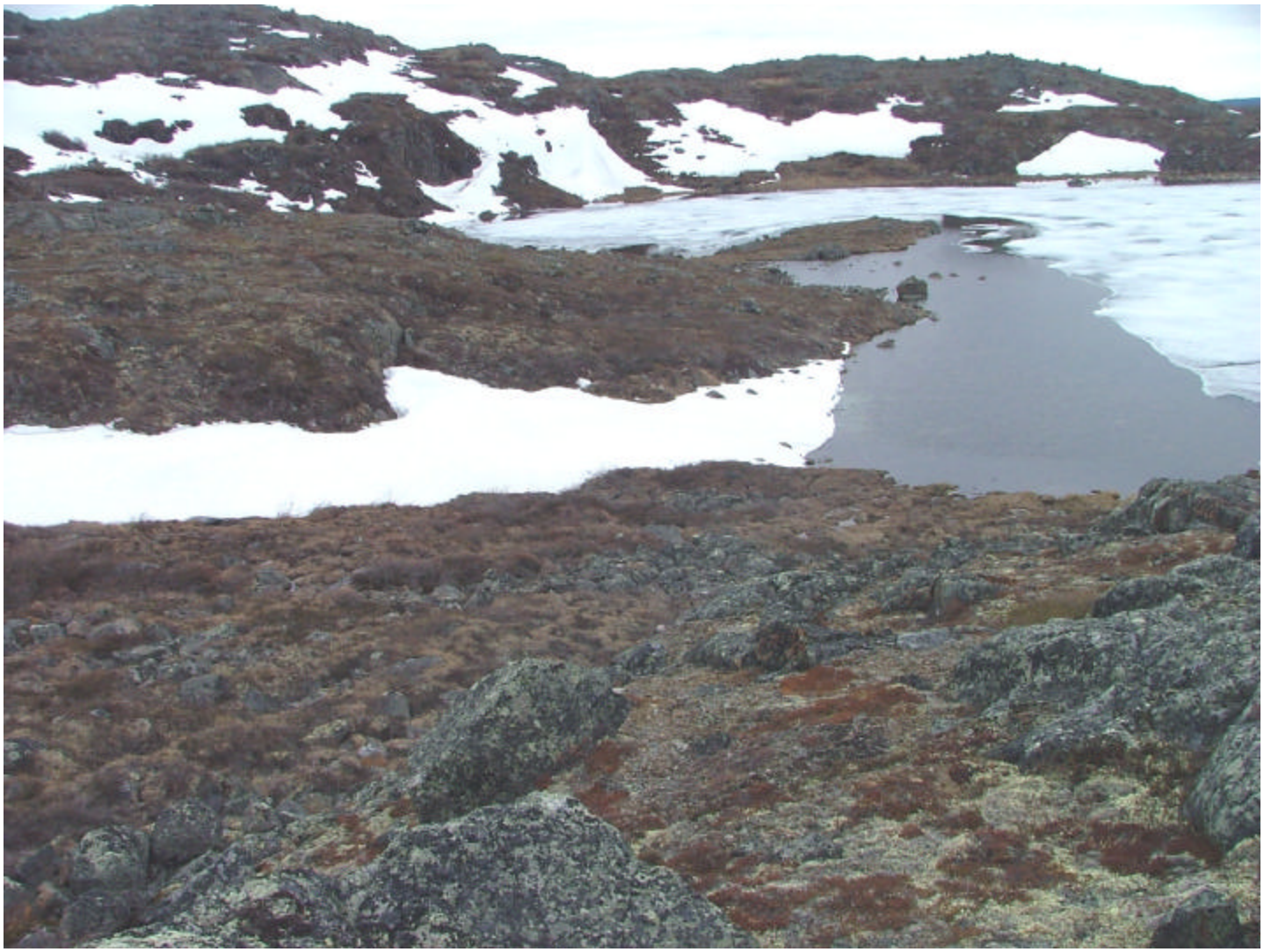
WOLFDEN Resources Inc.

Humidity Cell Test Results - High Lake Project



May 2007

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May 18, 2007

Wolfden Resources Inc.
401-1113 Jade Court
Thunder Bay, Ontario
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Attention: Andrew Mitchel, P. Geo.
Project Manager

Re: High Lake Humidity Cell Results Report

Please find enclosed two (2) copies of the High Lake Humidity Cell Results Report and one (1) digital version on a CD-ROM disk. The report provides the final results from ten of the original eleven humidity cells that were completed for the project. Interim results are also provided for the eleventh humidity cell that continues to operate. The implications of these kinetic test results for mine waste management and drainage chemistry predictions are also outlined. Copies have also been forwarded to BGC and Gartner Lee.

I appreciate the opportunity to work on this interesting project. If you have any questions or concerns pertaining to the report, please do not hesitate to contact me.

Yours very truly,
LORAX ENVIRONMENTAL SERVICES LTD.

Bruce Mattson, M.Sc., P.Geo.
Senior Environmental Geoscientist

Cc: Leslie Gomm, Jim Cassie

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1. Introduction

1. Introduction

Acid rock drainage and metal leaching (ARD/ML) testwork, analysis and interpretation were completed to support Wolfden Resources' High Lake Project. The preliminary kinetic test results were presented and discussed in the High Lake Geochemical Characterization and Source Loading Study that was included as an appendix in the High Lake Environmental Impact Study. This report updates the preliminary laboratory-based humidity cell test results and analysis.

This ARD Kinetic Update Report is organized in the following manner. Chapter 2 outlines the test rationale and descriptions of the humidity cell samples. Chapter 3 discusses the mineral assemblages and provides context for these samples within the overall High Lake sample database with respect to acid base accounting and solid-phase metal constituents. Chapter 4 provides the results and interpretation of the humidity cell tests. Chapter 3 remains essentially unchanged from the original discussion presented in the High Lake Geochemical Characterization and Source Loading Study. However, this chapter is included as part of this report for completeness, to document the geochemical nature of the samples that are undergoing the leaching tests. A summary of the critical results of the study and the implications of these results to waste management and drainage chemistry is provided in Chapter 5.

2. Humidity Cell Test Rationale and Sample Description

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2. Humidity Cell Test Rationale and Sample Description

A series of kinetic tests were initiated to evaluate the relative acid rock drainage / metal leaching risk (ARD/ML) for the waste rock that will be produced during mine operations at the A/B Zone, D Zone and West Zone. A description of the methods used is provided in Appendix A. A total of 11 waste rock humidity cells operated at Canadian Environmental and Metallurgical Inc. (CEMI) laboratory in Burnaby, British Columbia. The tailings management plan includes subaqueous disposal of tailings in High Lake, which restricts sulphide oxidation from the tailings (Pedersen and Mueller, 1993; Vigneault and Campbell, 2001; MEND, 1998), the process which humidity cells are designed to accentuate. Therefore, humidity cell testing was not initiated on tailings samples, as the predominant source of metal release from the tailings will not be sulphide oxidation.

The primary objectives of the humidity cell kinetic test program are to evaluate the relative metal release from the dominant rock types present in the High Lake mining zones and to evaluate the availability of the measured NP to buffer pH. In order to determine the availability of the non-carbonate NP measured in many of the High Lake samples, a sodium acetate pre-leach treatment designed to dissolve the carbonate minerals was conducted on four samples, prior to placement into the humidity cells. The sample selection rationale was to develop a strong program that focuses on characterizing the leaching behavior of materials that will be used for construction purposes or mitigating waste rock drainage. Thus, the geologic units that have the lowest potential for acid generation, as indicated by static testings were the primary kinetic test targets.

Table 2-1 lists the operating humidity cells, a sample description, the start-up date, and the termination date. Testing has been terminated on humidity cell samples HC1 through HC10. A total of 42 test cycles were completed on HC1 and 40 test cycles were completed on HC2 through HC10. Testing continues for HC11, which has 44 cycles reported for this study.

Table 2-1:
Laboratory Humidity Cell Start up Date and Termination Date.

ID	Description	Drill Hole (Interval)	Start Date	Termination Date
HC 1	AB Zone Granodiorite - High S	HLW 01-04 (38.75-40.25)	5-Oct-05	26-Jul-06
HC 2	AB Zone Granodiorite - High S - NaOAc Preleach	HLW 01-04 (38.75-40.25)	12-Dec-05	18-Sep-06
HC 3	AB Zone Granodiorite - Low S	HB-93-96 (98.5-99.5)	21-Nov-05	28-Aug-06
HC 4	AB Zone Granodiorite - Low S - NaOAc Preleach	HB-93-96 (98.5-99.5)	12-Dec-05	18-Sep-06
HC 5	D Zone HW mafic subvolcanic - Bin 1	Composite	21-Nov-05	28-Aug-06
HC 6	AB Zone felsic volcanic - Bin 3	Composite	21-Nov-05	28-Aug-06
HC 7	West Zone mafic volcic - Bin 4	Composite	21-Nov-05	28-Aug-06
HC 8	AB Zone clastic sediments - Bin 5	Composite	21-Nov-05	28-Aug-06
HC 9	D Zone diabase	HLW-02-10 (111-112)	21-Nov-05	28-Aug-06
HC 10	D Zone diabase - NaOAc Preleach	HLW-02-10 (111-112)	12-Dec-05	18-Sep-06
HC 11	AB Zone granodiorite - High S - (-3.36mm) NaOAc Preleach	HLW-01-04 (38.75-40.25)	21-Dec-05	Still Active

The kinetic test samples were selected to represent geologic units that will comprise significant quantities of waste rock derived from the AB Zone Pit, D Zone Pit and West Zone underground. The kinetic test program has emphasized geologic units that have been identified as non-acid generating. As part of the management plan, non-acid generating materials will be exposed in the active zone and will have the greatest opportunity to interact with infiltrating waters and contribute to metal loading. Particular emphasis has been given to the AB Zone granodiorite due to the large number of samples from the static test data base that document that this rock type has a low sulphur content and a tendency to have a non-acid generating ABA signature. Evaluating the availability of the non-carbonate NP typically measured in granodiorite samples and determining the metal leaching characteristics is important to confirm that this material is suitable for construction material. Five of the eleven humidity cells contain material from this unit including HC1, HC2, HC3, HC4 and HC11. HC1 contains a granodiorite sample that has high pyritic sulphur content relative to the static test population of granodiorite samples. HC2 contains a split of the original HC1 sample that has undergone the sodium acetate leach to remove the carbonate prior to humidity cell testing. HC11 also contains a split of the original HC1 sample that has undergone the sodium acetate leach, but only includes material < 3.36 mm in diameter. The sample in HC3 was selected to have sulphur content closer to the median value of the granodiorite sample population and HC4 contains a split of the original HC3 material that has undergone the sodium acetate leach.

The material in humidity cells HC5, HC6, HC7 and HC8 represents D-Zone's mafic sub-volcanic unit, AB Zone felsic volcanic unit, mixed West Zone volcanic unit and AB Zone clastic sediments, respectively. These humidity cell materials are sub-samples of the large composite samples placed in the field leach bins at the High Lake site (Table 2-2). The specific drill hole ID's and intervals used to make the composites are listed in Appendix B.

HC9 contains a diabase sample obtained from the diabase dike that intrudes through the D Zone geologic units. This sample has high pyritic sulphur content relative to the central value of the total available diabase static test population. HC10 contains a split of the original HC9 sample, which has undergone the sodium acetate leach.

Table 2-2:
Composite Humidity Cell Sample Description.

