March 20, 2013
TC53920

Robin McCall
Yukon Zinc Corporation
701-475 Howe Street
Vancouver BC
V6C 2B3

Dear Mr. McCall:

Re: Wolverine Project Update: Shutdown of Seven Remaining Humidity Cells

1.0 INTRODUCTION

This report summarizes the final leach data of the remaining seven humidity cells from the Wolverine Project humidity cell testing program. Results from the humidity cells were last reported in March 2011 (AMEC, 2011). Following recommendations made in November of 2008 (AMEC, 2008) 17 cells were shut down on February 19, 2009, and the operation of seven cells were continued up to January 2012 (Table 1).

The remaining seven humidity test cells consisted of four mine rock humidity cells (HC 4, HC 6, HC 7 and HC 10), one NP-depleted ore cell (HC 21) and two tailings paste backfill cells (T1 and T2).

Release rates were calculated based on the measured concentrations and volumes of leachate produced weekly by each cell. Long-term rates were determined for steady-state conditions that excluded the initial 20 weeks of data to account for the flushing of oxidation products in the samples that may have accumulated prior to testing.

Termination of the seven cells followed standard procedures as outlined in the document *Draft Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia* (Price, 1997). After the last cycle of the humidity cell testing, the closedown procedure involved a high volume final rinse to account for the retention and/or accumulation of weathering products over time. The detectable retained products of the final rinse were then distributed evenly over all weeks of testing; assuming the weekly amount of retained product was constant over the testing period.

Results for pH, and calculated loadings for sulphate, alkalinity, acidity and regulated metals, plus carbonate molar ratios for each material type are discussed in the following sections and shown in Figures 1 to 48.

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2.0 HUMIDITY CELL SHUTDOWN RESULTS

2.1 Static Testing – ABA and Elemental Analysis

Initial acid-base accounting (ABA) analyses were conducted at the ALS Chemex laboratory in Burnaby, BC. Humidity cells were operated by SGS CEMI of Burnaby, BC. For consistency, after the final rinse of the humidity cells by SGS CEMI, subsamples of the humidity cell solids were sent to ALS Chemex for final ABA analyses and the results are provided in Table 2. The following section describes the results of the final ABA analyses in comparison to the initial test results.

Paste pH

The initial and final values for the paste pH of the HC 6 (Excp-3) sample were identical, with a value of 7.7. The paste pH of the waste rock samples HC 4 (Footwall Rhyolite-3) and HC 7 (Argillite-2) decreased by 2.8-3.6 pH units over the course of the testing period, with a final paste pH of 4.0 and 5.2 respectively. The paste pH of HC 10 increased from 7.9 at the commencement of testing, to 8.2 at the time of closeout.

The NP depleted ore sample (HC 21) had a paste pH of 3.6 following the decommissioning of the cell. The initial paste pH of HC 15 was used as a general comparison to the ore sample in HC 21, resulting in a decrease of 4.4 pH units (final paste pH of 3.6) over the testing period.

The initial measured paste pH of the tailings paste backfill samples T1 and T2 were 8.3 and 7.9, respectively, while the final measured paste pH of the humidity cell materials were both 7.8.

Forms of Sulphur

Total sulphur, sulphate sulphur and sulphide sulphur for both initial and final analyses are presented in Table 2. In general, total sulphur content decreased by 0.5 to 9.5% in all humidity cell material. The initial sulphide sulphur content was elevated relative to the final sulphide sulphur content for all waste rock humidity cell material.

Final sulphate content for material from HC 4, 6 and 7 were slightly higher than the initial values (0.03-0.07% increase) and sulphide content for the same cells declined relative to initial values (0.7 to 0.9% decrease), suggesting that sulphide oxidation may have occurred.

Values for total sulphur and sulphide sulphur content decreased by 9.5 and 10.8%, respectively for the NP depleted ore cell (HC 21) material. The sulphate values for the HC 21 material increased by 0.3% over the testing period relative to the initial values.

Total sulphur content in the backfill material (T1 and T2 cells) decreased by 1.25-2.25%, whereas initial and final sulphide sulphur content remained relatively similar. The initial concentrations of sulphate were 1.2% and 1.0%, and both decreased to 0.1% sulphate at the time of closeout. The backfill material had large proportions of pyrite, however evidence suggests that little sulphide oxidation occurred. The decline in sulphate content within the material may be related to the elevated sulphate loadings observed within the initial 100 weeks (ranged from 50-700 mg/kg/wk) (Figure 36).

The acid potential (AP) in the final humidity cell material was less than the initial AP values for all cells. The final AP values for humidity cell material from HC 4, 6, 7 and 10 were 9-29 kg $CaCO_3$/tonne lower than the initial material, and were likely a result of sulphide oxidation. The AP value for the NP depleted ore sample (HC 21) was initially 413 kg $CaCO_3$/tonne, while the final AP was 73 kg $CaCO_3$/tonne. The substantial loss in AP for the NP depleted cell is likely attributed to accelerated loss of sulphur after the onset of acidic conditions. The AP values for the backfill material in cells T1 and T2 decreased from 608 and 586 kg $CaCO_3$/tonne to 553 and 550 kg $CaCO_3$/tonne, respectively.

Forms of Neutralization Potential

In general the initial values for NP were significantly higher than the NP values for the final residues, and decreased by 13.5-112.5 kg $CaCO_3$/tonne for all materials.

The initial NP for HC 4 material decreased by 93%, from 19 kg/$CaCO_3$/tonne to 1.4 kg/$CaCO_3$/tonne. The NP depleted cell (HC 21) had a reported decrease in NP of 99.6%, with a final NP of 0.5 kg $CaCO_3$/tonne. The NP values of the tailings cells decrease by 66-68 kg $CaCO_3$/tonne.

At the onset of acidic conditions, approximately 10 kg $CaCO_3$/tonne NP was remaining for HC 4, 13 kg $CaCO_3$/tonne NP was remaining for HC 7, and 1.3 kg $CaCO_3$/tonne NP was remaining for HC 21.

Acid Base Accounting (ABA)

The ratio of NP to AP provides an estimate of the bulk available NP relative to AP, where a value of one indicates that NP content exactly balances AP content. Values less than one indicate AP exceeds NP and values greater than one indicates excess NP. Values of NP/AP much greater than one are preferable and allow for variability in rock composition.

Initial and final NP/AP ratios were compared in Table 2. The initial NP/AP ratios were less than 0.75 for all humidity cells, with the exception of HC 6 (2.52). In general, the final NP/AP ratios were less than the initial NP/AP ratios, and decreased by 0.02-0.34 for all humidity cell samples. All final NP/AP ratios were less than 0.4, with the exception of HC 6 (2.5).

The greatest differences in NP/AP were observed for HCs 4 and 21: HC 4 had an initial NP/AP ratio of 0.17 and a final NP/AP ratio of 0.02, and HC 21 had an initial NP/AP ratio of 0.27 and a final NP/AP ratio of 0.001. In general, the decrease in NP was greater than the decrease in AP for HCs 4, 7 and 21.

Elemental Analyses of Solids

The initial elemental content of the humidity cell material were compared to the elemental content of the humidity cell material after closeout, and are summarized in Table 3. Concentrations of major elements including aluminum, calcium, iron, magnesium and sodium were generally elevated in the initial analyses relative to the elemental content of samples following closeout.

Concentrations of calcium decreased by 2.3-3.3% for the NP depleted ore material (HC 21) and backfill materials (T1 and T2). The backfill materials had 2.5% calcium remaining following termination, which likely contributed to the elevated NP values for these materials. A large decline from initial to final elemental content was observed for cadmium, copper, manganese, zinc and magnesium for the acid generating humidity cell material (HC 4, 7 and 21).

Trace elemental content of the final samples were at times elevated relative to the initial content; the discrepancy is likely due heterogeneity within the soil sample and instrument sensitivity.

2.2 Kinetic Testing

Humidity cell testing was conducted at SGS CEMI (formerly Canadian Environmental and Metallurgical Inc.) according to standard humidity cell procedures outlined in Price (1997). Following the last cycle of the humidity cell operation, the closedown procedure included a high volume final rinse of the cells to remove any weathering products that may have been retained in the sample. Calculated loads of retained products in the final rinse were then distributed evenly over the testing period to revise the weekly loading rates. Humidity cell leachate chemistry was used to determine the release rate of metals and other parameters as a function of time, and to estimate the time to acid rock drainage (ARD) onset.

pH

Measured leachate pH values for HCs 6 and 10 remained fairly constant throughout the testing period and fluctuated around near-neutral pH values (~7). The pH values of HC 4 and HC 7 leachate behaved similarly. The pH values were near-neutral and decreased to 6.5 over approximately 50 weeks, followed by a rapidly decline (over 30-50 weeks) to values below 4. The final pH values measured for HC 4 and HC 7 were 3.8 and 2.8, respectively (Figure 1).

The pH values of the NP-depleted ore sample (HC 21) decreased to acidic conditions within 2.5 years; the last recorded pH value was 2.1 (Figure 16).

The pH values of the two paste backfill humidity cell samples remained circum-neutral throughout the testing period, ranging from 6.5 to 8.2 (Figure 33).

Alkalinity and Acidity

The alkalinity loadings from the mine rock samples HC 6 and HC 10 remained steady throughout the testing duration, and ranged from 12.1 to 51.3 mg/kg/wk (Figure 2). The acidity release rates for the mine rock leachate of the same cells ranged from 0.6 to 6.7 mg/kg/wk (Figure 3).

Alkalinity loadings from HC 4 and HC 7 decreased throughout the testing duration, reaching loads of 0.1 and 0.5 mg/kg/wk, respectively (Figure 2). The acidity release rates increased to 30.6 and 73.9 mg/kg/wk, respectively (Figure 3).

The alkalinity loads from the NP-depleted ore sample (HC 21) decreased to less than the Method Detection Limit (MDL) following 195 weeks (Figure 18). The acidity of HC 21 increased to a maximum loading rate of approximately 2200 mg/kg/wk at the time of termination (Figure 19).

Alkalinity release rates from the paste backfill samples increased slowly over time. After 150 weeks, the alkalinity concentrations stabilized and ranged from 11.1 to 41.2 mg/kg/wk (Figure 34). The acidity of the paste backfill humidity cell leachate rapidly declined from > 20 mg/kg/wk and stabilized between 0.7 and 4.3 mg/kg/wk until termination (Figure 35).

<u>Sulphate</u>

Sulphate loads from HC 6 and HC 10 remained relatively consistent throughout the testing period. After 50 weeks, the HC 6 sulphate loadings stabilized at 27.1 to 91.1 mg/kg/wk, and HC 10 stabilized at 5.5 to 22.4 mg/kg/wk. After 150 weeks, sulphate loadings for HC 4 and HC 7 increased slowly after the onset of acidic conditions. After 150 weeks, HC 4 ranged from 18.4 to 80.8 mg/kg/wk with a median of 33.1 mg/kg/wk, and HC 7 ranged from 12.9 to 198.3 mg/kg/wk with a median sulphate loading of 27.9 mg/kg/wk (Figure 4).

Sulphate release rates for the NP-depleted ore cell (HC 21) steadily increased from week 135. The final sulphate release rate from this cell was 2685.5 mg/kg/wk (Figure 20).

Sulphate loadings from the paste backfill humidity cells (T1 and T2) had decreased to below 100 mg/kg/wk at 91 and 101 weeks, respectively. With the exception of a few irregularities, sulphate release rates for these 2 cells ranged from 17.9 to 87.7 mg/kg/wk thereafter (Figure 36).

<u>Carbonate Molar Ratio</u>

The release rates of calcium and magnesium were compared to the release rates of sulphate, known as the carbonate molar ratio (CMR) to assess the relationship between acid generation and acid neutralization in a sample. Generally CMR values between 0.5 and 1.5 indicate carbonate dissolution in response to sulphide oxidation. Values above this range indicate additional carbonate dissolution due to other processes.

The CMR values for HC 10 were elevated relative to the other mine rock humidity leachates, and were commonly greater than 2 for the entirety of the test. The CMR values for HC 6 were relatively steady up to termination, and ranged from between 1 and 2 (Figure 16). Following 170 weeks, the CMR values for HC 4 and HC 7 steadily declined to ratios below 1, corresponding to decreases in the leachate pH to acidic values until the time of closeout.

The CMR for HC 21 decreased from values of 0.9 to1.7 prior to week 130, to less than one (Figure 36). At week 224, the ratio stabilized at approximately 0.3. The CMR for the paste backfill cells were approximately one for the initial 90 weeks, and increased to values between 1 and 2.6 thereafter (Figure 48). This change corresponded with a notable decrease in sulphate loadings, which were likely due to the flushing of sulphate content on the surface of the backfill tailings.

Metals

The average metal release rates for the waste rock cells HC 6 and HC 10 did not change notably over time (Figure 5 through 15). However, metal loading rates were observed to increase for acid generating cells HC 4 and HC 7. Loading rates for silver, aluminum, arsenic, cadmium, copper, iron, nickel, lead and zinc increased by approximately three orders of magnitude following the onset of acidic conditions in HC 4 and 7 (Figures 5 through 15).

Metals release rates for the NP depleted ore HC 21 generally increased by 2-3 orders of magnitude for most metals including aluminum, copper, iron, and lead (Figures 21 through 31). The release rates of some metals including arsenic, nickel, cadmium and zinc reached a minimum loading at 227 weeks, followed by a rapid increase for the remainder of the testing period.

Metal release rates from the paste backfill humidity cells generally decreased and reached steady state by approximately week 150 (Figures 37 through 47). Arsenic loads decreased significantly (to below method detection limit values) in the last few weeks of testing.

3.0 ESTIMATES OF SULPHIDE AND NP DEPLETION

Estimates of sulphide and NP depletion are used to assist in the prediction of the likelihood of a material to generate net acidity in the future. Net acid generation is assumed to begin once the available NP in a sample is exhausted. Results from humidity cell testing are used to determine the rates of depletion and time to exhaustion. Generally, extrapolation of these laboratory results to a mine setting cannot be done directly; laboratory testing tends to overestimate the rates of sulphide and NP depletion compared to the underground environment. However, the results of this exercise can be used to provide a general sense of the possible duration and relative time difference of sulphide and NP exhaustion.

Estimates of sulphide and NP exhaustion were calculated for all 7 remaining humidity cells (Table 4). Time to sulphide exhaustion was calculated using the sulphate release rates from each of the humidity cells and the amount of total sulphur as determined by the initial ABA static testing analyses. Time to sulphide exhaustion for the 7 terminated cells was calculated based on release rates for the period ending January, 2012. The measured loss of calcium and magnesium was used to estimate NP depletion, assuming the dominant forms of NP were calcium and magnesium carbonates. Estimates calculated for January 2012 include release rates for sulphate, calcium and magnesium incorporating the final rinse for the terminated cells.

Two of the waste rock humidity cells (HC 4 and HC 7) were acid generating. The NP remaining at the time of ARD on-set was approximately 10 kg $CaCO_3$/tonne for HC 4, at which time the humidity cell material had a calculated remaining total sulphur content of 3.4%. At the time of ARD on-set for HC7, approximately 13 kg $CaCO_3$/tonne of NP was remaining, corresponding to a remaining total sulphur content of 1.1%. These results suggest that unavailable NP present in the rock is approximately 10 kg $CaCO_3$/tonne.

The predicted NP exhaustion time of HC 10 was 5.1 years.

The HC 6 data predicted that the sulphide content would become depleted 37 years prior to NP depletion, suggesting the sample is not acid generating.

The NP-depleted ore sample (HC 21) reached acidic conditions at 146 weeks. The NP remaining at time of AP depletion was approximately 1.3 kg CaCO3/tonne. At the time of ARD on-set, the total sulphur content was approximately 12.6%.

The cemented tailings backfill cells (T1 and T2) have an estimated NP exhaustion period of approximately 16 and 8 years respectively.

4.0 SUMMARY

- Sulphate release rates for the mine rock HC 6 and HC 10 were generally constant after the initial 20 weeks of operation. Sulphate loadings increased for HC 4 and HC 7 and HC 21 after the onset of acidic conditions. Sulphate loadings decreased over time for the paste backfill tailings (T1 and T2).
- Elevated concentrations of metals were released as a result of acidic conditions, including aluminum, arsenic, cadmium, copper, iron, lead, nickel and zinc.
- Humidity cells HC 4, HC 7 and HC 21 were operating under acidic conditions. HC 10 and backfill tailings cells (T1 and T2) were estimated to exhaust their NP prior to the exhaustion of sulphide, suggesting that acidic conditions could occur over time. HC 6 was estimated to exhaust AP content prior to NP exhaustion.
- The Calcite-pyrite Exhalite mine rock humidity cell (HC 6) had a predicted NP exhaustion time of approximately 80 years.
- The Carbonaceous Argillite mine rock cell (HC 10) had a predicted NP exhaustion time of approximately 5 years.
- The cemented tailings backfill cells (T1 and T2) had an average estimated NP exhaustion period of approximately 12 years.

5.0 REFERENCES

AMEC, 2008a. Wolverine Project Humidity Cell Update. Prepared by AMEC Earth & Environmental, August 2008.

AMEC, 2008b. Wolverine Project: Recommendations for Continued Humidity Cell Testing. Prepared by AMEC Earth & Environmental, November 2008.

AMEC, 2006. Wolverine Project. Acid Rock Drainage and Metal Leaching Assessment of Mine Rock and Predicted Water Quality of the Underground Workings at Closure. Prepared by AMEC Earth & Environmental, February 2006.

Price, W.A., 1997. Draft Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia.

6.0 CLOSURE

This memo was prepared exclusively for Yukon Zinc Corporation (Yukon Zinc) by AMEC Americas Limited (AMEC). The quality of information, conclusions and estimates contained herein are consistent with the level of effort involved in AMEC's services and based on: i) information available at the time of preparation, ii) data supplied by outside sources and iii) the assumptions, conditions and qualifications set forth in this memo. This memo is intended to be used by Yukon Zinc only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

Yours truly,
AMEC Environment & Infrastructure,
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TABLES

Table 1: Waste Rock, Ore, and Tailing Paste Backfill Humidity Cell Descriptions

Cell #	Sample ID	Sample Type	Method Reference	Column Packing: Dry Wt. of Sample (kg)	Column Packing: Other Materials Used	Column Material	Initial Volume of Initial Flushings	Flushing Rate/Weekly Input*mL	Temp (oC)	Start-up Date	Status	Duration (weeks)
4	Footwall Rhyolite-3	wasterock	MEND	1	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22	22-Dec-05	Terminated	316
6	Excp-3	wasterock	MEND	1	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22	22-Dec-05	Terminated	316
7	Argillite-2	wasterock	MEND	0.9	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22	22-Dec-05	Terminated	316
10	A083529	wasterock	MEND	1	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22	12-Jan-06	Terminated	313
21	Hump Feed Ore NP Removed	ore	MEND	0.541	PVC perforated disk & nylon mesh	Plexiglas	410	270	20-22	23-May-06	Terminated	298
T1	Backfill A	paste backfill	MEND	1	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22	23-May-06	Terminated	297
T2	Backfill B	paste backfill	MEND	1	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22	23-May-06	Terminated	297

Table 2: Initial and Final ABA Summary

Sample	Paste pH		Total Sulphur %		Sulphate-S %		Sulphide-S %		AP (kg CaCO3/tonne)		NP (kg CaCO3/tonne)		NP/AP Ratio		MPA (kg CaCO3/tonne)		Ca NP (kg CaCO3/tonne)	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
HC 4	7.6	4.0	3.61	3.04	0.02	0.09	3.59	2.93	113	91.6	19.0	1.4	0.17	0.02	113	95		<0.8
HC 6	7.7	7.7	4.44	3.83	0.02	0.07	4.42	3.53	139	110	350	275.2	2.52	2.49	139	120		330.8
HC 7	8	5.2	1.2	0.52	0.01	0.04	1.19	0.4	37.5	12.5	18.0	4.5	0.48	0.36	38	16		<0.8
HC 10	7.9	8.2		0.73		0.01		0.68	29.7	21.3	22.0	8.5	0.74	0.40	30	23	25.02	9.2
HC 21	8	3.6	13.2	3.69	0.03	0.3	13.15	2.32	413	72.5	113	0.5	0.27	0.01	413	115		<0.8
T1	8.3	7.8	19.45	17.2	1.16	0.1	18.3	17.7	608	553	131	63.3	0.22	0.11	608	538		72.5
T2	7.9	7.8	18.75	17.5	1.01	0.1	17.75	17.6	586	550	131	65.0	0.22	0.12	586	547		72.5

Table 3: Initial and Final Elemental Content Summary

Concentration (ppm)	Ag		As		Cd		Co		Cr		Cu		Hg	
MDL	0.01		1		0.01		0.1		1		0.5		0.01	
Sample ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
HC 4	2.85		16.2	12	2.52	0.74	10	6.9	2	59	939	656	0.08	0.08
HC 6	0.36		17	14	0.09	0.12	4.6	4	10	53	55.1	67.9	0.02	0.01
HC 7	0.97		11.8	10	2.55	0.45	4.4	1.4	10	112	54.8	25.1	0.38	0.36
HC 10			8.4	7	0.34	0.33		3.9		110	62.5	66	0.06	0.06
HC 21	97		808	355	308	9.78	22.7	5.7	198	83	6430	6070	10.35	17.2
T1	76.5		1250	1060	73.2	77.7	44.9	35.6	83	123	3130	2760	1	1.19
T2	79.3		1235	1040	76.3	87	43.7	36.2	80	119	3370	2990	1.03	1.21

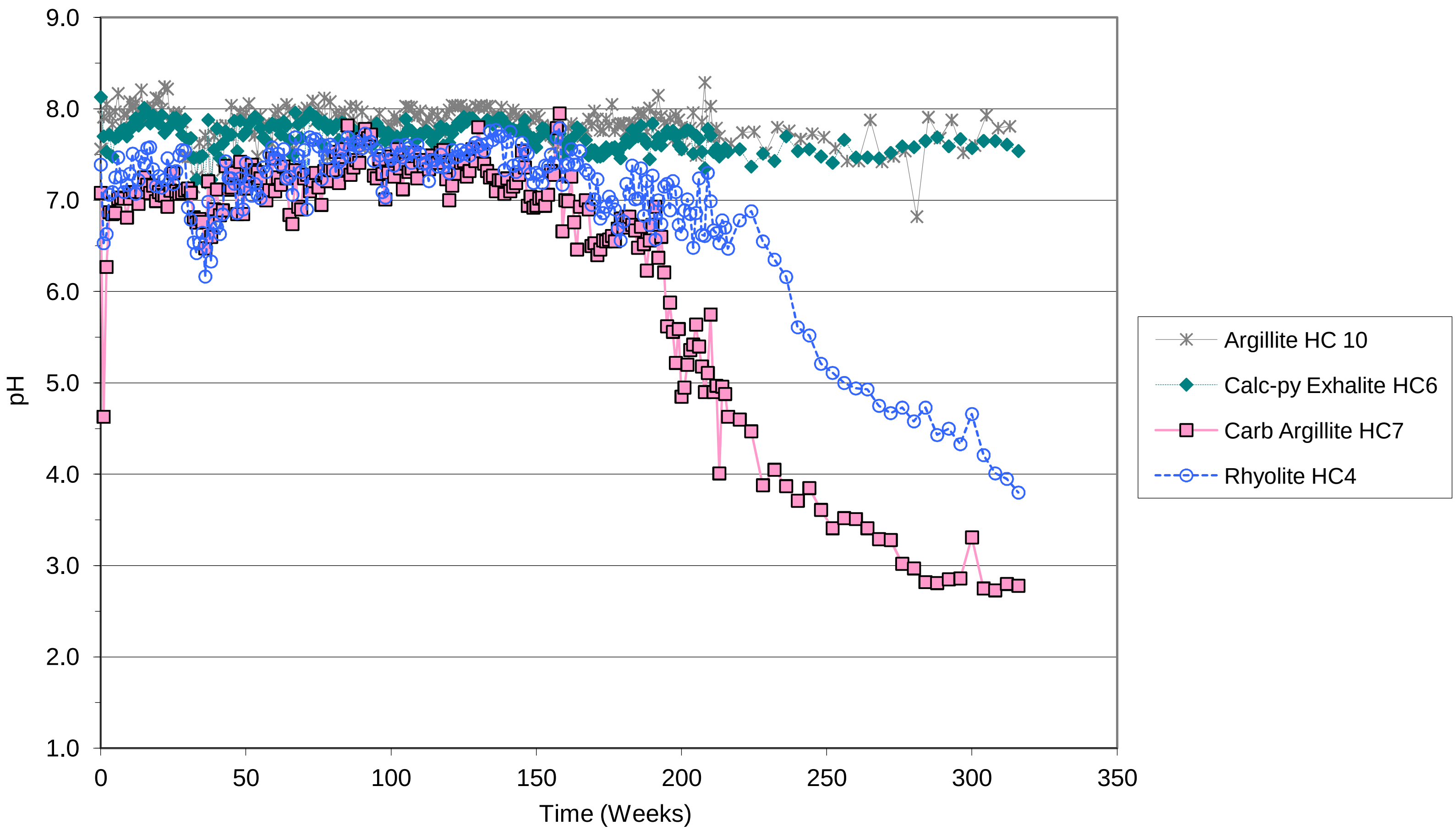
Concentration (ppm)	Mn		Mo		Ni		Pb		Sb		Se		Zn	
MDL	2		0.05		0.5		0.2		0.05		1		1	
Sample ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
HC 4	337	181	2.37	2.42	5.8	3.3	34	25.4	4.43	3.24	44.3	27	289	159
HC 6	4030	4360	5.81	6.06	19.6	17.1	139	163	2.19	1.46	2.3	2	31	34
HC 7	180	52	2.45	2.43	44.5	16.2	19.7	14.1	6.45	7.24	6	4	855	194
HC 10	222	247		1.69		36.2	29.2	29.3	3.15	3.08	2.4	2	192	195
HC 21	661	100	27	32.2	40.6	4.1	3760	1890	290	298	540	397	>10000	1180
T1	1150	1230	15.05	13.6	27.5	22	3030	3550	120	76.7	830	520	7320	7760
T2	1120	1170	15.35	14.2	27.1	21.1	2990	3440	121.5	73.7	830	532	7850	8000

