
 PHONE: 604-984-0221 FAX: 604-984-0218



To: RESCAN ENVIRONMENTAL SERVICES LIMITED
 6TH FLOOR, 1111 W. HASTINGS ST.
 VANCOUVER, BC V6E 2J3

Project: 547-1
 Comments: ATTN:DARCY MCDONALD

Page Number :1-B
 Total Pages :1
 Certificate Date: 08-AUG-98
 Invoice No. :19826335
 P.O. Number :
 Account :VF

CERTIFICATE OF ANALYSIS A9826335

SAMPLE	PREP CODE	Na %	Mg ppm	P ppm	Ph ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
TLIS FEB98 CP-200	2251251	0.12	8	1220	28	2	5	90	0.11	< 10	212	< 10	212	156
TLIS FEB98 CP+200	2081251	0.20	4	630	8	< 2	4	86	0.13	< 10	102	< 10	102	54
TLIS MAR98 CP-200	2251229	0.09	6	1110	10	< 2	4	101	0.11	< 10	256	< 10	256	88
TLIS MAR98 CP+200	2081251	0.18	5	680	4	< 2	3	97	0.13	< 10	158	< 10	158	46
TLIS APR98 CP-200	2251251	0.12	9	1300	2	< 2	4	121	0.13	< 10	290	< 10	290	86
TLIS APR98 CP+200	2081251	0.24	7	730	8	< 2	4	129	0.16	< 10	148	< 10	148	46
TLIS MAY98 CP-200	2251229	0.13	9	1200	4	< 2	4	130	0.14	< 10	263	< 10	263	78
TLIS MAY98 CP+200	2081251	0.23	6	630	2	< 2	3	130	0.13	< 10	105	< 10	105	42
TLIS JUN98 CP-200	2251251	0.10	9	1230	< 2	< 2	5	107	0.12	< 10	276	< 10	276	80
TLIS JUN98 CP+200	2081251	0.21	6	770	4	< 2	4	120	0.14	< 10	140	< 10	140	50

CERTIFICATION:

Appendix A

Shake Flask Tests
Tailings Monthly Composites
-200 & +200



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
 212 Brocksbank Ave., North Vancouver
 British Columbia, Canada V7J 2C1
 PHONE: 604-984-0221 FAX: 604-984-0218

To: RESCAN ENVIRONMENTAL SERVICES LIMITED
 6TH FLOOR, 1111 W. HASTINGS ST.
 VANCOUVER, BC
 V6E 2J3

A9826337

Comments: ATT:N:DARCY MCDONALD

CERTIFICATE

A9826337

(V/F) - RESCAN ENVIRONMENTAL SERVICES LIMITED

Project: 547-1
P.O. #:

Samples submitted to our lab in Vancouver, BC.
 This report was printed on 14-AUG-98.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
1453	8	Shake flask test

ANALYTICAL PROCEDURES					
CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
659	8	pH	POTENTIOMETER	0.1	14.0
655	8	Conductivity umhos/cm	CONDUCTIVITY MTR	1	10000
653	8	Alkalinity mg/l CaCO ₃	TITRA-ACID-BASE	1	10000
654	0	Acidity mg/l CaCO ₃	TITRA-ACID-BASE	1	10000
662	8	SO ₄ mg/L - Ion Chrom.	ION CHROM.	0.1	10000
5501	8	Ag ug/L: Water samples	ICP-MS	0.05	10000
5531	8	Al mg/L: Water samples	ICP-MS	0.001	100000
5503	8	As ug/L: Water samples	ICP-MS	1	50000
5504	8	Ba ug/L: Water samples	ICP-MS	0.05	50000
5505	8	Be ug/L: Water samples	ICP-MS	0.5	1000
5506	8	Bi ug/L: Water samples	ICP-MS	0.05	1000
5532	8	Ca mg/L: Water samples	ICP-MS	0.05	100000
5508	8	Cd ug/L: Water samples	ICP-MS	0.1	50000
5509	8	Co ug/L: Water samples	ICP-MS	0.02	50000
5510	8	Cr ug/L: Water samples	ICP-MS	0.5	50000
5511	8	Cu ug/L: Water samples	ICP-MS	0.1	50000
5533	8	Fe mg/L: Water samples	ICP-MS	0.01	100000
5513	8	Hg ug/L: Water samples	ICP-MS	1	1000
5534	8	K mg/L: Water samples	ICP-MS	0.05	100000
5535	8	Mg mg/L: Water samples	ICP-MS	0.001	100000
5516	8	Mn ug/L: Water samples	ICP-MS	0.05	50000
5517	8	Mo ug/L: Water samples	ICP-MS	0.1	50000
5536	8	Na mg/L: Water samples	ICP-MS	0.05	100000
5519	8	Ni ug/L: Water samples	ICP-MS	0.2	50000
5537	8	P mg/L: Water samples	ICP-MS	0.1	100000
5521	8	Pb ug/L: Water samples	ICP-MS	2	50000
5522	8	Sb ug/L: Water samples	ICP-MS	0.05	1000
5523	8	Se ug/L: Water samples	ICP-MS	1	1000
5524	8	Sn ug/L: Water samples	ICP-MS	0.5	1000
5525	8	Sr ug/L: Water samples	ICP-MS	0.05	50000
5526	8	Tl ug/L: Water samples	ICP-MS	1	50000
5527	8	Tl ug/L: Water samples	ICP-MS	0.05	1000
5528	8	U ug/L: Water samples	ICP-MS	0.05	1000
5529	8	V ug/L: Water samples	ICP-MS	1	50000
5530	8	Zn ug/L: Water samples	ICP-MS	0.5	50000



To: RESCAN ENVIRONMENTAL SERVICES LIMITED
6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2J3

Project: 547-1
Comments: ATTN:DARCY MCDONALD

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

* PLEASE NOTE

CERTIFICATE OF ANALYSIS

PARAMETER DESCRIPTIONS	SAMPLE T/S FEB98 CP-200MLIS FEB98 CP-200MLIS MAR98 CP-200MLIS MAR98 CP-200MLIS APR98 CP-200MLIS APR98 CP-200MLIS MAY98 CP-200MLIS MAY98 CP-200MLIS JUN98 CP-200MLIS JUN98 CP-200MLIS	SAMPLE 1453 ---	SAMPLE 1453 ---	SAMPLE 1453 ---	SAMPLE 1453 ---	SAMPLE 1453 ---	SAMPLE 1453 ---	SAMPLE 1453 ---
Sample preparation code	1453	1453	1453	1453	1453	1453	1453	1453
Sample preparation code	---	---	---	---	---	---	---	---
pH	11.0 3.60	8.7 1.21	-----	8.5 1.23	12.4 5.950	8.8 1.06	-----	9.1 8.5
Conductivity (mhos/cm)	13.4	4.3	-----	4.1 1.375	3.6 1.36	-----	3.1 3.50	11.8 12.55
Alkalinity (mg/L CaCO ₃)	14.4	13.2	-----	17.9 5.8	11.7 1.17	-----	9.6 9.6	9.0 12.55
Acidity (mg/L CaCO ₃)	-----	-----	-----	-----	-----	-----	-----	9.6 3.50
SO ₄ mg/L - Ion Chrom.	-----	-----	-----	-----	-----	-----	-----	-----
Ag ug/L	< 0.05	< 0.05	-----	0.05 0.582	< 0.05 0.710	0.05 0.772	-----	0.05 0.863
Al ug/L	0.156	0.572	-----	7 52.4	< 1 49.5	8 33.6	-----	0.05 0.730
As ug/L	54.9	52.5	-----	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 0.5	-----	< 0.05 < 0.1
Ba ug/L	< 0.5	-----	-----	-----	-----	-----	-----	-----
Be ug/L	-----	-----	-----	-----	-----	-----	-----	-----
Bi ug/L	< 0.05	< 0.05	-----	< 0.05 10.10	< 0.05 4.42	0.05 7.50	-----	< 0.05 84.0
Ca ug/L	36.6	8.85	-----	< 0.1 0.22	< 0.1 0.28	< 0.1 0.60	-----	< 0.05 < 0.1
Cd ug/L	< 0.1	< 0.1	-----	0.22 1.5	0.22 1.5	0.36 1.0	-----	< 0.05 0.38
Co ug/L	0.06	0.22	-----	-----	-----	-----	-----	< 0.05 0.02
Cr ug/L	15.0	1.5	-----	-----	-----	-----	-----	0.5 1.5
Cu ug/L	121.5	99.9	-----	172.5 0.47	181.0 < 0.01	193.5 0.62	-----	139.5 0.55
Fe ug/L	< 0.01	0.34	-----	< 1 3.00	< 1 3.00	< 1 5.50	-----	< 0.05 < 1
Hg ug/L	< 1	< 1	-----	1.125 1.125	< 0.001 0.001	2.45 1.110	-----	12.90 2.55
K mg/L	3.30	2.95	-----	-----	-----	-----	-----	10.6 2.55
Mg mg/L	0.013	1.275	-----	-----	-----	-----	1.020	< 0.001 1.020
Mn ug/L	0.05	8.65	-----	10.40 25.4	< 0.05 7.05	11.30 12.00	-----	12.90 16.9
Mo ug/L	23.9	20.2	-----	< 0.1 1.2	< 0.2 0.6	7.65 0.6	-----	10.6 5.65
Na ug/L	11.10	8.00	-----	< 0.1 0.1	< 0.1 0.1	< 0.1 0.1	-----	12.50 0.8
Ni ug/L	< 0.2	0.4	-----	-----	-----	-----	-----	5.50 0.8
P ug/L	< 0.1	< 0.1	-----	-----	-----	-----	-----	0.6 0.1
Pb ug/L	2	2	-----	< 2 0.35	< 2 0.33	2.5 0.31	-----	< 2 0.65
SB ug/L	1.35	0.40	-----	< 0.5 0.5	< 0.5 0.5	0.35 1.5	-----	< 2 0.16
Se ug/L	< 0.25	0.18	-----	< 0.5 82.9	< 0.5 670	66.1 66.1	-----	< 2 71.3
Sn ug/L	< 0.5	< 0.5	-----	< 0.5 94.9	< 0.5 94.9	10.0 1.5	-----	< 2 186.5
sr ug/L	131.0	94.9	-----	-----	-----	-----	-----	65.1 186.5
Tl ug/L	6	19	-----	23 0.35	< 1 0.33	2.8 0.31	-----	< 1 0.65
U ug/L	< 0.05	< 0.05	-----	< 0.05 0.35	< 0.05 0.35	0.25 0.25	-----	< 0.05 0.15
V ug/L	< 0.05	0.35	-----	< 0.5 2.0	< 1 10.0	1.8 1.5	-----	< 0.05 0.13
Zn ug/L	4.7	1.0	3.0	-----	-----	-----	3.0	< 0.5 3.0

* SHAK FLASK TEST (24 HR/1:3 SOLID:LIQUID) ON AS-RECEIVED TAILINGS, ACIDITY I/A.