HC	Zone	Target Lithology	Borehole	Interval (m)	Mass (kg)
5	D	Mafic Subvolcanics	HD 92-56	14.02 -- 88.1	71
			HD 92-65	11 -- 90.07	86.6
			HD 92-55	10.1 -- 53.2	78
6	AB	Felsic Volcanics	HLW 03-20	8.7 -- 40.3	47.6
		(Footwall)	HB 93-96	230.4 -- 284.2	68.6
			HLW 02-08	129.3 -- 130.5	5.1
			HLW 01-08	227 -- 265.1	53.6
			HLW 01-09	98 -- 102.1	10.4
			HLW 01-02	82 -- 98.7	25.9
7	West	Mafic Volcanics	HLW 03-47	312.4 -- 370.9	83.4
		(Footwall)	HLW 03-55	520.2 -- 558.1	54.9
			HLW 03-42	548 – 596	57.2
8	AB	Sediments	HA 57-31	146 -- 346 (feet)	62.8
		(Footwall)	HB 56-06	73.1 -- 330.4 (feet)	93.4
			HB 56-25	203.3 -- 320.1 (feet)	43

The humidity cell samples were crushed using a jaw crusher to achieve a particle size distribution consistent with the recommended guidelines (Price, 1997). Figure 2-1 demonstrates that the High Lake humidity cell samples are primarily composed of gravel and sand sized particles. The coarsest sample is HC9, which contains approximately 90% of the material coarser than 2 mm. Of note is HC 11, which was a split of sample HC1 and re-crushed to achieve a finer particle size, as a result, this sample is composed completely of sand sized particles.

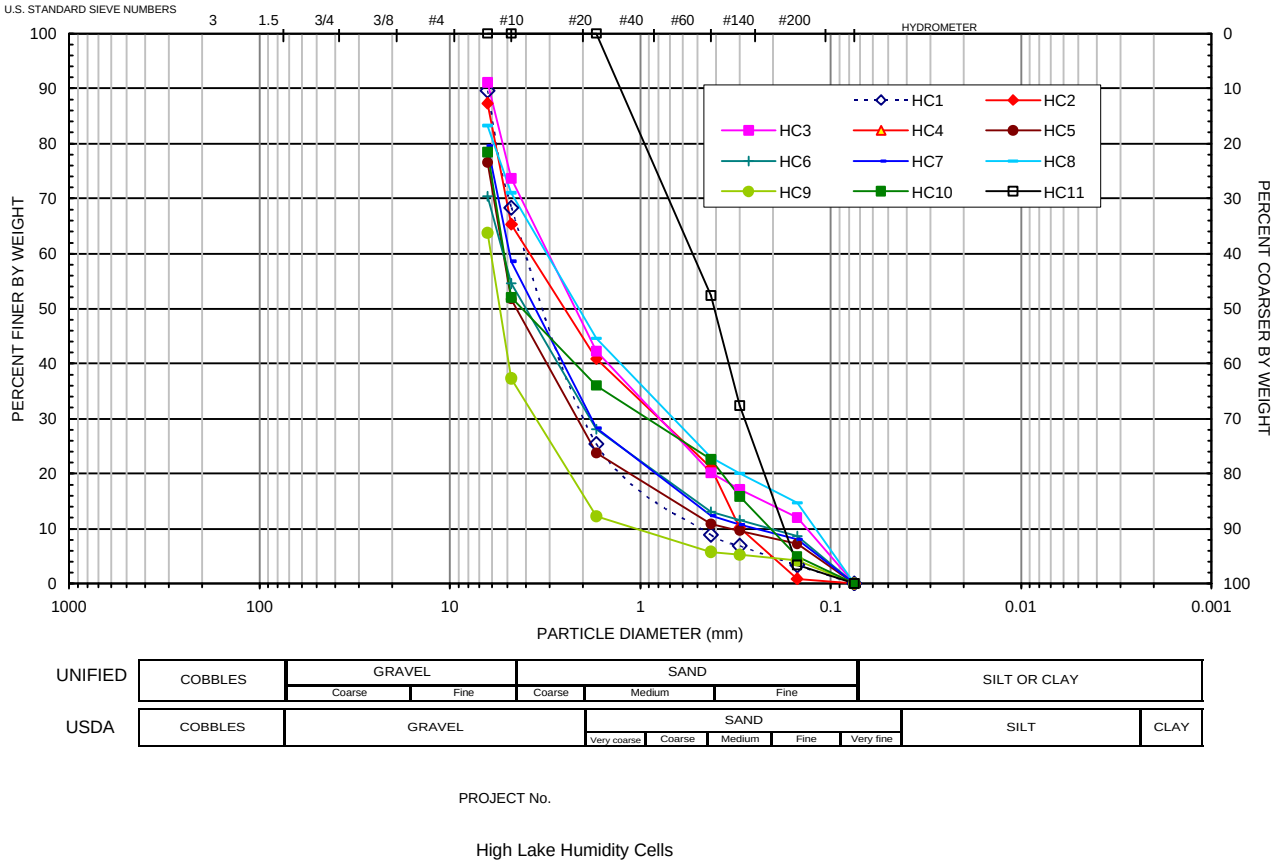

Figure 2-1: Humidity Cell Sample Particle Size Distribution.

3. Solid-Phase Geochemical Characterization

3. Solid-Phase Geochemical Characterization

Solid-phase geochemical characteristics of the samples that were subjected to humidity cell testing are presented and discussed in this section. The analytical methods used for the testing are provided in Appendix A.

3.1 Sample Mineralogy

The humidity cell samples were analysed using X-ray diffraction with Rietveld refinement by Mati Raudsepp and Elisabetta Pani at the University of British Columbia and a sub set of the samples were examined optically by John Jambor of Leslie Research and Consulting. To fully understand the implications of a material's leaching behaviour, the source and abundance of the minerals contributing to the elemental loading is required. The primary objectives of the mineralogical analyses were to:

- evaluate the minerals that may be contributing to the non-carbonate NP measurement and
- the effect of the sodium acetate leach that was conducted on the HC2, HC11, HC4 and HC10 samples.

The minerals identified are outlined in Table 3-1. The weight percent of the minerals detected by XRD analyses are denoted in the table and those minerals observed by optical techniques in trace amounts are demarcated by an "x". The full mineralogy reports are provided in Appendix C.

The XRD analyses indicate that the granodiorite samples' mineralogic assemblage, by order of decreasing abundance, includes plagioclase, quartz, clinochlore, clinozoisite and amphibole. Clinozoisite is less abundant in the low sulphur granodiorite samples HC3 and HC4 (Table 3-1). The diabase samples have higher amphibole content than the granodiorite samples. Amphibole, clinozoisite and plagioclase are not detected in the felsic volcanic and clastic sediment samples. Calcite was the only carbonate mineral detected in all samples except the diabase which also contained ankerite.

Table 3-1:
Humidity Cell Sample Mineralogy.

	Granodiorite*						Mafic subvolcanic	Felsic volcanic	Mafic volcanic	Clastic Sed*	Diabase*	
	HC1	**HC2**	**HC11PL**	**HC11**	**HC3**	**HC4**	**HC5**	**HC6**	**HC7**	**HC8**	**HC9**	**HC10**
Quartz	21.8	20.2	22.8	22.2	24.8	24.0	5.7	68.4	29.7	66.4	6.2	6.2
Clinochlore	10.2	9.9	11.2	11.4	8.0	6.8	7.6	12.2	15.9	14.9	13.0	11.9
Amphibole	6.7	7.6	6.9	6.9	6.6	6.9	43.1		6.0		46.5	47.3
Plagioclase	34.8	33.1	35.4	36.0	40.0	41.5	28.9		25.8		27.0	28.2
Biotite	x	x			4.4	4.2			11.1		2.8	2.0
K-feldspar	1.9	1.8	2.3	2.8	4.3	4.2	3.0	1.6	2.5	2.8		
Muscovite	3.7	6.0	3.4	5.5	6.0	6.9	6.5	16.3	4.2	15.2		2.3
Clinozoisite	13.8	16.4	12.1	12.6	3.7	4.3	3.2		2.4			
Titanite	2.1	1.5									2.0	1.5
Magnetite					1.3	1.3						
Ankerite											0.3	
Calcite	3.1	1.3	3.7	0.5	0.8		2.1	1.0	1.9	0.3	2.2	0.7
Pyrite	1.9	2.0	2.1	2.0	x	x		0.5	0.5	0.3	x	x
Chalcopyrite	x	x		x	x	x				0.1		
Pyrrhotite	x	x										
Sphalerite										x		
Hematite	x	x										
Ilmenite	x	x			x	x					x	

* Sample underwent optical mineral examination; x mineral observed by optical methods

The optical examination indicated that the Na Acetate leach resulted in no observable affect on the minerals contained in the samples other than the carbonate minerals. The optical examination also indicated that the granodiorite samples (HC1 through HC4 and HC11) were comprised of a mixture of two principal rock types, a granitoid and a clinozoisite- and carbonate altered metavolcanic. The metavolcanic is most abundant rock type in the fine grained particles, while the granitoid material predominates in the coarser particles.

HC1 – Unleached Granodiorite High Sulphur

Metavolcanic particles are both clinozoisite and carbonate altered; or amphibole-rich. Pyrite grains are up to 200 µm across and contains patches of chalcopyrite and blebs of pyrrhotite. Sulphides are locked within particles. Metavolcanic chips are riddled with minute calcite grains

Granitoid essentially comprised of quartz and plagioclase and lacking pyrite or mafic minerals. Plagioclase is the sodic-rich variety (albite). Calcite is present in veinlets, along the edges of the grains, and occluded within the center of the granitoid chips.

HC2 – Na Acetate leached Granodiorite – HC1 Equivalent

This sample contains a higher proportion of the fine grained metavolcanic particles than HC1. Pyrite is present locked within particles but ~20% is present as liberated grains. Calcite is present within the interiors of the metavolcanic chips and as fine-grained inclusions occluded within the plagioclase of the granitoid rock. Pervasive calcite alteration is absent in the metavolcanic chips.

HC11 - Na Acetate leached Granodiorite (-3mm) – HC1 Equivalent

Similar to HC1, this sample is comprised predominately of granitoid particles with a high proportion of clinozoisite altered metavolcanic particles. Pyrite occurs predominately within the metavolcanic chips but many grains are liberated. Calcite occurs only as occluded grains within the granitoid and metavolcanic particles.

HC3 – Unleached Granodiorite Low Sulphur

Granitoid particles comprise 90% of particles, which contain amphibole, muscovite and biotite in addition to quartz and plagioclase. Biotite is often chloritized. The variety of biotite present is annite, which is the Fe-rich analogue of phlogopite and clinochlore (Mg > Fe) is the predominant form of chlorite. Microprobe analyses indicate that the amphibole is magnesio-hornblende rather than actinolite and that the Coarse-grained clinozoisite is present with muscovite. Pyrite is present as both locked and liberated grains. Calcite is present as disseminated grains and veinlets.

HC4 – Na Acetate leached Granodiorite – HC3 Equivalent

Similar to HC3 with the exception of the absence of the coarser calcite grains and calcite veinlets.

HC8 – Clastic Sediment

Sample consists of even-grained quartz with intergranular muscovite and chlorite. Pyrite and chalcopyrite occur as disseminated grains within the particles. Calcite occurs as coarse grains amidst the fines and is believed to be derived from quartz-calcite veinlets.

HC9 – Diabase

Sample consists of green amphibole, sericitized plagioclase and chlorite. Biotite occurs as coarse grains. Pyrite occurs as disseminated grains with an estimated abundance of 0.1 to 0.2%. Carbonate minerals occurs as liberated grains, intergrowths with chlorite and discrete veinlets.

HC10 – Diabase – Na Acetate Leached

Similar to HC9, sample consists of green amphibole, sericitized plagioclase and chlorite. However, it also contains ~10% particles of metasedimentary origin. Coarse grained carbonate was removed by the Na acetate leach but fine grained calcite remained at intergrain positions.

3.2 Humidity Cell Acid-Base Accounting

This section discusses the measured ABA characteristics of the humidity cell samples relative to the ABA sample population from the corresponding geologic unit. The median ABA values for major waste rock geologic units compared to the corresponding humidity cell values are outlined in Table 3-2. A complete listing of the complete ABA data for High Lake Humidity Cells 1 to 11 can be found in Appendix D.

3.2.1 Paste pH

The paste pH of all humidity cell samples exceeded 8.5, indicating that these samples are currently alkaline and that a reactive source of NP is present in each of the samples. Those samples that underwent the sodium acetate pre-leach have pH values that are elevated by approximately 0.5 pH units relative to the corresponding pre-leached sample. This indicates that the pre-leach was not completely successful at removing all of the carbonate contained in the samples. Although the higher paste pH values may also be partially attributed to residual buffering of the leach solution.