Concentration %	Al		Ca		Fe		Mg		Na	
MDL	0.01		0.01		0.01		0.01		0.01	
Sample ID	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
HC 4	2.05	1.81	0.41	0.1	5.75	6.15	1.54	1.44	0.01	0.02
HC 6	0.53	0.4	12	12.9	9	9.29	0.53	0.38	0.01	0.01
HC 7	0.36	0.25	0.79	0.47	1.52	1.42	0.06	0.03	<0.01	0.01
HC 10		0.38		0.38	1.76	1.84		0.11		0.01
HC 21	1.09	1.02	3.41	0.1	10.45	5.05	1.1	0.86	<0.01	0.01
T1	1.8	1.74	5.23	2.5	21.7	>15	1.43	1.49	0.04	0.01
T2	1.83	1.68	4.91	2.57	21.9	>15	1.43	1.43	0.04	0.01

Table 4: Estimates of Sulphide and Neutralization Potential Exhaustion

Cell	Sample ID	Rock Type	Years to Depletion		Years to Exhaustion		Years to Exhaustion		Status
			NP	Sulphide	NP	Sulphide	NP	Sulphide	
Continued Humidity Cells			June 2008 Update		March 2009		Jan-12		
HC4	Footwall Rhyolite-3	Rhyolite and Rhyolite Fragmental	8.6	97	5.5	78.1	4.3	68.8	Acidic after 240 weeks
HC6	EXCP-3	Calcite-pyrite exhalite	84	44	80.7	43.5	79.5	41.9	Expected to be non-acidic
HC7	Argillite-2	Carbonaceous argillites	14	45	8.7	24.5	9.1	18.4	Acidic after 198 weeks
HC10	A083529	Argillites	7.4	46	5.1	37.9	5.1	37.4	Potentially acid generating
HC21	Hump Ore	NP-Depleted Ore	0.8	88	0	2.3	0.0	0.5	Acidic after 146 weeks
T1	Backfill Tailings	Tailings Backfill	3.6	25	6.1	55.6	16.4	107.1	Potentially acid generating
T2	Backfill Tailings	Tailings Backfill	4.1	8.2	6.8	18.3	8.2	21.0	Potentially acid generating

FIGURES



pH Operating Cells Wolverine Mine, YK	
Mine Rock	
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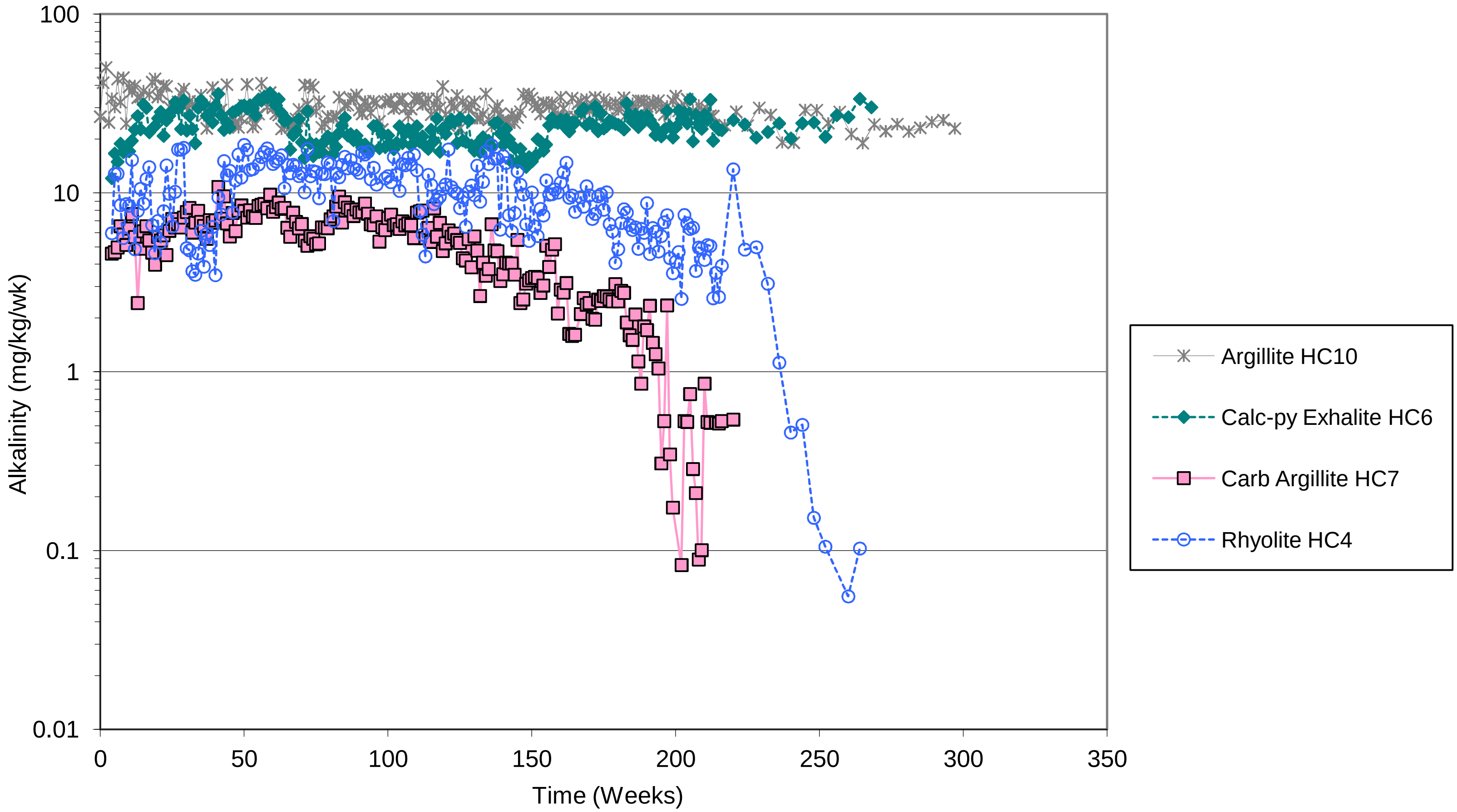

Determination of alkalinity is not valid
below pH values of pH 4.5

Alkalinity Load
Operating Cells
Wolverine Mine, YK

Mine Rock

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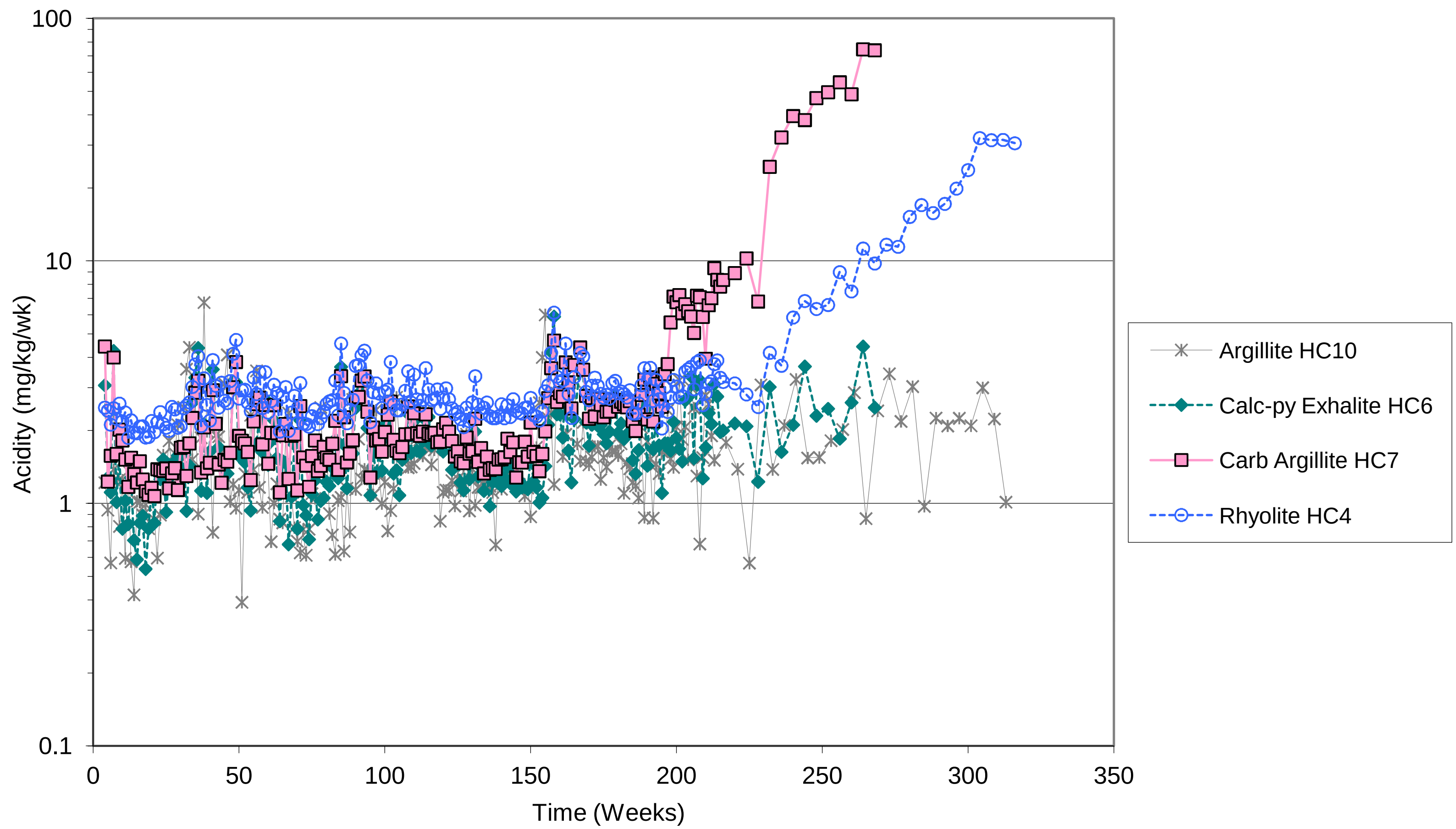

Acidity Load Operating Cells Wolverine Mine, YK	
Mine Rock	
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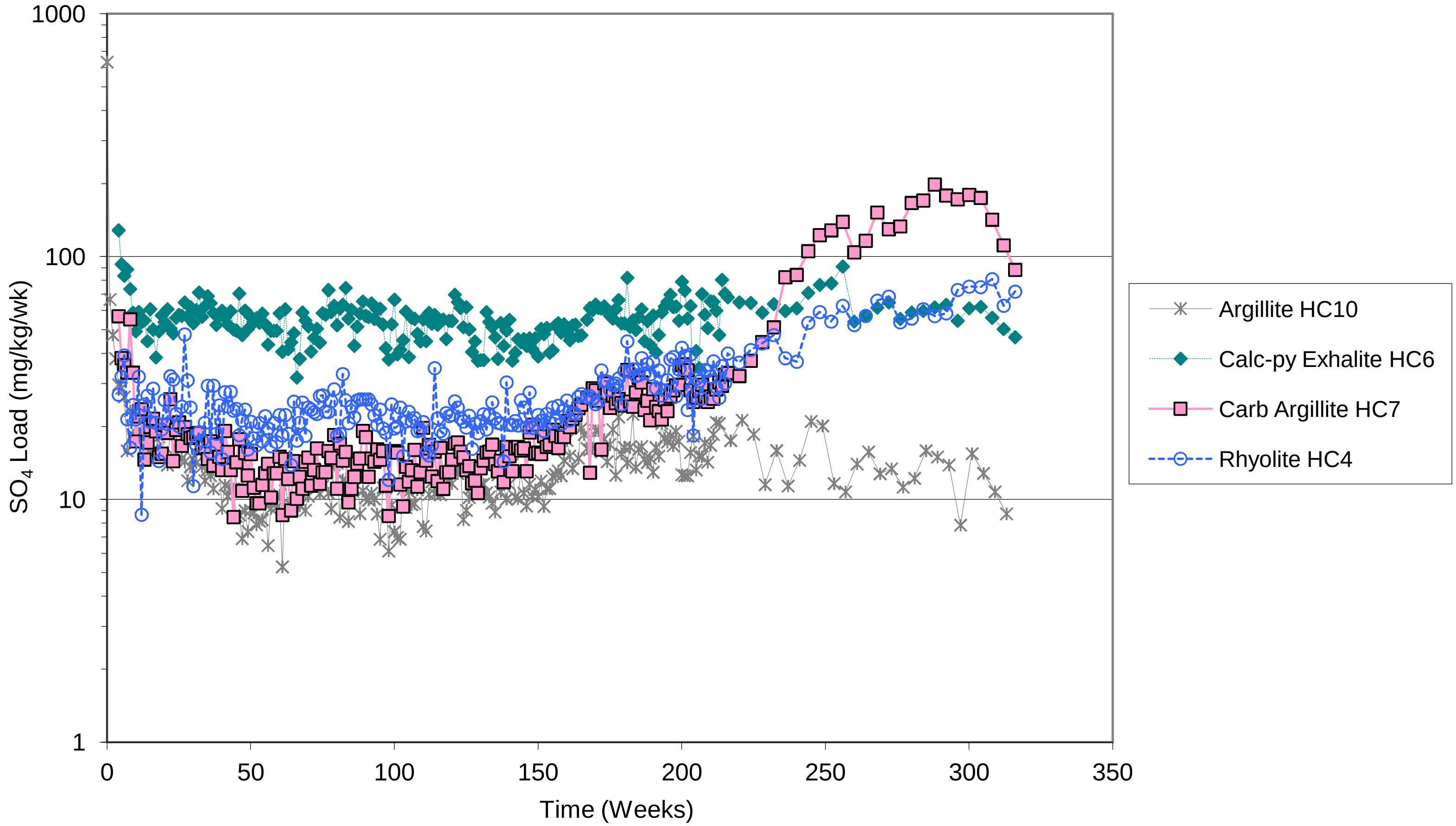

Sulphate Load Operating Cells Wolverine Mine, YK	
Mine Rock	
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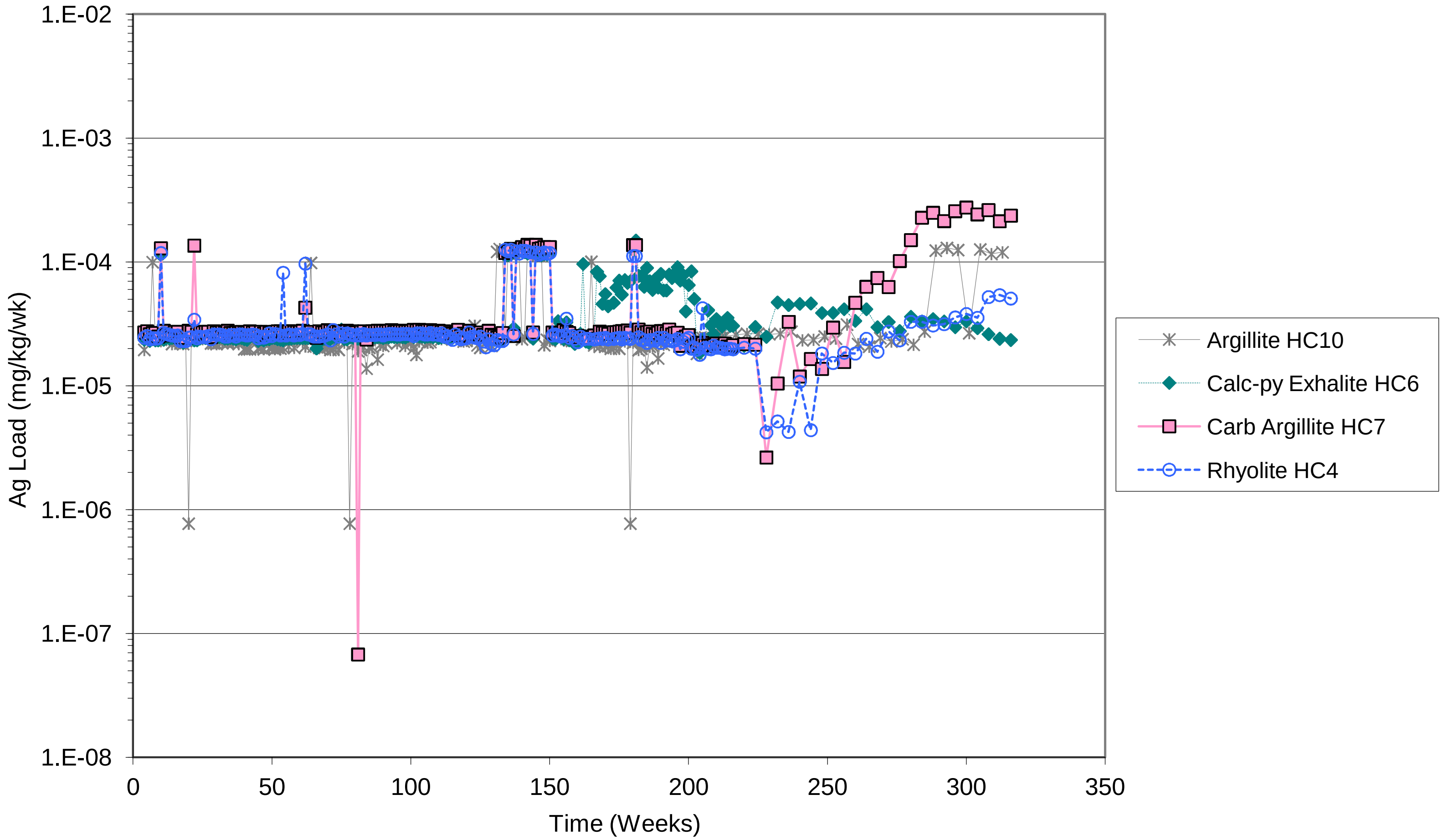
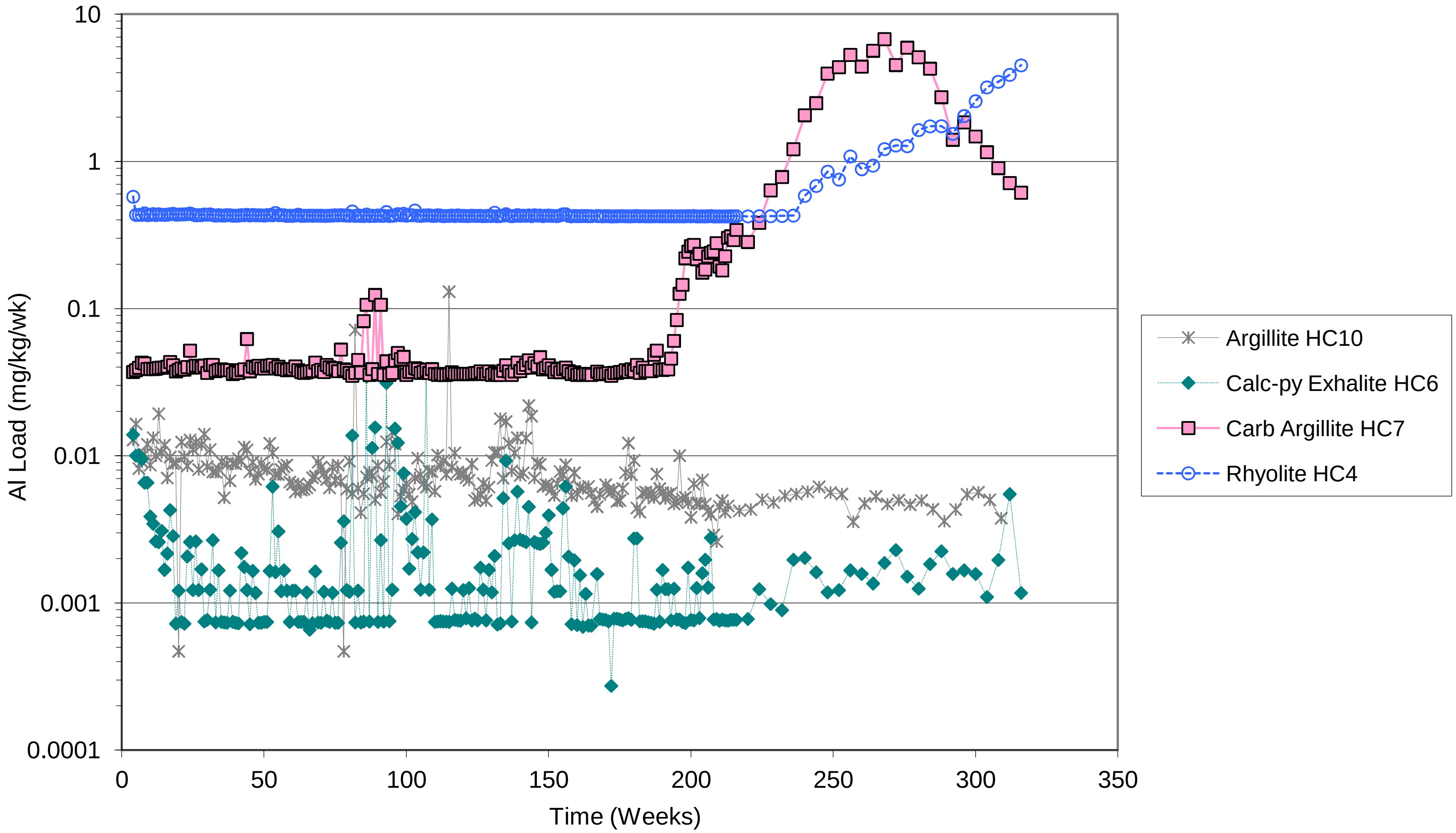


Silver Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2013	FIGURE 5



Aluminium Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2013	FIGURE 6

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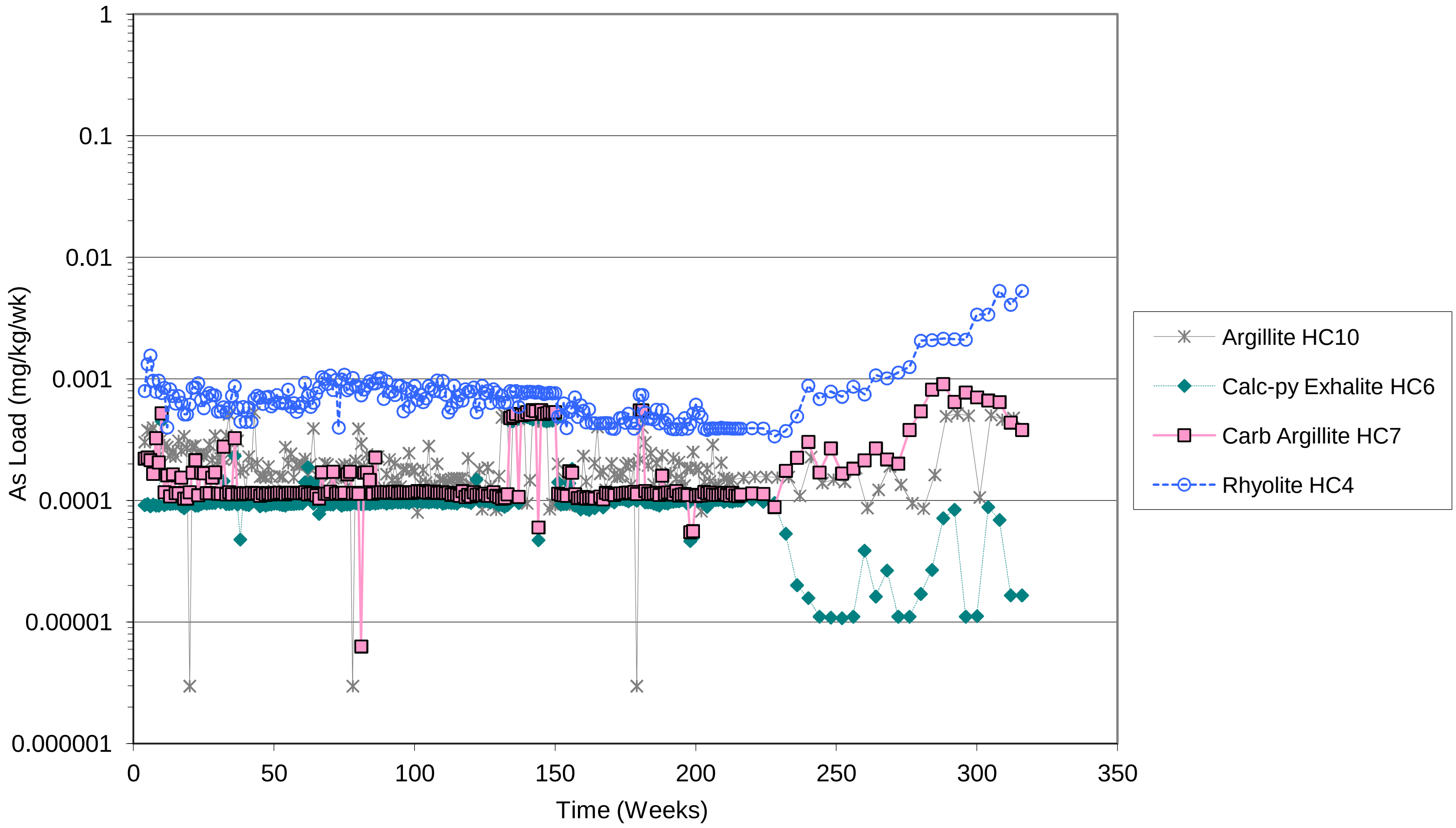
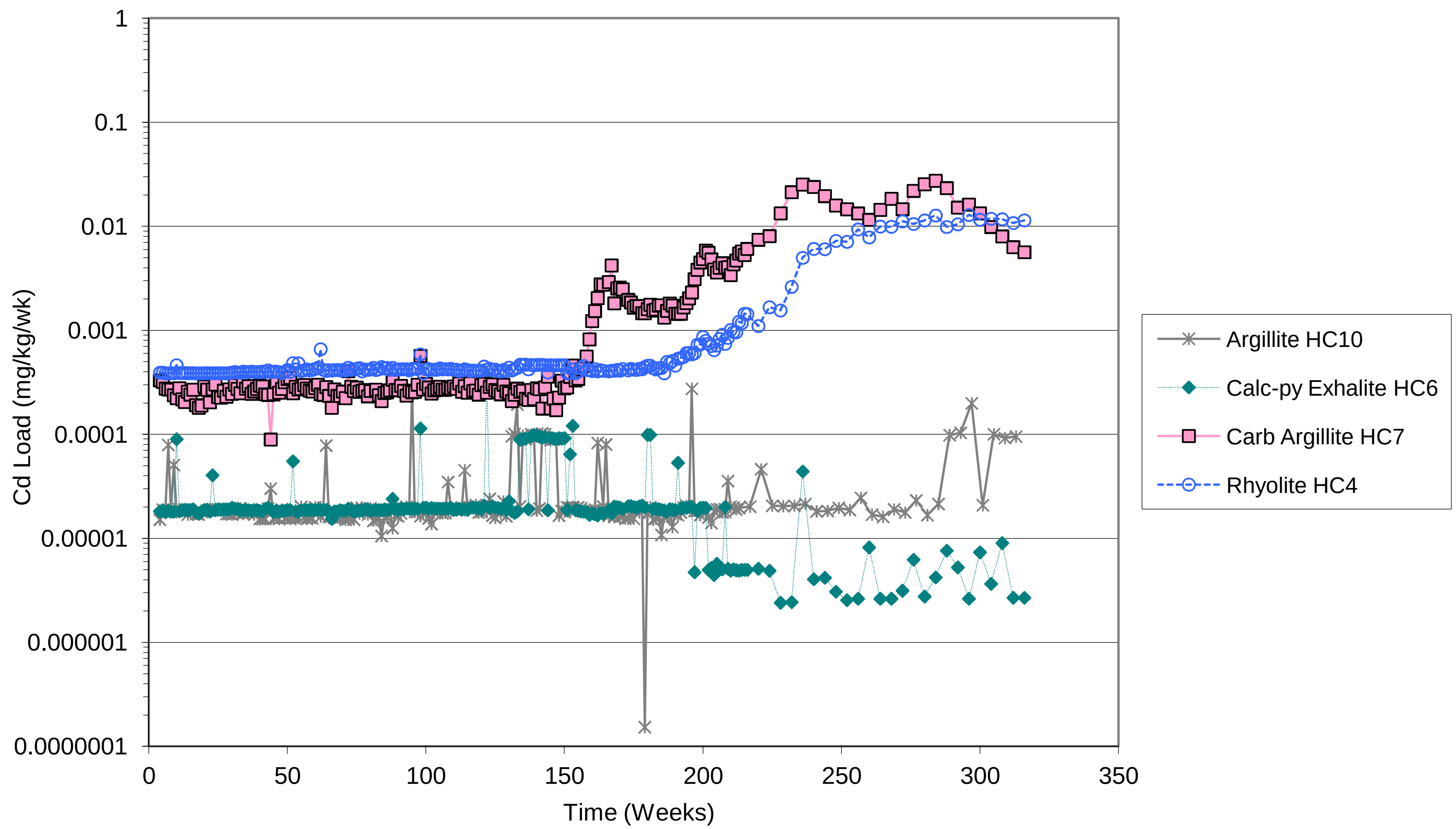