CERTIFICATION: *Darci McDonald*

Page Number :1
Total Pages :1
Certificate Date: 14-AUG-98
Invoice No. :I9826337
P.O. Number :
Account :VF

Appendix B

Elemental Scan
MP Tails 98



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
212 Brookspank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
VOL 1N0

A9829110

Comments: ATTN: RON MARTEL CC: KEVIN MORIN

CERTIFICATE A9829110

(NOU) - MOUNT POLLEY MINING CORPORATION

Project P.O. #: 12041-S

Samples submitted to our lab in Vancouver, BC.
This report was printed on 02-SEP-1998.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
208	1	Assay ring to approx 150 mesh
234	1	0-7 Kg splitting charge
234	1	0-7 Kg splitting charge
234	1	0-7 Kg splitting charge
285	1	ICP - HF digestion charge
287	1	special dig'n with organic ext'n
579	1	Tl %: 24 element, rock & core
572	1	V ppm: 24 element, rock & core
556	1	W ppm: 24 element, rock & core
558	1	Zn ppm: 24 element, rock & core

ANALYTICAL PROCEDURES					
CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
13	1	As ppm: HNO3-aqua regia digest	AAS-HYDRIDE/EDL	1	10000
22	1	SD ppm: HCl-KCl digest, extract	AAS-BKGD CORR	0.2	1000
20	1	Hg ppm: HNO3-HCl digestion	AAS-FLAMELESS	0.1	10000
578	1	Ag ppm: 24 element, rock & core	ICP-AES	0.2	1000.0
573	1	Al %: 24 element, rock & core	ICP-AES	0.01	25.0
565	1	Be ppm: 24 element, rock & core	ICP-AES	0.10	10000
575	1	Be ppm: 24 element, rock & core	ICP-AES	0.5	1000
561	1	Bi ppm: 24 element, rock & core	ICP-AES	2	10000
576	1	Ca %: 24 element, rock & core	ICP-AES	0.01	25.0
562	1	Cd ppm: 24 element, rock & core	ICP-AES	0.5	500
563	1	Co ppm: 24 element, rock & core	ICP-AES	1	10000
569	1	Cr ppm: 24 element, rock & core	ICP-AES	1	10000
577	1	Cu ppm: 24 element, rock & core	ICP-AES	1	10000
566	1	Fe %: 24 element, rock & core	ICP-AES	0.01	25.0
584	1	K %: 24 element, rock & core	ICP-AES	0.01	10.00
570	1	Mg %: 24 element, rock & core	ICP-AES	0.01	15.00
568	1	Mn ppm: 24 element, rock & core	ICP-AES	5	10000
554	1	Mo ppm: 24 element, rock & core	ICP-AES	1	10000
583	1	Na %: 24 element, rock & core	ICP-AES	0.01	10.00
564	1	Ni ppm: 24 element, rock & core	ICP-AES	1	10000
559	1	P ppm: 24 element, rock & core	ICP-AES	10	10000
560	1	Pb ppm: 24 element, rock & core	ICP-AES	2	10000
582	1	Sr ppm: 24 element, rock & core	ICP-AES	1	10000
579	1	Tl %: 24 element, rock & core	ICP-AES	0.01	10.00
572	1	V ppm: 24 element, rock & core	ICP-AES	1	10000
556	1	W ppm: 24 element, rock & core	ICP-AES	10	10000
558	1	Zn ppm: 24 element, rock & core	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists • Geochimists • Registered Assayers
2112 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218



To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
V0L 1N0

Project : Comments: ATTN: RON MARTEL CC: KEVIN MORIN

Page Number :1-A
Total Pages :1
Certificate Date: 02-SEP-1998
Invoice No.: 19829110
P.O. Number :12041-S
Account :NOU

CERTIFICATE OF ANALYSIS A9829110

SAMPLE	PREP CODE	As ppm	Sb ppm	Hg ppb	Ag ppm AAS	Al % (ICP)	Ba ppm (ICP)	Be ppm (ICP)	Bi ppm (ICP)	Ca % (ICP)	Cd ppm (ICP)	Co ppm (ICP)	Cr ppm (ICP)	Cu ppm (ICP)	Fe % (ICP)
MP TAILS 98	208 234	12 < 0.2	5.0 < 0.2	9.30	1490	1.0 < 2	2.68	0.5	14	44	1790	4.94			

CERTIFICATION:

Howard J. Deller

nemex Lands Ltd.

Analytical Chemists • Geochemists • Registered Assayers
2112 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

Certified Date: 02-SEP-1998
Inv. No.: 19829110
P.O. Number: 12041-S
Account: NOU

P.O. BOX 12
LIKELY, BC
VOL 1 NO
Project: ATTN: RON MARTEL
Comments: CC: KEVIN MORIN

CERTIFICATE OF ANALYSIS A9829110

SAMPLE	PREP CODE	K % (ICP)	Mg % (ICP)	Mn ppm (ICP)	Mo ppm (ICP)	Na % (ICP)	Ni ppm (ICP)	Pb ppm AAS	Pb ppm (ICP)	Sr ppm (ICP)	Ti % (ICP)	V ppm (ICP)	W ppm (ICP)	Zn ppm (ICP)
MP TAILS 98	208 234	5.00	1.33	585	1	3.30	7	1030	2	532	0.31	196	< 10	62

CERTIFICATION:

[Handwritten Signature]

Appendix B

Shake Flask Tests
MP Tails 98

Cinemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
 212 Brookbank Ave., North Vancouver
 British Columbia, Canada V7J 2C1
 PHONE: 604-984-0221 FAX: 604-984-0218

P.O. BOX 12
 LIKELY, BC
 VOL 1 NO

A9829115

CERTIFICATE

A9829115

(NOU) - MOUNT POLLEY MINING CORPORATION

Project:
 P.O. #:
 NONE
 12041-S

Samples submitted to our lab in Vancouver, BC.
 This report was printed on 16-SEP-1998.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
1453	1	Shake flask test

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
659	1	pH	POTENCIOMETER	0.1	14.0
655	1	Conductivity umhos/cm	CONDUCTIVITY MTR	0.1	10000
653	1	Alkalinity mg/l CaCO ₃	TITRA-ACID-BASE	1	1000
654	0	Acidity mg/l CaCO ₃	TITRA-ACID-BASE	1	1000
662	1	SC4 mg/L - Ion Chrom.	ION CHROM.	0.1	1000
5501	1	Ag ug/L: Water samples	ICP-MS	0.05	1000
5531	1	Al mg/L: Water samples	ICP-MS	0.001	10000
5503	1	As ug/L: Water samples	ICP-MS	1	5000
5504	1	Ba ug/L: Water samples	ICP-MS	0.05	5000
5505	1	Be ug/L: Water samples	ICP-MS	0.5	1000
5506	1	Bi ug/L: Water samples	ICP-MS	0.05	1000
5532	1	Ca mg/L: Water samples	ICP-MS	0.05	10000
5508	1	Cd ug/L: Water samples	ICP-MS	0.1	5000
5509	1	Co ug/L: Water samples	ICP-MS	0.02	5000
5510	1	Cr ug/L: Water samples	ICP-MS	0.5	5000
5511	1	Cu ug/L: Water samples	ICP-MS	0.1	5000
5533	1	Fe mg/L: Water samples	ICP-MS	0.01	10000
5513	1	Hg ug/L: Water samples	ICP-MS	1	1000
5534	1	K mg/L: Water samples	ICP-MS	0.05	10000
5535	1	Mg mg/L: Water samples	ICP-MS	0.001	10000
5516	1	Mn ug/L: Water samples	ICP-MS	0.05	5000
5517	1	Mo ug/L: Water samples	ICP-MS	0.1	10000
5536	1	Na mg/L: Water samples	ICP-MS	0.05	50000
5519	1	Ni ug/L: Water samples	ICP-MS	0.2	100000
5537	1	P mg/L: Water samples	ICP-MS	0.1	50000
5521	1	Pb ug/L: Water samples	ICP-MS	2	10000
5522	1	Se ug/L: Water samples	ICP-MS	0.05	1000
5523	1	Sn ug/L: Water samples	ICP-MS	1	1000
5524	1	Sr ug/L: Water samples	ICP-MS	0.5	50000
5525	1	Ti ug/L: Water samples	ICP-MS	0.05	50000
5526	1	U ug/L: Water samples	ICP-MS	1	1000
5527	1	V ug/L: Water samples	ICP-MS	0.05	1000
5528	1	Zn ug/L: Water samples	ICP-MS	1	50000
5529	1		ICP-MS	0.5	50000
5530	1		ICP-MS		

Comments: ATTN: RON MARTEL CC: KEVIN MORIN



Analytical Chemistry • Geochemistry • Registered Assayers
212 Brooksbank Ave., North Vancouver

British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

* PLEASE NOTE

Chemex Labs Ltd.

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
V0L 1N0
Project: NONE
Comments: ATTN: RON MARTEL CC: KEVIN MORIN

Page Number :1
Total Pages :1
Certificate Date: 16-SEP-199
Invoice No.: 19829115
P.O. Number :12041-S
Account :NOU

CERTIFICATE OF ANALYSIS A9829115

PARAMETER DESCRIPTION	SAMPLE HP TAULS 98								
Sample preparation code Sample preparation code	1453 ---								
pH	9.3								
Conductivity (umhos/cm)	111								
Alkalinity (mg/L CaCO ₃)	34								
Acidity (mg/L CaCO ₃)	---								
SO ₄ mg/L - Ion Chrom.	15.0								
Ag ug/L	< 0.05								
Al mg/L	0.204								
As ug/L	15								
Ba ug/L	37.3								
Be ug/L	< 0.5								
Bi ug/L	< 0.05								
Ca mg/L	10.15								
Cd ug/L	< 0.1								
Co ug/L	0.08								
Cr ug/L	1.0								
Cu ug/L	< 0.05								
Fe mg/L	0.06								
Hg ug/L	< 1								
K mg/L	4.15								
Mg mg/L	0.915								
Mn ug/L	2.10								
Mo ug/L	17.1								
Na ug/L	9.35								
Ni ug/L	< 0.2								
P ug/L	< 0.1								
Pb ug/L	6								
Se ug/L	0.90								
Sn ug/L	0.36								
Sr ug/L	< 0.5								
Tl ug/L	83.3								
Tl ug/L	5								
V ug/L	< 0.05								
V ug/L	0.25								
Zn ug/L	19								
Zn ug/L	2.5								

* ACID IS NOT APPLICABLE. SHAKE FLASK 24 HRS/1:3 SOLID:H₂O RATIO

CERTIFICATION: *[Signature]*

Appendix B

Whole Rock Analysis, ABA,
%Cu & %NSCu
MP Tails 98



P.O. BOX 12
LIKELY, BC
VOL 1 No

A9829111

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave., North Vancouver, BC V7J 2C1
British Columbia, Canada PHONE: 604-984-0221 FAX: 604-984-0218