3.2.2 Sulphur Species

Sulphur content of the humidity cell samples is predominately in the form of the sulphide mineral pyrite. The granodiorite samples in HC1, HC2 and HC11 have total S content of ~1%S which is an order of magnitude greater than the median value of 0.08%S for the granodiorite sample population (Table 3-2). Thus, due to the high sulphur content, the leaching behaviour of these materials provides an extreme upper end member of the acid generating potential of the granodiorite waste rock. The granodiorite samples HC3 and HC4 have sulphur content (~0.1%S) that is more typical of the granodiorite waste rock. Similarly, humidity cell samples HC5, HC6, HC7 and HC8 have sulphur contents that are similar to the median value for their respective rock types of mafic subvolcanic, felsic volcanic, mafic volcanic and clastic sediment. The diabase samples (HC9 and HC10) have sulphur contents significantly greater than the median value for the diabase sample population. A pyritic S analysis was not completed for all of the humidity cell samples as the more conservative calculated value of sulphide sulphur (sulphide S = total S – sulphate S) is being used to calculate acid potential. However, it is noteworthy that pyritic S was measured to be significantly greater than the total S measurement in the mafic subvolcanic sample HC5.

Table 3-2:
Humidity Cell Sample ABA Characteristics and Median Values from corresponding geologic unit.

	Paste	Total S	Sulphate S*	Pyritic S	Sulphide S	TAP	Mend NP	CaNP	NP/TAP	NP/SAP	CaNP/TAP	CaNP/SAP	Fizz
	pH	(Wt.%)	(Wt.%)	(Wt.%)		(Kg CaCO3/T)	(Kg CaCO3/T)	(Kg CaCO3/T)					
HC1 GD	**8.7**	**0.98**	**<0.01**	**na**	**0.98**	**31**	**72**	**37**	**2.3**	**2.4**	**1.2**	**1.2**	**moderate**
HC2 GD Leach	**9.3**	**1.14**	**na**	**an**	**1.14**	**36**	**44**	**12**	**1.2**		**0.3**		**slight**
HC11 GD Leach	**9.3**	**1.10**	**na**	**na**	**1.1**	**34**	**27**	**5**	**0.8**		**0.2**		**none**
HC3 GD	**9.3**	**0.11**	**<0.01**	**0.10**	**0.11**	**3**	**35**	**12**	**10.3**	**10.8**	**3.5**	**3.7**	**slight**
HC4 GD Leach	**9.5**	**0.11**	**na**	**na**	**0.11**	**3**	**23**	**3**	**6.6**		**0.9**		**none**
Granodiorite n=46	9.3	0.08	<0.01	0.06	0.07	2.3	29.2	11.5	15.7	17.2	6.6	7.5	
HC5 MSV	**9.0**	**0.06**	**<0.01**	**0.15**	**0.06**	**2**	**39**	**19**	**20.9**	**22.8**	**10.1**	**11.0**	**slight**
Mafic Subvolcanic n=30	9.3	0.04	<0.01	0.03	0.04	1.3	21.6	8.4	25.1	37.1	9.1	19.0	
HC6 FV	**8.8**	**0.74**	**<0.01**	**0.54**	**0.74**	**23**	**18**	**5**	**0.8**	**0.8**	**0.2**	**0.2**	**none**
Felsic Volcanic n=47	8.8	0.33	0.005	0.30	0.32	10.3	12.5	3.2	1.3	1.3	0.2	0.3	
HC7 MV	**9.2**	**0.49**	**<0.01**	**0.51**	**0.49**	**15**	**48**	**22**	**3.1**	**3.1**	**1.4**	**1.4**	**slight**
Mafic Volcanic n=9	9.6	0.30	<0.01	0.22	0.30	9.4	33.5	9.3	2.5	2.6	1.4	1.4	
HC8 CS	**8.9**	**0.67**	**<0.01**	**0.55**	**0.67**	**21**	**20**	**10**	**0.9**	**0.9**	**0.5**	**0.5**	**none**
Clastic Sediment n=17	8.6	0.73	0.01	0.28	0.73	22.8	12.8	1.8	0.7	0.7	0.1	0.1	
HC9 Di	**9.2**	**0.25**	**0.01**	**0.29**	**0.24**	**8**	**37**	**23**	**4.8**	**5.0**	**2.9**	**3.1**	**slight**
HC10 Di	**9.7**	**0.25**	**na**	**na**	**na**	**8**	**24**	**5**	**3.1**		**0.6**		**none**
Diabase n=17	9.3	0.03	<0.01	0.02	0.03	0.9	19.2	1.1	17.4	24.7	1.1	2.0	

na = not analysed

3.2.3 Neutralization Potential

The MEND NP and Carbonate NP (CaNP) values are compared and contrasted relative to all the available ABA samples from the Perry Creek database in this section. The MEND NP analysis was conducted on all samples and involves the same procedure as the Sobek NP measurements with a slight modification. The modification involves the addition of hydrogen peroxide (H_2O_2), which produces the complete oxidation and hydrolysis of Fe^{2+}, reactions that occur in natural oxic systems such as waste rock piles but does not fully complete in the laboratory conditions imposed by the traditional Sobek NP measurements. CaNP values were calculated for all the static test samples assuming that all the inorganic carbon measured in the sample is in the form of calcite. This assumption is applicable for the High Lake deposit as the mineralogical observations indicate calcite is the predominant carbonate mineral in all the humidity cell samples (Table 3-1).

As outlined in Chapter 2, HC2 and HC11 are splits of the original granodiorite sample HC1 that were subjected to a NaAc leach to remove the carbonate NP. Similarly HC4 is a leached split of the typical-sulphur granodiorite sample HC3 and HC10 is a leached split of the diabase sample HC9. The CaNP values of the leached samples (Table 3-2) ranged from 3 $KgCaCO_3/t$ in HC4 to 12 $KgCaCO_3/t$ in HC2. Although these CaNP values were lower than that of the original samples, the NaAc leach was not successful in completely removing all of the carbonate from the samples. Petrographic analyses of the leached samples indicate that particle size was the major influence on the extent of carbonate removal by the NaAc leach, with residual carbonate left in the coarser fragments that were not fully exposed to the leach solution. Although the residual carbonate is measured in the pulverized sample that is subjected to ABA testing, the residual carbonate contained in the centre of the particles should not be available to the leaching waters that infiltrate through the samples during the kinetic test.

Note that all humidity cell samples plot below the 1:1 line in Figure 3-1, indicating that the CaNP values are lower than the MEND NP measurements and that a non-carbonate NP source is being measured by the MEND NP method. Mineralogic results indicate that the most likely mineralogic sources of the non-carbonate NP include plagioclase, biotite, chlorite, amphibole and clinozoisite. These minerals are capable of buffering pH in natural systems and may be effective in mine wastes under certain circumstances. However, the quantity of non-carbonate NP for these samples (20 $KgCaCO_3/t$ to 30 $KgCaCO_3/t$) is greater than published values for these minerals (Jambor *et al*, 2002 and Jambor *et al*, 2000). The results of the kinetic testwork assist in determining the acid buffering capacity of these minerals for the High Lake materials.

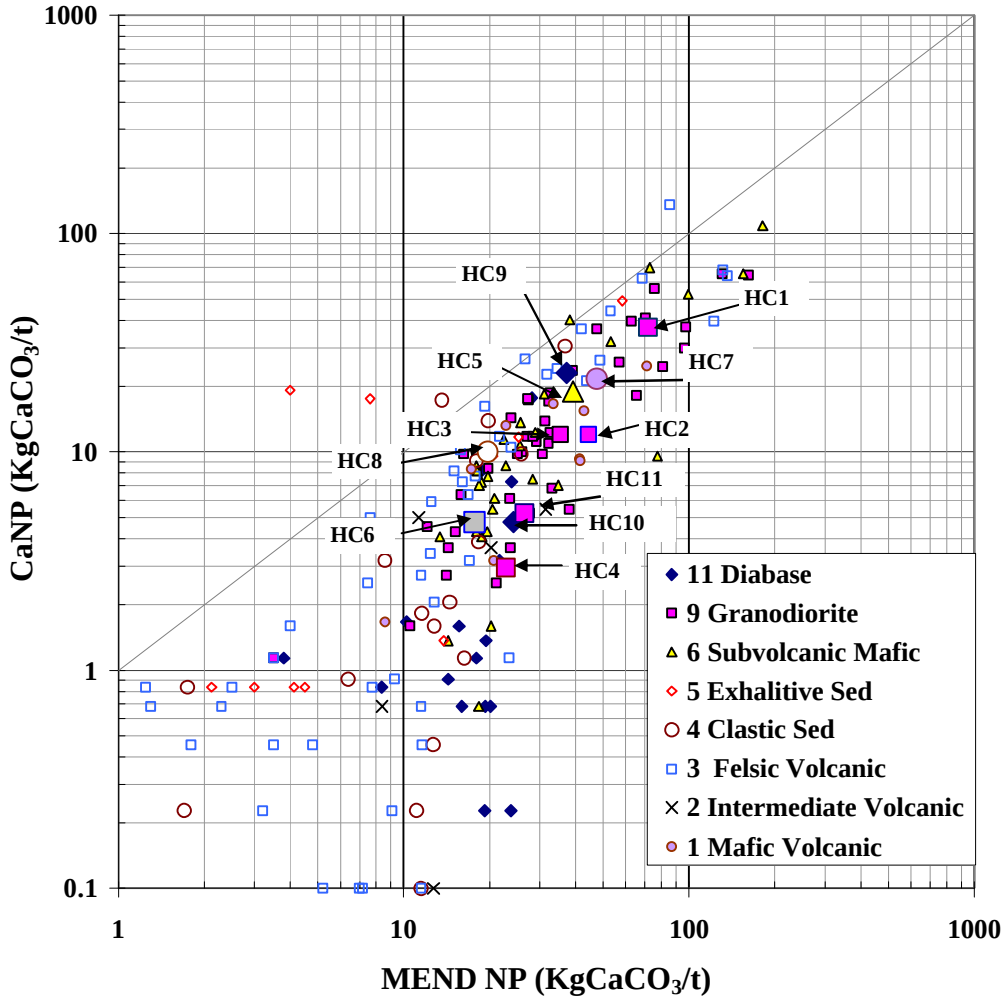

Figure 3-1: Carbonate NP vs MEND NP for Humidity Cell Samples in Relation to the High Lake Static Test Database.

The difference between the MEND NP and CaNP values, or the measured non-carbonate NP, was greatest at 35 $KgCaCO_3/t$ and 32 $KgCaCO_3/t$ for the original granodiorite sample HC1 and NaAc Leached granodiorite HC2, respectively. The similar values between these samples indicate that the NaAc leach left the non-carbonate NP relatively intact. The slight variance observed between the samples is likely variability produced from sample splitting. The granodiorite sample crushed to -3.3 mm (HC11) contained 21 $KgCaCO_3/t$ non-carbonate NP. This indicates that there is a lower quantity of non-carbonate NP in the finer grained waste rock. The two granodiorite samples HC3 and HC4 had non-carbonate NP of approximately 20 $KgCaCO_3/t$ close to the median for granodiorite samples. The leached diabase sample (HC10) had a non-carbonate NP value of 20 $KgCaCO_3/t$, which was greater than the 14 $KgCaCO_3/t$ measured in the original sample HC9. This variability is likely an arifact of sample splitting.

3.2.4 Net Potential Ratio

The humidity cell sample net potential ratio values are discussed for both the MEND NP to total acid potential ratio (NP/TAP) and carbonate NP to total acid potential ratio (CaNP/TAP). The total acid potential is the acid potential calculated from the total sulphur measurement.

As discussed previously, the measured carbonate NP is consistently lower than the MEND NP measurements for the High Lake deposit. As a result, the humidity cell sample CaNP/TAP ratios are lower than the NP/TAP values.