Arsenic Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2013	FIGURE 7

TC 53920

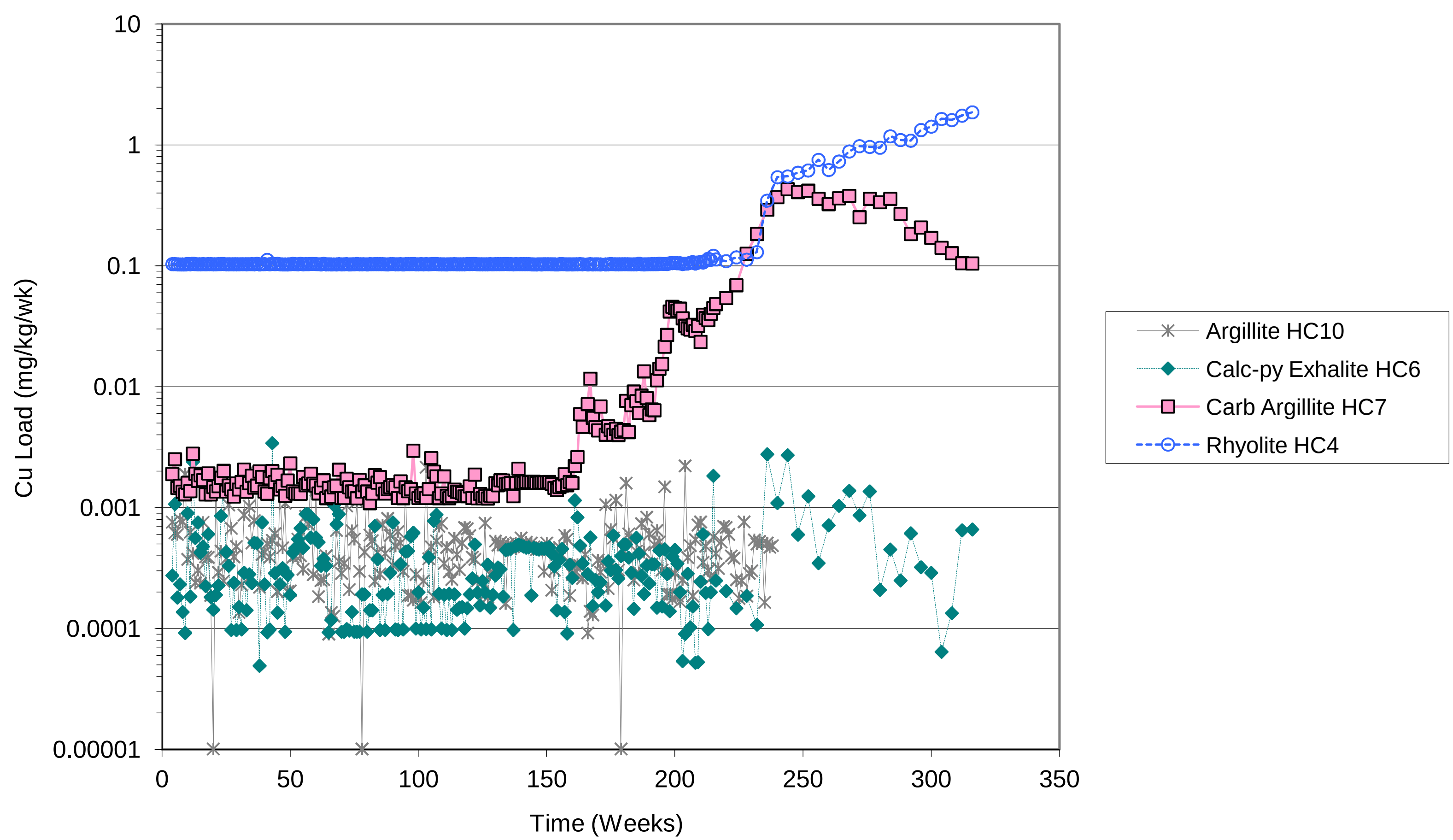


Cadmium Load
Operating Cells
Wolverine Mine, YK

Mine Rock

March 2013 | FIGURE 8

TC 53920

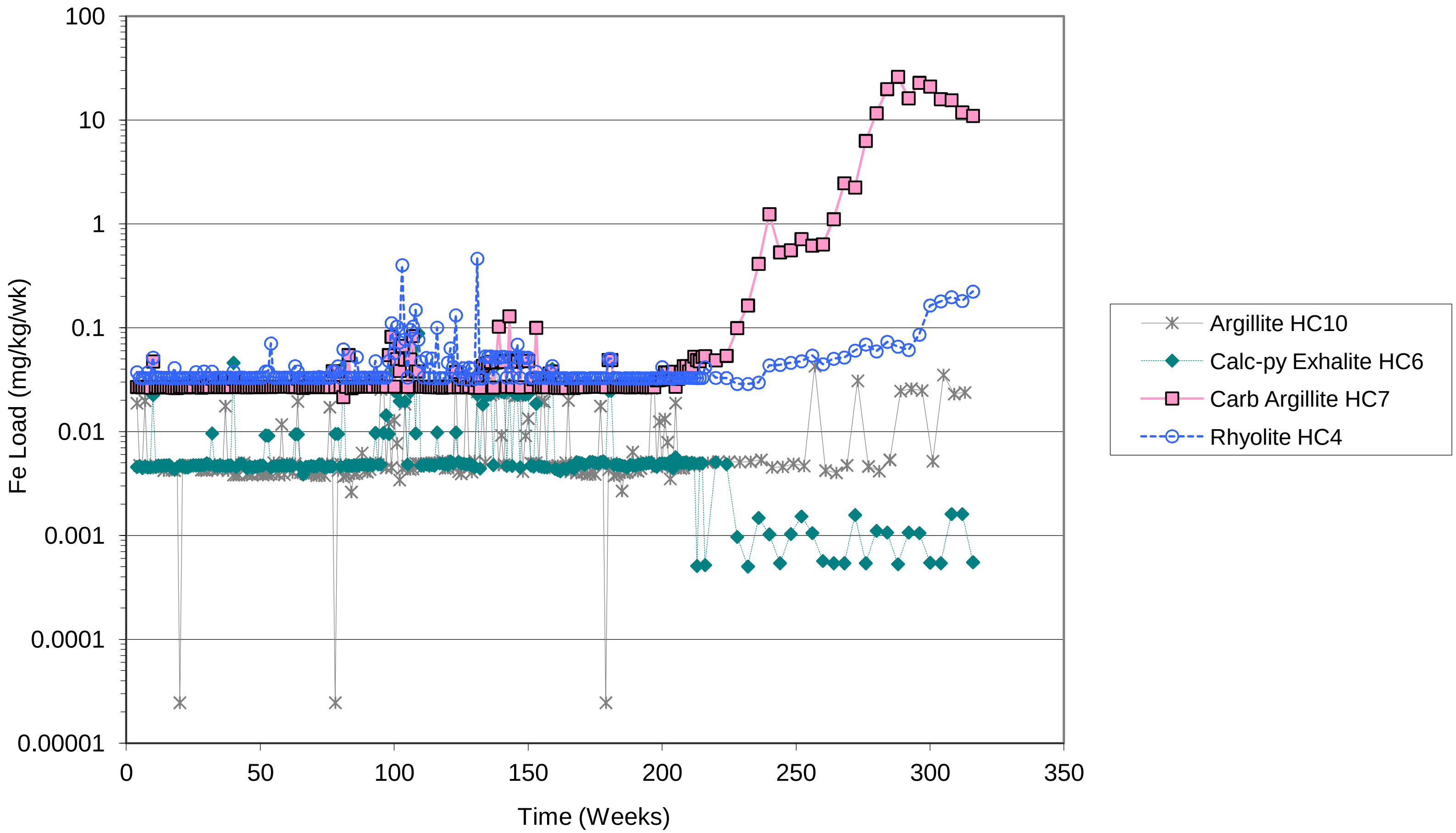


Copper Load
Operating Cells
Wolverine Mine, YK

Mine Rock

March 2013	FIGURE 9

TC 53920



Notes:

Instrument MDL lower for HC6 past 230 weeks

Iron Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2013	FIGURE 10

TC 53920

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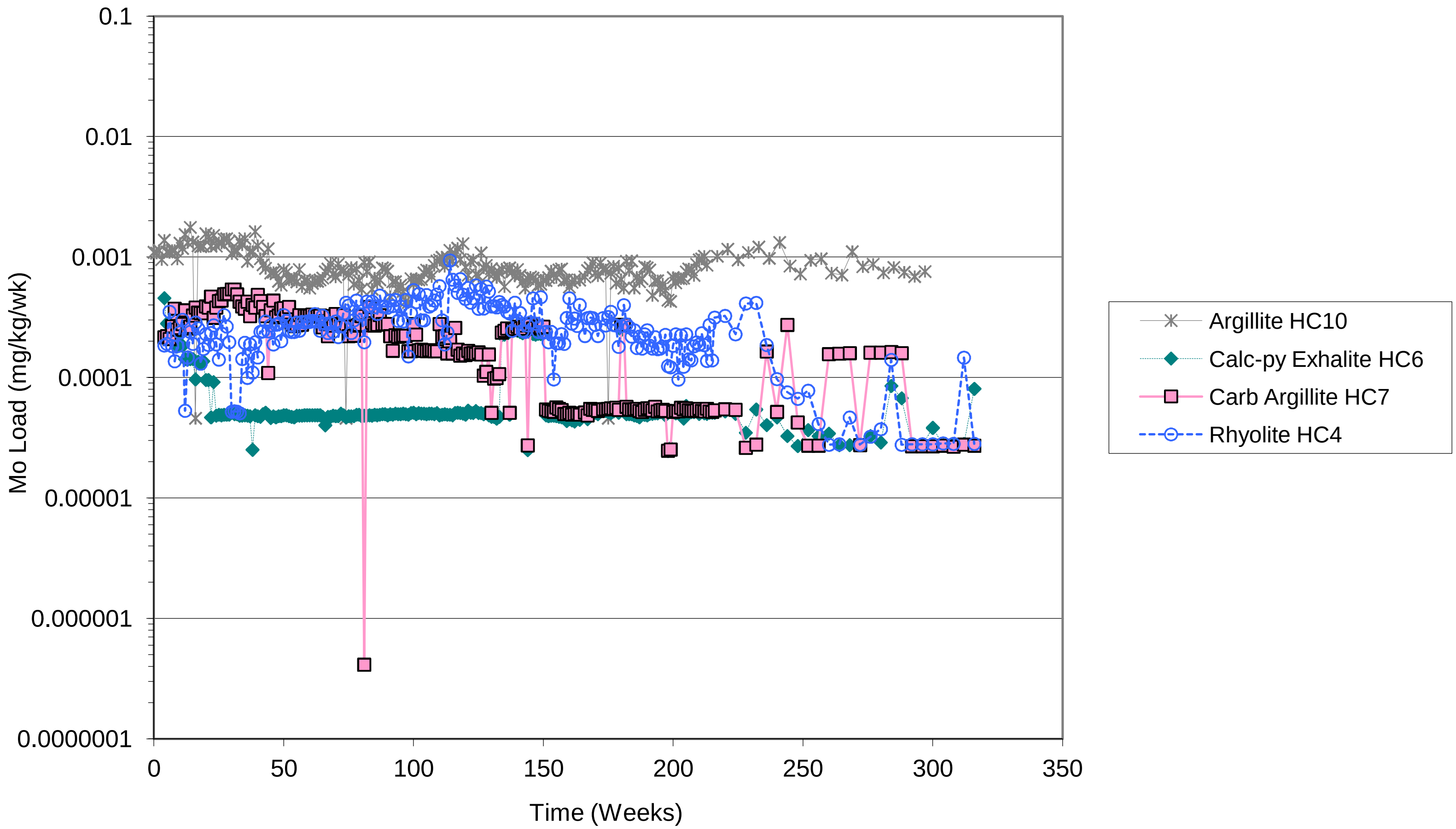
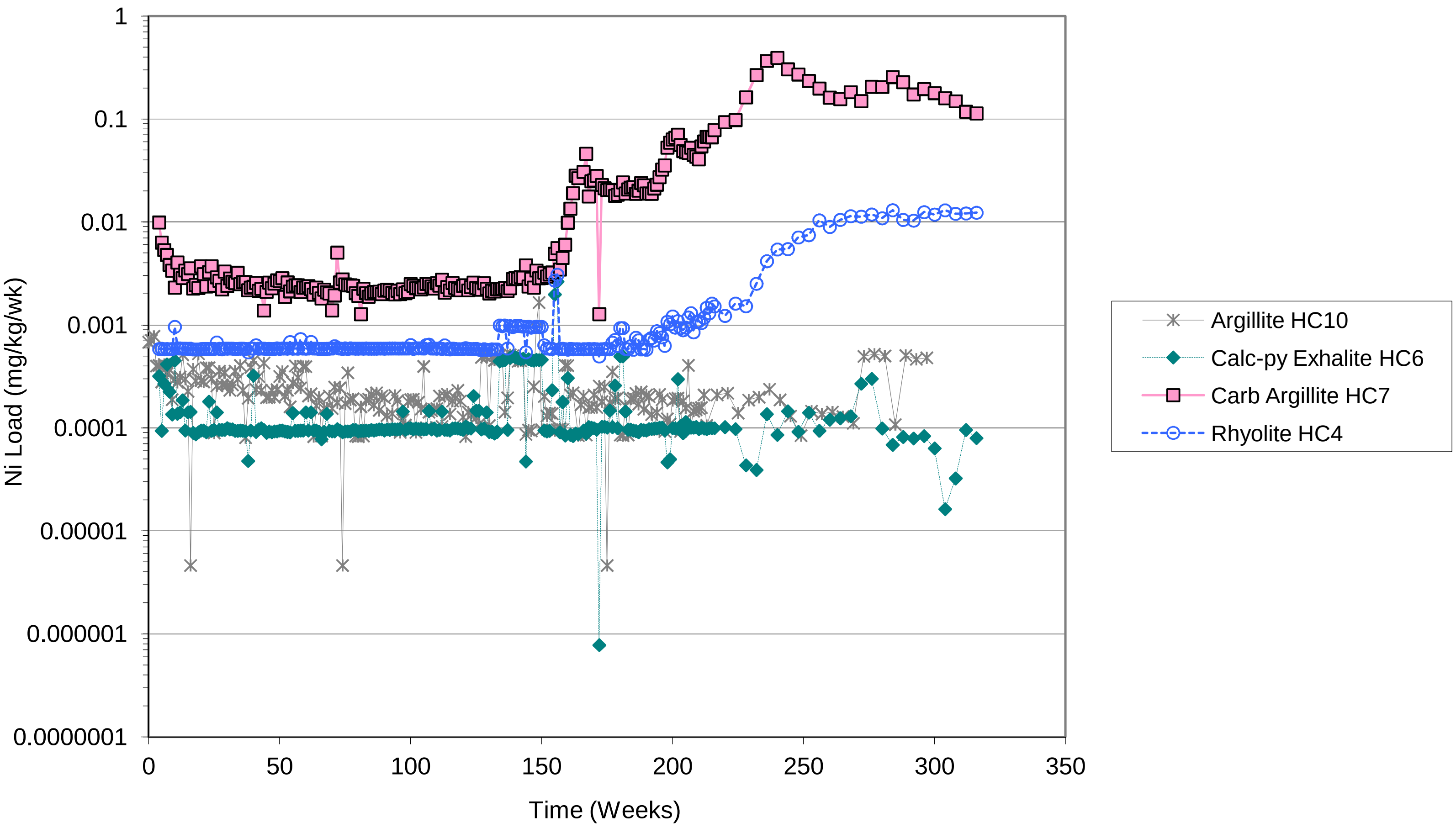


Molybdenum Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2013	FIGURE 11

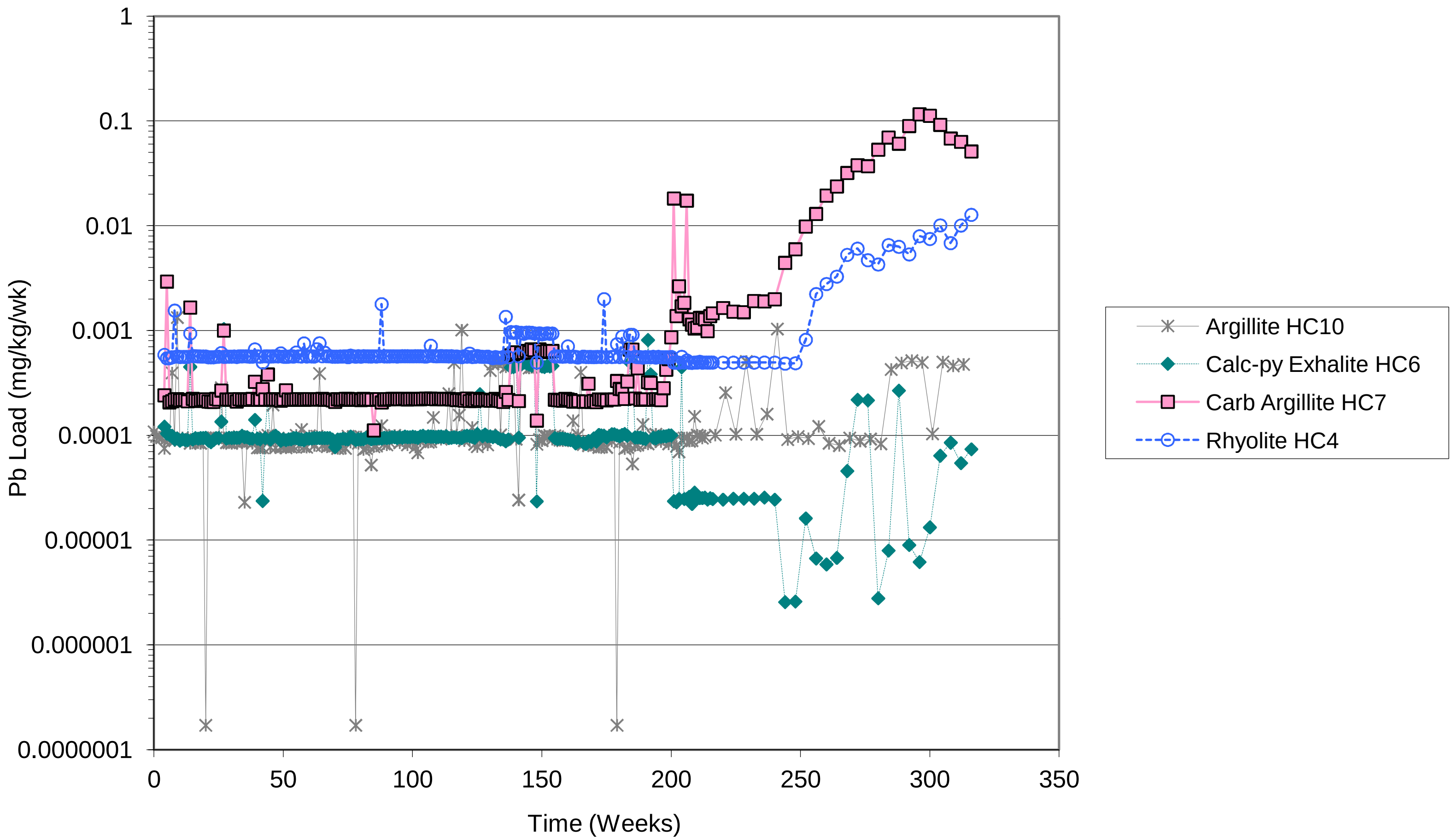
amec



Nickel Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2013	FIGURE 12

TC 53920

amec



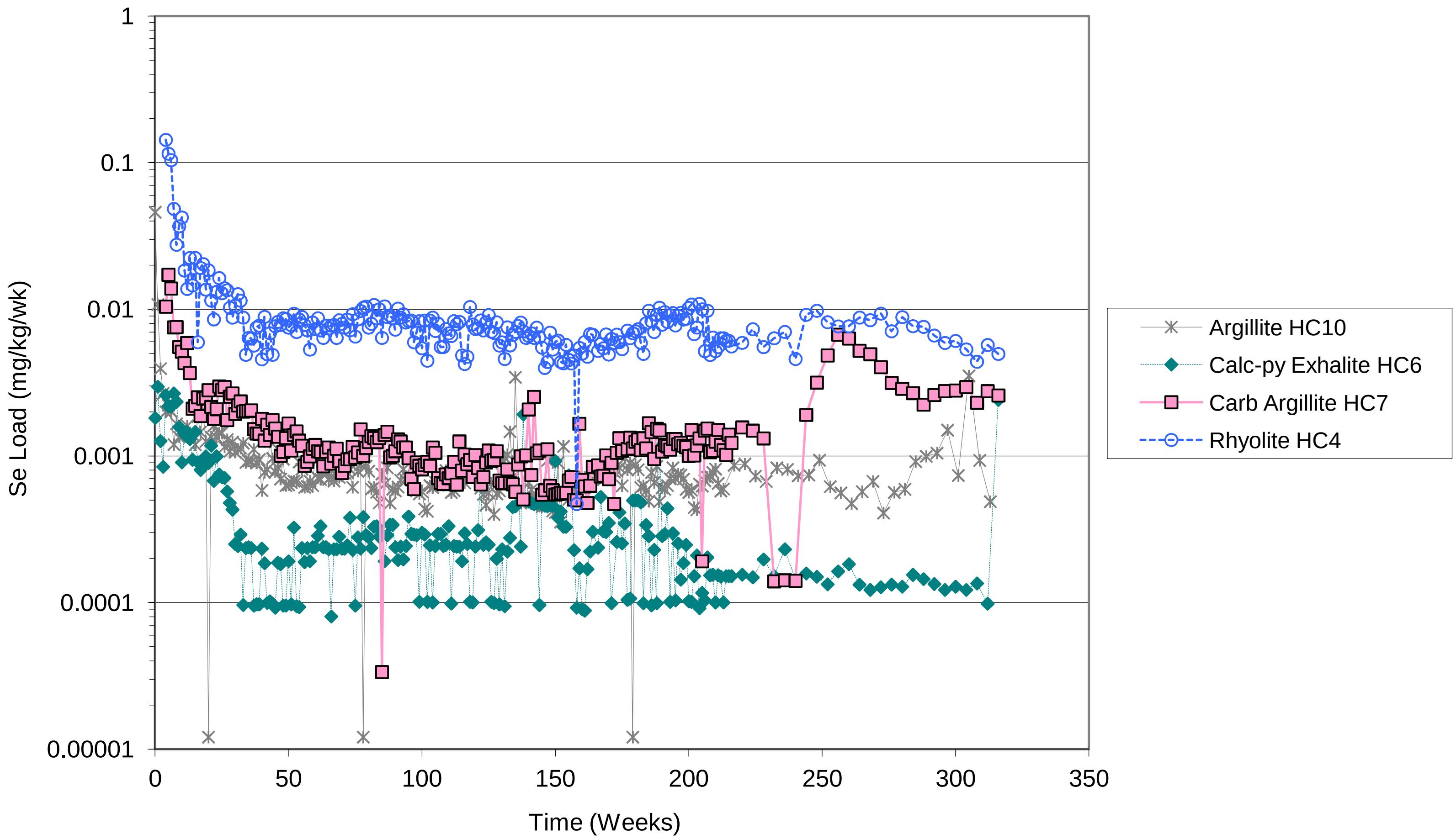
Lead Load
Operating Cells
Wolverine Mine, YK