Comments: ATTN:RON MARTEL

CERTIFICATE

A9829111

(NOU) - MOUNT POLLEY MINING CORPORATION

Project:
P.O. #: 12041-S

Samples submitted to our lab in Vancouver, BC.
This report was printed on 08-SEP-1998.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
299	1	Pulp; prepped on other workorder

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
1119	1	Paste pH	POTENTIOMETER	0.0	14.0
379	1	S %: HNO ₃ -bromide digestion	GRAVIMETRIC	0.01	100.00
1379	1	Sulfate S %: Dilute HCl leach	GRAVIMETRIC	0.01	100.00
1066	1	Sulfide S %: Total S - Sulfate S	CALCULATION	0.01	100.00
1380	1	S %: Leco furnace	LECO-IR DETECTOR	0.01	100.0
368	1	CO ₂ %: Inorganic	LECO-GASOMETRIC	0.2	100.0
1117	1	Maximum Potential acidity	CALCULATION	1	400.00
1118	1	Neutralization potential	ITRATION	-1000	1000
1970	1	Net neutralization potential	CALCULATION	-2000	2000
1971	1	Neutral. pot. acidity ratio	CALCULATION	-10.0	100.0
3731	1	Fizz test		1	10000
301	1	Cu %: Conc. Nitric-HCl dig'n	AAS	0.01	100.0
302	1	Cu %: Nonsulfide, dilute H ₂ SO ₄	AAS	0.01	100.0
902	1	Al2O ₃ %: XRF	XRF	0.01	100.00
906	1	Cao %: XRF	XRF	0.01	100.00
2590	1	Cr2O ₃ %: XRF	XRF	0.01	100.00
903	1	Fe2O ₃ %: XRF	XRF	0.01	100.00
908	1	K2O %: XRF	XRF	0.01	100.00
905	1	MgO %: XRF	XRF	0.01	100.00
1989	1	MnO %: XRF	XRF	0.01	100.00
907	1	Na2O %: XRF	XRF	0.01	100.00
909	1	P2O ₅ %: XRF	XRF	0.01	100.00
901	1	SiO ₂ %: XRF	XRF	0.01	100.00
904	1	TiO ₂ %: XRF	XRF	0.01	100.00
910	1	LoI %: XRF	XRF	0.01	100.00
2540	1	Total %	CALCULATION		105.00



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
V0L 1N0

Project: ATTN:RON MARTEL
Comments:

Page Number :1-A
Total Pages :1
Certificate Date: 08-SEP-1998
Invoice No.: 19829111
P.O. Number : 12041-S
Account : NOU

CERTIFICATE OF ANALYSIS A9829111

SAMPLE	PREP CODE	PASTE pH	S %	S % * Sulfate	S % *** Sulfide	S % Total	CO2 % inorg	Max Pot Acid **	Neutral Poten**	Net Neu Poten**	Ratio NP/NMPA	Fizz Test	Cu %	Cu nsu1 %	A1203 % XRF
MP TAILS 98	299 --	8.8	0.05	0.02	0.03	0.04	0.4	1	20	19	20.00	2	0.17	0.12	16.78

NOTE: * HYDROCHLORIC ACID SOLUBLE SULFATE
NOTE: ** UNITS = KILOGRAMS CaCO₃ EQUIVALENT PER METRIC TONNE (KG/MT)
NOTE: ● NITRIC ACID SOLUBLE SULFIDE

CERTIFICATION: *[Signature]*

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218



To: MOUNT POLLEY MINING CORPORATION *

P.O. BOX 12
LIKELY, BC
V0L 1N0

Project: ATTN:RON MARTEL
Comments:

Page Number :1-B
Total: 1
Certificate Date: 08-SEP-1998
Invoice No.: 19829111
P.O. Number: 12041-S
Account: NOU

CERTIFICATE OF ANALYSIS A9829111

SAMPLE	PREP CODE	CaO % XRF	Cr2O3 % XRF	Fe2O3 % XRF	K2O % XRF	MgO % XRF	MnO % XRF	Na2O % XRF	P2O5 % XRF	SiO2 % XRF	TiO2 % XRF	LOI % XRF	TOTAL %	
MP TAILS 98	299 --	3.64	< 0.01	7.67	6.14	2.43	0.08	4.16	0.23	56.05	0.56	2.07	99.81	

NOTE: * HYDROCHLORIC ACID SOLUBLE SULFATE
NOTE: ** UNITS = KILOGRAMS CaCO₃ EQUIVALENT PER METRIC TONNE (Kg/MT)
NOTE: *** NITRIC ACID SOLUBLE SULFIDE

CERTIFICATION:

[Handwritten Signature]



VINCIA LABS LTD.
Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

A982911c

Comments: ATTN: RON MARTEL CC: KEVIN MORIN

CERTIFICATE

A9829116

(NOU) - MOUNT POLLEY MINING CORPORATION

Project: 12041-S
P.O. #:

Samples submitted to our lab in Vancouver, BC.
This report was printed on 11-SEP-1998.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
3659	1	1:1 Rinse pH	POTENTIOMETER	0.1	14.0

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
299	1	Pulp; prepped on other workorder



To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
V0L 1N0
Project :
Comments: ATTN: RON MARTEL CC: KEVIN MORIN

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
212 Brookbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

Page Number :1
Total Pages :1
Certificate Date: 11-SEP-1998
Invoice No. :19829116
P.O. Number :12041-S
Account :NOU

CERTIFICATE OF ANALYSIS A9829116

PARAMETER DESCRIPTIONS	SAMPLE MP TAILS 98								
Sample preparation code Sample preparation code	299 ---								
Rinse pH	9.3								

CERTIFICATION:

Appendix B

Particle Size Analysis
MP Tails 98



P.O. BOX 12
LIKELY, BC
V0L 1N0

Analytical Chemists • Geochimists • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

A9830336

Comments: ATTN:RON MARTEL

CERTIFICATE A9830336

(NOU) - MOUNT POLLEY MINING CORPORATION
Project: MP TAILS 98
P.O. #:
samples submitted to our lab in Vancouver, BC.
This report was printed on 10-SEP-1998.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
2944	8	Weight g	BALANCE	0.1	1000.0

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
204	1	Dry, sieve to -60 mesh
201	1	Dry, sieve to -80 mesh
211	1	Screen 150 um 100 mesh
216	1	sieve to -150 mesh
230	1	sieve to -200 mesh
254	1	sieve less than 63 u
3254	1	sieve less than 53 u



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
V0L 1N0

Comments: MP TAILS 98
Project: ATTN:RON MARTEL

Page Number :1
Total Pages :1
Certificate Date: 10-SEP-1998
Invoice No.: I9830336
P.O. Number
Account :NOU

CERTIFICATE OF ANALYSIS A9830336

SAMPLE	PREP CODE	Weight grams
+60MESH	204	46.7
-60+80MESH	201	94.7
-80+100MESH	211	44.6
-100+150MESH	216	134.2
-150+200MESH	230	120.0
-200+250MESH	254	34.2
-250+270MESH	3254	15.5
-270MESH	--	81.8

CERTIFICATION:

Hayes!

Appendix B

Petrographic Examination
MP Tails 98

Harris
EXPLORATION
SERVICES

MINERALOGY AND GEOCHEMISTRY

534 ELLIS STREET, NORTH VANCOUVER, B.C., CANADA V7H 2G6

TELEPHONE (604) 929-5867

Report for: Mount Polley Mining Corp.,
P.O. Box 12,
LIKELY, B.C.
VOL 1NO

Report 98-85

RECEIVED

SEP 21 1998

September 11, 1998

INTRODUCTION:

A sample, labelled "MP.Tails-98", was forwarded from Chemex Labs, with a request for mineralogical examination for Ron Martel.

A portion of the sample was prepared as a smear-mount polished thin section (Slide 98-12118).

DESCRIPTION:

Estimated mode

Plagioclase)	77
K-feldspar)	
Pyroxene)	8.5
Amphibole)	
Biotite	2.8
Chlorite	0.3
Epidote	0.3
Carbonate	0.5
Garnet	0.5
Sphene	trace
Magnetite	10
Chalcopyrite	trace
Pyrite	trace
Limonite	trace

This sample has a particle size range of 30 - 200 microns.

It consists dominantly of turbid (incipiently sericitized and argillized) feldspars. These apparently include both K-feldspar and poorly twinned plagioclase, but in uncertain relative proportions.

The principal mafics are a pale green to near colourless silicate, which shows extinction angles sometimes typical of pyroxene and sometimes of amphibole; it probably includes both. Biotite - occasionally altered to chlorite - is a less abundant accessory, and

there are also traces of epidote, garnet and sphene.

Carbonate is present as sparsely scattered liberated grains, but is of low overall abundance.

The principal opaque constituent is magnetite. This occurs mainly as liberated grains, but is also seen as small inclusions 10 - 50 microns in size in a few silicate grains.

Sulfides are of notably low abundance (estimated <0.1%). The commonest is chalcopyrite, almost entirely in the form of tiny inclusions, 10 - 50 microns in size, locked in silicates. A couple of small liberated grains rimmed by digenite or chalcocite were also seen - as were rare grains of limonite containing remnant specks of chalcopyrite. Extremely rare traces of pyrite occur in similar mode. A single example of native Au was found, as a liberated flake, 5 microns thick by 60 microns long.

This tailings is of "clean" appearance - essentially free of dispersed limonite staining. The presence of traces of recognizable limonite suggests, however, that the material is derived, at least in part, from the oxidized zone. Traces of secondary Cu minerals may, therefore, also be present, but are not preserved - or recognizable - in the polished thin section. In any event, these are not of significance in the evaluation of AMD potential.

The petrographic examination suggests that the content of carbonate, though minor, should be adequate to buffer any acid produced by oxidation of the very low levels of sulfides present.

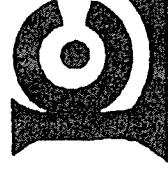


J.F. Harris

Ph.D.

Appendix C

Shake Flask Tests
Modified pH, Modified Rinse,
Sequential Rinse
MP Tails 98



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayors
 212 Brookbank Ave., North Vancouver
 British Columbia, Canada V7J 2C1
 PHONE: 604-984-0221 FAX: 604-984-0218

• PLEASE NOTE

To: RESCAN ENVIRONMENTAL SERVICES LIMITED
 6TH FLOOR, 1111 W. HASTINGS ST.
 VANCOUVER, BC
 V6E 2J3
 Project #: 547-1
 Comments: ATTN: DARCY McDONALD

CERTIFICATE OF ANALYSIS A9831738

PARAMETER DESCRIPTION	SAMPLE NUMBER	TESTING DATE	TESTING TIME	TESTER	REMARKS
Sample preparation code Sample preparation code	1337 1454				
pH Conductivity (umhos/cm) Alkalinity (mg/L CaCO ₃) Acidity (mg/L CaCO ₃) SO ₄ mg/L - Ion Chrom.		7.0 848 97 7 13.2			
Ag Al As Ba Be	ug/L mg/L ug/L ug/L ug/L	< 0.05 0.109 < 1 702 < 0.5			
Bi Ca Cd Co Cr	ug/L mg/L ug/L ug/L ug/L	0.05 123.0 0.3 0.62 7.0			
Cu Fe Hg K Mg	ug/L mg/L ug/L mg/L mg/L	57.5 < 0.01 < 1 9.15 9.73			
Mn Mo Na Ni P	ug/L mg/L mg/L ug/L mg/L	128.5 15.2 11.20 2.2 < 0.1			
Pb Sb Se Sn Sr	ug/L ug/L ug/L ug/L ug/L	6 0.75 0.5 674			
Tl Tl U V Zn	ug/L ug/L ug/L ug/L ug/L	< 0.05 1.45 4 22.0			

• SHAKE FLASK TEST (24 HR/1:3 SOLID:LIQUID RATIO) AT pH 7.0.