Only three unleached humidity cell samples, granodiorite (HC3), mafic subvolcanic (HC5) and Diabase (HC9) have CaNP/TAP values > 2.0 (Table 3-2). The other humidity cell samples have CaNP/TAP < 1.5 and could be considered potentially acid generating (PAG) if the measured non-carbonate NP is not available to buffer acidity.

When applying the MEND NP value to calculate the net potential ratio, the NP/TAP values are considerably higher. Only four humidity cell samples, leached granodiorite (HC2 & HC11), felsic volcanic (HC6) and clastic sediment (HC8), have NP/TAP values <1.5 (Figure 3-2).

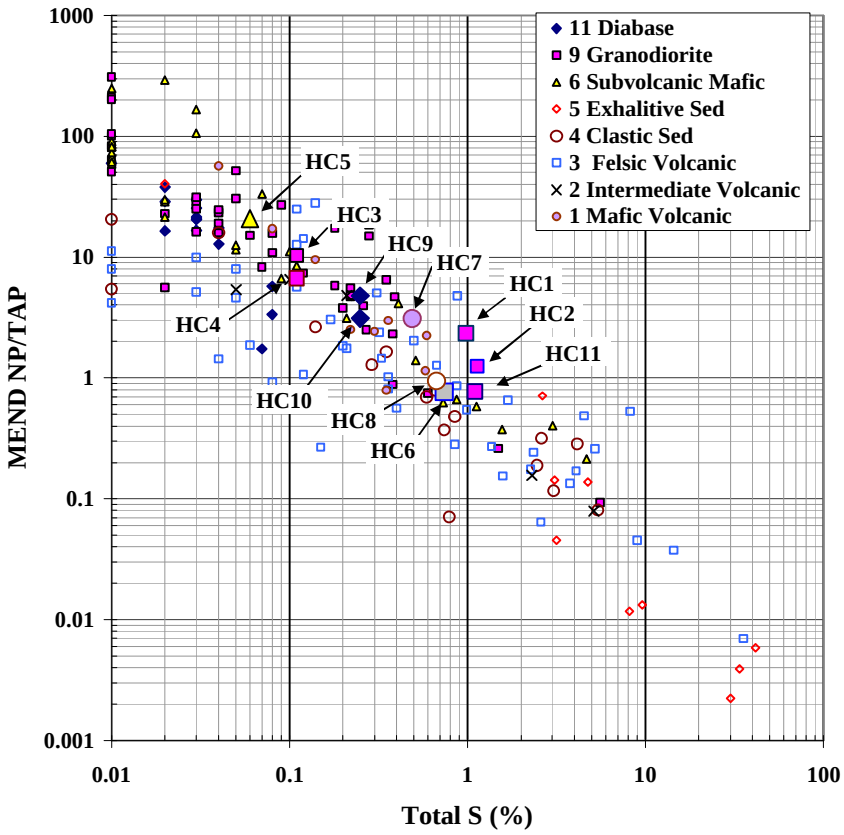

Figure 3-2: MEND NP/TAP vs Total S.

3.3 Humidity Cell Solid-Phase Metal Concentrations

The following section provides an overview of the metal concentrations of the humidity cell samples. These metal concentrations provide context for the humidity cell samples within the overall High Lake static test sample population. The concentration of selected solid phase elemental concentrations in the humidity cell samples is provided in Table 3-4 relative to the median concentration for the corresponding geologic unit that it represents. Humidity cell values that are greater than twice the median value from their corresponding stratigraphic units have been highlighted in Table 3-4. A complete list of the solid-phase metal concentrations of the humidity cell samples can be found in Appendix D.

Solid-phase metal concentrations examined include arsenic (As), antimony (Sb), cadmium (Cd), copper (Cu), molybdenum (Mo), lead (Pb), selenium (Se) and zinc (Zn). A number of elements (As, Co, Cr, Cu, Hg, Pb and Sb) are elevated in HC1, HC2 and HC11 relative to the median value for the granodiorite samples. These samples were selected for the high sulphide content to provide an endmember for maximum acid generation and leaching conditions. Thus, higher metal concentrations are expected in these 3 cells relative to typical granodiorite material. Similarly, sample HC6 also has elevated concentrations (As, Co, Cu, Ni, Sb, and Se) relative to median concentrations of the felsic volcanic sample population, likely due to its higher sulphur content in the humidity cell sample. In particular, solid-phase copper is elevated in HC6. Despite having relatively high sulphur contents, the diabase humidity cell samples (HC9 and HC10) have metal contents (with the exception of Ni and Pb) similar to the median values.

Table 3-3:
Humidity Cell and Median Geologic Unit Elemental Abundance.

	Ag	**Al**	**As**	**Ca**	**Cd**	**Co**	**Cr**	**Cu**	**Fe**	**Hg**	**K**	**Mg**	**Mn**	**Mo**	**Na**	**Ni**	**Pb**	**Sb**	**Se**	**Zn**
	ppm	%	ppm	%	ppm	Ppm	ppm	ppm	%	ppm	%	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
HC1 GD	**3.1**	1.3	**1.9**	1.6	<.1	**38.7**	36.4	**113.6**	2.8	<.01	0.04	1.7	360	2.1	**0.017**	20.7	**9.6**	**0.5**		34
HC2 GD Leach	**0.5**	2.0	**2.8**	1.2	0.1	**46.8**	**197.1**	**148.9**	3.8	**0.04**	0.11	2.3	373	3.2	0.078	32.8	**16.2**	**0.3**	0.6	48
HC11 GD Leach	**0.8**	1.8	**3.0**	0.9	<.1	**46.9**	**163.4**	**130.7**	3.6	**0.04**	0.10	2.1	329	2.8	0.074	32.2	**11.0**	**0.7**	0.6	44
HC3 GD	<0.1	1.5	0.5	1.0	<0.1	15.4	89.0	49.0	3.5	<0.01	0.21	1.5	377	1.7	0.039	19.5	2.6	<0.1	<0.5	60
HC4 GD Leach	<0.1	1.7	0.9	0.7	<.1	16.5	**147.6**	63.8	3.9	**0.02**	0.23	1.6	377	2.8	0.073	24.0	6.1	0.1	<.5	64
Granodiorite n=46	*0.1*	*1.5*	*0.6*	*1.1*	*0.1*	*15.6*	*75.5*	*47.4*	*2.9*	*0.01*	*0.13*	*1.3*	*298*	*1.6*	*0.044*	*22.6*	*4.4*	*0.1*	*0.5*	*51*
HC5 MSV	0.1	2.2	0.8	1.4	<.1	19.9	89.5	57.5	2.4	**0.07**	**0.23**	1.9	291	0.8	0.095	101.5	4.2	<.1	<.5	32
Mafic Subvolcanic n=30	*0.1*	*2.4*	*0.9*	*0.9*	*0.1*	*19.7*	*63.1*	*46.4*	*2.5*	*0.01*	*0.09*	*1.9*	*271*	*1.1*	*0.060*	*75.7*	*3.3*	*0.1*	*0.5*	*40*
HC6 FV	**1.3**	2.7	**21.3**	0.1	**0.2**	**20.9**	156.0	**2094**	4.6	**0.06**	0.21	2.4	303	3.9	0.011	**16.3**	27.4	**0.8**	**12.3**	133
Felsic Volcanic n=47	*0.6*	*2.5*	*2.8*	*0.2*	*0.1*	*8.7*	*90.8*	*236.8*	*3.7*	*0.01*	*0.13*	*2.3*	*264*	*3.3*	*0.005*	*4.9*	*14.5*	*0.3*	*0.7*	*123*
HC7 MV	**0.7**	3.4	**2.3**	1.1	0.1	16.8	85.5	**97.0**	4.0	0.04	0.92	3.6	991	1.4	0.050	21.5	**69.1**	**0.5**	0.8	132
Mafic Volcanic n=9	*0.1*	*4.1*	*1.0*	*0.6*	*0.1*	*17.0*	*64.1*	*22.4*	*4.1*	*0.01*	*1.23*	*4.7*	*590*	*1.5*	*0.026*	*11.5*	*17.5*	*0.1*	*0.5*	*92*
HC8 CS	0.9	2.8	**48.4**	0.2	0.3	23.9	140.1	1152	4.7	**0.04**	**0.24**	2.5	323	4.3	0.009	**43.8**	9.6	**1.3**	2.2	171
Clastic Sediment n=17	*1.4*	*3.1*	*1.9*	*0.1*	*0.3*	*16.7*	*71.9*	*913.0*	*5.4*	*0.01*	*0.07*	*2.5*	*287*	*2.8*	*0.005*	*3.1*	*9.1*	*0.2*	*3.4*	*215*
HC9 Di	0.1	2.1	0.9	1.3	<0.1	30.4	60.5	44.5	2.9	0.01	0.22	2.0	361	0.7	0.089	**178.9**	7.4	<0.1	<0.5	50
HC10 Di	0.1	2.5	0.8	1.0	0.1	33.8	87.9	57.9	3.2	**0.07**	0.22	2.4	372	0.7	0.145	**208.7**	**10.4**	0.1	<.5	58
Diabase n=17	*0.1*	*1.49*	*0.5*	*1.05*	*0.1*	*25.5*	*62.8*	*356.8*	*5.6*	*0.01*	*0.25*	*1.17*	*370*	*1.1*	*0.174*	*24.6*	*4.6*	*0.1*	*0.5*	*74*

4. Humidity Cell Leachate Results

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4. Humidity Cell Leachate Results

Kinetic testing is conducted to evaluate reaction rates and depletion times for minerals contained in the mine waste. The results of these tests are used to assess the availability of neutralization potential measured in the static tests, the pH buffering trends associated with the material and assess metal leaching rates. This is accomplished through the measurement of reaction rates over a period of several months. Ultimately, such testing can help establish the mobility of metals that may be of environmental concern in drainage from the various waste rock units. In addition, site-specific parameters for the waste rock, namely safe NPR values and the nature, reactivity and time to depletion of available NP may be evaluated.

During the initial cycles of humidity cell testing, sulphate and metals often have highly variable release rates before stabilizing at a relatively constant rate. This variability is a geochemical response to surface exposure of freshly crushed samples and the accelerated leaching/oxidizing conditions induced in a humidity cell. Once exposed mineral surfaces have equilibrated to this environment, stable reaction rates can be determined. Humidity cells often require many weeks to approach geochemical stability, and reaction rates rarely remain constant on a week-to-week basis. As a result, data from a number of cycles over which rates vary within a definable and constant range are commonly used to calculate long-term reaction rates.

The results discussed below present leachate data from eleven (11) humidity cells that was made available as of November 14th, 2006. Humidity cell tests for ten (10) of the eleven (11) humidity cell have been terminated, Table 3-1. The only active humidity cell remaining is HC 11. A number of analytical parameters were measured in each cycle including: conductivity, pH, sulphate, alkalinity, acidity and sulphate. In addition an ICP-MS element scan and Hg analysis was conducted on every second leachate collected. The laboratory operating procedure is described in Appendix A and complete data are presented in Appendix E of this report.

4.1 pH and Alkalinity

Weekly pH values provide insight as to the state of competition between acid generating and acid neutralizing reactions in a humidity cell sample. Carbonate mineral buffering maintains leachate pH above or near pH 7 and acid consuming reactions predominate. However, once the reactive neutralization potential is exhausted, pH will decrease rapidly if the sample maintains a source of acid production.