Mine Rock

March 2013	FIGURE 13

TC 53920

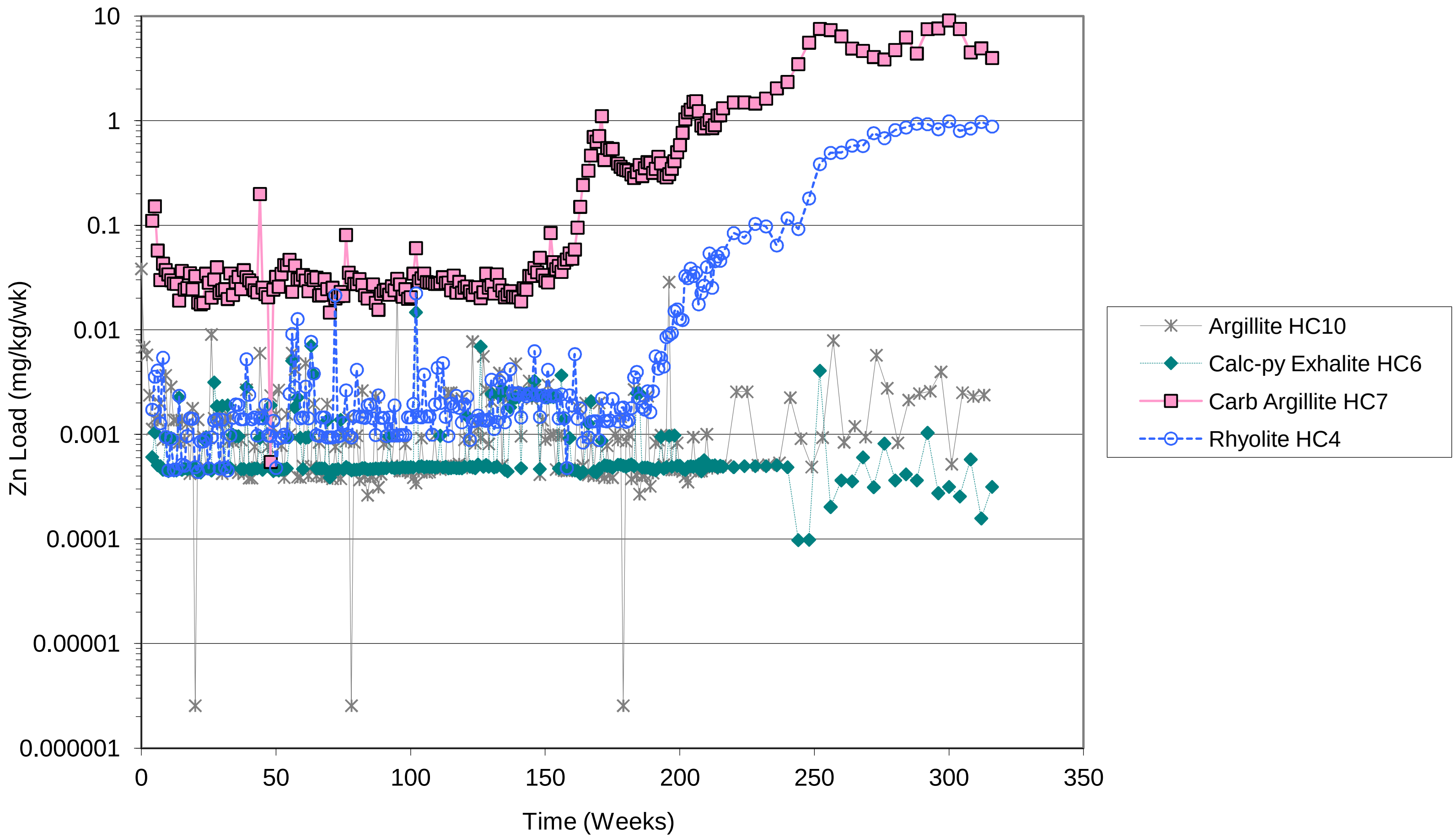
amec



Selenium Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2013	FIGURE 14

TC 53920

amec



Zinc Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2013	FIGURE 15

TC 53920

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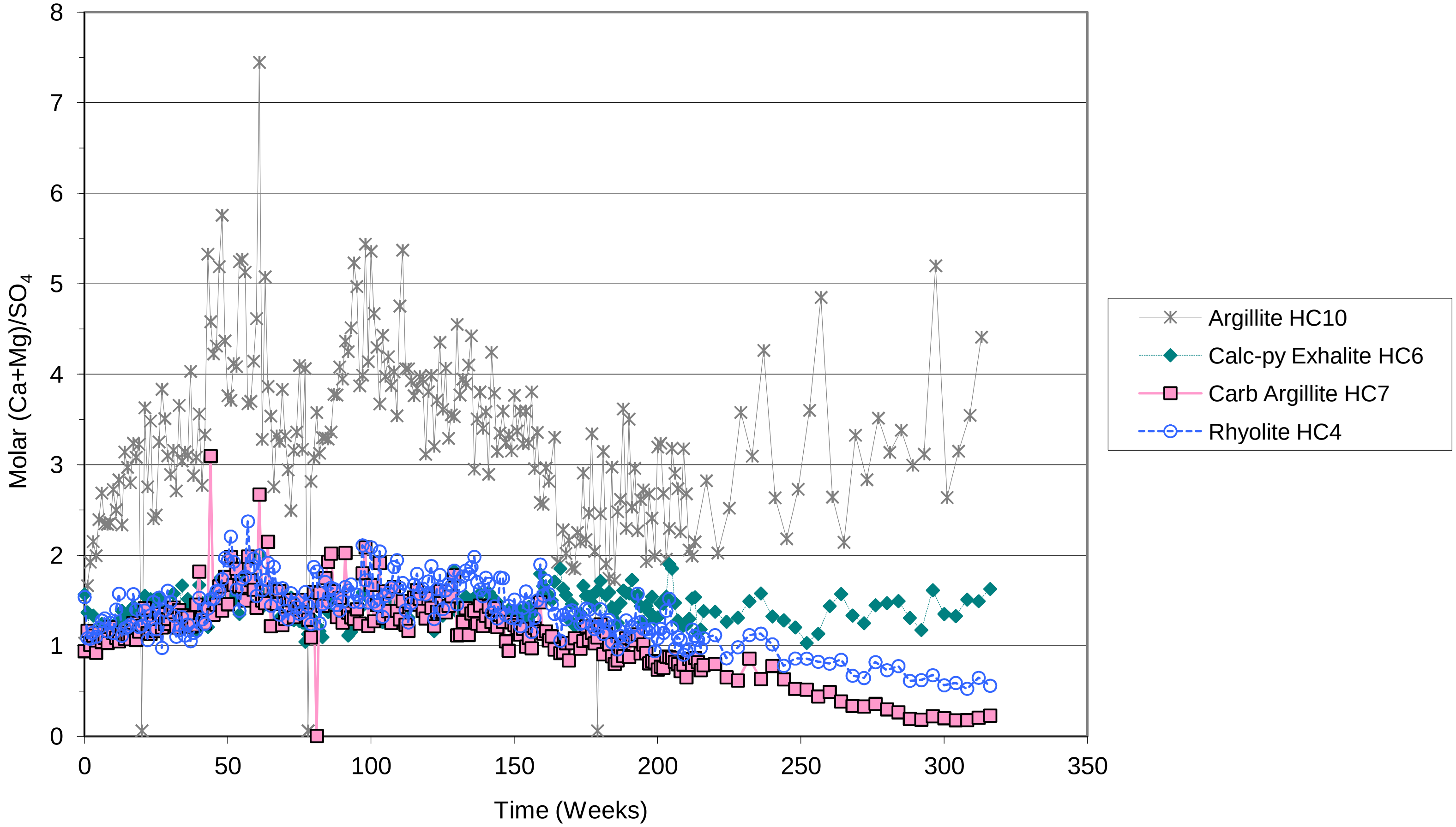
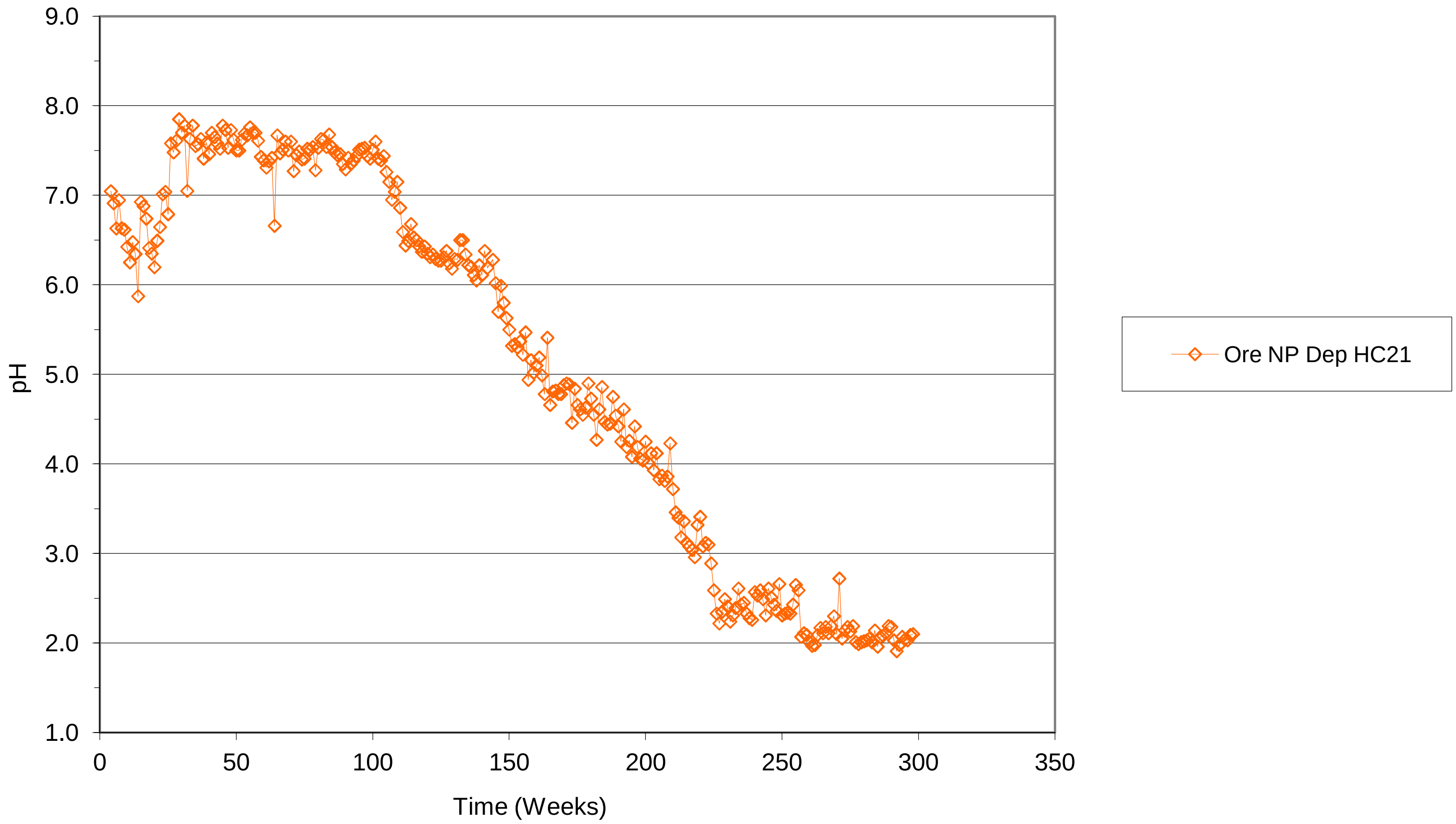


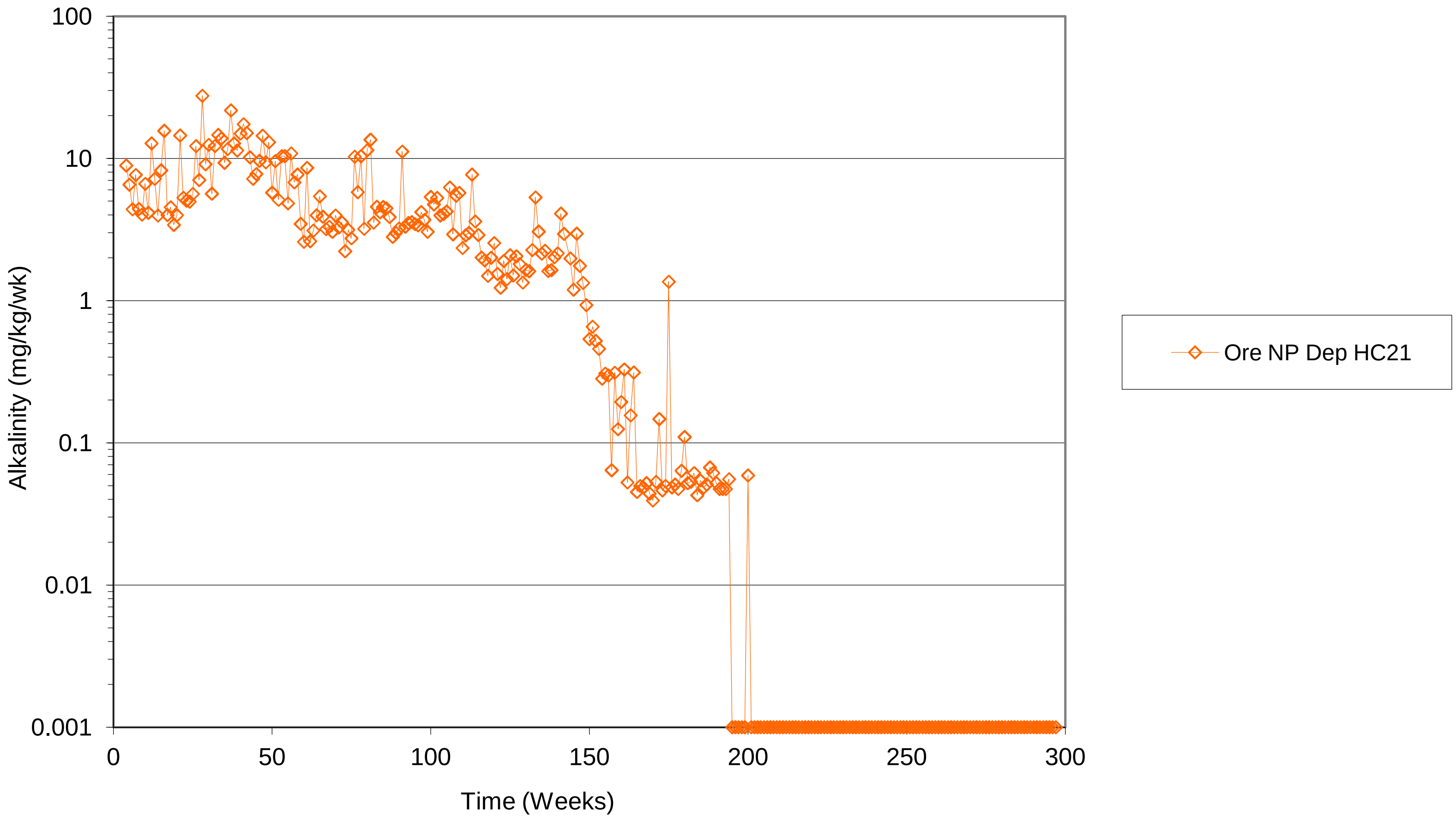
Molar (Ca+Mg)/SO_4 Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2013	FIGURE 16

TC 53920



pH Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 17

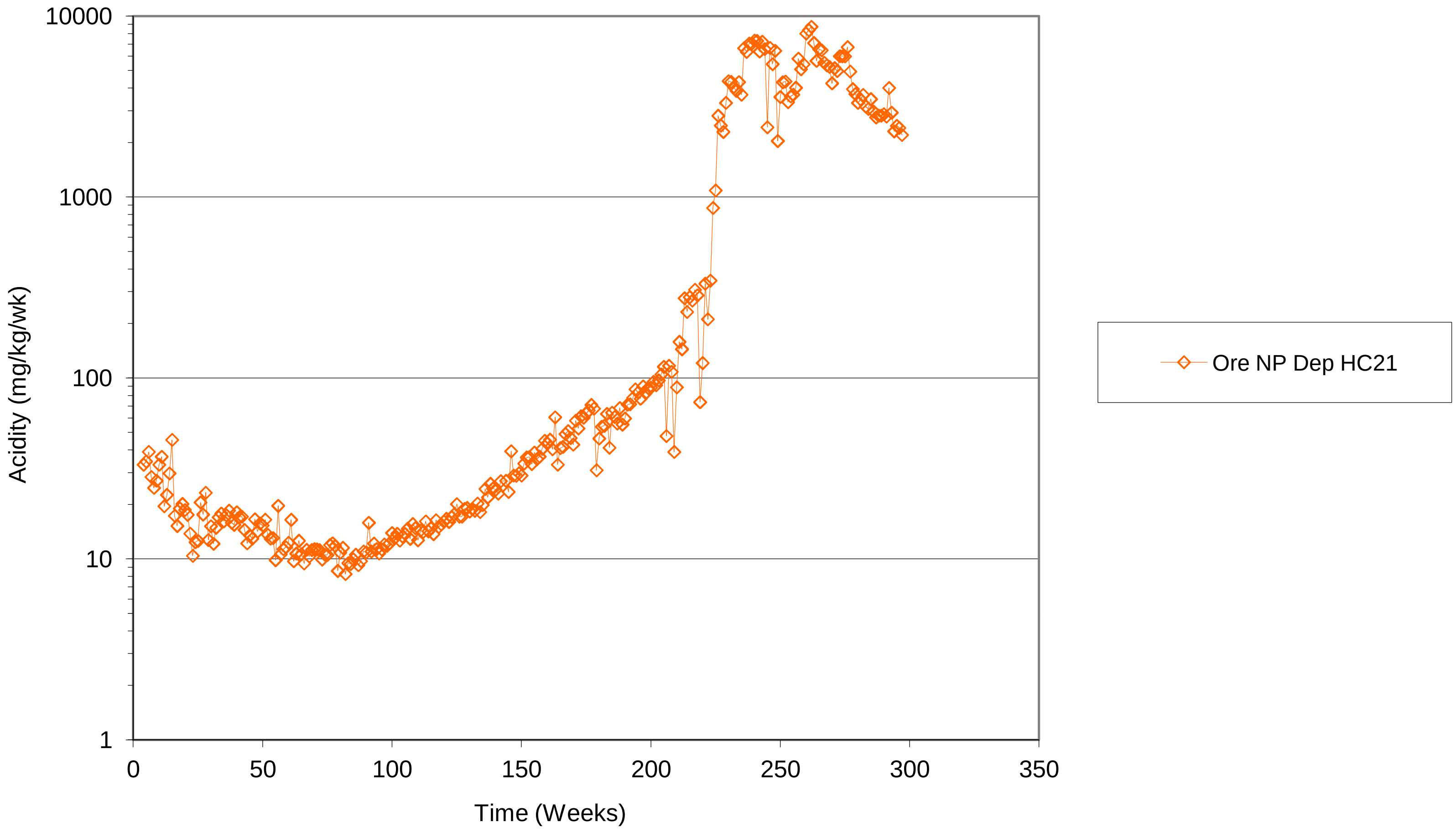
TC 53920



Determination of alkalinity is not valid
below pH values of pH 4.5

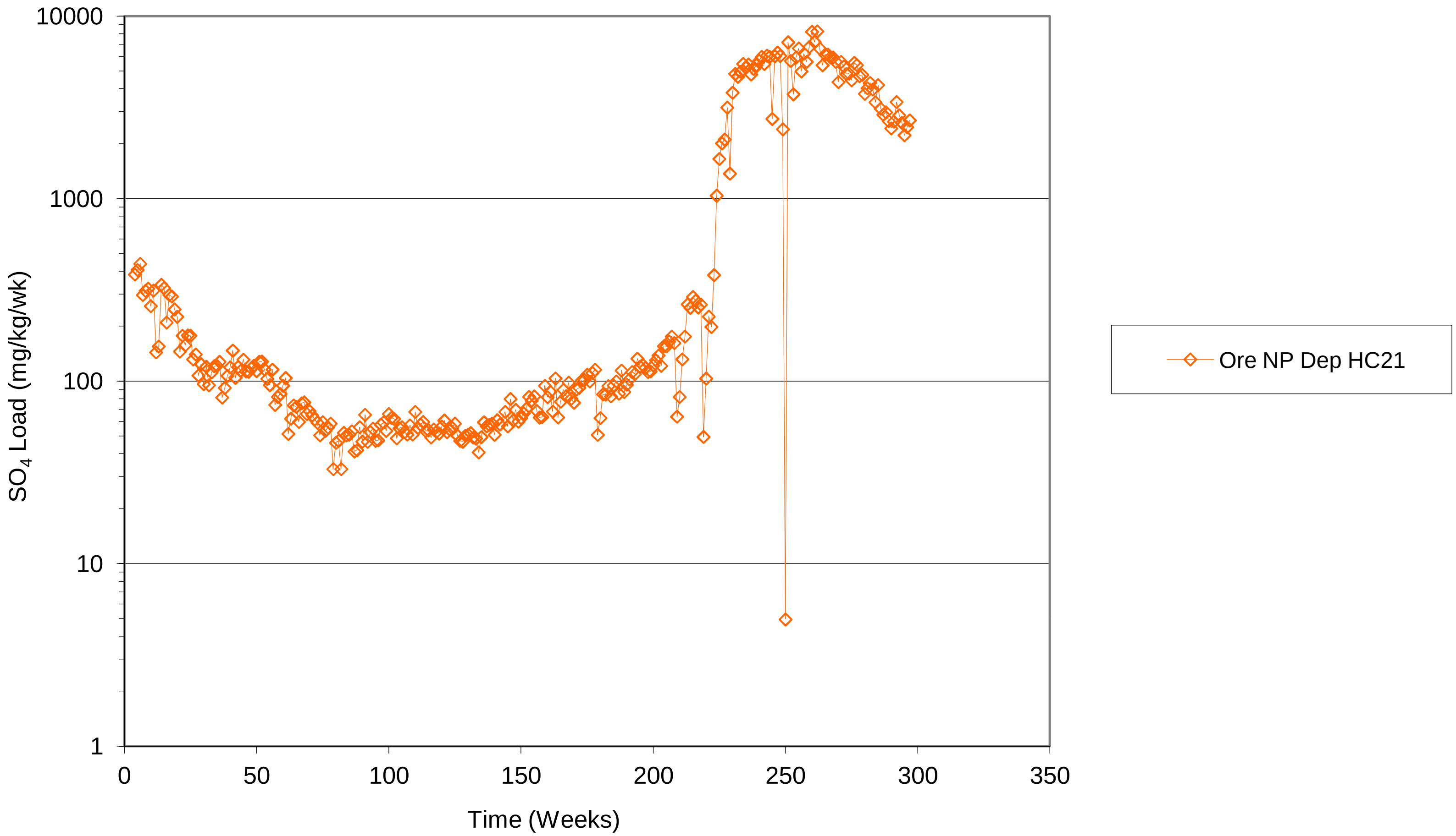
Alkalinity Load Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 18

amec



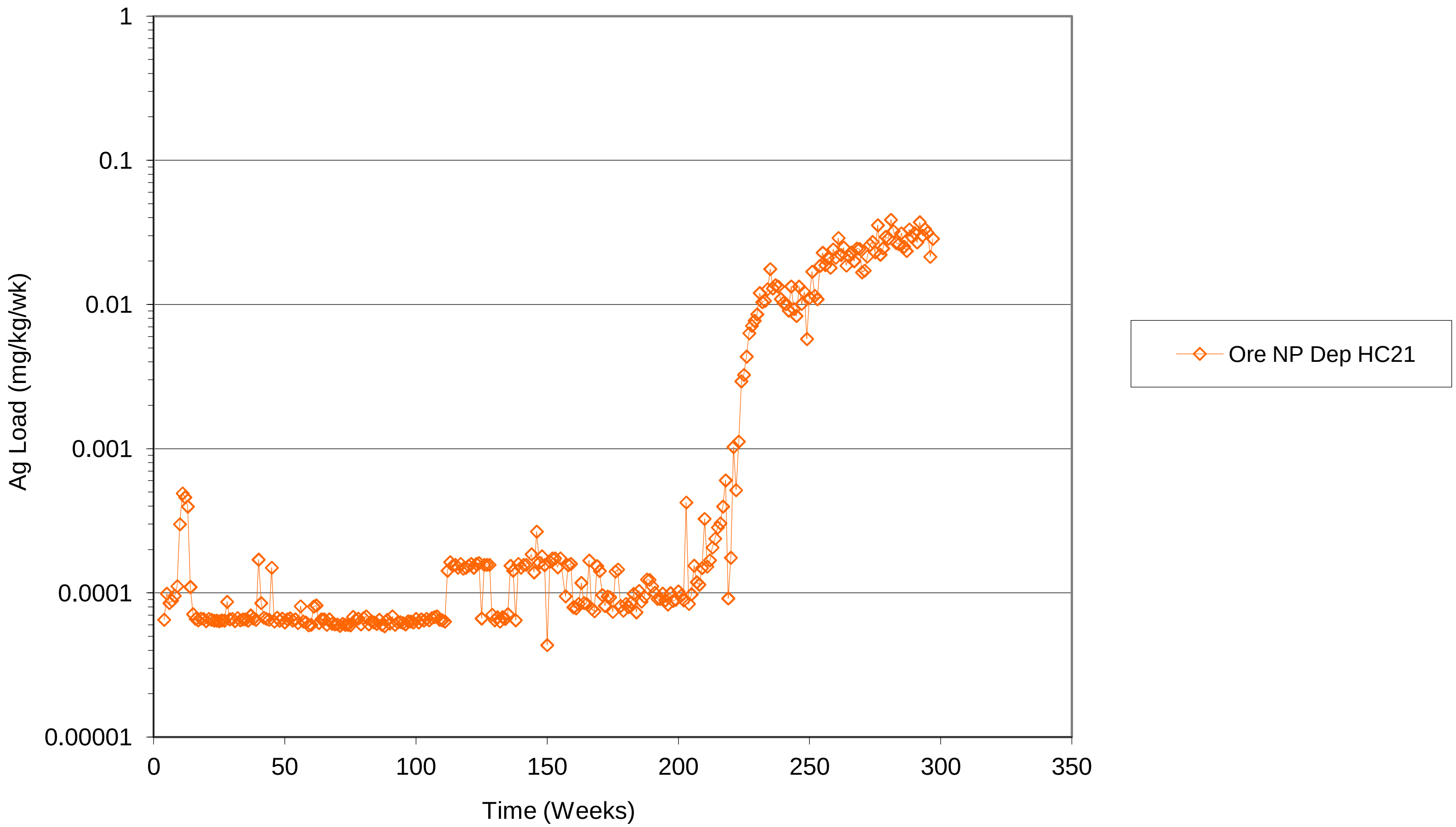
Acidity Load Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 19