CERTIFICATION:

Darci McDonald



Chemex Labs Ltd.
 Analytical Chemists • Geochemists • Registered Assayers
 212 Brooksbank Ave., North Vancouver
 British Columbia, Canada V7J 2C1
 PHONE: 604-984-0221 FAX: 604-984-0218

To: RESCAN ENVIRONMENTAL SERVICES LIMITED
 6TH FLOOR, 1111 W. HASTINGS ST.
 VANCOUVER, BC
 V6E 2J3

Project: 547-1
 Comments: ATTN: DARCY McDONALD

* PLEASE NOTE

CERTIFICATE OF ANALYSIS A9831739					
PARAMETER DESCRIPTION	SAMPLE PREPARATION CODE	TESTING DATE	TESTER	TESTER SIGNATURE	TESTER APPROVAL
Sample preparation code Sample preparation code	1337 1454				
DR Conductivity (umhos/cm)	6.0				
Alkalinity (mg/L CaCO ₃)	2680				
Acidity (mg/L CaCO ₃)	29				
SO ₄ mg/L - Ion Chrom.	8				
Ag ug/L	< 0.05				
Al ug/L	0.094				
As ug/L	< 1				
Br ug/L	884				
Ca ug/L	< 0.5				
Cr ug/L	0.05				
Cd ug/L	425				
Co ug/L	4.5				
Cr ug/L	9.56				
Mg ug/L	3.5				
Cl ug/L	280				
F ug/L	< 0.01				
Hg ug/L	< 1				
K ug/L	11.75				
Mg ug/L	18.60				
Mn ug/L	2330				
Mo ug/L	8.5				
Na ug/L	12.25				
Ni ug/L	19.0				
P ug/L	< 0.1				
Pb ug/L	6				
Se ug/L	0.65				
Sn ug/L	< 1				
Si ug/L	< 0.5				
Tl ug/L	13.65				
Tl ug/L	1				
V ug/L	< 0.05				
V ug/L	0.50				
Zn ug/L	90.5				

• SHOT FLASK TEST (24 HR/1:3 SOLID:LIQUID RATIO) AT pH 5.5.

CERTIFICATION: *Darci McDonald*



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 Brookbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: RESCAN ENVIRONMENTAL SERVICES LIMITED

6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2J3

Project : 547-1
Comments: ATTN: DARCY McDONALD

* PLEASE NOTE

		CERTIFICATE OF ANALYSIS		A9831735
PARAMETER	SAMPLE	RESULTS	UNITS	
Sample preparation code	1337			
Sample preparation code	1453			
pH		8.7		
Conductivity (umhos/cm)		112		
Alkalinity (mg/L CaCO ₃)		36		
Acidity (mg/L CaCO ₃)		—		
SO ₄ mg/L - Ion Chrom.		13.7		
Ag	ug/L	< 0.05		
Al	ug/L	0.164		
As	ug/L	13		
Ba	ug/L	39.8		
Be	ug/L	< 0.5		
B1	ug/L	< 0.05		
Ca	mg/L	11.00		
Cd	ug/L	< 0.1		
Co	ug/L	0.06		
Cr	ug/L	3.0		
Cu	ug/L	43.0		
Fe	mg/L	< 0.01		
Hg	ug/L	< 1		
K	mg/L	4.05		
Mg	mg/L	0.884		
Mn	ug/L	2.05		
Mo	ug/L	15.8		
Na	mg/L	8.35		
Ni	ug/L	0.8		
P	mg/L	< 0.1		
Pb	ug/L	< 2		
Se	ug/L	0.95		
Sn	ug/L	33		
Sr	ug/L	1.0		
Tl	ug/L	79.6		
Tl	ug/L	< 0.05		
D	ug/L	0.35		
V	ug/L	18		
Zn	ug/L	2.0		

Page Number :1
Total Pages :1
Certificate Date: 02-OCT-1998
Invoice No.: 18831735
P.O. Number : VF
Account : VF

F. Anka

CERTIFICATION



Chemex **Labs** **Ltd.**

Analytical Chemists • Geochemists • Registered Assayers

212 Brookbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

* PLEASE NOTE

To: RESCAN ENVIRONMENTAL SERVICES LIMITED
6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2B3
Project #: 547-1
Comments: ATTN: DARCY McDONALD

Page Number :1
Total Pages :1
Certificate Date: 02-OCT-1998
Invoice No.: 18831742
P.O. Number:
Account: VF

CERTIFICATE OF ANALYSIS A9831742				
PARAMETER DESCRIPTIONS	SAMPLE # TINN 98-CW1P			
Sample preparation code	1337	1337	1337	1337
Sample preparation code	1454	1454	1454	1454
pH	8.5	8.5	8.4	8.4
Conductivity (umhos/cm)	113	31.7	255	255
Alkalinity (mg/L CaCO ₃)	36	5.6	4.7	4.7
Acidity (mg/L CaCO ₃)	-----	-----	-----	-----
SO ₄ mg/L - Ion Chrom.	14.0	3.0	1.4	1.4
Ag ug/L	< 0.05	< 0.05	< 0.05	< 0.05
Al ug/L	0.347	0.07	0.108	0.108
As ug/L	0.12	0.5	4	4
Ba ug/L	47.9	162.0	138.0	138.0
Be ug/L	< 0.5	< 0.5	< 0.5	< 0.5
Bi ug/L	< 0.05	< 0.05	< 0.05	< 0.05
Ca ug/L	10.50	43.8	37.3	37.3
Cd ug/L	< 0.1	< 0.1	< 0.1	< 0.1
Co ug/L	0.16	0.54	0.24	0.24
Cr ug/L	2.5	3.5	2.5	2.5
Cu ug/L	< 0.05	< 0.05	< 0.05	< 0.05
Er ug/L	0.17	0.17	0.17	0.17
Hg ug/L	< 1	< 1	< 1	< 1
K ug/L	4.30	4.70	3.95	3.95
Mg ug/L	1.085	3.35	2.45	2.45
Mn ug/L	4.95	22.0	19.6	19.6
Mo ug/L	15.7	3.4	1.3	1.3
Na ug/L	8.30	4.70	2.30	2.30
Ni ug/L	0.6	0.8	0.4	0.4
P ug/L	< 0.1	< 0.1	< 0.1	< 0.1
Pb ug/L	2	< 2	< 2	< 2
Se ug/L	0.85	0.45	0.35	0.35
Sn ug/L	0.28	9	5	5
Se ug/L	1.5	1.0	0.5	0.5
Sn ug/L	81.1	294	220	220
Tl ug/L	12	3	4	4
Tl ug/L	< 0.05	< 0.05	< 0.05	< 0.05
U ug/L	0.30	1.15	0.60	0.60
V ug/L	0.15	5	4	4
Zn ug/L	2.0	2.5	5.0	5.0

• SITE FLASK TEST (24 HR/1:3 SOLID:LIQUID RATIO) AT pH 8.5 ACIDITY IS N/A.

CERTIFICATION: *Darci McDonald*



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
 212 Brookbank Ave., North Vancouver
 British Columbia, Canada V7J 2C1
 PHONE: 604-984-0221 FAX: 604-984-0218

PLEASE NOTE

To: RESCAN ENVIRONMENTAL SERVICES LIMITED
 6TH FLOOR, 1111 W. HASTINGS ST.
 VANCOUVER, BC
 V6E 2J3
 Project #: 547-1
 Comments: ATTN: DARCY McDONALD

Page Number :1
 Total Pages :1
 Certificate Date: 02-OCT-1998
 Invoice No.: 19831741
 P.O. Number:
 Account :VF

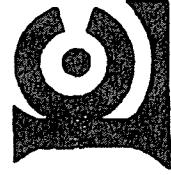
CERTIFICATE OF ANALYSIS

A983174-1

PARAMETER DESCRIPTION	SAMPLE NUMBER	RESULT	UNITS
Sample preparation code	1337	8.5	
Sample preparation code	1454	7.5	
pH		3.0	
Conductivity (umhos/cm)		-----	
Alkalinity (mg/L CaCO ₃)		4.7	
Acidity (mg/L CaCO ₃)		-----	
SO ₄ mg/L - Ion Chrom.		-----	
Ag ug/L	< 0.05	0.05	
Al ug/L	0.211	0.55	
As ug/L	< 0.1	0.1	
Ba ug/L	51.2	0.08	
Be ug/L	< 0.5	2.0	
Bi ug/L	< 0.05	0.05	
Ca ug/L	8.55	8.55	
Cd ug/L	< 0.1	0.1	
Co ug/L	0.08	0.08	
Cr ug/L	2.0	2.0	
Cu ug/L	37.6	37.6	
Fe ug/L	0.09	0.09	
Hg ug/L	< 1	< 1	
K ug/L	2.50	2.50	
Mg ug/L	0.747	0.747	
Na ug/L	2.70	2.70	
No ug/L	4.9	4.9	
Na ug/L	3.15	3.15	
Ni ug/L	0.2	0.2	
P ug/L	< 0.1	< 0.1	
Pb ug/L	< 2	< 2	
sb ug/L	0.35	0.35	
Se ug/L	1.0	1.0	
Sn ug/L	1.0	1.0	
Br ug/L	63.9	63.9	
Tl ug/L	6	6	
Tl ug/L	< 0.05	< 0.05	
V ug/L	0.20	0.20	
V ug/L	0.8	0.8	
Zn ug/L	0.5	0.5	

*SHAKE FLASK TEST (24 HR/1:10 SODIUM DILUTION RATIO) AT pH 8.5. ACIDITY IS N/A.