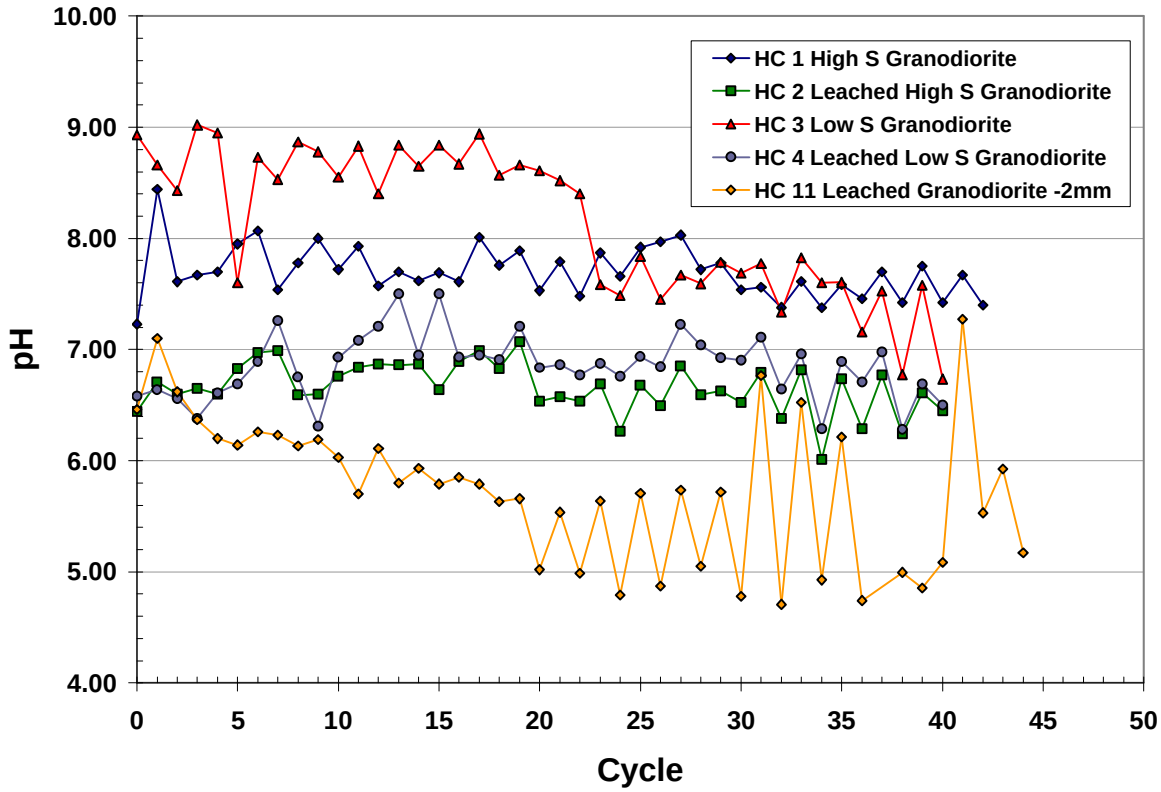

Figure 4-1a: Humidity Cell Leachate pH Values for Granodiorite Samples.

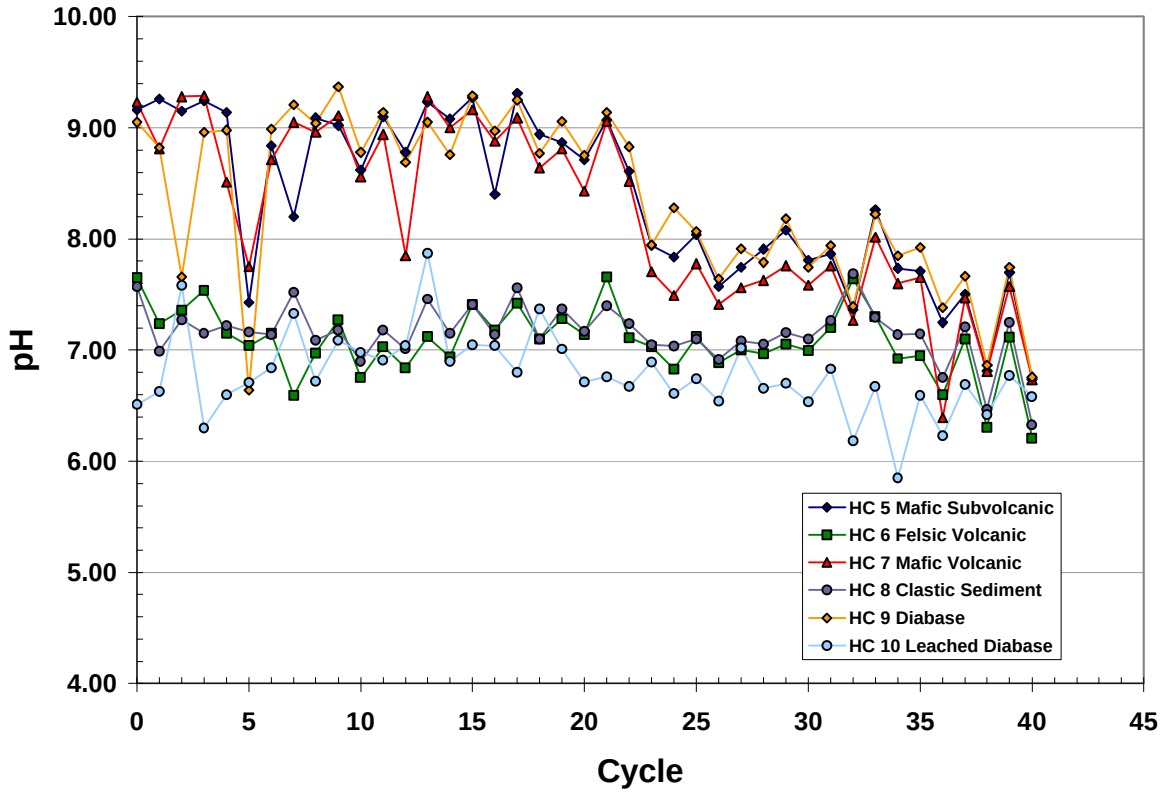

Figure 4-1b Humidity Cell Leachate pH Values for Waste Rock Samples.

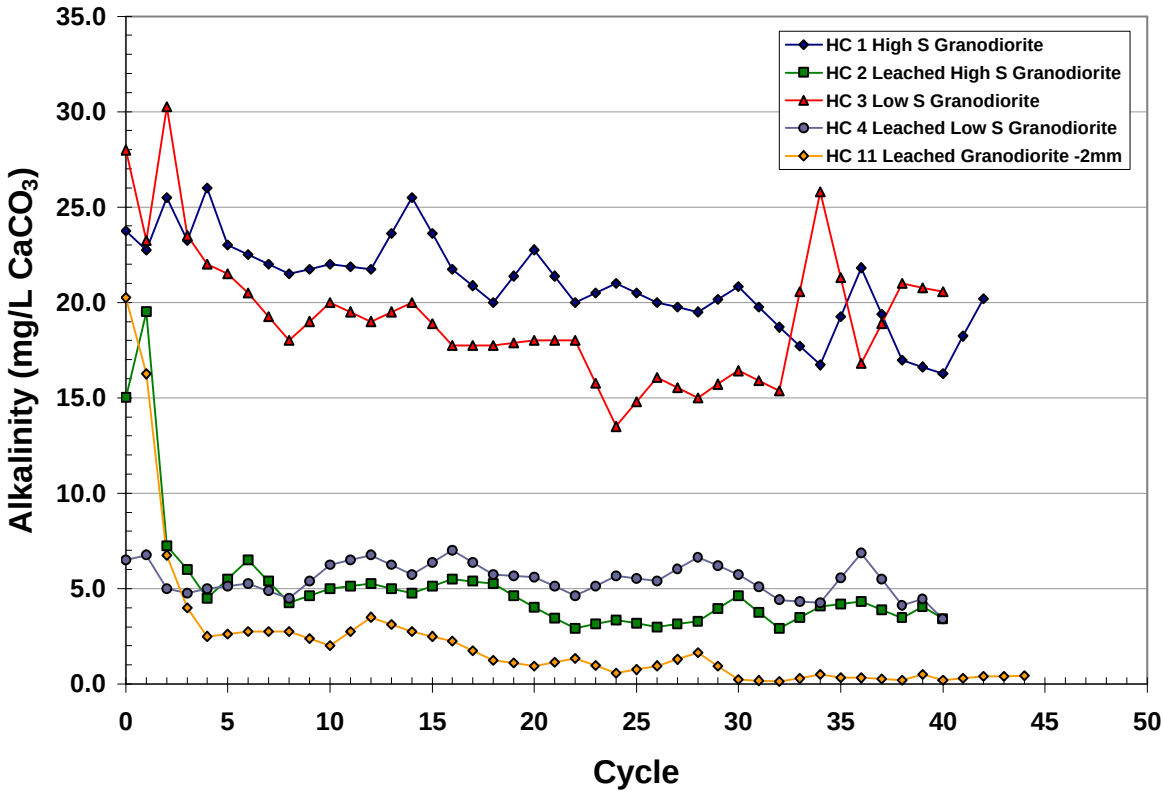

Figure 4-2a: Alkalinity in Granodiorite Humidity Cells.

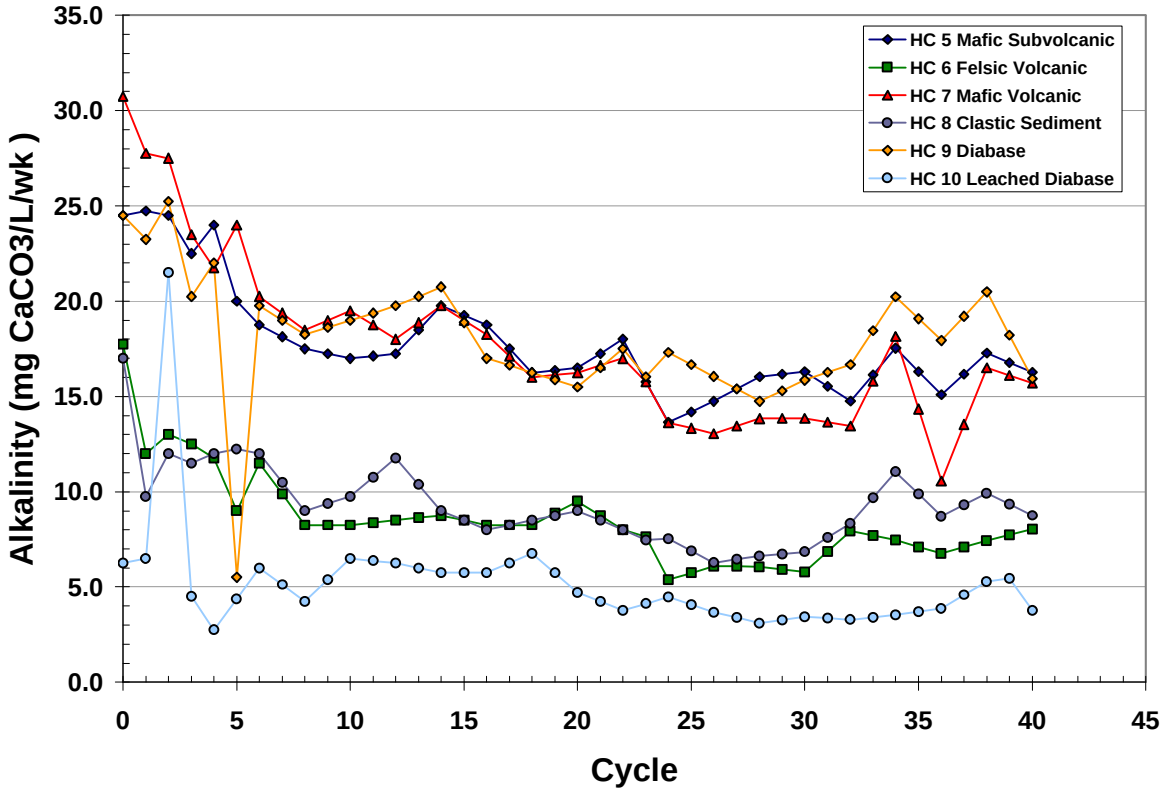

Figure 4-2b: Alkalinity in Waste Rock Humidity Cells.

When neutralization potential is derived from a less reactive source, a trend of gradually decreasing pH is observed as the neutralization potential is depleted and the equilibrium pH of the next most reactive mineral phase is reached.