TC 53920



Sulphate Load Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 20

TC 53920

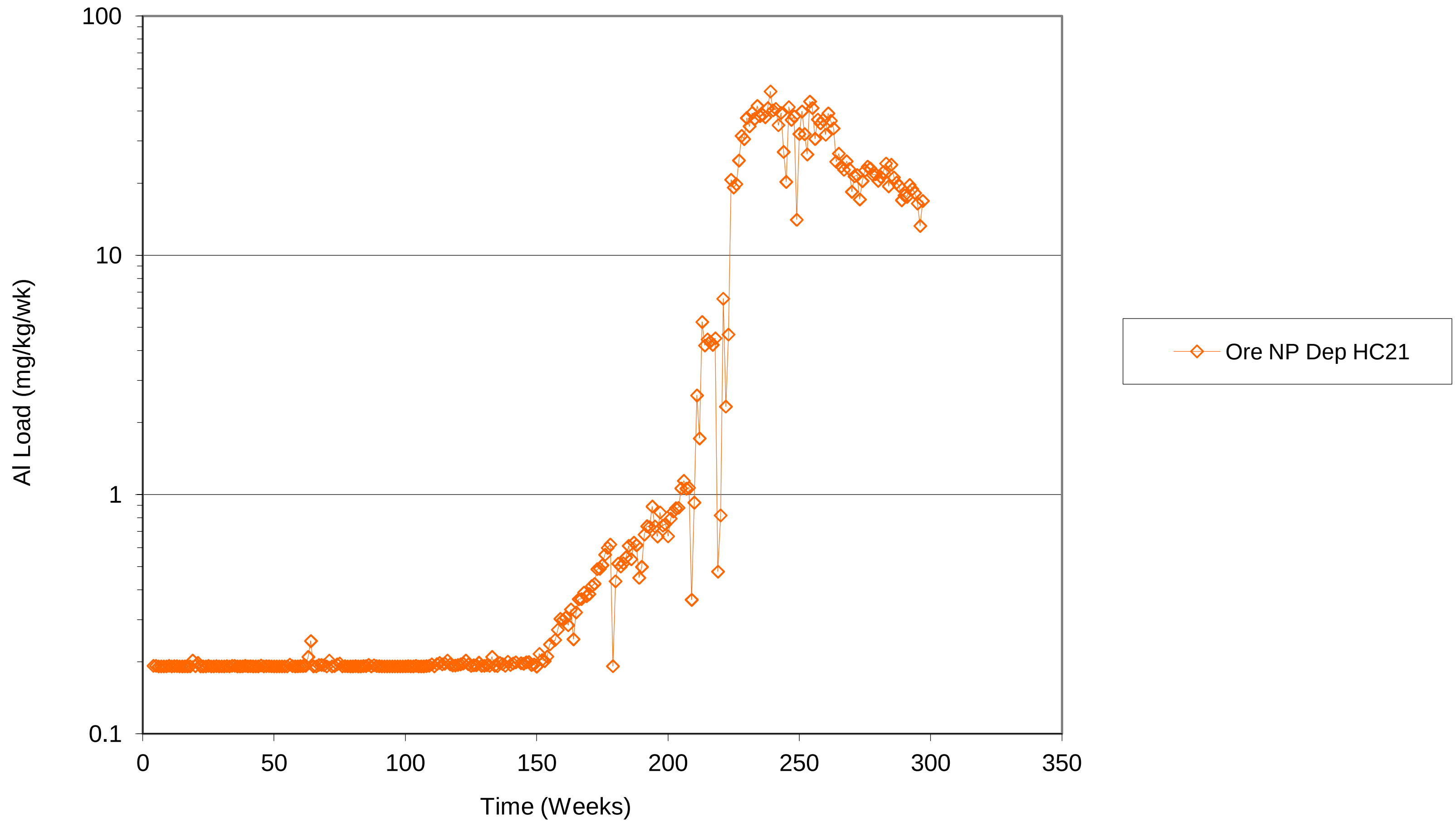


Silver Load
Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

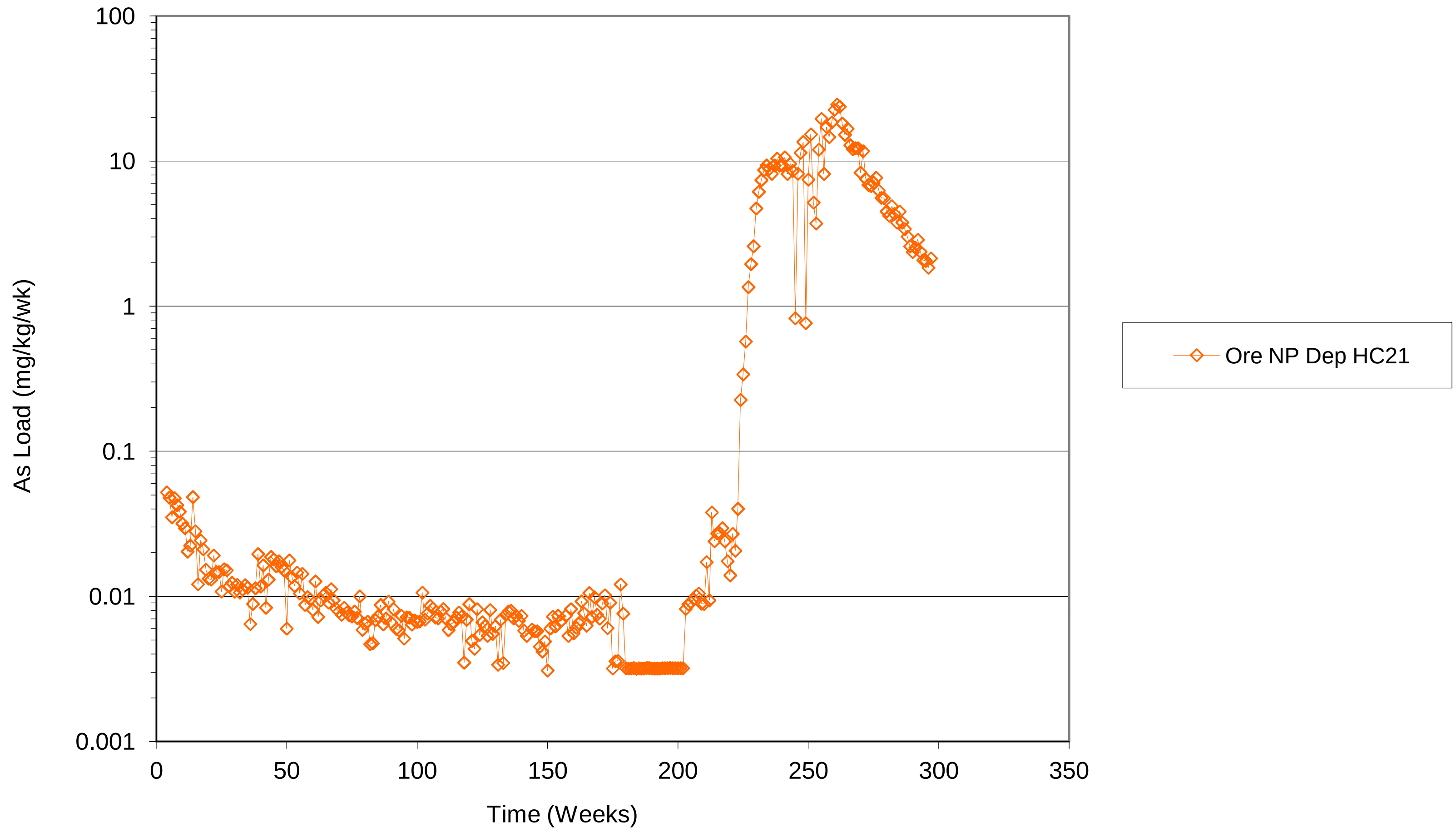
March 2013 | FIGURE 21

TC 53920



Aluminium Load Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 22

TC 53920



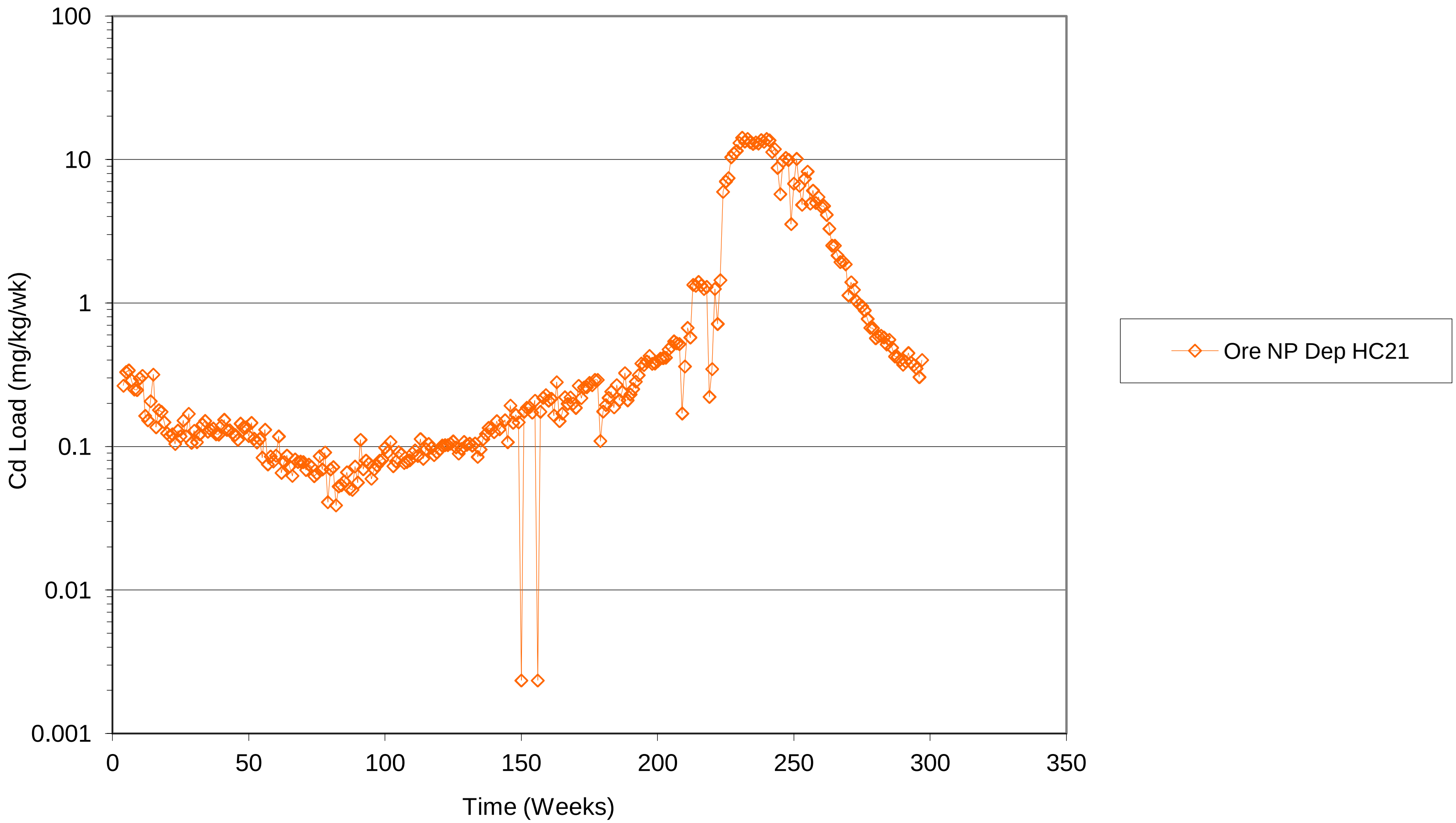
Arsenic Load
Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2013 | FIGURE 23

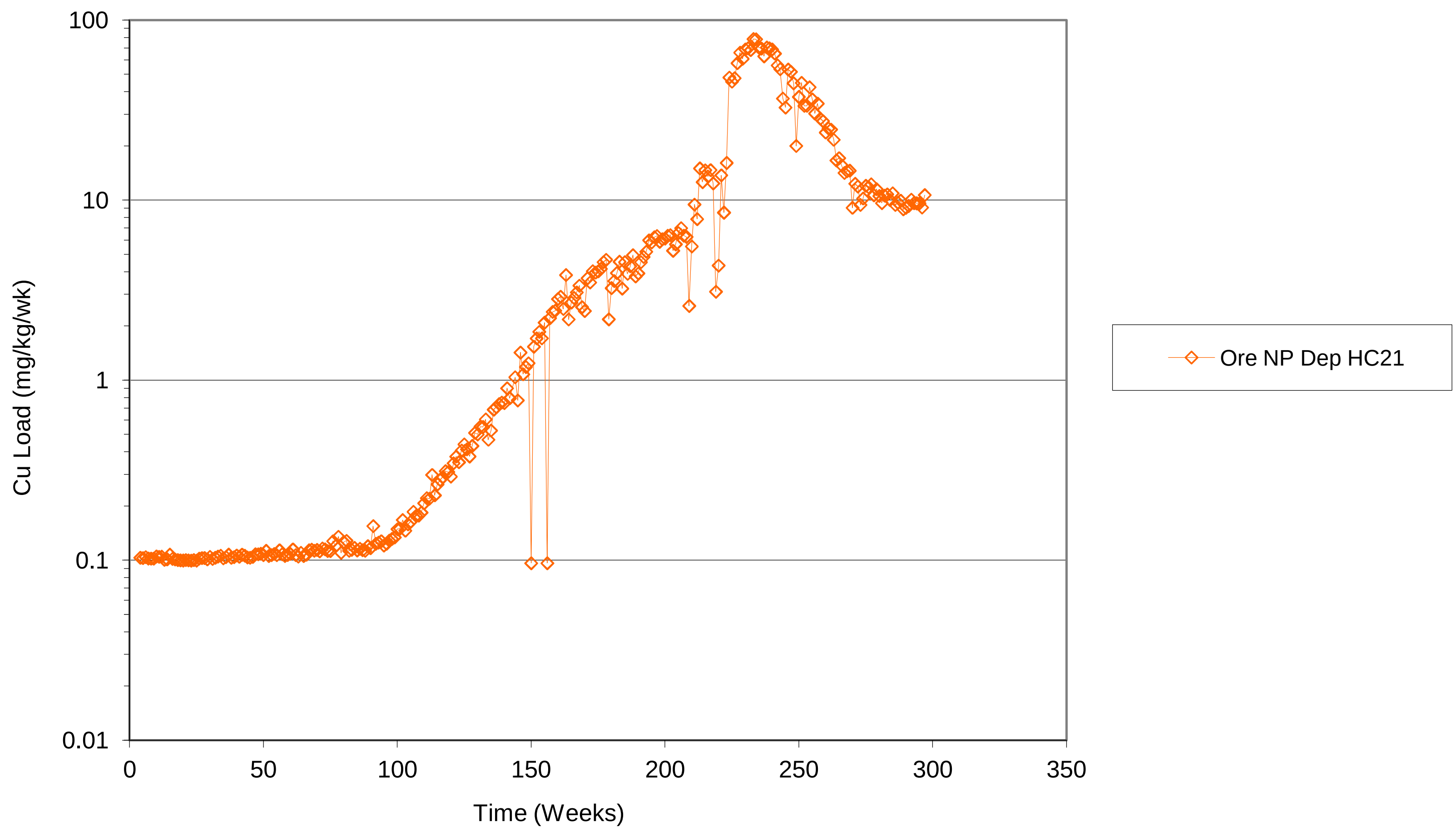
TC 53920

amec



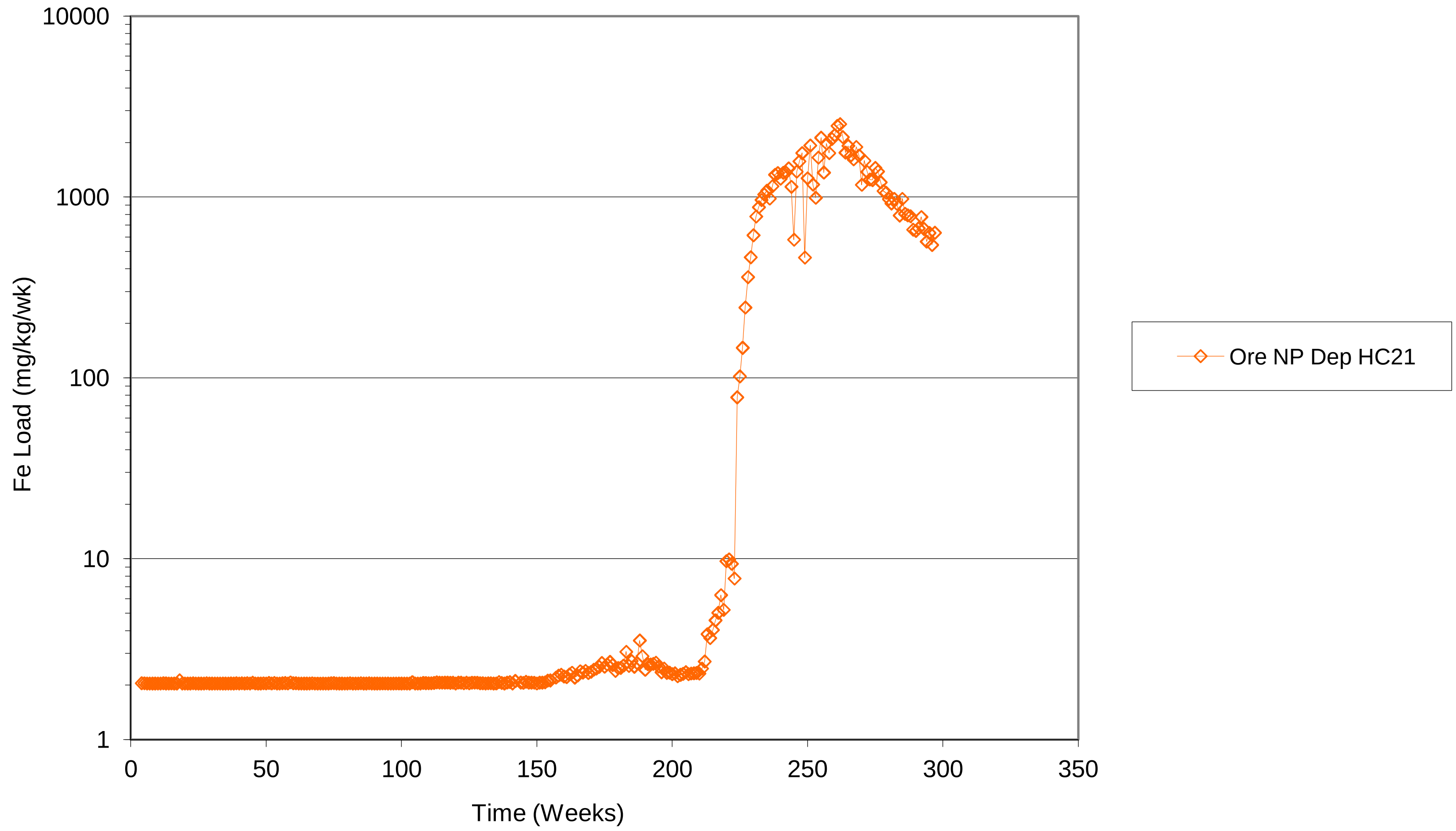
Cadmium Load Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 24

TC 53920



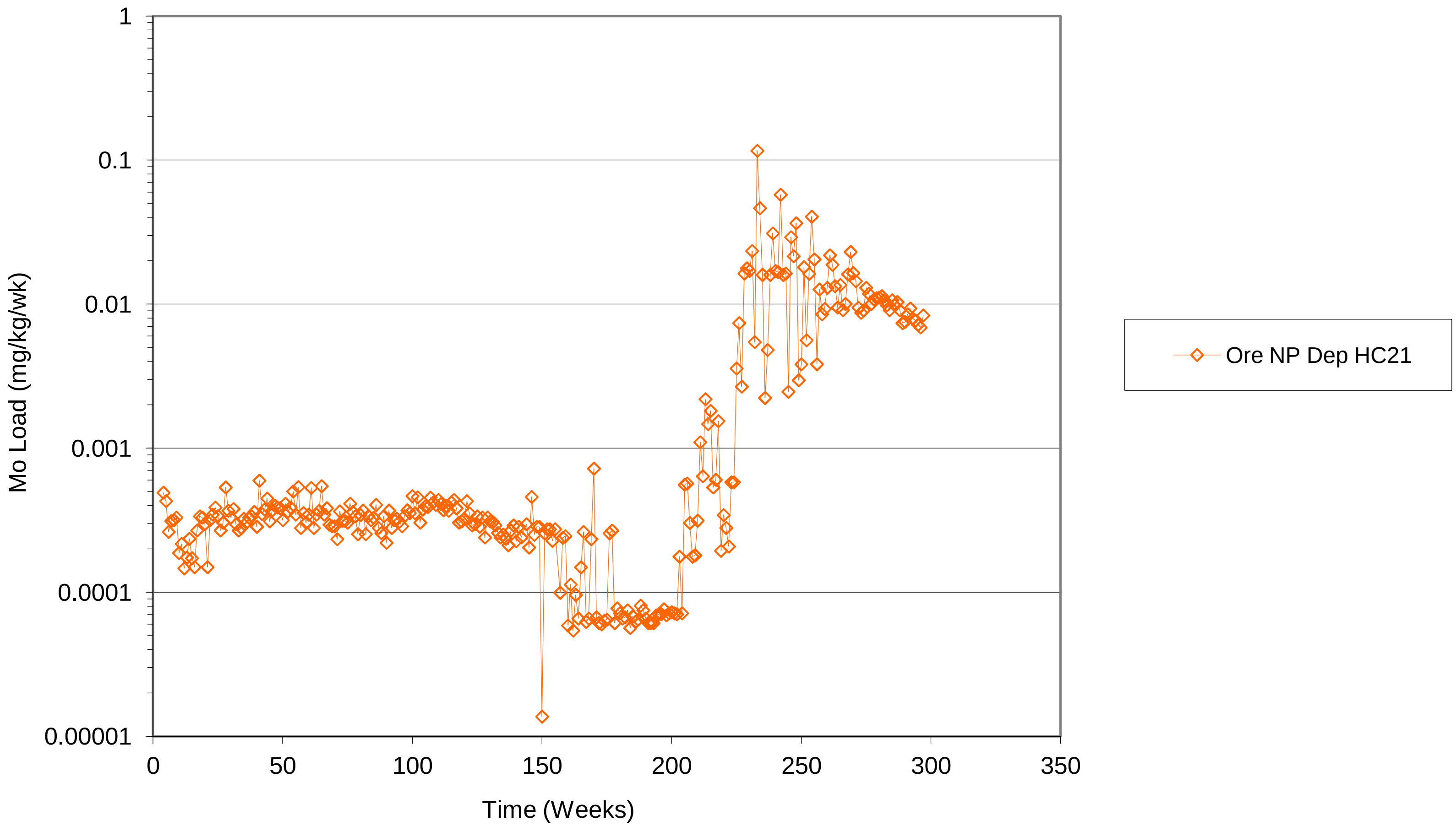
Copper Load Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 25

TC 53920



Iron Load Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 26

TC 53920

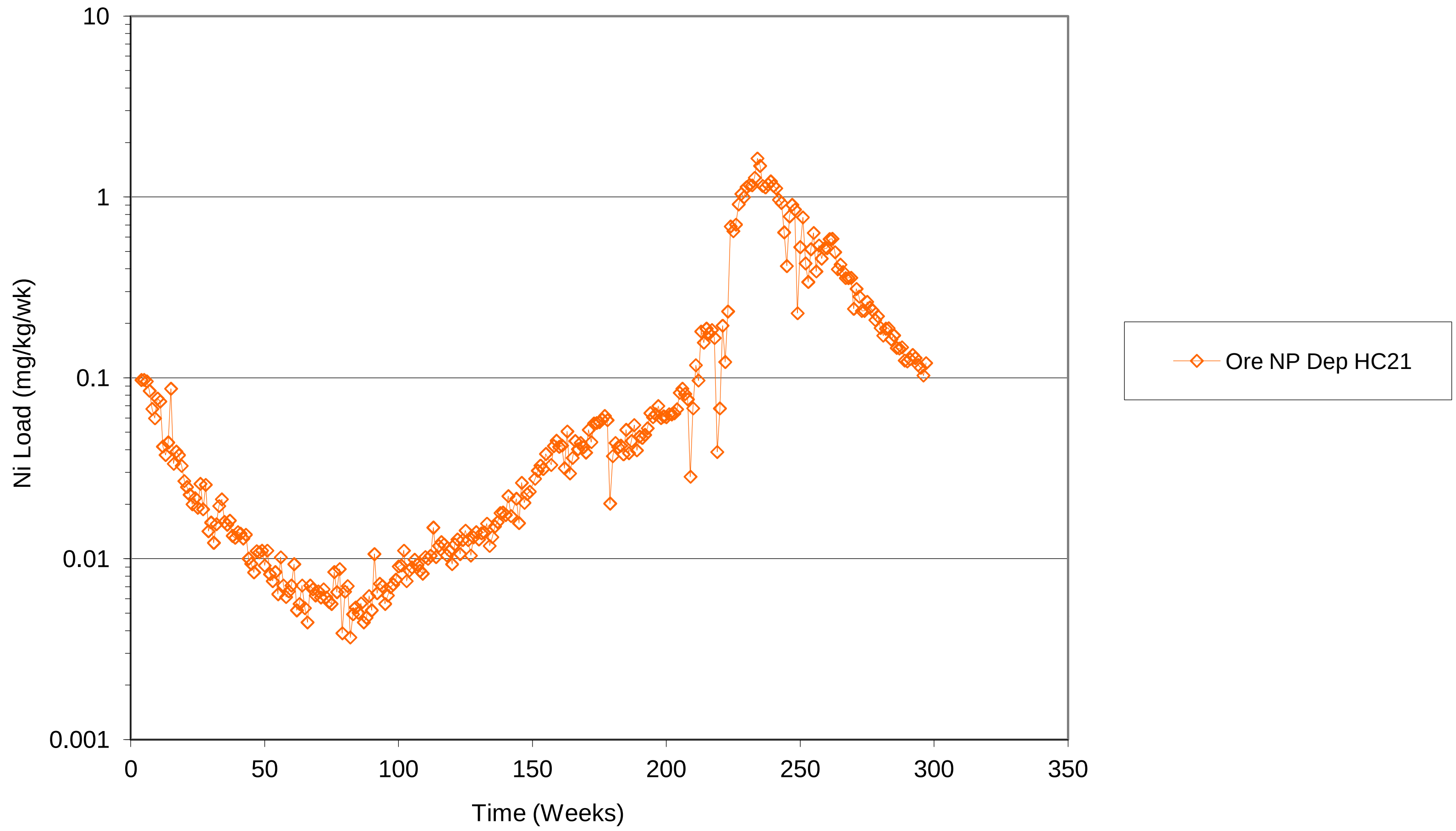


Molybdenum Load
Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2013	FIGURE 27