CERTIFICATION
Darci McDonald



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
2112 Brooksbank Ave., North Vancouver,
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

• PLEASE NOTE

To: RESCAN ENVIRONMENTAL SERVICES LIMITED
6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2J3
Project: 547-1
Comments: ATTN: DARCY McDONALD

CERTIFICATE OF ANALYSIS A9831740

PARAMETER DESCRIPTION	SAMPLE #	TEST NAME	TEST CODE	TEST DATE	TESTER	TESTER SIGNATURE
Sample preparation code	1337					
Sample preparation code	1454					
pH	8.5					
Conductivity (umhos/cm)	3.21					
Alkalinity (mg/L CaCO ₃)	51					
Acidity (mg/L CaCO ₃)	---					
SO ₄ mg/L - Ion Chrom.	34.3					
A ₁ ug/L	< 0.05					
A ₂ ug/L	0.143					
A ₃ ug/L	9					
B _a ug/L	70.8					
B _b ug/L	< 0.5					
B ₁ ug/L	< 0.05					
C _a ug/L	31.8					
C _d ug/L	< 0.1					
C _e ug/L	0.10					
C _f ug/L	4.5					
Cu ug/L	53.4					
E _a ug/L	< 0.01					
Hg ug/L	< 1					
K ug/L	8.40					
Mg ug/L	3.11					
N _m ug/L	4.35					
N _o ug/L	41.9					
N _a ug/L	20.9					
N _r ug/L	0.2					
P ug/L	< 0.1					
P _b ug/L	< 2					
E _b ug/L	1.55					
E _c ug/L	3.8					
S _n ug/L	0.5					
G _r ug/L	230					
T ₁ ug/L	5					
T ₂ ug/L	< 0.05					
G ug/L	0.95					
V ug/L	8					
Zn ug/L	0.5					

INCLUDE FLASK TEST (1:1 HR/1:1 SOLID:LIQUID RATIO) AT pH 8.5. ACIDITY IS NA.

CERTIFICATION:

DARCY MCDONALD



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: RESCAN ENVIRONMENTAL SERVICES LIMITED

6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2J3

Project: 547-1
Comments: ATTN: DARCY McDONALD

Page Number :1
Total Pages :1
Certificate Date: 02-OCT-1998
Invoice No.: 19831735
P.O. Number:
Account :VF

* PLEASE NOTE

		CERTIFICATE OF ANALYSIS A9831735	
PARAMETER	SAMPLE	WATER	WATER
Sample preparation code	1337		
Sample preparation code	1453		
PH	8.7		
Conductivity (umhos/cm)	11.2		
Alkalinity (mg/L CaCO ₃)	3.6		
Acidity (mg/L CaCO ₃)	-----		
SO ₄ mg/L - Ion Chrom.	13.7		
Ag	< 0.05		
Al	0.164		
As	0.13		
Ba	39.8		
Be	< 0.5		
Bi	ug/L	< 0.05	
Ca	mg/L	11.00	
Cd	ug/L	< 0.1	
Co	ug/L	0.06	
Cr	ug/L	3.0	
Cu	ug/L	43.0	
Fe	mg/L	< 0.01	
Hg	ug/L	< 1	
K	mg/L	4.05	
Mg	mg/L	0.884	
Mn	ug/L	2.05	
Mo	ug/L	15.8	
Na	mg/L	B.35	
Ni	ug/L	0.8	
P	mg/L	< 0.1	
Pb	ug/L	< 2	
Sb	ug/L	0.95	
Se	ug/L	33	
Sn	ug/L	1.0	
Sr	ug/L	79.6	
Tl	ug/L	6	
Tl	ug/L	< 0.05	
U	ug/L	0.35	
V	ug/L	18	
Zn	ug/L	2.0	

* SHAKEN FLASK TEST(24 HR/1:3 SOLID:LIQUID) ON AS RECEIVED TAILINGS. ACIDITY IS N/A



CERTIFICATION: *[Handwritten Signature]*



Chemex Labs Ltd.
Analytical Chemists - Geochemists - Registered Assayers
212 Broomebank Ave., North Vancouver V7J 2C1
British Columbia, Canada PHONE: 604-984-0218 FAX: 604-984-0218

To: RESCAN ENVIRONMENTAL SERVICES LIMITED
6TH FLOOR, 1111 W. HASTINGS ST.
VANCOUVER, BC
V6E 2E3

Project: 547-1
Comments: ATTN: DARCY McDONALD

* PLEASE NOTE

CERTIFICATE OF ANALYSIS A9831742

PARAMETER DESCRIPTION	SAMPLE # TAIL 9:1:1:1 P.MLS 9:1:1:1 P.MLS TAILS 9:1:1:1	SAMPLE # TAIL 9:1:1:1 P.MLS 9:1:1:1 P.MLS TAILS 9:1:1:1	SAMPLE # TAIL 9:1:1:1 P.MLS 9:1:1:1 P.MLS TAILS 9:1:1:1
Sample preparation code	1337	1337	1337
Sample preparation code	1454	1454	1454
pH	8.5	8.5	8.4
Conductivity (umhos/cm)	113	317	255
Alkalinity (mg/L CaCO ₃)	36	56	47
Acidity (mg/L CaCO ₃)	-----	-----	-----
SO ₄ mg/L - Ion Chrom.	14.0	3.0	1.4
Ag ug/L	< 0.05	< 0.05	< 0.05
Al ug/L	0.347	0.070	0.108
As ug/L	1.12	0.1	0.4
Ba ug/L	47.9	162.0	138.0
Be ug/L	< 0.5	< 0.5	< 0.5
Bi ug/L	< 0.05	< 0.05	< 0.05
Ca ug/L	10.50	43.8	37.3
Cd ug/L	< 0.1	< 0.1	< 0.1
Co ug/L	0.16	0.54	0.24
Cr ug/L	2.5	3.5	2.5
Cu ug/L	✓ 65.3	22.0	19.6
Fa ug/L	0.17	< 0.01	< 0.01
Hg ug/L	< 1	< 1	< 1
K ug/L	4.30	4.70	2.95
Mg ug/L	1.085	3.35	2.45
Mn ug/L	4.95	6.80	7.90
Mo ug/L	15.7	3.4	1.3
Na ug/L	8.30	4.70	2.30
Ni ug/L	0.6	0.8	0.4
P ug/L	< 0.1	< 0.1	< 0.1
Pb ug/L	2	< 2	< 2
Se ug/L	0.85	0.45	0.35
Sn ug/L	1.5	1.0	0.5
Sr ug/L	81.1	294	220
Tl ug/L	12	3	4
Tl ug/L	< 0.05	< 0.05	< 0.05
U ug/L	0.30	1.15	0.60
V ug/L	15	5	4
Zn ug/L	2.0	2.5	5.0

**SHAKE FLASK TEST (24 HR/1:3 SOLID:LIQUID RATIO) AT pH 8.5 ACIDITY IS N/A.

CERTIFICATION: J. Campbell

Appendix D

Kinetic Rates

MP Tails 98



Chemex Labs Ltd.
Analytical Chemists • Geochemists • Registered Assayers
212 Brookspank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
VOL 1N0

Comments: ATTN: RON MARTEL CC: KEVIN MORIN

A9829725

CERTIFICATE

A9829725

(NOU) - MOUNT POLLEY MINING CORPORATION

Project CYCLE # 0
P.O. #: 12041-S

Samples submitted to our lab in Vancouver, BC.
This report was printed on 14-SEP-1998.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
221	1	Water sample

ANALYTICAL PROCEDURES					
CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
6559	1	pH	POTENTIOMETER	0.1	14.0
6555	1	Conductivity umhos/cm	CONDUCTIVITY MTR	1	10000
653	1	Alkalinity mg/l CaCO ₃	TITRA-ACID-BASE	1	10000
654	0	Acidity mg/l CaCO ₃	TITRA-ACID-BASE	1	10000
662	1	SO ₄ mg/L - Ion Chrom.	ION CHROM.	0.1	10000
5501	1	Ag ug/L: Water samples	ICP-MS	0.05	1000
5531	1	Al mg/L: Water samples	ICP-MS	0.001	100000
5503	1	As ug/L: Water samples	ICP-MS	1	50000
5504	1	Ba ug/L: Water samples	ICP-MS	0.05	50000
5505	1	Be ug/L: Water samples	ICP-MS	0.5	1000
5506	1	Bi ug/L: Water samples	ICP-MS	0.05	1000
5532	1	Ca mg/L: Water samples	ICP-MS	0.05	100000
5533	1	Cd ug/L: Water samples	ICP-MS	0.1	50000
5508	1	Co ug/L: Water samples	ICP-MS	0.02	50000
5509	1	Cr ug/L: Water samples	ICP-MS	0.5	50000
5510	1	Cu ug/L: Water samples	ICP-MS	0.1	50000
5511	1	Fe mg/L: Water samples	ICP-MS	0.01	100000
5533	1	Hg ug/L: Water samples	ICP-MS	1	1000
5513	1	K mg/L: Water samples	ICP-MS	0.05	100000
5534	1	Mg mg/L: Water samples	ICP-MS	0.001	100000
5535	1	Mn ug/L: Water samples	ICP-MS	0.05	50000
5516	1	Mo ug/L: Water samples	ICP-MS	0.1	50000
5517	1	Na mg/L: Water samples	ICP-MS	0.05	100000
5536	1	Ni ug/L: Water samples	ICP-MS	0.2	50000
5519	1	P mg/L: Water samples	ICP-MS	0.1	100000
5537	1	Pb ug/L: Water samples	ICP-MS	2	50000
5521	1	Sb ug/L: Water samples	ICP-MS	0.05	1000
5522	1	Se ug/L: Water samples	ICP-MS	1	1000
5523	1	Sn ug/L: Water samples	ICP-MS	0.5	1000
5524	1	Sr ug/L: Water samples	ICP-MS	0.05	50000
5525	1	Ti ug/L: Water samples	ICP-MS	1	50000
5526	1	Tl ug/L: Water samples	ICP-MS	0.05	1000
5527	1	U ug/L: Water samples	ICP-MS	0.05	10000
5528	1	V ug/L: Water samples	ICP-MS	1	50000
5529	1	Zn ug/L: Water samples	ICP-MS	0.5	50000
5530	1	Leach water added	SPECIAL ANALYSIS	1	10000
1732	1	Leachate collected	SPECIAL ANALYSIS	1	10000
1738	1				



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
212 Brookbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
V0L 1N0
Project: CYCLE # 0
Comments: ATTN: RON MARTEL CC: KEVIN MORIN

Page Number :1
Total Pages :1
Certificate Date: 14-SEP-1998
Invoice No.: 19829725
P.O. Number :12041-S
Account :NOU

* PLEASE NOTE

CERTIFICATE OF ANALYSIS

A9829725

PARAMETER DESCRIPTIONS	SAMPLE NP TAILS.98 - 0						
Sample preparation code Sample preparation code	221 ----						
pH	8.8						
Conductivity (umhos/cm)	240						
Alkalinity (mg/L CaCO ₃)	47						
Acidity (mg/L CaCO ₃)	-----						
SO ₄ mg/L - Ion Chrom.	258						
Ag ug/L	< 0.05						
Al ug/L	0.594						
As ug/L	0.13						
Ba ug/L	37.1						
Be ug/L	< 0.5						
Bi ug/L	< 0.05						
Ca ug/L	18.75						
Cd ug/L	0.1						
Co ug/L	0.06						
Cr ug/L	3.25						
Cu ug/L	58.6						
Fe ug/L	0.03						
Hg ug/L	< 1						
K ug/L	8.30						
Mg ug/L	1.790						
Mn ug/L	2.65						
Mo ug/L	53.8						
Na ug/L	23.0						
Ni ug/L	0.6						
P ug/L	< 0.1						
Pb ug/L	1.28.0						
Sb ug/L	< 2						
Se ug/L	1.15						
Sn ug/L	0.58						
Sr ug/L	0.5						
Tl ug/L	1.28.0						
U ug/L	< 0.05						
V ug/L	0.80						
Zn ug/L	1.14						
	3.5						
Ti ug/L	3						
U ug/L	< 0.05						
V ug/L	0.80						
Zn ug/L	1.14						
	3.5						
Leach water added, mL	750						
Leachate collected, mL	405						

* ACI () IS NOT APPLICABLE.