Granodiorite humidity cell leachate pH values are maintained above pH 7 for the two samples (HC1 and HC3) that did not undergo the NaAc preleach to remove carbonate minerals (Figure 4-1a). Despite the lack of readily available carbonate, the preleached granodiorite samples (HC2 and HC4) maintained leachate pH values > 6.5 (Figure 4-1a) but released significantly lower amounts of alkalinity (4 to 5 mg/L $CaCO_3$) than the unleached samples (Figure 4-2a). The fine grained granodiorite (HC11) displayed the lowest pH, which dropped to pH 5 during the final 20 cycles and lowest alkalinity (<1 mg/L $CaCO_3$). Significant variability in pH was also observed from HC11 during these final cycles. This variability is related to the sensitivity of pH in weakly buffered waters. The low alkalinity values indicate that a mineral phase other than carbonate is maintaining pH at its current values.

Humidity cells containing PAG felsic volcanic (HC6), PAG sediments (HC8) and the preleached diabase (HC10) maintained circumneutral (pH 6.2-7.2) and low alkalinity (< 10 mg/L) during the final cycles. The other mafic waste rock samples (mafic subvolcanic-HC5, mafic volcanic-HC7, and unleached diabase-HC9) maintained neutral pH (approximately 7.0) and alkalinity values similar to the unleached granodiorite samples of approximately 20 mg $CaCO_3$/L.

4.2 Sulphate Production and NP Depletion

The rates of sulphide oxidation and NP consumption are two important parameters derived from the analysis of humidity cell leachates. Humidity cell tests determine the rate of sulphide mineral oxidation by the presence of sulphate in weekly leachates. Sulphide oxidation is typically the major source of acid production and metal loading in mine drainage. The rate of NP consumption resulting from leaching of the waste rock can be calculated from the rate of sulphate production and release rates of major cations.

The consumption or loss of NP from waste rock and/or tailings can occur via two important processes: 1) consumption through neutralization of acidity produced during sulphide oxidation; and 2) consumption through simple carbonate dissolution from infiltration of meteoric waters. When reactive sulphides are actively oxidizing the dominant NP consumption reaction is that of acid neutralization.

The sulphide oxidation reaction for pyrite is typically represented as

$$Pyrite: \quad FeS_2 + {}^{15}\!/_{4}\, O_2 + {}^{7}\!/_{2}\, H_2O \Rightarrow Fe(OH)_3 + 2SO_4^{2-} + 4H^+$$

Thus, for each mole of sulphide-sulphur oxidized, 2 moles of acidity are produced. In the most simplistic scenario, when carbonate minerals are present the oxidation-neutralization reaction is pH-dependent. Assuming no calcium and sulphate are lost to secondary mineral precipitation, two carbonate consumption reactions can describe the process:

(Example 1): at pH<6.3:

Pyrite

$$FeS_2 + {}^{15}\!/_{4}\, O_2 + {}^{7}\!/_{2}\, H_2O + 2[Ca^{2+}, Mg^{2+}]CO_3 \longrightarrow Fe(OH)_3 + 2SO_4^{2-} + 2H_2CO_3^0 + 2[Ca^{2+}, Mg^{2+}]$$

(Example 2): at 6.3<pH<10.3:

Pyrite

$$FeS_2 + {}^{15}\!/_{4}\, O_2 + {}^{7}\!/_{2}\, H_2O + 4[Ca^{2+}, Mg^{2+}]CO_3 \longrightarrow Fe(OH)_3 + 2SO_4^{2-} + 4HCO_3^- + 4[Ca^{2+}, Mg^{2+}]$$

Example (1) indicates that in theory, neutralization of acidity up to pH levels of 6.3 will produce one mole of Ca for each mole of SO_4 released, giving a 1:1 *carbonate molar ratio* (CMR). However, this is a somewhat idealized representation that does not consider the exsolution of CO_2 gas; the contribution of non-carbonate minerals releasing Ca and Mg ions; or the dissolution of carbonates by dilute waters in the absence of sulphide oxidation. These processes could all increase the rate of Ca, Mg release relative to SO_4 production.

At circum-neutral pH levels, $H_2CO_3^0$ is not stable and the dominant form of inorganic carbonate in an aqueous solution is the bicarbonate ion (HCO_3^-). Example (2) indicates that, at near-neutral pH levels, calcium carbonate is less efficient at neutralizing acidity and will produce a 2:1 calcium (+ magnesium) to sulphate ratio.

Chemical analysis of the humidity cell leachates provide weekly leachate concentrations of Ca, Mg and SO_4^{2-}, which can be used to calculate the carbonate molar ratio (CMR), expressed in the following form:

$$\frac{[Ca^{2+}]+[Mg^{2+}]}{[SO_4^{2-}]}$$

The CMR provides an indication of the actual rate of carbonate dissolution (NP consumption) and sulphide oxidation, and thus can be used in estimating the time to the onset of acid generation under the appropriate laboratory conditions. Moreover, when these laboratory conditions are met the CMR can be compared directly to NPR values obtained via acid-base accounting, since both parameters represent normalized ratios.

When there is a low rate of *in situ* acid generation from sulphide oxidation, the predominant form of acidity (as defined by the amount of base required to raise pH of

solution to 8.0) is associated with the residual acidity of the deionized water (pH~5.5) introduced into the humidity cells. Carbonate minerals are sufficiently reactive that they dissolve in response to the volume of deionized water introduced into the cell, raising the pH of the solution to the circum-neutral range and releasing base cations to solution. In this situation the CMR values tend to be significantly greater than 2.0 due to the low sulphate concentrations in the leachate solutions. Thus, the CMR values do not accurately reflect the relative rates of sulphide oxidation and NP depletion when the sulphate concentrations in humidity cell leachates < 20 mg/Kg (Mattson, 2005).

4.2.1 Sulphide Oxidation Rates – Sulphate Production

The rate of sulphide oxidation in the waste rock samples is estimated from sulphate analyses of the humidity cell leachates. To obtain sulphide oxidation rates, weekly sulphate concentrations are normalized to the mass of sample in the humidity cell. The cumulative sulphate load during the initial test cycles is illustrated in Figure 4-3.

Sulphate release from the granodiorite cells demonstrated a consistently low sulphate release rate for four of the five cells (Figure 4-3). During the final 3 cycles unleached high-sulphur and low-sulphur samples (HC1 through HC4) released sulphur at rates of <2mg/Kg/wk following a higher release of soluble sulphate during the first 4 cycles. Only the finely crushed (-2mm) pre-leached sample in HC11 released sulphate at rates >10 mg/Kg/wk.

The results indicate that the sulphide contained in the granodiorite is not highly reactive. In particular, the low release of sulphate from the high sulphur samples (HC1, HC2) that contain approximately 1% sulphide S (a sulphide content that is atypically high relative to the granodiorite ABA database) and the samples with a more typical sulphur content (HC3 and HC4) demonstrate that high rates of sulphide oxidation would not be expected from the granodiorite waste rock and rock exposures. Occlusion of sulphides within the intrusive rock mass is likely in-part responsible for the limited rates of sulphide oxidation observed during the early portion of the humidity cell testing. This control on sulphide oxidation rates is confirmed by the higher sulphate production rates from the finely crushed sample (HC11) relative to the coarser grained equivalent samples in HC1 and HC2. In the finely crushed sample a higher proportion of sulphide would be exposed to atmospheric oxygen due to the greater surface area of the fine grained material.

Cumulative sulphate release from the other rock types is illustrated in Figure 4-3b. The highest rates of sulphate release from these materials are from the Felsic Volcanic (HC6) and Sediment (HC8) samples. However, the sulphate load remained <10 mg/Kg/wk. The mafic samples all had lower sulphate production rates. Typically the sulphate production rates were near or below the detection limit, which translates into loads

<1.0 mg/Kg/wk. The lowest sulphate release rate was observed from the Mafic Subvolcanic sample, which represents a significant portion of the non-PAG material that will be produced from D Pit.

Sulphide mineral depletion calculations from the release of sulphate in the humidity cell leachates indicate that the current sulphide content of the humidity cell samples is essentially the same as the original amount due to the low sulphide oxidation rates. All samples with the exception of HC11, are estimated to still contain > 98% of the original sulphur content. The high sulphur granodiorite sample HC11 that had the carbonate leach procedure completed on the -2mm fraction that contains 97% of the original sulphur content.

The sulphate production rates indicate that the waste rock is not expected to be highly reactive. In particular the units that have been designated as NAG (granodiorite and mafic subvolcanic in D pit) demonstrate low sulphide reactivity. The low reactivity of the granodiorite can be attributed to the occlusion of the sulphide minerals within a silicate mineral mass that is resistant to both physical and chemical weathering. The low reactivity of the mafic subvolcanic sample can likely be attributed to the same mineral relationship, although the mafic subvolcanic humidity cell sample (HC5) did not undergo an optical microscopic examination. Optical examination of the granodiorite samples indicate that sulphides are present as distinct grains or disseminated within the silicate mineral mass, rather than being present as veins. This morphology leads to limited exposure of the sulphide minerals on the edge of waste rock particles and a significant proportion of the total sulphur appears to be occluded and unavailable for water-atmosphere-rock interactions that accentuate sulphide oxidation processes. Higher rates of sulphide oxidation from the finely crushed granodiorite material in HC11 relative to those rates observed from coarser particles in HC2 support the mineralogic observations and the assertion that acidic drainage will not develop from this material.

The mafic volcanic and diabase lithologies will be treated as PAG during operation of the mine, but kinetic testing of these materials demonstrate that they will add buffering capacity to the mixed PAG dumps and will have low sulphide oxidation rates. The greatest rates of sulphide oxidation and associated metal loads to the drainage are expected from the sedimentary and the felsic volcanic lithologies.

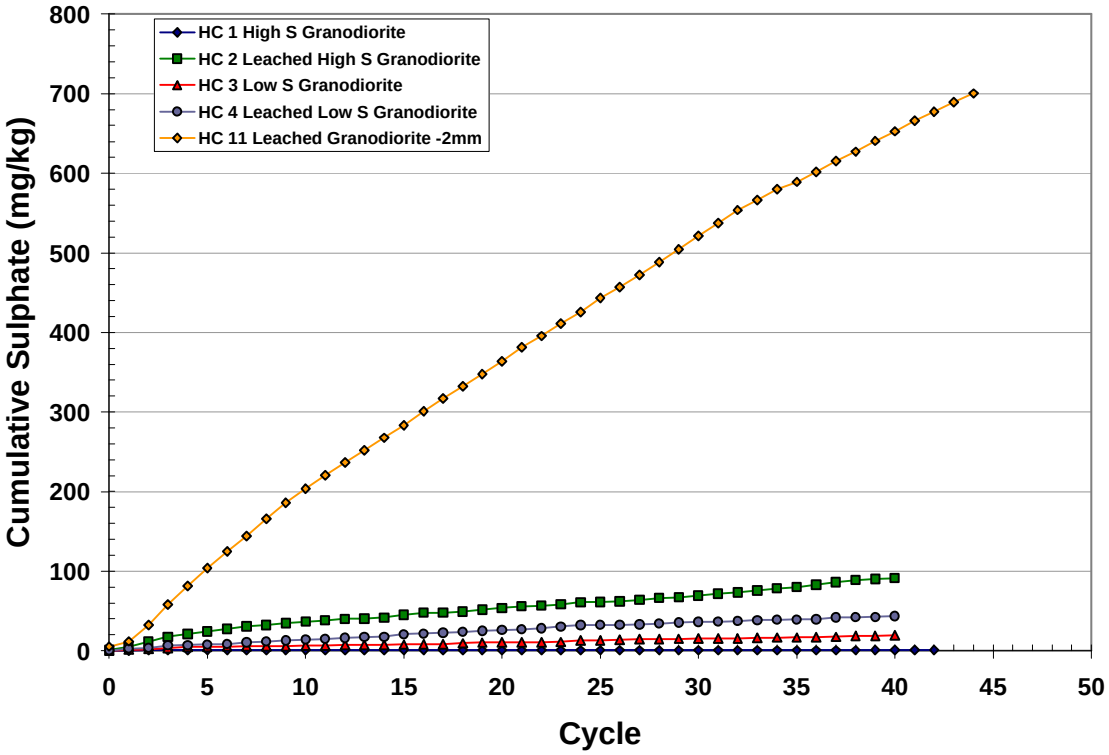

Figure 4-3a: Cumulative Sulphate Load - Granodiorite Samples.