TC 53920

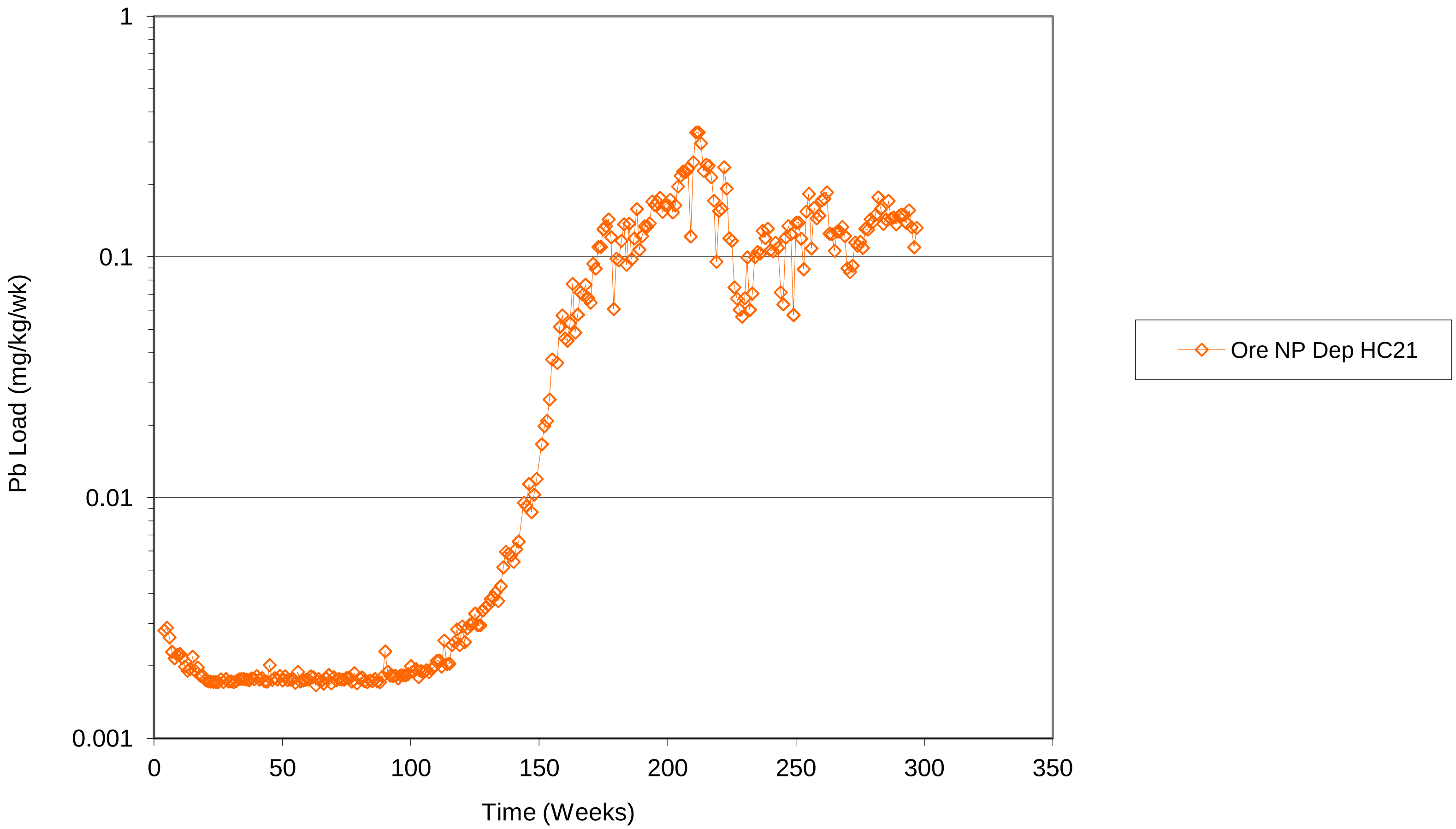


Nickel Load
Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2013	FIGURE 28

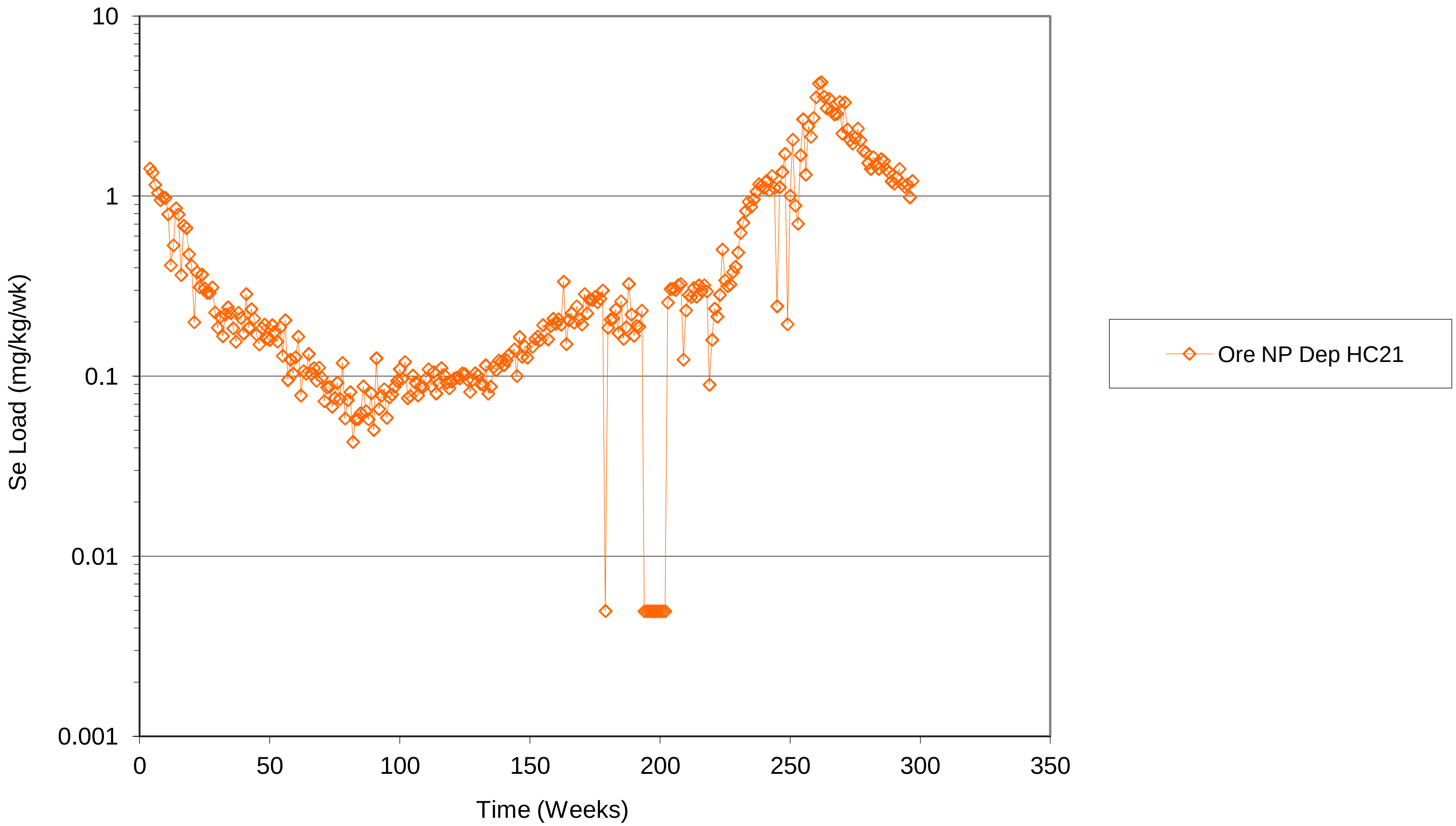
TC 53920



Lead Load Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 29

TC 53920

amec



Selenium Load
Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2013	FIGURE 30

TC 53920

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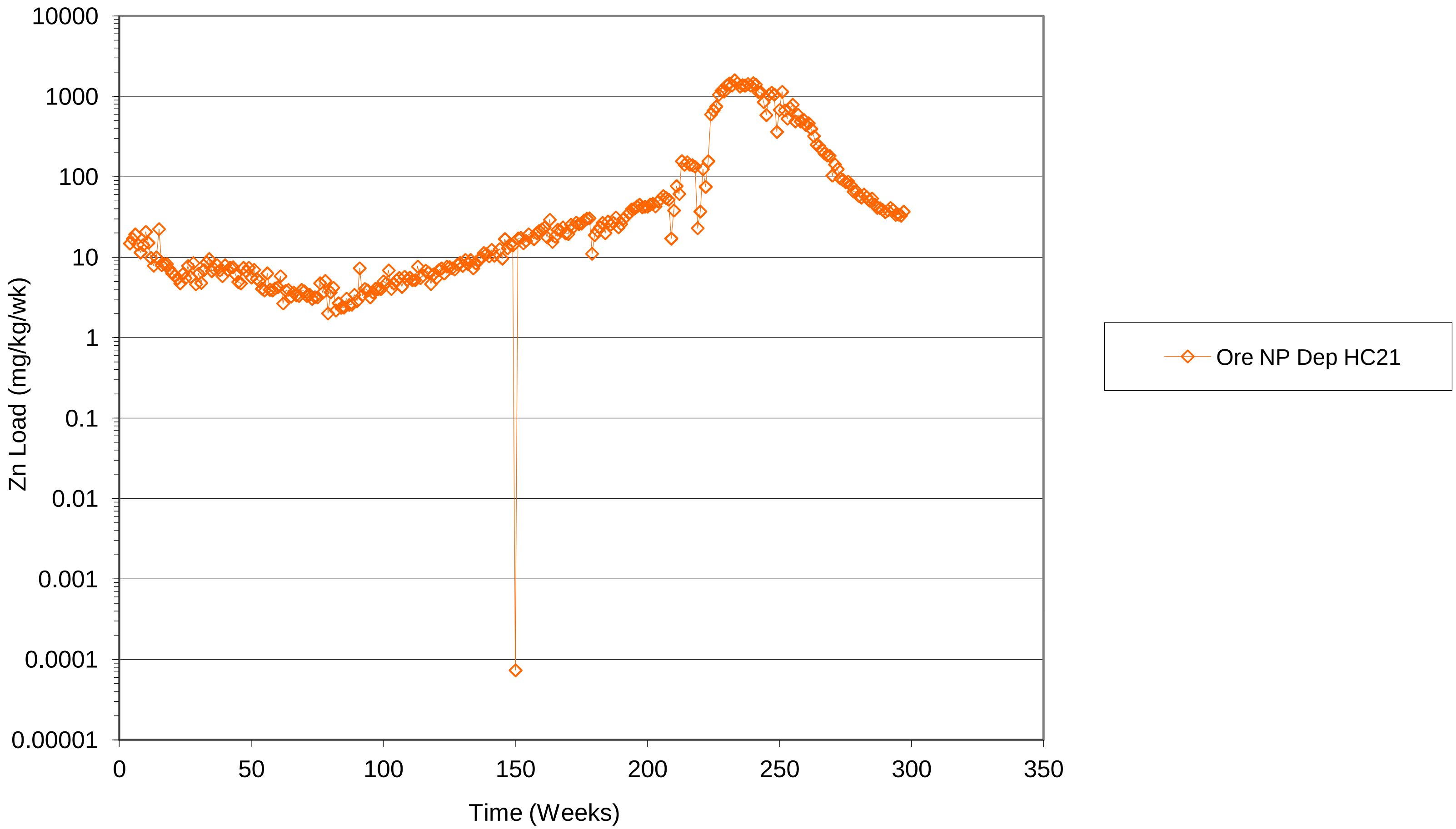
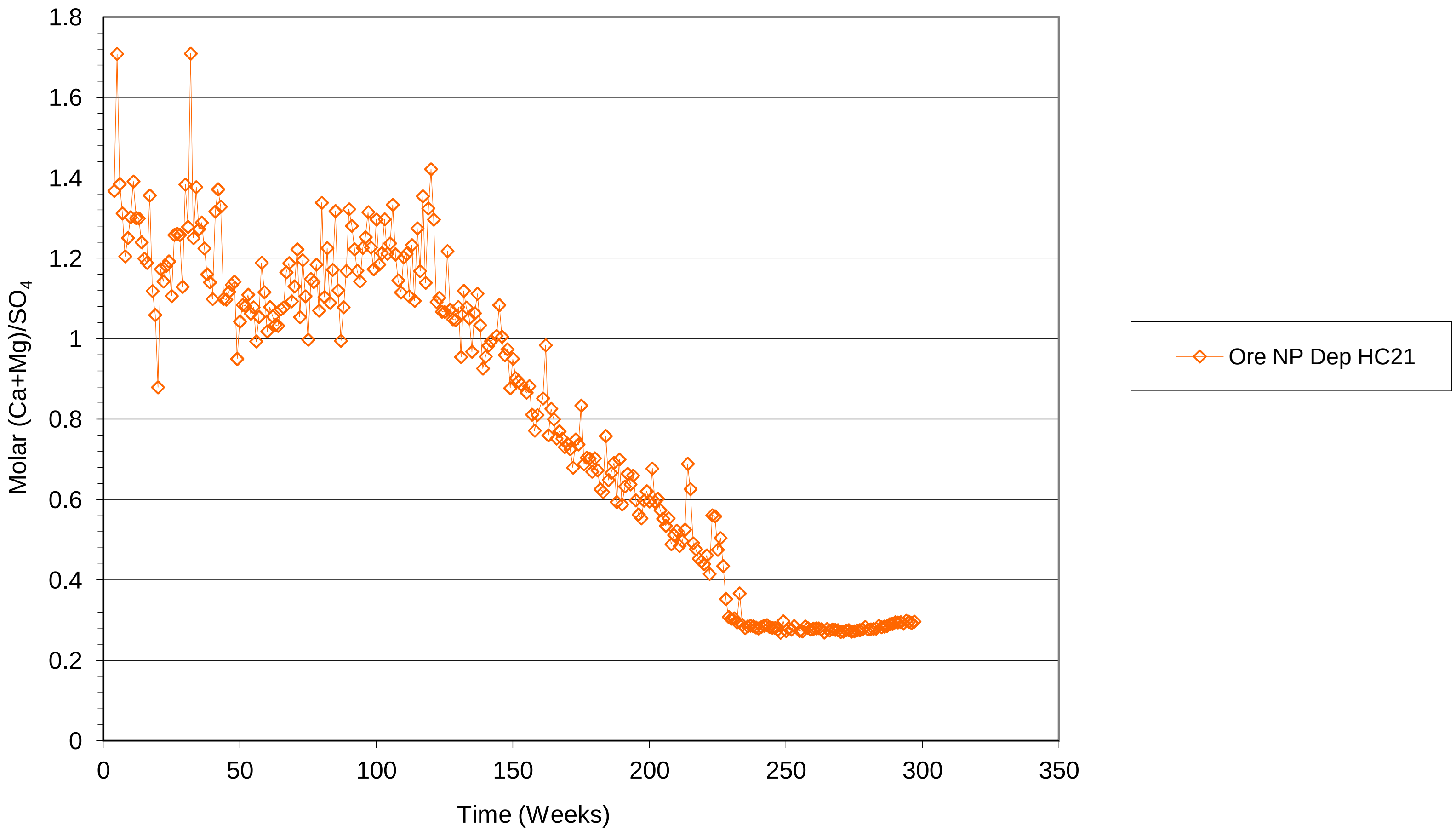


Zinc Load Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2013	FIGURE 31

TC 53920



Molar (Ca+Mg)/SO_4 Ratio
Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2013	FIGURE 32

TC 53920

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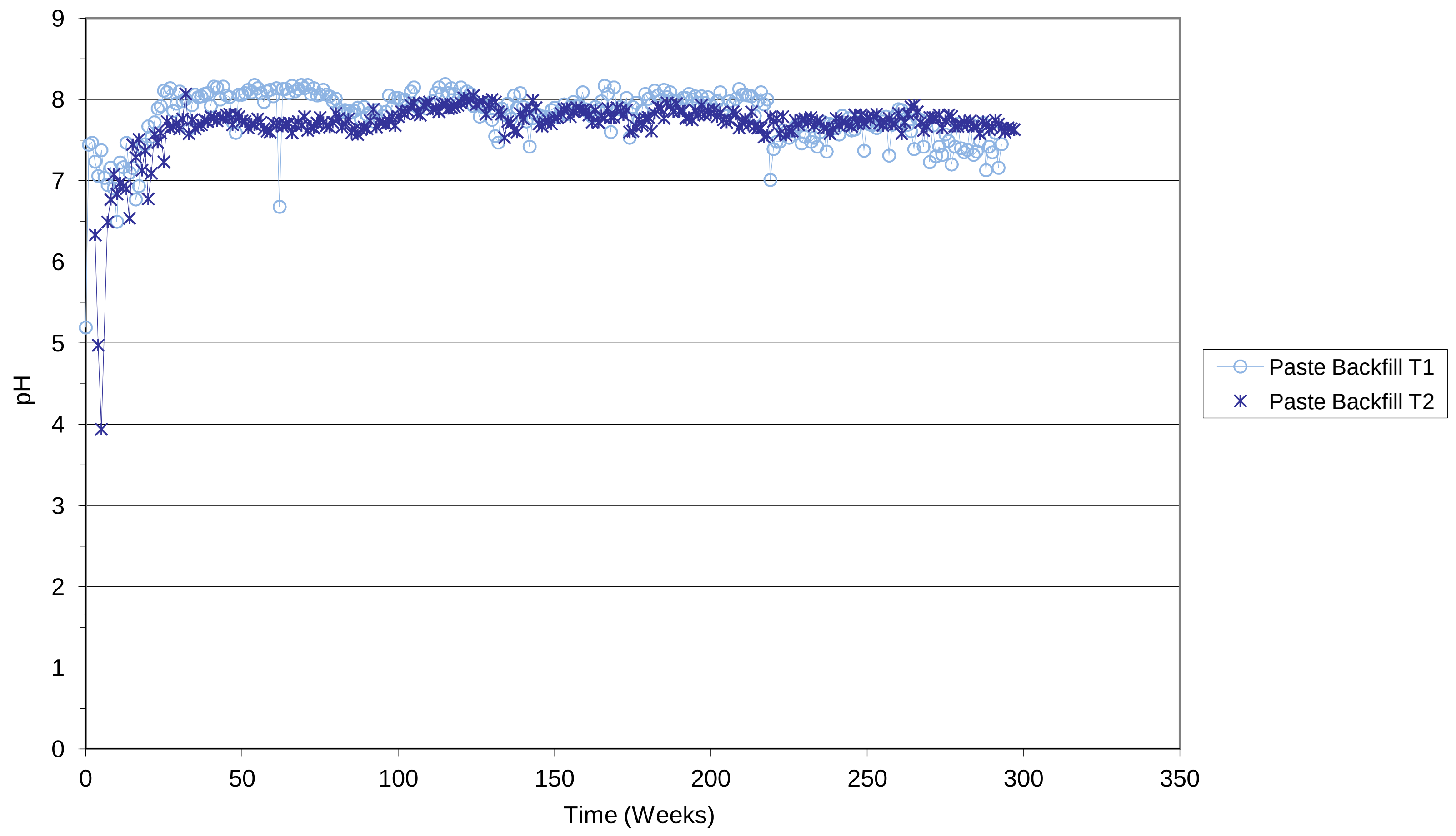

pH Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 33

TC 53920

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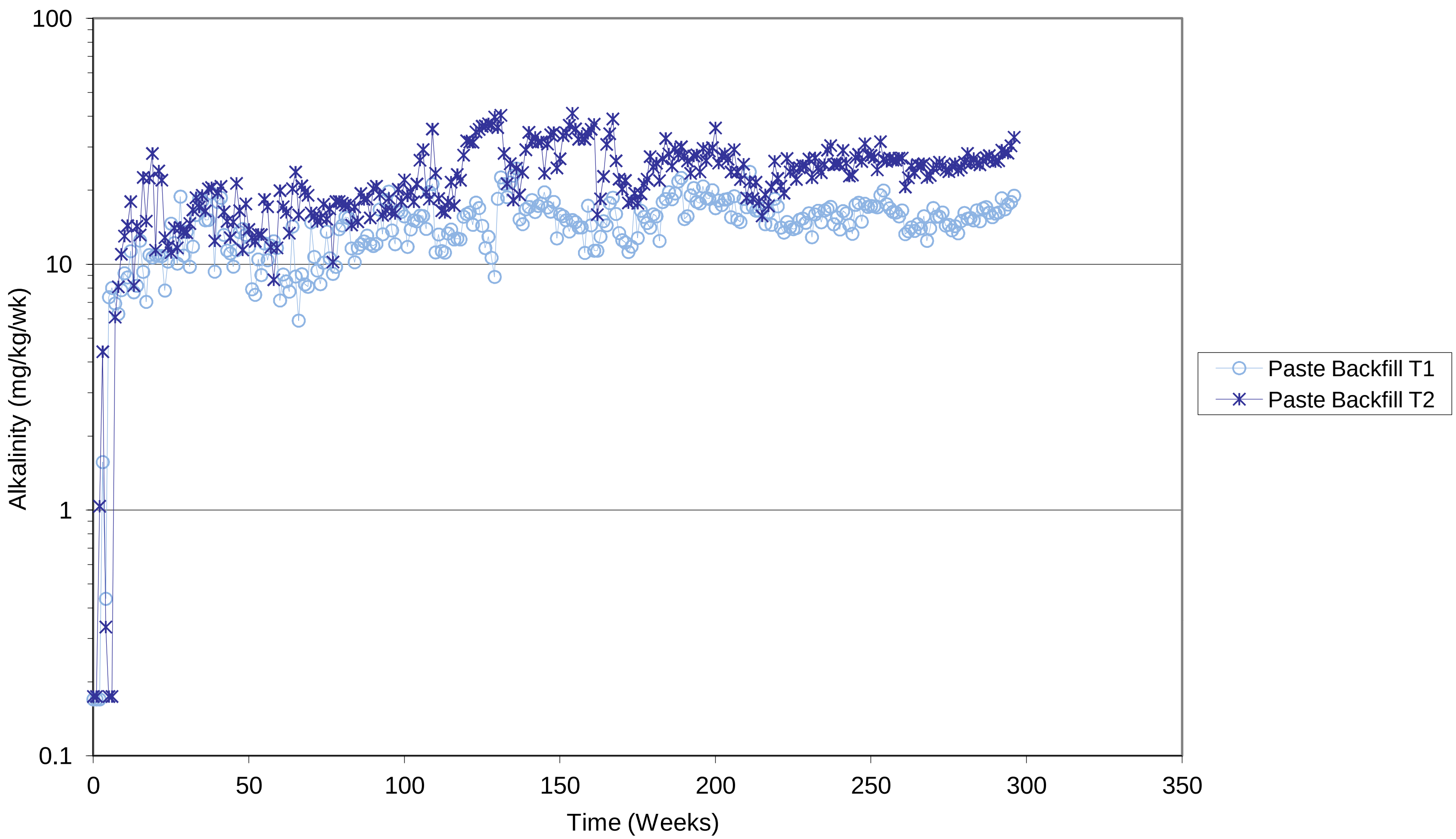