CERTIFICATION: *Parke J.S.*



To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
V0L 1N0

A9830287

Comments: ATTN: RON MARTEL CC: KEVIN MORIN

CERTIFICATE

A9830287

(NOU) - MOUNT POLLEY MINING CORPORATION

CYCLE # 1
12041-S

Samples submitted to our lab in Vancouver, BC.
This report was printed on 16-SEP-1998.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
221	1	Water sample

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
659	1	pH Conductivity umhos/cm	POTENTIOMETER	0.1	14.0
655	1	Alkalinity mg/l CaCO ₃	CONDUCTIVITY MTR	1	10000
653	1	Acidity mg/l CaCO ₃	TITRA-ACID-BASE	1	10000
654	0		TITRA-ACID-BASE	1	10000
662	1	SO ₄ mg/L - Ion Chrom.	ION CHROM.	0.1	10000
5501	1	Ag ug/L: Water samples	ICP-MS	0.05	10000
5531	1	Al mg/L: Water samples	ICP-MS	0.001	100000
5503	1	As ug/L: Water samples	ICP-MS	1	50000
5504	1	Ba ug/L: Water samples	ICP-MS	0.05	50000
5505	1	Be ug/L: Water samples	ICP-MS	0.5	1000
5506	1	Bi ug/L: Water samples	ICP-MS	0.05	1000
5532	1	Ca mg/L: Water samples	ICP-MS	0.05	100000
5508	1	Cd ug/L: Water samples	ICP-MS	0.1	50000
5509	1	Co ug/L: Water samples	ICP-MS	0.02	50000
5510	1	Cr ug/L: Water samples	ICP-MS	0.5	50000
5511	1	Cu ug/L: Water samples	ICP-MS	0.1	50000
5533	1	Fe mg/L: Water samples	ICP-MS	0.01	100000
5513	1	Hg ug/L: Water samples	ICP-MS	1	1000
5534	1	K mg/L: Water samples	ICP-MS	0.05	100000
5535	1	Mg mg/L: Water samples	ICP-MS	0.001	100000
5516	1	Mn ug/L: Water samples	ICP-MS	0.05	50000
5517	1	Mo ug/L: Water samples	ICP-MS	0.1	50000
5536	1	Na mg/L: Water samples	ICP-MS	0.05	100000
5519	1	Ni ug/L: Water samples	ICP-MS	0.2	50000
5537	1	P mg/L: Water samples	ICP-MS	0.1	100000
5521	1	Pb ug/L: Water samples	ICP-MS	2	50000
5522	1	Sb ug/L: Water samples	ICP-MS	0.05	10000
5523	1	Se ug/L: Water samples	ICP-MS	1	10000
5524	1	Sn ug/L: Water samples	ICP-MS	0.5	10000
5525	1	Sr ug/L: Water samples	ICP-MS	0.05	50000
5526	1	Ti ug/L: Water samples	ICP-MS	1	50000
5527	1	Tl ug/L: Water samples	ICP-MS	0.05	10000
5528	1	U ug/L: Water samples	ICP-MS	0.05	10000
5529	1	V ug/L: Water samples	ICP-MS	1	50000
5530	1	Zn ug/L: Water samples	ICP-MS	0.5	50000
1732	1	Leach water added	SPECIAL ANALYSIS	1	10000
1738	1	Leachate collected	SPECIAL ANALYSIS	1	10000



To: MOUNT POLLEY MINING CORPORATION *

P.O. BOX 12
LIKELY, BC
V0L 1N0

Project: CYCLE # 1
Comments: ATTN: RON MARTEL CC: KEVIN MORIN

* PLEASE NOTE

CERTIFICATE OF ANALYSIS A9830287

PARAMETER DESCRIPTION	SAMPLE NO. TALS.38 - 1							
Sample preparation code	221							
Sample preparation code	---							
pH								
Conductivity (umhos/cm)		8.7						
Alkalinity (mg/L CaCO ₃)		150						
Acidity (mg/L CaCO ₃)		4.4						
SO ₄ mg/L - Ion Chrom.		---						
Ag ug/L	< 0.05							
Al ug/L	0.211							
As ug/L	0.13							
Ba ug/L	32.1							
Be ug/L	< 0.5							
Bi ug/L	0.05							
Ca ug/L	12.55							
Cd ug/L	< 0.1							
Co ug/L	0.08							
Cr ug/L	1.0							
Cu ug/L	53.7							
Fe ug/L	0.06							
Hg ug/L	< 1							
K mg/L	3.85							
Mg mg/L	1.170							
Mn ug/L	3.80							
Mo ug/L	29.8							
Na mg/L	10.85							
Ni ug/L	0.2							
P mg/L	< 0.1							
Pb ug/L	2							
Sb ug/L	1.00							
Se ug/L	2.9							
Sn ug/L	1.5							
Sr ug/L	1.01.5							
Ti ug/L	5							
Tl ug/L	< 0.05							
U ug/L	0.95							
V ug/L	9							
Zn ug/L	4.5							
Leach water added, mL	500							
Leachate collected, mL	430							

* ACID IS NOT APPLICABLE

CERTIFICATION:

Dale Smith

Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
 212 Brooksbank Ave., North Vancouver
 British Columbia, Canada V7J 2C1
 PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
 LIKELY BC
 VOL 1 NO

A9831110

Comments: ATTN: RON MARTEL CC: KEVIN MORIN

CERTIFICATE

(NOU) - MOUNT POLLEY MINING CORPORATION

Project: SEPT 15/98 CYCLE # 2
 P.O. #: 12041-S

Samples submitted to our lab in Vancouver, BC.
 This report was printed on 24-SEP-1998.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
221	1	Water sample

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
659	1	pH Conductivity umhos/cm	POTENTIOMETER	0.1	14.0
655	1	Alkalinity mg/l CaCO ₃	CONDUCTIVITY MTR	1	100000
653	1	Acidity mg/l Caco3	TITRA-ACID-BASE	1	10000
654	0	SO ₄ mg/L - Ion Chrom.	ION CHROM.	0.1	1000
662	1	Ag ug/L: Water samples	ICP-MS	0.05	1000
5501	1	Al mg/L: Water samples	ICP-MS	0.001	100000
5503	1	As ug/L: Water samples	ICP-MS	1	50000
5504	1	Ba ug/L: Water samples	ICP-MS	0.05	50000
5505	1	Be ug/L: Water samples	ICP-MS	0.5	1000
5506	1	Bi ug/L: Water samples	ICP-MS	0.05	1000
5532	1	Ca mg/L: Water samples	ICP-MS	0.05	100000
5508	1	Cd ug/L: Water samples	ICP-MS	0.1	50000
5509	1	Co ug/L: Water samples	ICP-MS	0.02	50000
5510	1	Cr ug/L: Water samples	ICP-MS	0.5	50000
5511	1	Cu ug/L: Water samples	ICP-MS	0.1	50000
5533	1	Fe mg/L: Water samples	ICP-MS	0.01	100000
5513	1	Hg ug/L: Water samples	ICP-MS	1	100000
5534	1	K mg/L: Water samples	ICP-MS	0.05	100000
5535	1	Mg mg/L: Water samples	ICP-MS	0.001	100000
5516	1	Mn ug/L: Water samples	ICP-MS	0.05	50000
5517	1	Mo ug/L: Water samples	ICP-MS	0.1	50000
5536	1	Na mg/L: Water samples	ICP-MS	0.05	100000
5519	1	Ni ug/L: Water samples	ICP-MS	0.2	50000
5537	1	P mg/L: Water samples	ICP-MS	0.1	100000
5521	1	Pb ug/L: Water samples	ICP-MS	2	50000
5522	1	Sb ug/L: Water samples	ICP-MS	0.05	1000
5523	1	Se ug/L: Water samples	ICP-MS	1	1000
5524	1	Sn ug/L: Water samples	ICP-MS	0.5	1000
5525	1	Sr ug/L: Water samples	ICP-MS	0.05	50000
5526	1	Ti ug/L: Water samples	ICP-MS	1	50000
5527	1	Tl ug/L: Water samples	ICP-MS	0.05	1000
5528	1	U ug/L: Water samples	ICP-MS	0.05	1000
5529	1	V ug/L: Water samples	ICP-MS	1	50000
5530	1	Zn ug/L: Water samples	ICP-MS	0.5	100000
1732	1	Leach water added	SPECIAL ANALYSIS	1	10000
1738	1	Leachate collected	SPECIAL ANALYSIS	1	10000

09/01/1998



To: MOUNT POLLEY MINING CORPORATION

Analytical Chemists • Geochemists • Registered Assayers
 212 Brooksbank Ave., North Vancouver
 British Columbia, Canada V7J 2C1
 PHONE: 604-984-0221 FAX: 604-984-0218

P.O. BOX 12
 LIKELY, BC
 VOL 1 NO

Project: SEPT 15/98 CYCLE #²
 Comments: ATTN: RON MARTEL CC: KEVIN MORIN

* PLEASE NOTE

CERTIFICATE OF ANALYSIS A9831110

PARAMETER DESCRIPTION	SAMPLE MP TAILS.98-2								
Sample preparation code Sample preparation code	221 ----								
pH	8.7								
Conductivity (mhos/cm)	138								
Alkalinity (mg/L CaCO ₃)	4.9								
Acidity (mg/L CaCO ₃)	-----								
SO ₄ mg/L - Ion Chrom.	16.6								
Ag ug/L	< 0.05								
Al ug/L	0.197								
As ug/L	8								
Ba ug/L	34.4								
Be ug/L	< 0.5								
Bi ug/L	< 0.05								
Ca ug/L	13.35								
Cd ug/L	< 0.1								
Co ug/L	0.10								
Cu ug/L	1.15								
Fe ug/L	52.2								
Hg ug/L	0.11								
K ug/L	< 1								
Mg ug/L	3.75								
Mn ug/L	1.400								
Mo ug/L	5.00								
Na ug/L	14.8								
Ni ug/L	9.80								
P ug/L	0.2								
Pb ug/L	< 0.1								
Sb ug/L	< 2								
Se ug/L	0.70								
Sn ug/L	23								
Sr ug/L	1.0								
Tl ug/L	108.0								
U ug/L	< 2								
V ug/L	0.05								
Zn ug/L	0.80								
	6								
	< 0.05								
	0.80								
	6								
	5.5								
Leach water added, mL	500								
Leachate collected, mL	420								