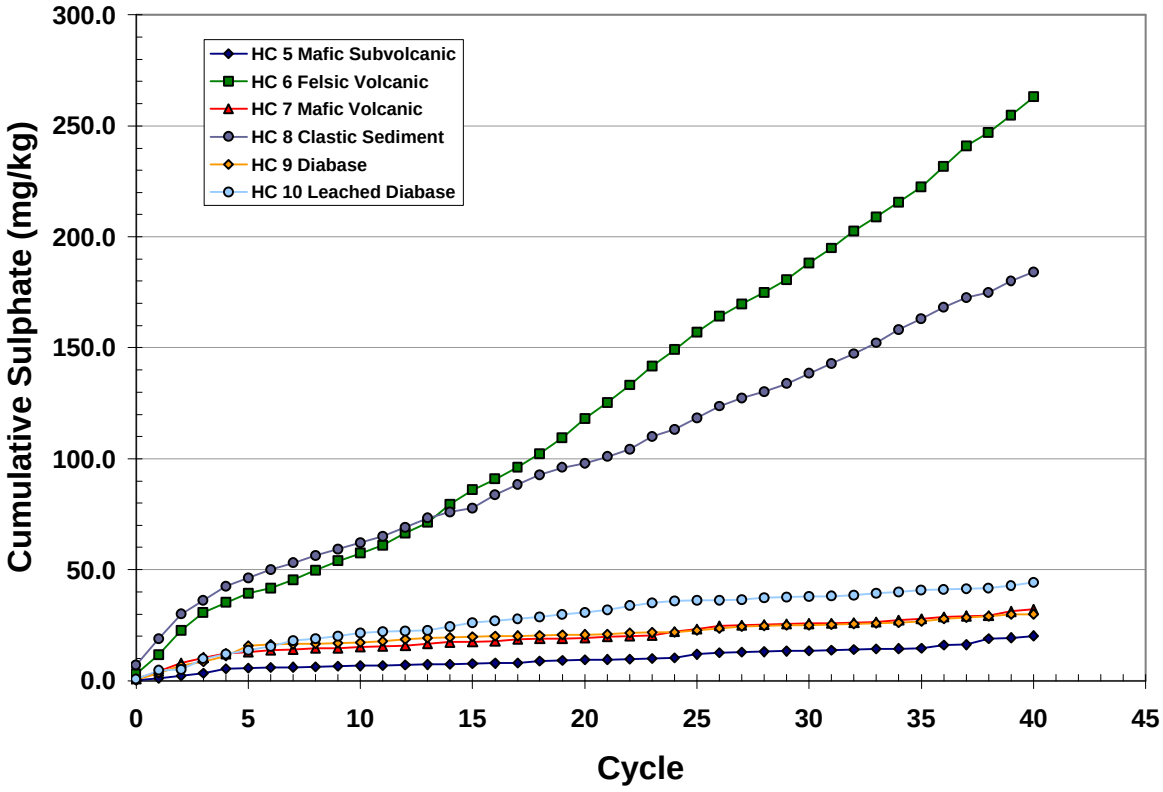

Figure 4-3b: Cumulative Sulphate Load – Waste Rock Samples.

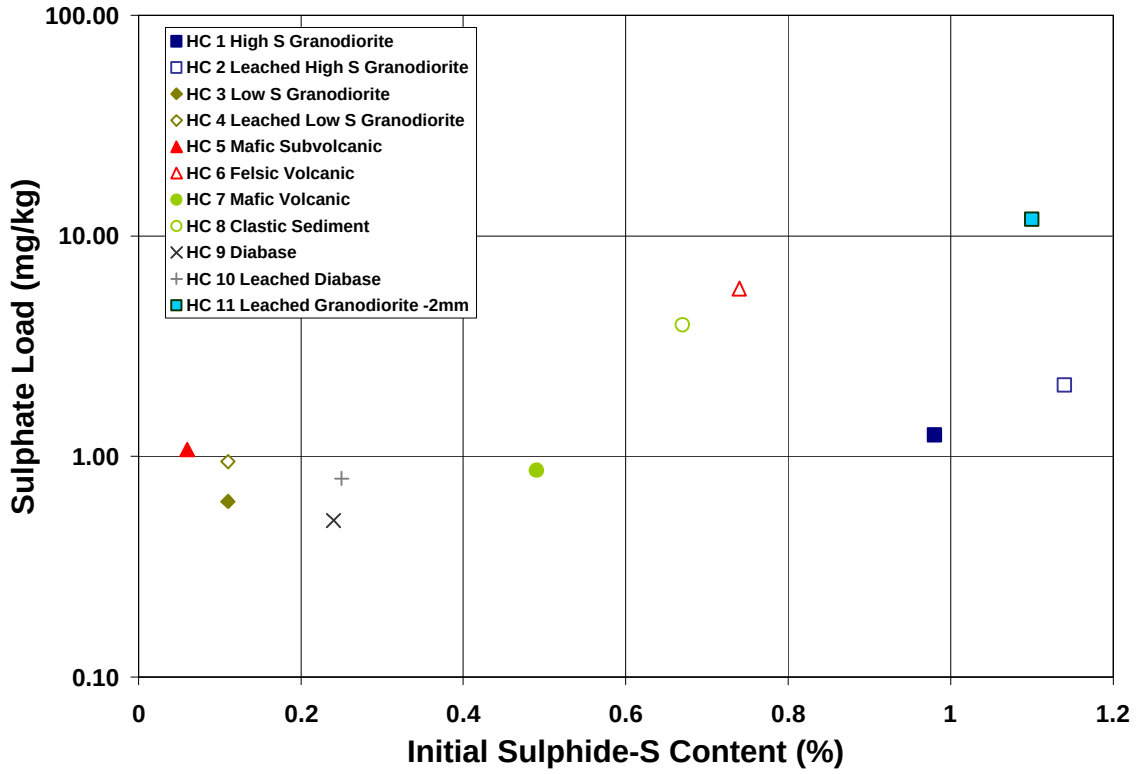

Figure 4-4: Average Sulphate Load From Final Leach Cycles vs Initial Solid Phase Sulphide Content.

4.2.2 NP Depletion

Acid-base accounting determined that measurable neutralization potential was present in the High Lake samples both in the form of carbonate and non-carbonate minerals. Kinetic test results are used to evaluate if the measured NP effectively buffers pH at the rate of acid generation produced by oxidizing sulphide minerals. The buffering effect of carbonate minerals, residual sodium acetate used to pre-leach the samples, and aluminosilicate minerals are discussed in turn below.

4.2.2.1 Carbonate NP

The amount of CaNP leached from a humidity cell sample is calculated by conducting a mass balance of the cation leach rates. The depletion calculation assumes that all Ca and Mg leached from the sample are derived from carbonate minerals, which is typically a valid assumption given the rapid dissolution rate of carbonates relative to other major Ca minerals at circum-neutral pH. Calculations from the elemental leaching of Ca and Mg indicates that all cells contain >88% of the originally measured CaNP.

The rate of NP depletion relative to sulphide oxidation is typically assessed using the carbonate molar ratio (CMR). This ratio is most applicable when carbonate mineral

dissolution is in direct response to neutralizing acidity produced by the sulphide oxidation. In the case of the High Lake humidity cells, the observed CMR cannot be directly applied to a site-specific NP/AP criterion because the CMR is strongly influenced in most of the cells by the low sulphide oxidation rates. CMR values tend to be high and are erratic due to the low rate of sulphide oxidation and attendant acid generation in many of the cells, which results in the dissolution of carbonate and release of cations via dissolution by deionized water (See Section 4.2 for discussion). The exception is the HC 11 cell, which maintains a CMR near approximately 1.0 during the final cycles reported (Figure 4-5a). Regardless, a number of trends are apparent from the data (Figure 4-5a and 4-5b).

Unleached granodiorite (HC1 and HC3), mafic subvolcanic (HC5), mafic volcanic (HC7) and diabase (HC9) samples all have average CMR values > 10 during the last four test cycles and most cycles during the test period. These samples also have low sulphate production <1.3 mg/Kg/wk, typically at or below the detection limit. This indicates that the release of calcium and magnesium is in response to the volume of deionized water added to the cells rather than direct dissolution of neutralizing minerals in response to acidity produced from sulphide oxidation. Thus, CMR values from these samples cannot be extrapolated directly to site-specific NP/AP criterion to differentiate between potentially acid generating waste rock and non-acid generating waste rock.

The two unleached samples (HC6 felsic volcanic and HC8 sediment) that had measurable sulphate release rates also had CMR values between 1.0 and 3.0, which stabilized at values < 2.0 during the latter stages of testing. The calculated Ca+Mg NP depletion from these cells is more directly influenced by sulphide-produced acidity than those samples discussed above, but these cells (HC6 & HC8) do not produce sufficient acidity to prevent the preferential leaching effect of the deionized water used during the humidity cell test. Thus, the CMR values do not directly reflect the relative depletion of sulphide and NP in the arid climate that will be experienced at the High Lake site. However, CMR values <2.0 indicate that the carbonate in these two samples is not highly reactive, yet currently capable of maintaining circum-neutral pH. These results indicate that a CaNP/AP criterion of 2.0 would be a conservative a criterion for non-granodiorite waste rock lithologies. This criterion is based on the low reactivity of the sulphide in the various lithologies demonstrated during the humidity cell testing and the relatively low sulphur content in the majority of the waste materials.

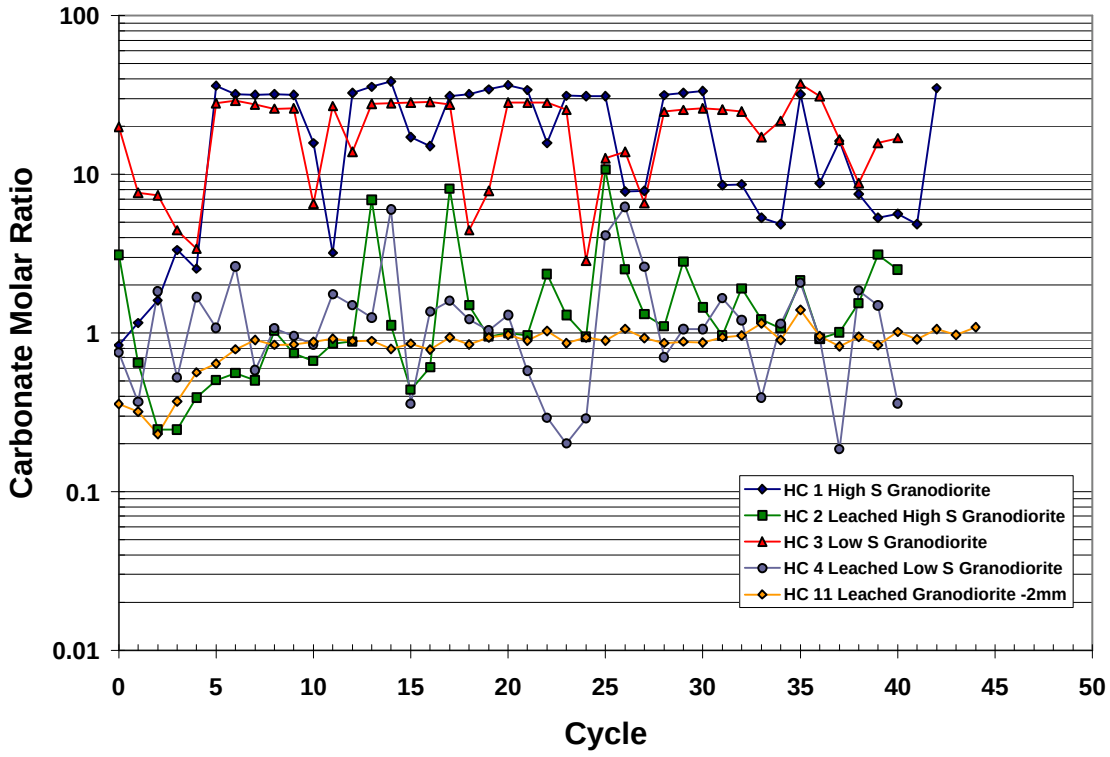

Figure 4-5a: Carbonate Molar Ratio Trends - Granodiorite Humidity Cells.