Alkalinity Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 34

TC 53920

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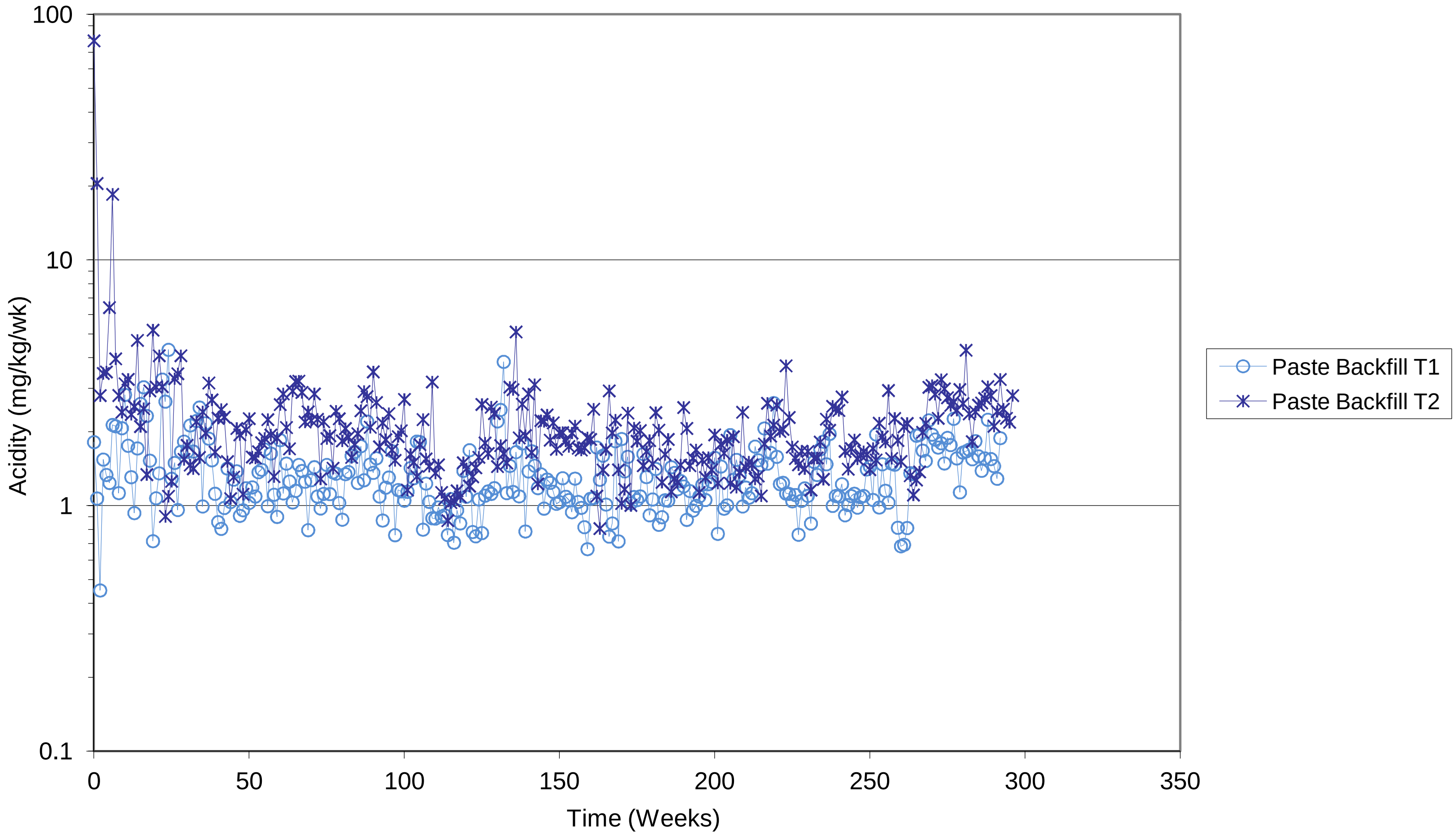

Acidity Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 35

TC 53920

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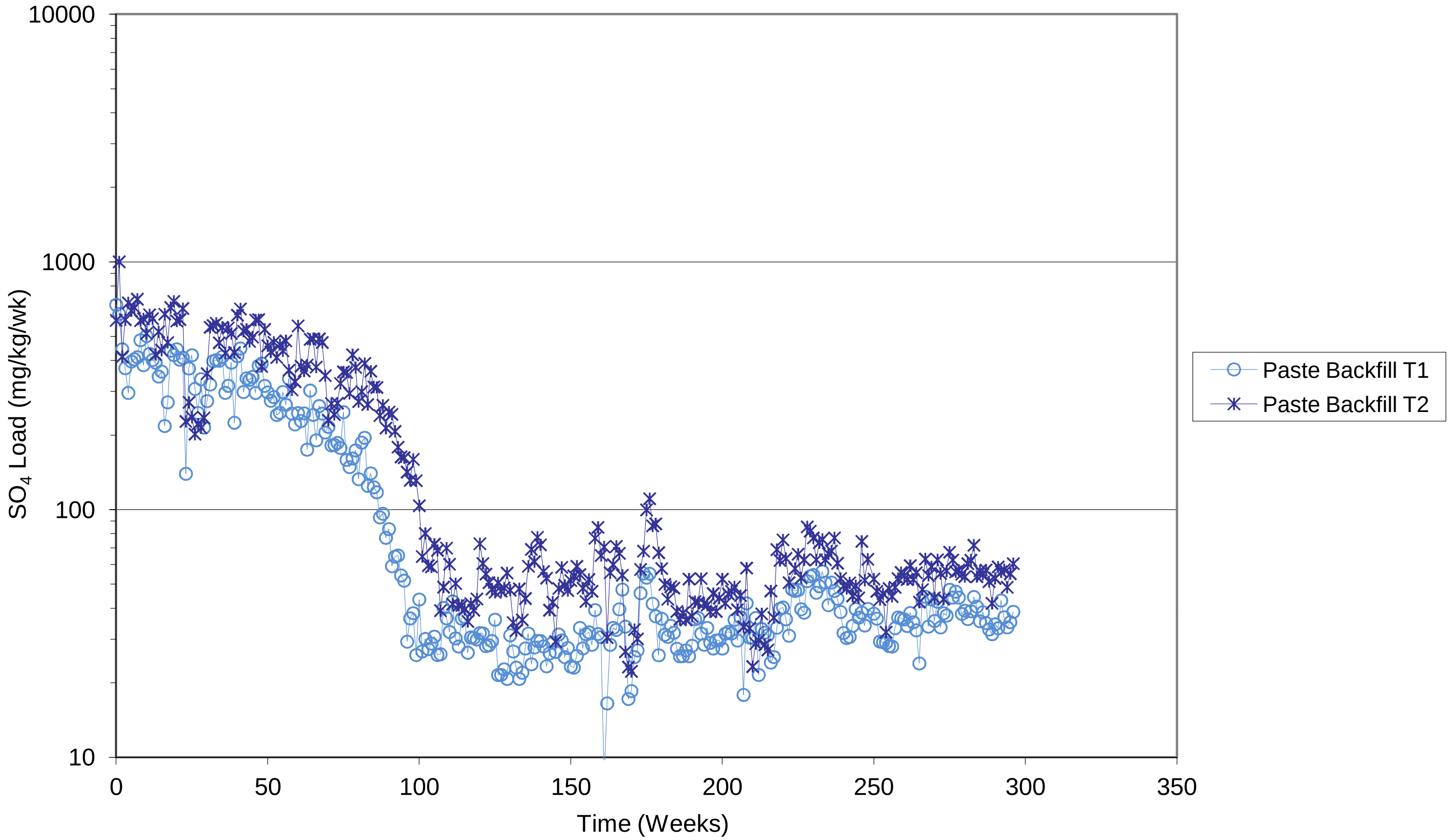
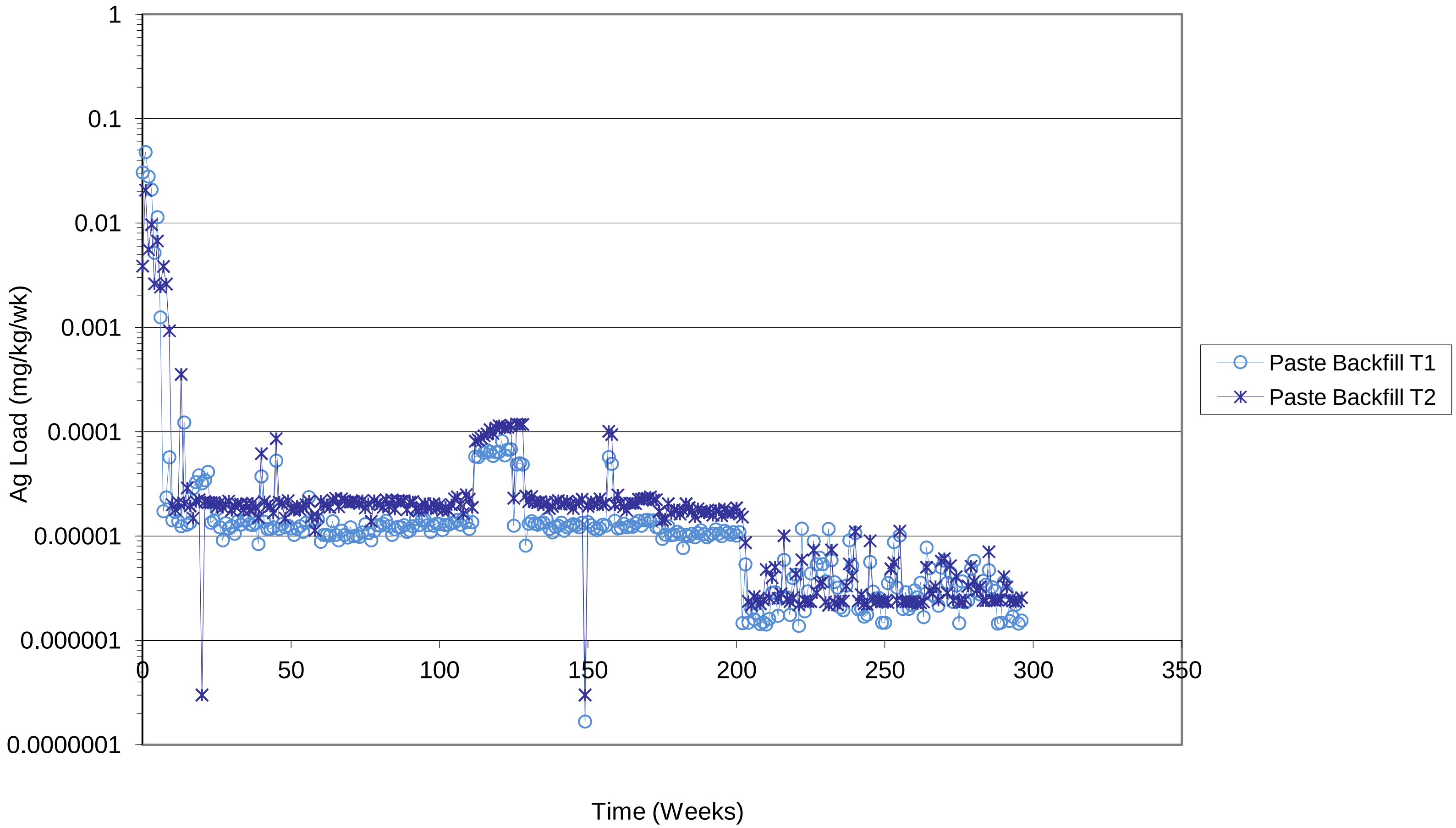


Sulphate Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 36

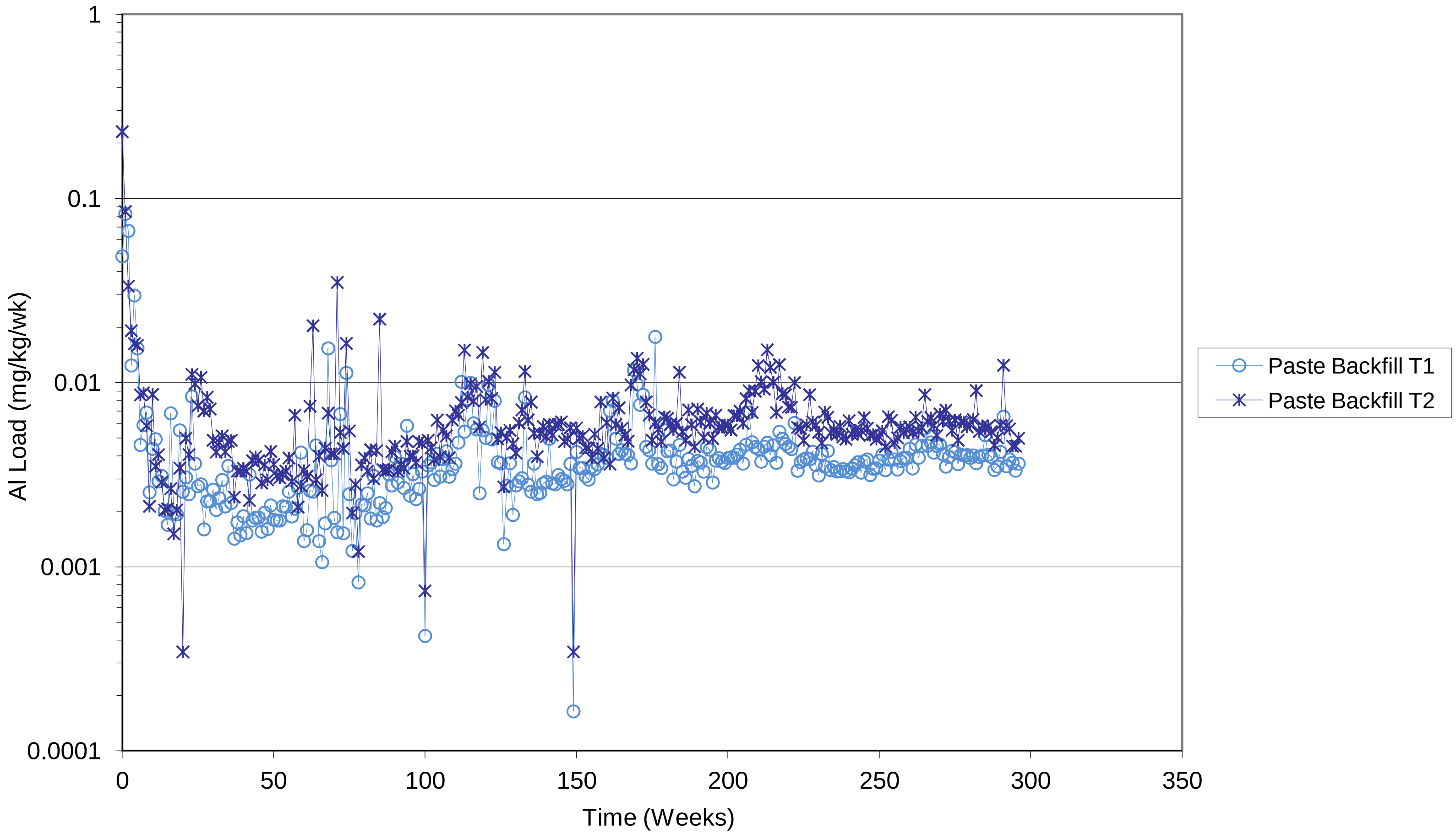
TC 53920

amec



Silver Load #REF! Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 37

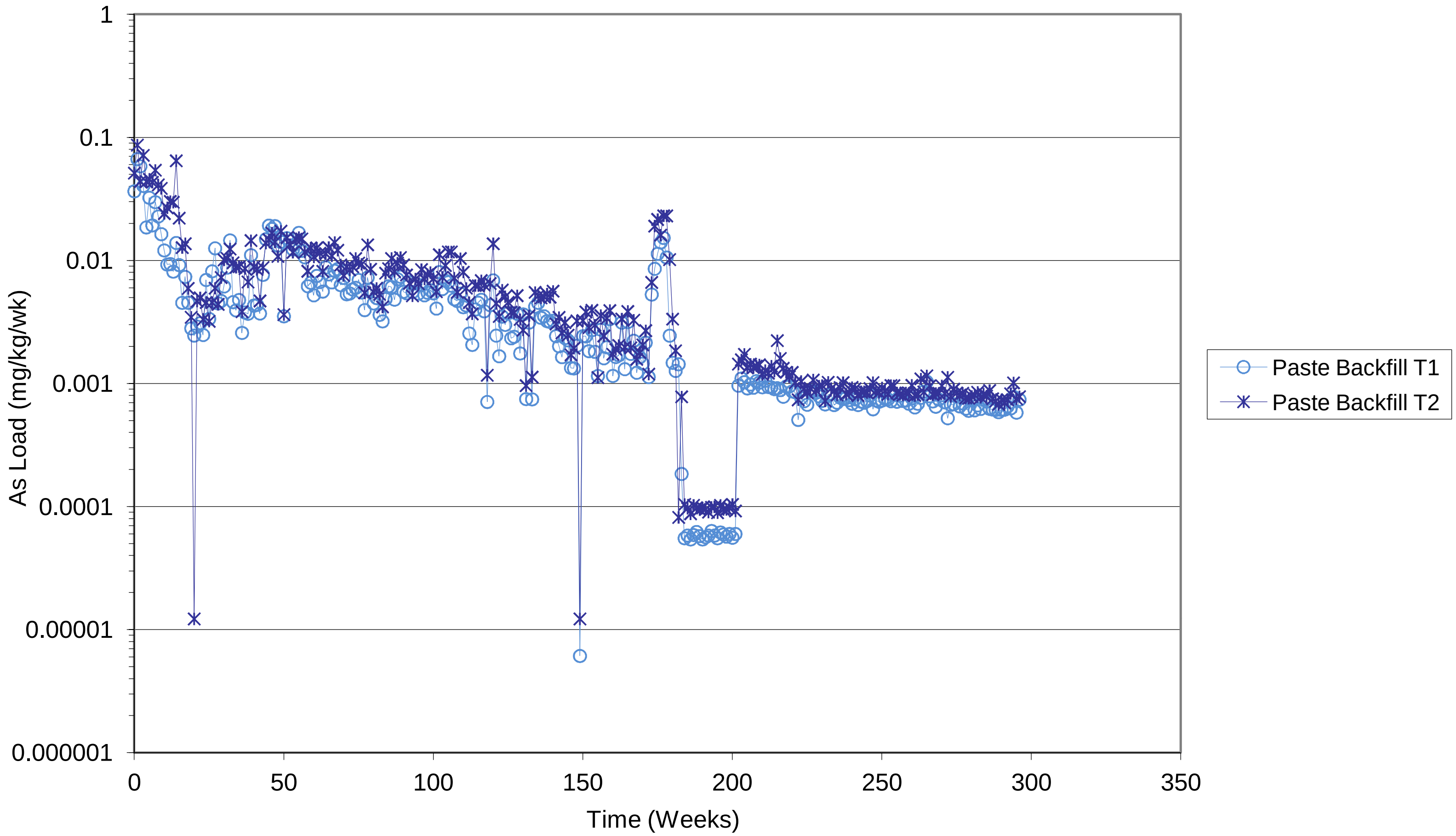
TC 53920



Aluminum Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 38

TC 53920

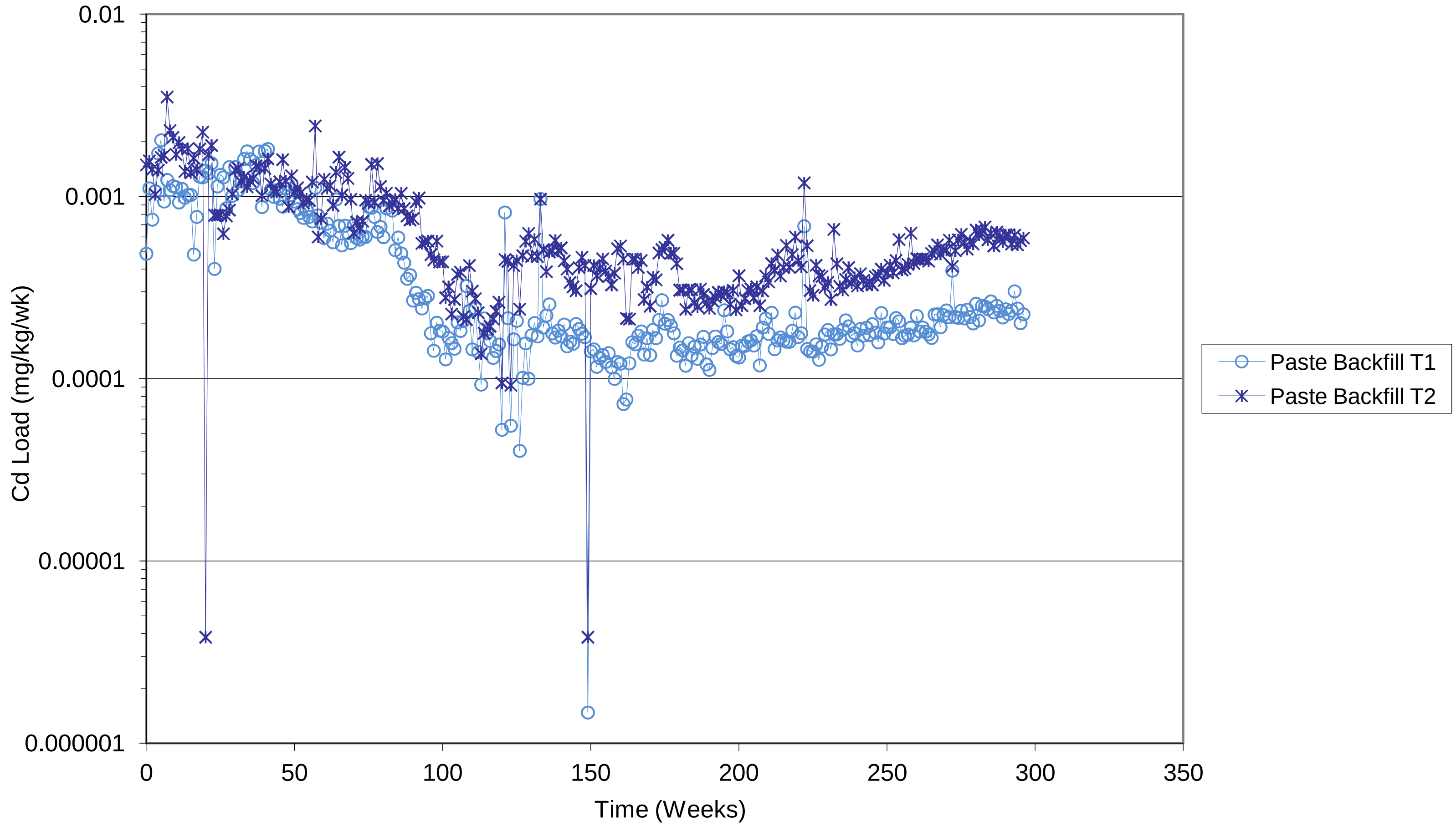
amec



Arsenic Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 39

TC 53920

amec



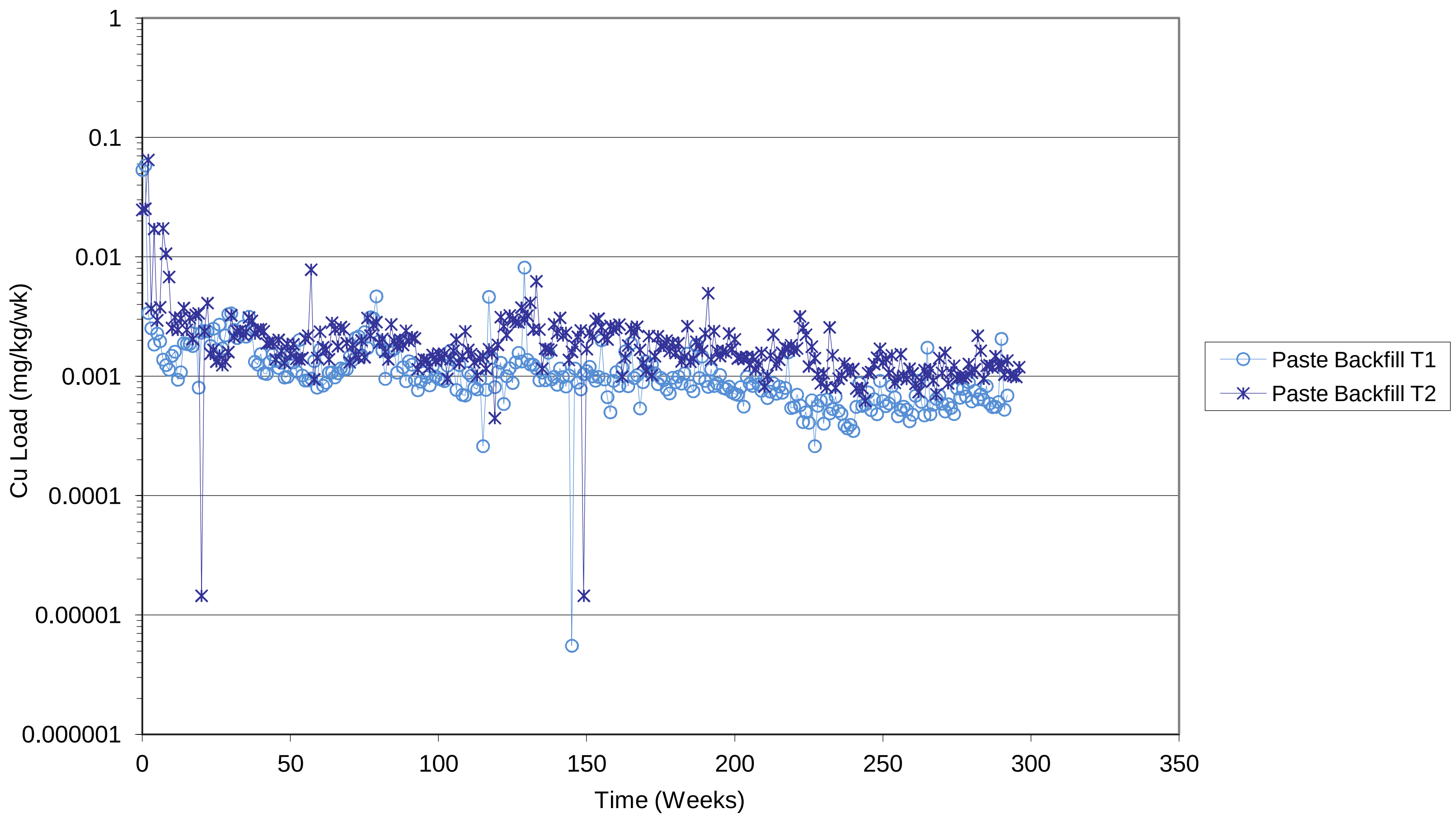
Cadmium Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