* ACI IS NOT APPLICABLE

CERTIFICATION: *[Signature]*



Chemex Labs Ltd.
Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
VOL 1 NO

A983170f

Comments: ATTN: RON MARTEL CC: KEVIN MORIN

CERTIFICATE

A9831706

(NOU) - MOUNT POLLEY MINING CORPORATION

Project: SEPT 22/98 CYCLE # 3
P.O. #: 12041-S

Samples submitted to our lab in Vancouver, BC.
This report was printed on 01-Oct-1998.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
221	1	Water sample

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
659	1	pH	POTENTIOMETER	0.1	14.0
655	1	Conductivity umhos/cm	CONDUCTIVITY MTR	1	10000
653	1	Alkalinity mg/l CaCO3	TITRA-ACID-BASE	1	10000
654	0	Acidity mg/l CaCO3	TITRA-ACID-BASE	1	10000
662	1	SO4 mg/L - Ion Chrom.	ION CHROM.	0.1	10000
5501	1	Ag ug/L: Water samples	ICP-MS	0.05	1000000
5531	1	Al mg/L: Water samples	ICP-MS	0.001	1000000
5503	1	As ug/L: Water samples	ICP-MS	1	50000
5504	1	Ba ug/L: Water samples	ICP-MS	0.05	50000
5505	1	Be ug/L: Water samples	ICP-MS	0.05	1000
5506	1	Bi ug/L: Water samples	ICP-MS	0.05	1000
5532	1	Ca mg/L: Water samples	ICP-MS	0.05	100000
5508	1	Cd ug/L: Water samples	ICP-MS	0.1	50000
5509	1	Co ug/L: Water samples	ICP-MS	0.02	50000
5510	1	Cr ug/L: Water samples	ICP-MS	0.5	50000
5511	1	Cu ug/L: Water samples	ICP-MS	0.1	50000
5533	1	Fe mg/L: Water samples	ICP-MS	0.01	100000
5513	1	Hg ug/L: Water samples	ICP-MS	1	10000
5534	1	K mg/L: Water samples	ICP-MS	0.05	100000
5535	1	Mg mg/L: Water samples	ICP-MS	0.001	100000
5516	1	Mn ug/L: Water samples	ICP-MS	0.05	50000
5517	1	Mo ug/L: Water samples	ICP-MS	0.1	50000
5536	1	Na mg/L: Water samples	ICP-MS	0.05	100000
5519	1	Ni ug/L: Water samples	ICP-MS	0.2	50000
5537	1	P mg/L: Water samples	ICP-MS	0.1	100000
5521	1	Pb ug/L: Water samples	ICP-MS	2	50000
5522	1	Se ug/L: Water samples	ICP-MS	0.05	10000
5523	1	Sn ug/L: Water samples	ICP-MS	1	10000
5524	1	Sn ug/L: Water samples	ICP-MS	0.5	10000
5525	1	Sr ug/L: Water samples	ICP-MS	0.05	50000
5526	1	Ti ug/L: Water samples	ICP-MS	1	50000
5527	1	Tl ug/L: Water samples	ICP-MS	0.05	10000
5528	1	U ug/L: Water samples	ICP-MS	0.05	10000
5529	1	V ug/L: Water samples	ICP-MS	1	50000
5530	1	Zn ug/L: Water samples	ICP-MS	0.5	50000
1732	1	Leach water added	SPECIAL ANALYSIS	1	10000
1738	1	Leachate collected	SPECIAL ANALYSIS	1	10000

REPORT DATE: NOV 08 1998



To: MOUNT POLLEY MINING CORPORATION

Analytical Chemists • Geochemists • Registered Assayers
2112 Brookbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

* PLEASE NOTE

CERTIFICATE OF ANALYSIS

A9831706

Project: SEPT 22/98 CYCLE #3
Comments: ATTN: RON MARTEL CC: KEVIN MORIN

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
V0L 1N0

Page Number :1
Total Pages :1
Certificate Date: 01-OCT-19c
Invoice No.: 19831706
P.O. Number :12041-S
Account :NOU

PARAMETER DESCRIPTIONS	SAMPLE NP TAILS.98 -3						
Sample preparation code	221						
Sample preparation code	---						
pH							
Conductivity (umhos/cm)	8.6						
Alkalinity (mg/L CaCO ₃)	136						
Acidity (mg/L CaCO ₃)	52						
SO ₄ mg/L - Ion Chrom.	-----						
Ag ug/L	< 0.05						
Al mg/L	0.277						
As ug/L	7						
Ba ug/L	49.0						
Be ug/L	< 0.5						
Bi ug/L							
Ca ug/L	< 0.05						
Cd ug/L	14.95						
Co ug/L	< 0.1						
Cr ug/L	< 0.08						
Mg ug/L	3.25						
Cu ug/L	51.0						
Fe ug/L	0.02						
Hg ug/L	< 1						
K mg/L	3.90						
Mg mg/L	1.550						
Mn ug/L	5.85						
Mo ug/L	11.5						
Na mg/L	9.30						
Ni ug/L	0.2						
P ug/L	< 0.1						
Pb ug/L	< 2						
Se ug/L	0.80						
Sn ug/L	19						
Sr ug/L	0.5						
	114.0						
Tl ug/L	8						
Tl ug/L	< 0.05						
U ug/L	0.80						
V ug/L	6						
Zn ug/L	3.5						
Leach water added, mL	500						
Leachate collected, mL	405						

* ACID IS NOT APPLICABLE.

P. J. P. Chemex
CERTIFICATION



Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
V0L 1N0

A9832390

Comments: ATTN: RON MARTEL CC: KEVIN MORIN

CERTIFICATE

A9832390

(NOU) - MOUNT POLLEY MINING CORPORATION
Project: SEPT 29/98 CYCLE # 4
P.O. #: 12041-S

Samples submitted to our lab in Vancouver, BC.
This report was printed on 09-OCT-1998.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
221	1	Water sample

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
659	1	pH Conductivity umhos/cm	POTENTIOMETER	0.1	14.0
655	1	Alkalinity mg/l CaCO3	CONDUCTIVITY MTR	1	10000
653	1	Acidity mg/l CaCO3	TETRA-ACID-BASE	1	10000
654	0		TETRA-ACID-BASE	1	10000
662	1	SO4 mg/L - Ion Chrom.	ION CHROM.	0.1	10000
5501	1	Ag ug/L: Water samples	ICP-MS	0.05	10000
5531	1	Al ug/L: Water samples	ICP-MS	0.001	100000
5503	1	As ug/L: Water samples	ICP-MS	1	50000
5504	1	Ba ug/L: Water samples	ICP-MS	0.05	50000
5505	1	Be ug/L: Water samples	ICP-MS	0.5	1000
5506	1	Bi ug/L: Water samples	ICP-MS	0.05	1000
5532	1	Ca mg/L: Water samples	ICP-MS	0.05	100000
5508	1	Cd ug/L: Water samples	ICP-MS	0.1	50000
5509	1	Co ug/L: Water samples	ICP-MS	0.02	50000
5510	1	Cr ug/L: Water samples	ICP-MS	0.5	50000
5511	1	Cu ug/L: Water samples	ICP-MS	0.1	50000
5533	1	Fe mg/L: Water samples	ICP-MS	0.01	100000
5513	1	Hg ug/L: Water samples	ICP-MS	1	1000
5534	1	K mg/L: Water samples	ICP-MS	0.05	100000
5535	1	Mg mg/L: Water samples	ICP-MS	0.001	100000
5516	1	Mn ug/L: Water samples	ICP-MS	0.05	50000
5517	1	Mo ug/L: Water samples	ICP-MS	0.1	50000
5536	1	Na mg/L: Water samples	ICP-MS	0.05	100000
5519	1	Ni ug/L: Water samples	ICP-MS	0.2	50000
5537	1	P mg/L: Water samples	ICP-MS	0.1	100000
5521	1	Pb ug/L: Water samples	ICP-MS	2	50000
5522	1	Sb ug/L: Water samples	ICP-MS	0.05	1000
5523	1	Se ug/L: Water samples	ICP-MS	1	1000
5524	1	Sn ug/L: Water samples	ICP-MS	0.5	1000
5525	1	Sr ug/L: Water samples	ICP-MS	0.05	50000
5526	1	Ti ug/L: Water samples	ICP-MS	1	50000
5527	1	Tl ug/L: Water samples	ICP-MS	0.05	10000
5528	1	U ug/L: Water samples	ICP-MS	0.05	10000
5529	1	V ug/L: Water samples	ICP-MS	1	50000
5530	1	Zn ug/L: Water samples	ICP-MS	0.5	50000
1732	1	Leach water added	SPECIAL ANALYSIS	1	10000
1738	1	Leachate collected	SPECIAL ANALYSIS	1	10000



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
212 Brookbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION *

P.O. BOX 12
LIKELY, BC
VOL 1N0

Project : SEPT 29/98 CYCLE # 4
Comments: ATTN: RON MARTEL CC: KEVIN MORIN

* PLEASE NOTE

CERTIFICATE OF ANALYSIS A9832390

PARAMETER DESCRIPTIONS	SAMPLE MP TAILS 98 -4							
Sample preparation code	221							
Sample preparation code	---							
P ^H		8.8						
Conductivity (mhos/cm)		129						
Alkalinity (mg/L CaCO ₃)		54						
Acidity (mg/L CaCO ₃)		-----						
SO ₄ mg/L		12.0						
Ag ug/L	< 0.05							
Al ug/L	0.265							
As ug/L	8							
Ba ug/L	44.3							
Be ug/L	< 0.5							
Bi ug/L	< 0.05							
Ca ug/L	15.55							
Cd ug/L	< 0.1							
Co ug/L	0.10							
Cr ug/L	5.5							
Cu ug/L	45.3							
Fe ug/L	0.12							
Hg ug/L	< 1							
K mg/L	4.00							
Mg mg/L	1.870							
Mn ug/L	5.30							
Mo ug/L	9.8							
Na ug/L	8.45							
Ni ug/L	0.4							
P ug/L	< 0.1							
Pb ug/L	< 2							
Sb ug/L	0.80							
Se ug/L	20							
Sn ug/L	< 0.5							
Sr ug/L	1.29.5							
Tl ug/L	8							
Tl ug/L	< 0.05							
U ug/L	0.75							
V ug/L	7							
Zn ug/L	2.5							
Leach water added, mL	500							
Leachate collected, mL	440							

* ACID IS NOT APPLICABLE.

Page Number :1
Total Pages :1
Certificate Date: 09-OCT-1998
Invoice No.: 19832390
P.O. Number :12041-S
Account :NOU

CERTIFICATION: *P. B. Martin*



Chemex Labs Ltd.