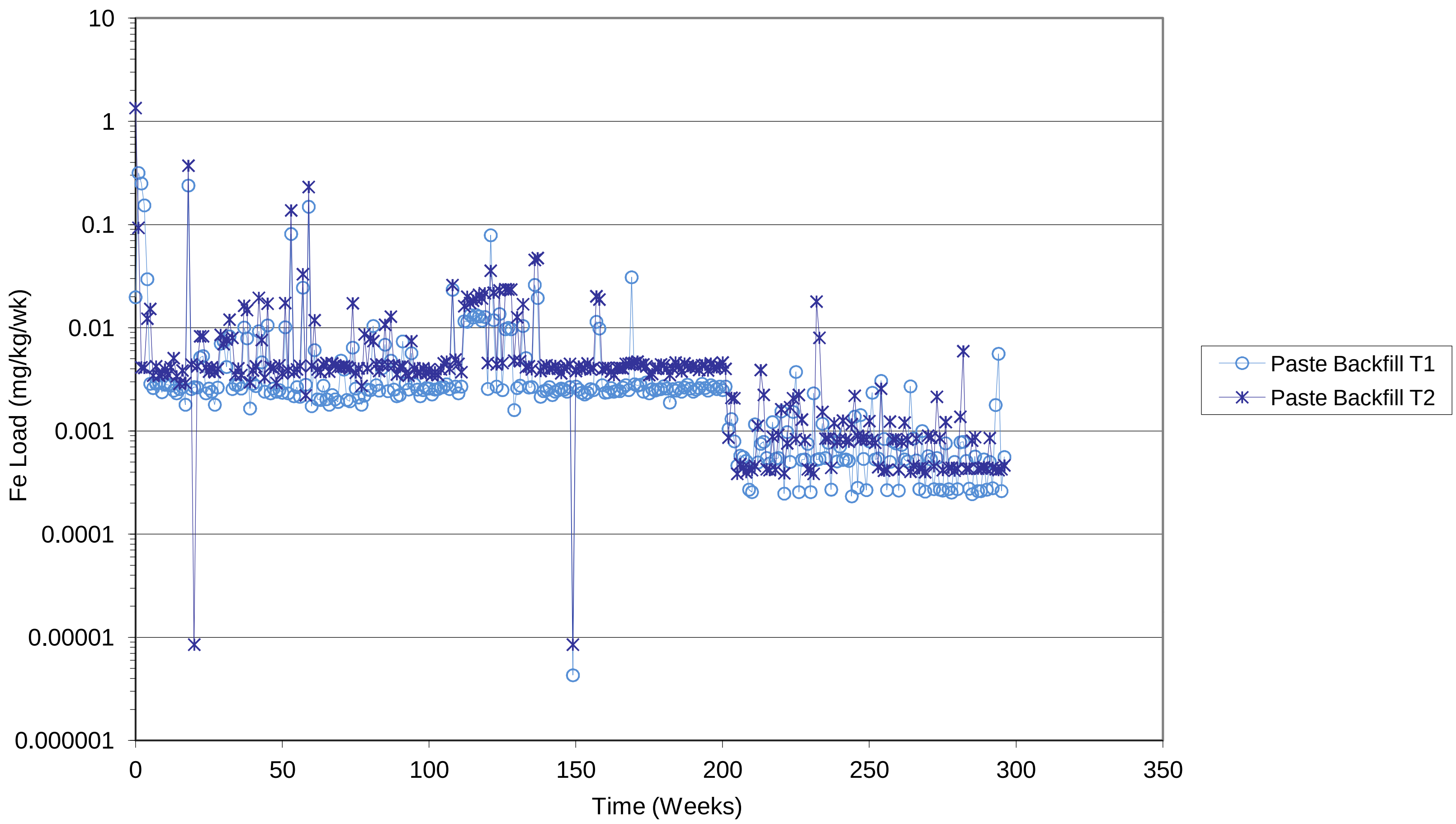
March 2013 | FIGURE 40

TC 53920

amec



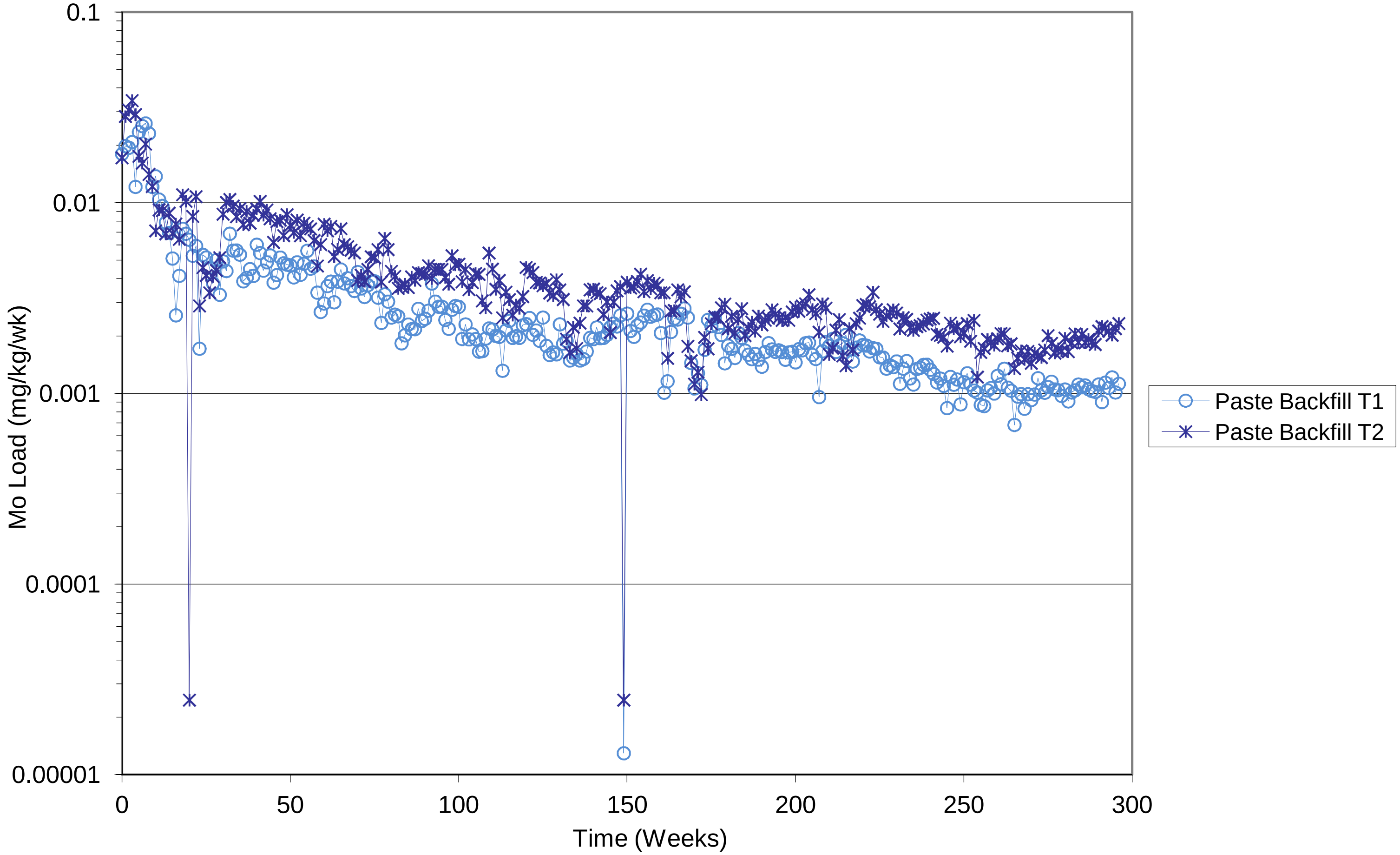
Copper Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 41



* Note change in method detection limit at week 200

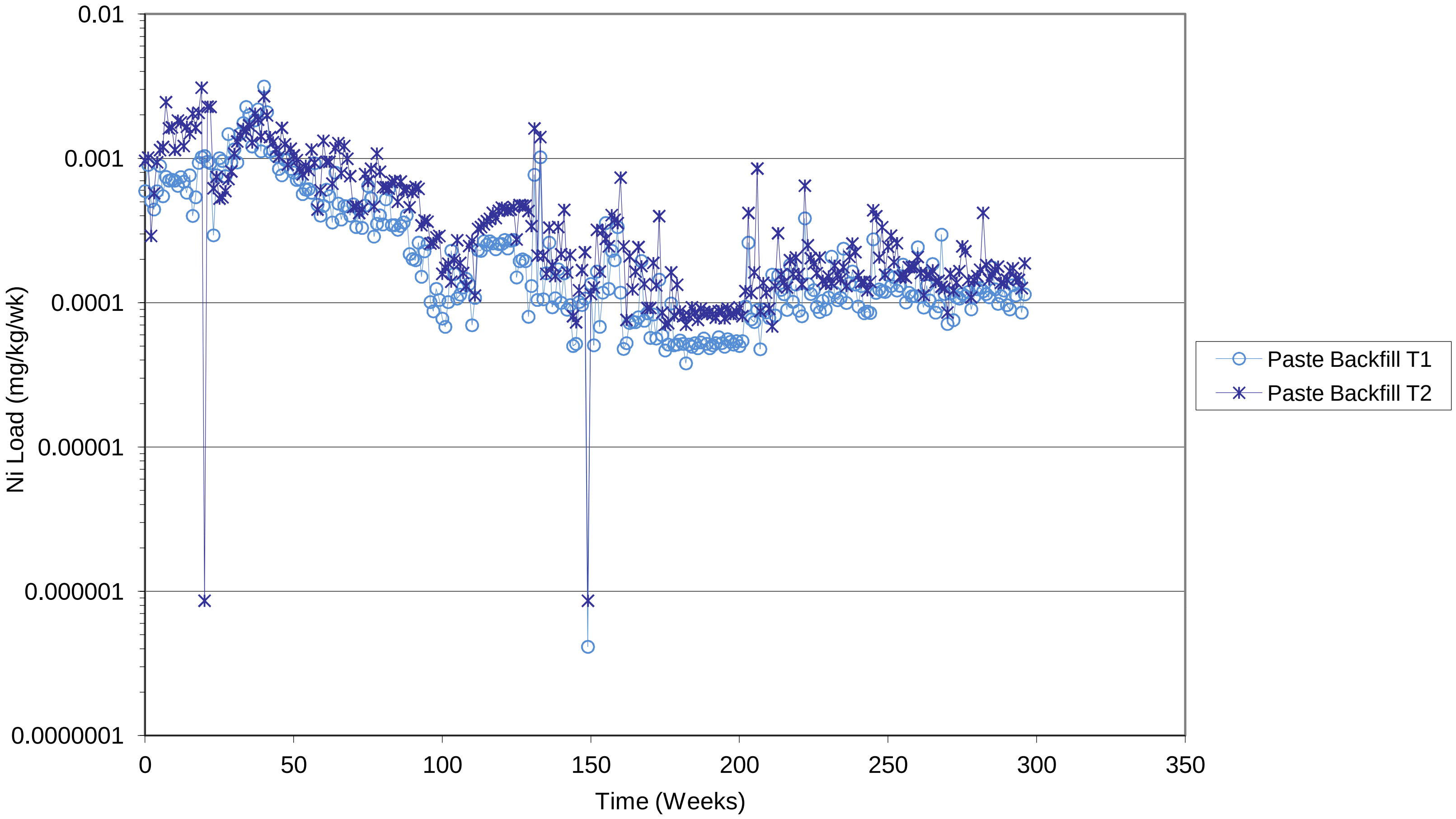
Iron Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 42

TC 53920



Molybdenum Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 43

TC 53920



Nickel Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

March 2013 | FIGURE 44

TC 53920

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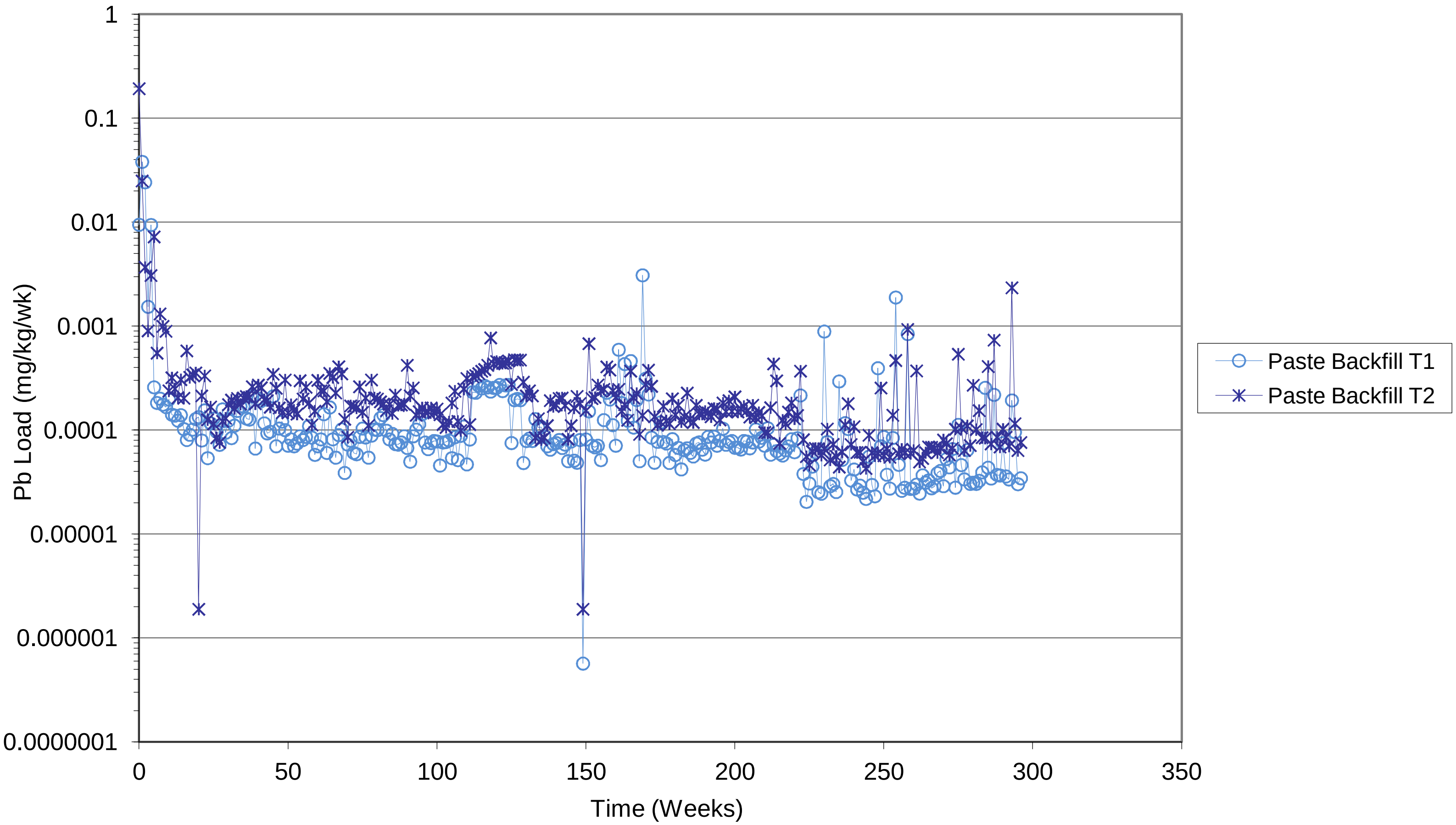
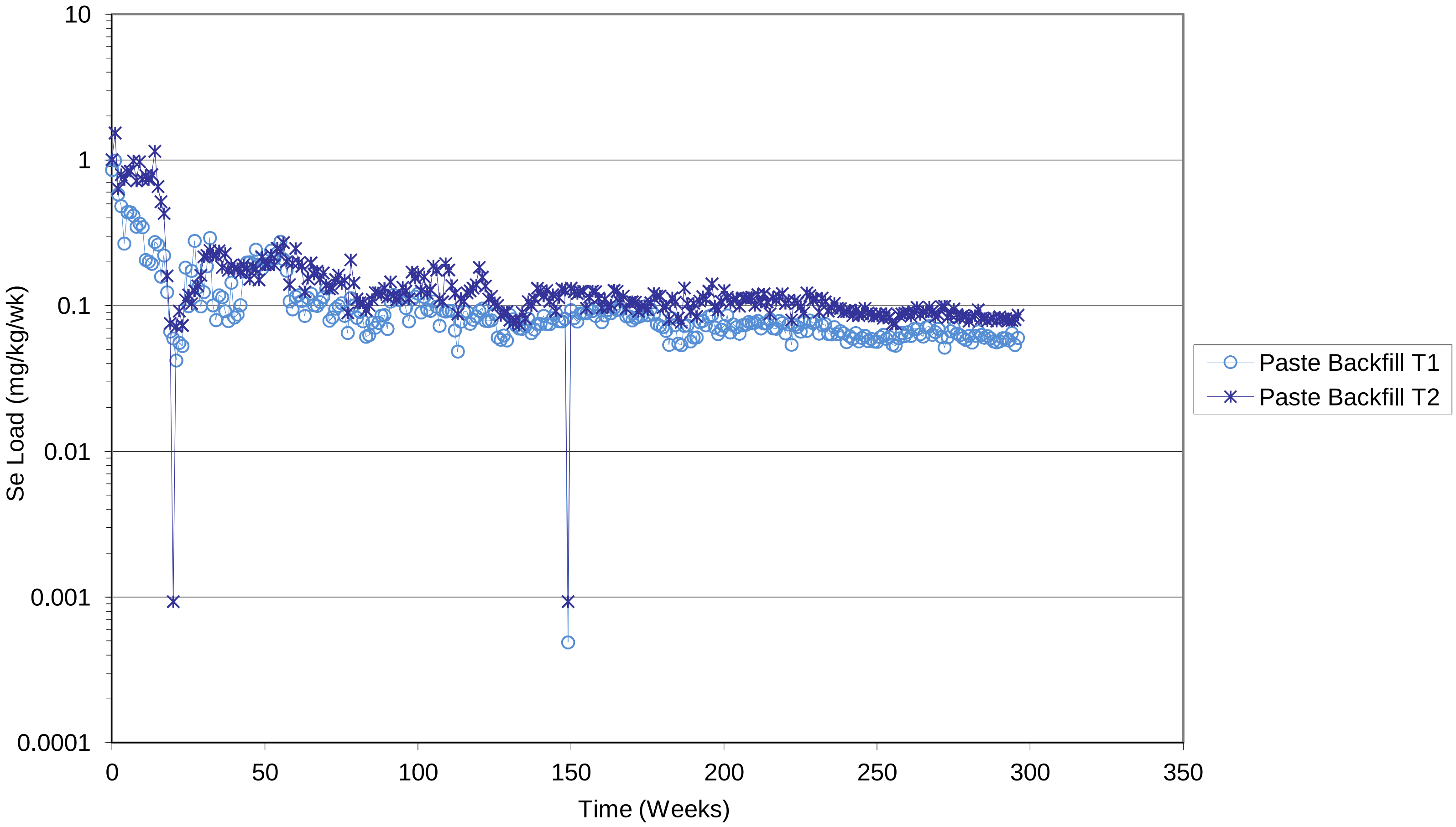


Lead Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2013	FIGURE 45

TC 53920



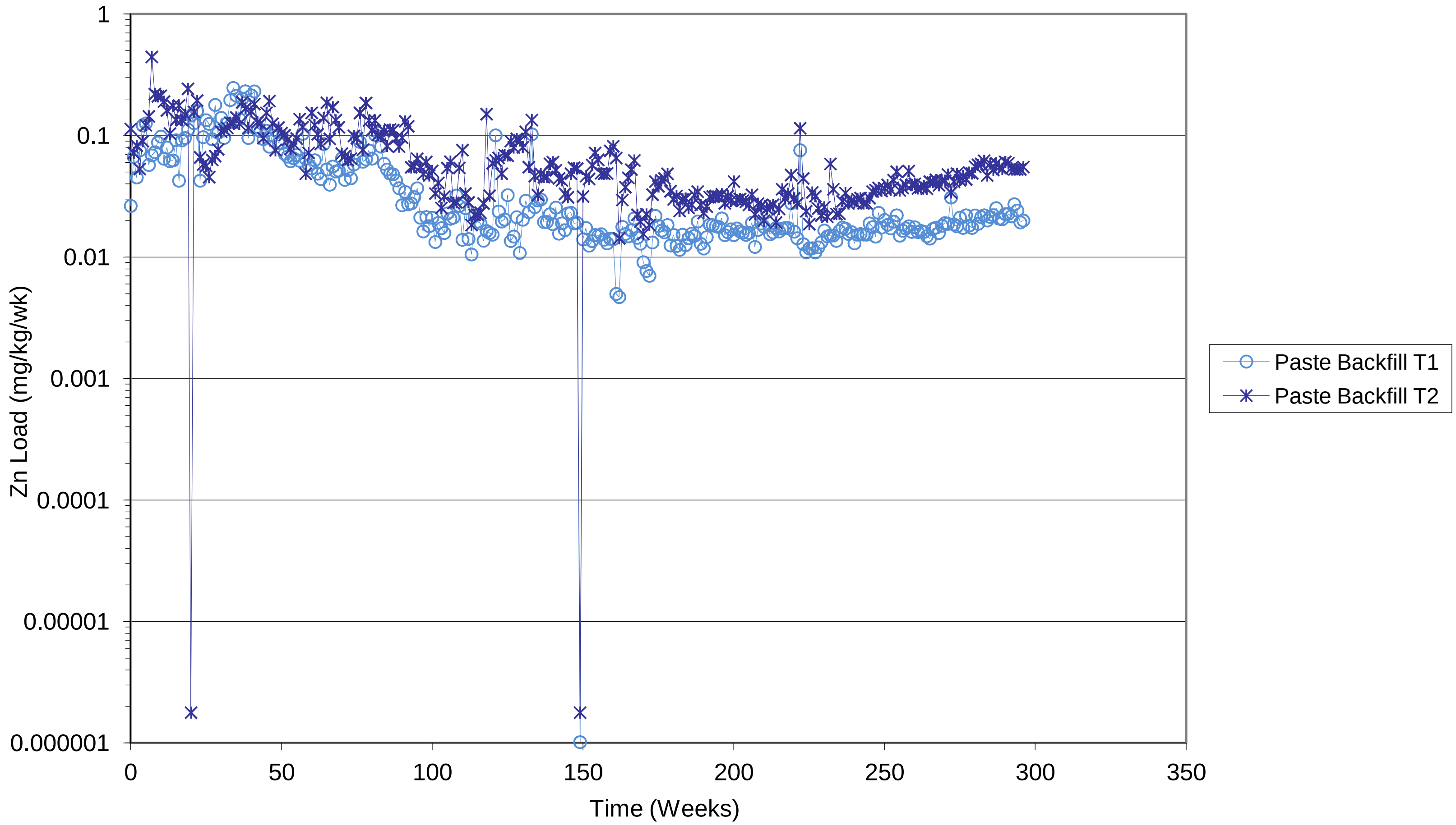
Selenium Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

March 2013 | FIGURE 46

TC 53920

amec



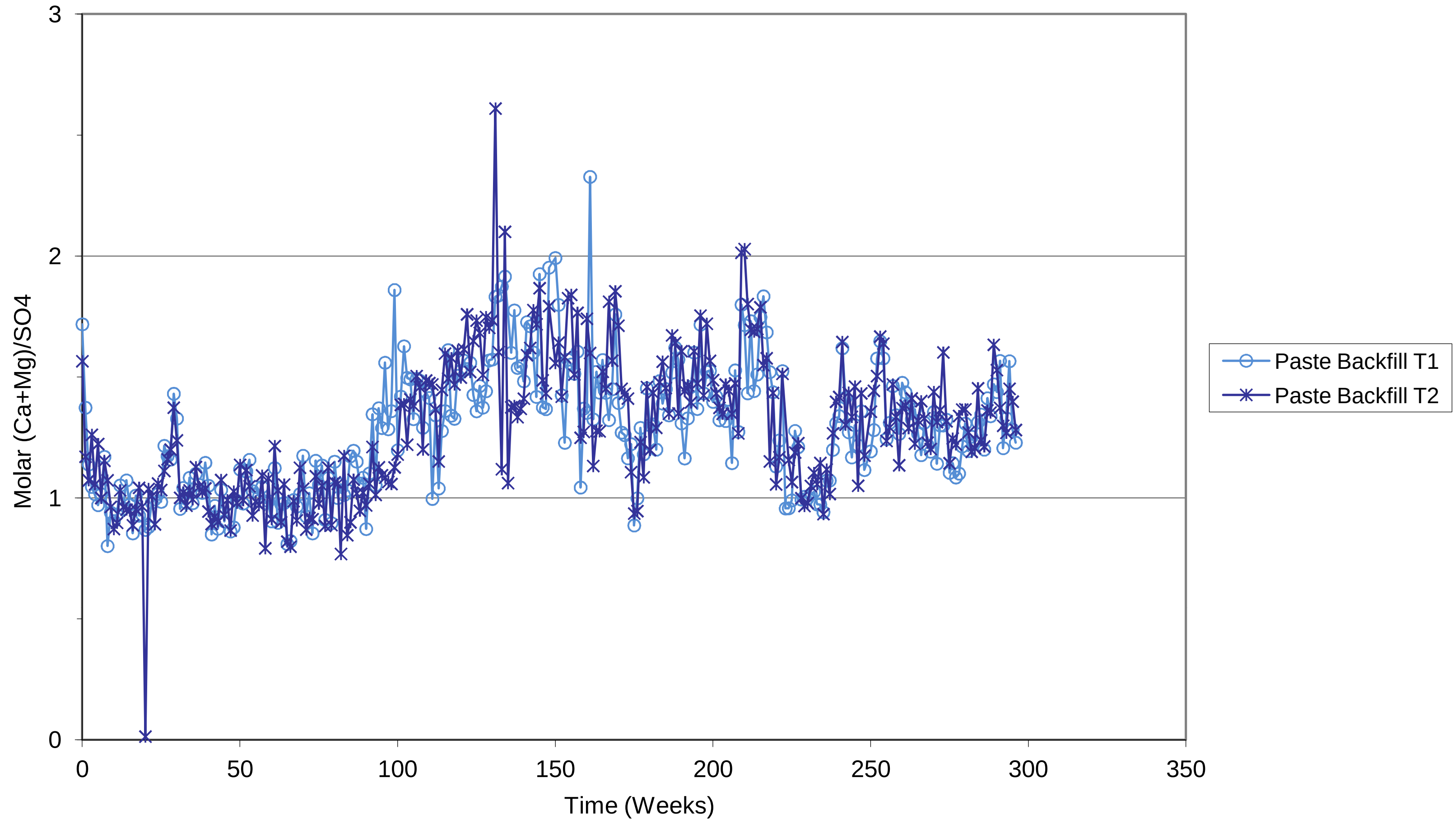
Zinc Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

March 2013	FIGURE 47

TC 53920

amec



Molar $(Ca+Mg)/SO_4$ Ratio
Operating Cells
Wolverine Mine, YK

Paste Backfill

March 2013	FIGURE 48

TC 53920