Analytical Chemists • Geochemistry • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY, BC
VOL 1 No

Comments: ATTN: RON MARTEL CC: KEVIN MORIN

A9832981

CERTIFICATE

A9832981

(NOU) - MOUNT POLLEY MINING CORPORATION

Project: OCT 06/98 CYCLE # 5
P.O. #: 12041-S

Samples submitted to our lab in Vancouver, BC.
This report was printed on 16-OCT-1998.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
221	1	Water sample

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
659	1	pH	POTENTIOMETER	0.1	14.0
655	1	Conductivity umhos/cm	CONDUCTIVITY MTR	1	10000
653	1	Alkalinity mg/l CaCO ₃	TITRA-ACID-BASE	1	10000
654	0	Acidity mg/l CaCO ₃	TITRA-ACID-BASE	1	10000
662	1	SO ₄ mg/L - Ion Chrom.	ION CHROM.	0.1	10000
5501	1	Ag ug/L: Water samples	ICP-MS	0.05	1000
5531	1	Al ug/L: Water samples	ICP-MS	0.001	10000
5503	1	As ug/L: Water samples	ICP-MS	1	50000
5504	1	Ba ug/L: Water samples	ICP-MS	0.05	50000
5505	1	Be ug/L: Water samples	ICP-MS	0.5	1000
5506	1	Bi ug/L: Water samples	ICP-MS	0.05	1000
5532	1	Ca mg/L: Water samples	ICP-MS	0.05	10000
5508	1	Cd ug/L: Water samples	ICP-MS	0.1	50000
5509	1	Co ug/L: Water samples	ICP-MS	0.02	50000
5510	1	Cr ug/L: Water samples	ICP-MS	0.5	50000
5511	1	Cu ug/L: Water samples	ICP-MS	0.1	50000
5533	1	Fe mg/L: Water samples	ICP-MS	0.01	100000
5513	1	Hg ug/L: Water samples	ICP-MS	1	1000
5534	1	K mg/L: Water samples	ICP-MS	0.05	100000
5535	1	Mg mg/L: Water samples	ICP-MS	0.001	100000
5516	1	Mn ug/L: Water samples	ICP-MS	0.05	50000
5517	1	Mo ug/L: Water samples	ICP-MS	0.1	50000
5536	1	Na mg/L: Water samples	ICP-MS	0.05	100000
5519	1	Ni ug/L: Water samples	ICP-MS	0.2	50000
5537	1	P mg/L: Water samples	ICP-MS	0.1	100000
5521	1	Pb ug/L: Water samples	ICP-MS	2	50000
5522	1	Sb ug/L: Water samples	ICP-MS	0.05	1000
5523	1	Se ug/L: Water samples	ICP-MS	1	1000
5524	1	Sn ug/L: Water samples	ICP-MS	0.5	1000
5525	1	Sr ug/L: Water samples	ICP-MS	0.05	50000
5526	1	Ti ug/L: Water samples	ICP-MS	1	50000
5527	1	Tl ug/L: Water samples	ICP-MS	0.05	1000
5528	1	U ug/L: Water samples	ICP-MS	0.05	1000
5529	1	V ug/L: Water samples	ICP-MS	1	50000
5530	1	Zn ug/L: Water samples	ICP-MS	0.5	50000
1732	1	Leach water added	SPECIAL ANALYSIS	1	10000
1738	1	Leachate collected	SPECIAL ANALYSIS	1	10000

NOT 40 1398



To: MOUNT POLLEY MINING CORPORATION

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

* PLEASE NOTE

CERTIFICATE OF ANALYSIS A9832981

Page Number :1
Total Pages :1
Certificate Date: 16-OCT-1996
Invoice No.: 19832981
P.O. Number :12041-S
Account :NOU

Project: OCT 06/98 CYCLE # 5
Comments: ATTN: RON MARTEL CC: KEVIN MORIN

PARAMETER DESCRIPTIONS

PARAMETER DESCRIPTIONS	SAMPLE MP TAILS .98 -5								
Sample preparation code	221								
Sample preparation code	---								
pH	8.7								
Conductivity (umhos/cm)	118								
Alkalinity (mg/L CaCO ₃)	49								
Acidity (mg/L CaCO ₃)	-----								
SO ₄ mg/L - Ion Chrom.	9.9								
Ag ug/L	< 0.05								
Al ug/L	0.161								
As ug/L	7								
Ba ug/L	43.7								
Be ug/L	< 0.5								
Bi ug/L	< 0.05								
Ca ug/L	13.30								
Cd ug/L	< 0.1								
Co ug/L	0.14								
Cr ug/L	2.5								
Cu ug/L	30.0								
Fe ug/L	0.08								
Hg ug/L	< 1								
K mg/L	3.15								
Mg mg/L	1.590								
Mn ug/L	4.95								
Mo ug/L	7.3								
Na mg/L	6.25								
Ni ug/L	0.2								
P mg/L	< 0.1								
Pb ug/L	< 2								
Sb ug/L	0.60								
Se ug/L	0.16								
Sn ug/L	< 0.5								
Sr ug/L	116.5								
Tl ug/L	4								
U ug/L	< 0.05								
V ug/L	0.65								
Zn ug/L	5								
	4.0								
Leach water added, mL	500								
Leachate collected, mL	300								
	4								

* AC¹ IS NOT APPLICABLE

Roberth
CERTIFICATION:



Chemex Labs Ltd.

Analytical Chemists • Geochemists • Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: MOUNT POLLEY MINING CORPORATION

P.O. BOX 12
LIKELY BC
V0L 1N0

Comments: ATTN: RON MARTEL CC: KEVIN MORIN

A9833486

CERTIFICATE

A9833486

(NOU) - MOUNT POLLEY MINING CORPORATION

Project OCT 13/98 CYCLE #6
P.O. #: 12041-S

Samples submitted to our lab in Vancouver, BC.
This report was printed on 20-oct-1998.

SAMPLE PREPARATION		
CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
221	1	Water sample

ANALYTICAL PROCEDURES					
CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
659	1	pH	POTENTIOMETER	0.1	14.0
655	1	Conductivity umhos/cm	CONDUCTIVITY MTR	0.1	100000
653	1	Alkalinity mg/l CaCO ₃	TITRA-ACID-BASE	1	10000
654	0	Acidity mg/l CaCO ₃	TITRA-ACID-BASE	1	10000
662	1	SO ₄ mg/L - Ion Chrom.	ION CHROM.	0.1	10000
5501	1	Ag ug/L: Water samples	ICP-MS	0.05	10000
5531	1	Al mg/L: Water samples	ICP-MS	0.001	100000
5503	1	As ug/L: Water samples	ICP-MS	1	50000
5504	1	Ba ug/L: Water samples	ICP-MS	0.05	50000
5505	1	Be ug/L: Water samples	ICP-MS	0.05	10000
5506	1	Bi ug/L: Water samples	ICP-MS	0.05	10000
5532	1	Ca mg/L: Water samples	ICP-MS	0.05	100000
5508	1	Cd ug/L: Water samples	ICP-MS	0.1	50000
5509	1	Co ug/L: Water samples	ICP-MS	0.02	50000
5510	1	Cr ug/L: Water samples	ICP-MS	0.5	50000
5511	1	Cu ug/L: Water samples	ICP-MS	0.1	50000
5533	1	Fe mg/L: Water samples	ICP-MS	0.01	100000
5513	1	Hg ug/L: Water samples	ICP-MS	1	10000
5534	1	K mg/L: Water samples	ICP-MS	0.05	100000
5535	1	Mg mg/L: Water samples	ICP-MS	0.001	100000
5516	1	Na ug/L: Water samples	ICP-MS	0.05	50000
5517	1	Mo ug/L: Water samples	ICP-MS	0.1	50000
5536	1	Na mg/L: Water samples	ICP-MS	0.05	100000
5519	1	Ni ug/L: Water samples	ICP-MS	0.2	50000
5537	1	P mg/L: Water samples	ICP-MS	0.1	100000
5521	1	Pb ug/L: Water samples	ICP-MS	2	50000
5522	1	Sb ug/L: Water samples	ICP-MS	0.05	10000
5523	1	Se ug/L: Water samples	ICP-MS	0.1	10000
5524	1	Sn ug/L: Water samples	ICP-MS	0.5	10000
5525	1	Sr ug/L: Water samples	ICP-MS	0.05	50000
5526	1	Tl ug/L: Water samples	ICP-MS	1	50000
5527	1	Tl ug/L: Water samples	ICP-MS	0.05	10000
5528	1	U ug/L: Water samples	ICP-MS	0.05	10000
5529	1	V ug/L: Water samples	ICP-MS	1	50000
5530	1	Zn ug/L: Water samples	ICP-MS	0.5	100000
1732	1	Leach water added	SPECIAL ANALYSIS	1	10000
1738	1	Leachate collected	SPECIAL ANALYSIS	1	10000



To: MOUNT POLLEY MINING CORPORATION

Analytical Chemists • Geochemists • Registered Assayers
 2112 Brooksbank Ave., North Vancouver
 British Columbia, Canada V7J 2C1
 PHONE: 604-984-0221 FAX: 604-984-0218

P.O. BOX 12
 LIKELY, BC
 VOL 1 N₀

Project: OCT 13/98 CYCLE #6
 Comments: ATTN: RON MARTEL CC: KEVIN MORIN

* PLEASE NOTE

CERTIFICATE OF ANALYSIS A9833486

PARAMETER DESCRIPTION	SAMPLE MP Tails.98 -6							
Sample preparation code Sample preparation code	221 ---							
pH	8.7							
Conductivity (umhos/cm)	200							
Alkalinity (mg/L CaCO ₃)	53							
Acidity (mg/L CaCO ₃)	---							
SO ₄ mg/L	11.5							
Ag ug/L	< 0.05							
Al ug/L	0.410							
As ug/L	7							
Ba ug/L	54.2							
Be ug/L	< 0.5							
Bi ug/L	< 0.05							
Ca ug/L	15.60							
Cd ug/L	< 0.1							
Co ug/L	0.30							
Cr ug/L	3.5							
Cu ug/L	69.6							
Fe ug/L	0.20							
Hg ug/L	< 1							
K mg/L	3.85							
Mg mg/L	1.870							
Mn ug/L	8.10							
Mo ug/L	8.7							
Na ug/L	6.95							
Ni ug/L	0.2							
P ug/L	< 0.1							
Pb ug/L	< 2							
Sb ug/L	0.90							
Se ug/L	0.18							
Sn ug/L	< 0.5							
Sr ug/L	132.0							
Tl ug/L	1.2							
Tl ug/L	< 0.05							
U ug/L	0.70							
V ug/L	6							
Zn ug/L	1.5							
Leach water added, mL	500							
Leachate collected, mL	360							

* ACI IS NOT APPLICABLE

Page Number :1
 Total Pages :1
 Certificate Date: 20-OCT-1998
 Invoice No. :19833486
 P.O. Number :12041-S
 Account :NOU

P. G. Smith
 CERTIFICATION: *P. G. Smith*

Appendix E

References

**Mount Polley Mining Corporation
Mount Polley Mine**

REFERENCES

Allison, J.D., D.S. Brown, and K.J. Novo-Gradac. 1990. MINTEQA2\PRODEFA2. A Geochemical Model for Environmental Systems: Version 3.0 User's Manual. U.S. Environmental Protection Agency, Environmental Research Laboratory, Athens, Georgia.