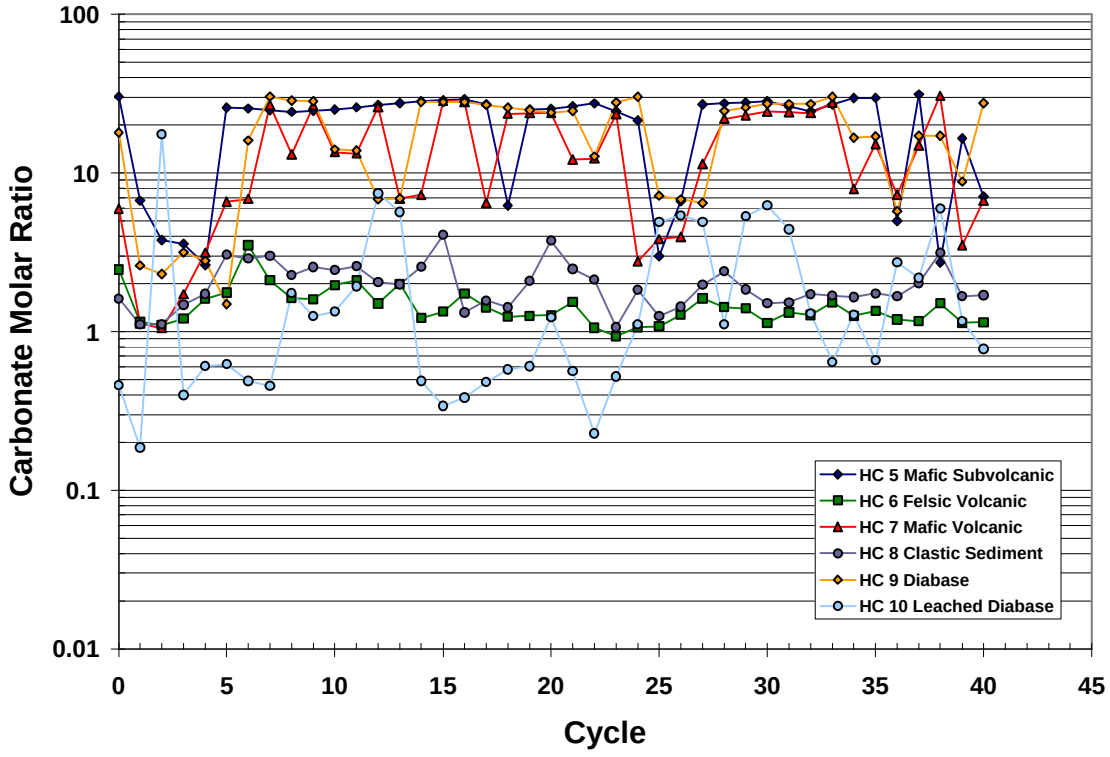

Figure 4-5b: Carbonate Molar Ratio Trends - Waste Rock Humidity Cells.

4.2.2.2 Residual Na buffering

The samples that were pre-leached with sodium acetate (HC2, HC4, and HC10) typically have CMR values <3.0. These lower CMR values are influenced by the residual effect of sodium acetate being leached from the samples and partially buffering the leachate waters. The sodium release rates steadily decreased from all of the pre-leached cells to 1 mg/Kg after 15 cycles (Figure 4-6). However, at the end of testing sodium release in all of the pre-leached cells remained slightly higher than the non-leached duplicate. This indicates that Na cation exchange is still partially responsible for buffering the low rate of acid production as demonstrated by the circum-neutral pH, low alkalinity and moderate CMR values. This is not the case for the fine grained high S granodiorite sample (HC11), which has Na release rates that have decreased to levels similar to those observed from the two unleached granodiorite samples HC1 and HC3 (Figure 4-6). The rapid depletion of residual Na adsorbed to the HC11 sample relative to the other pre-leached samples, appears to be related to the greater sulphide oxidation rates from this material that facilitate the desorption of Na via cation exchange. The depletion of the adsorbed Na in HC11 indicates that the pH during the latter test cycles from this sample are being buffered by non-carbonate sources and that the elemental concentrations in the leachate provides an indication of the type and rate of the neutralizing mineral depletion (discussed further in Section 4.2.2.2). While the majority of the kinetic tests have run to completion, HC11 is currently active to evaluate the source, availability, and depletion rate of non-carbonate NP.

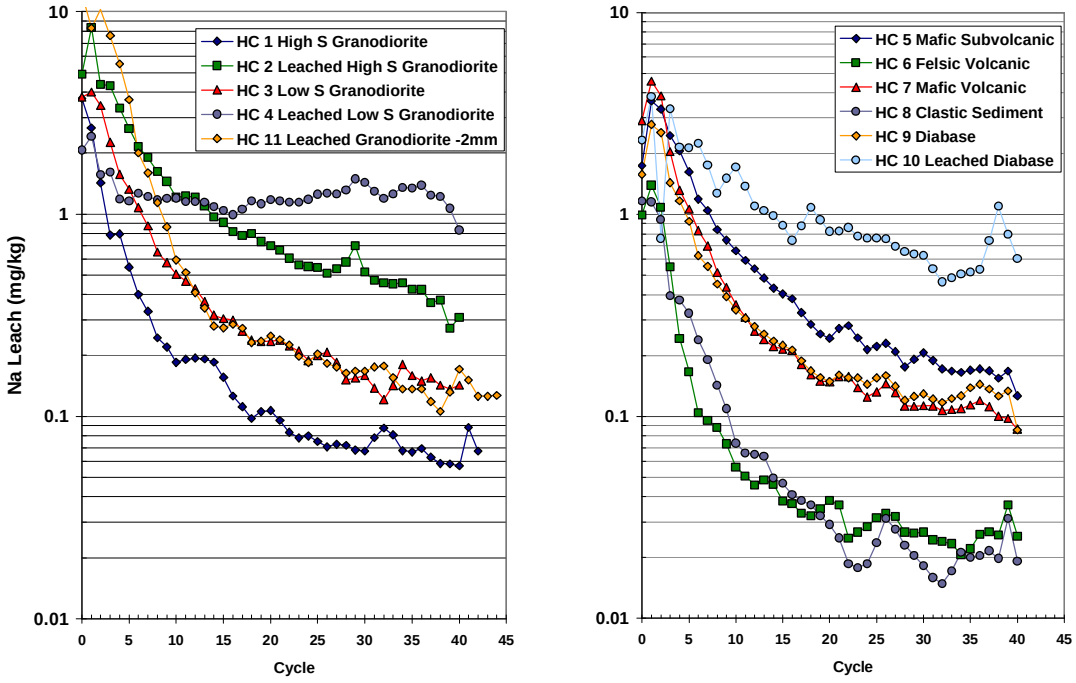

Figure 4-6: Sodium Release Rates - Waste Rock Humidity Cells.

4.2.2.3 Non-Carbonate (Aluminosilicate) NP

ABA measurements indicated that neutralization potential may be available from aluminosilicate minerals in addition to carbonates contained the various lithologic samples (Section 3.2.3). The availability of this non-carbonate NP was evaluated in the high-sulphur granodiorite humidity cell HC11 by removing carbonate minerals that were not occluded using the NaAc leach prior to testing. Maintenance of circum neutral conditions in the high sulphur sample (HC11) at moderate rates of sulphide oxidation (SO_4 > 10 mg/Kg/cycle) indicates that non-carbonate mineral phases contained in this sample are capable of buffering pH. It is possible that the non-carbonate NP measured in the other lithologies may also be available to neutralize acidity, however, this study was focussed on establishing NP availability in the granodiorite due to the benefits this knowledge would have for managing waste rock at the site.

The silicate mineral dissolution rates relative to calcite are outlined in Table 4-1. The relative mineral reactions were established primarily by examining the degree of alteration of a mineral assemblage in a weathered soil profile. Carbonate minerals are most reactive (relative reaction rate = 1.0) and quartz is identified as being least reactive having a relative reaction rate of 0.004. Understanding the reactivity of silicate minerals is important when evaluating the availability of the measured NP in mine waste to ensure that silicate dissolution rates are sufficiently rapid to offset acidity produced from sulphide oxidation. The rate of acid release in mine waste storage facilities is typically much more rapid than the rate of acid production during natural soil weathering processes. Thus, identifying the more reactive silicate minerals and their mode of chemical weathering provides a theoretical basis to evaluate the humidity cell leachate chemistry. Applying these principles will assist in determining the amount of silicate NP that is available to neutralize acidity in the High Lake granodiorite.

The aluminosilicate minerals that may contribute to pH buffering of the granodiorite humidity cells are listed in Table 4-2 with their abundance and stoichiometry as determined by XRD and microprobe studies (Appendix C). The amphibole mineral identified in the granodiorite is magnesiohornblende. Chlorite is of an intermediate composition between the Fe-rich chamosite and Mg-rich clinochlore, slight variations in the cation content indicate that both varieties are present. Biotite, when present, appears to be the Fe-rich variety annite. Plagioclase is sodic rich variety albite. Microprobe analyses have not yet been completed on the epidote, but the XRD patterns indicate that it is clinozoisite.

Table 4-1:
Relative reactivities of minerals grouped after their acid-neutralization capacity (after Sverdrup, 1988 and Kwong, 1993).

Group Name	Minerals	Relative Reaction Rate (at pH 5)
Dissolving	**Calcite,** aragonite, dolomite, magnesite, brucite	1.0
Fast weathering	Anorthite**,** nepheline, olivine, garnet, jadeite, leucite, spodumene, diopside, wollanstonite	0.6
Intermediate weathering	**Epidote**, zoisite, enstatite, hypersthene, augite, hedenbergite, **hornblende**, glaucophane, tremolite, actinolite, anthophyllite, serpentine, chrysotile, talc, **biotite, chlorite (clinochlore)**	0.4
Slow weathering	**Albite**, oligoclase, labradorite, vermiculite, montmorillonite, gibbsite, kaolinite	0.02
Very slow weathering	**K-feldspar, muscovite**	0.01
Inert	**Quartz,** rutile, zircon	0.004

Table 4-2:
Quantity of Potential Non-carbonate NP Sources in Granodiorite Samples from Rietveld Refinement of XRD.

Mineral	Formula	HC1	HC2	HC11	HC11	HC3	HC4
Amphibole (MagnesioHornblende)	$(Ca_{1.8}Fe_{0.2}Na_{0.3})Mg_3(Fe_{1.5}Al_{0.2})Si_7AlO_{22}(OH)_2$	6.7	7.6	6.9	6.9	6.6	6.9
Chlorite (Clinochlore, Chamosite)	$(Fe_{2.3}Mg_{2.2}Al_{1.1}K_{0.3})(Si_{3.1}Al_{0.9})O_{10}(OH)_8$	10.2	9.9	11.2	11.4	8.0	6.8
Biotite (Annite)	$K(Fe_{1.4}Mg_{1.1}Al_{0.2}Ti_{0.1})Al(Si_{2.8}Al_{0.2})O_{10}(OH)_2$	x	x			4.4	4.2
Epidote (Clinozoisite)	$Ca_2Al_3(SiO_4)_3(OH)$*	13.8	16.4	12.1	12.6	3.7	4.3
Plagioclase (Albite)	$NaAlSi_3O_8$*	34.8	33.1	35.4	36.0	40.0	41.5

*Idealized mineral stoichiometry based on XRD patterns

The leachate chemistry from HC1 and HC11 indicate that at least a portion of the non-carbonate NP measured in the samples is available during the oxidation of sulphides from the High Lake granodiorite. Phyllosilicate and amphibole minerals have been shown in the scientific literature to undergo weathering in response to low rates of acid production (Ritchie, 1994). Aluminosilicates tend to dissolve slowly and buffer at lower pH values, in contrast to the more circum-neutral buffering capacity of carbonates (Walther, 1996; Acker and Bricker, 1991).

Unlike the congruent dissolution processes observed exclusively during carbonate weathering (that essentially dissolve the total mineral structure), both congruent and incongruent dissolution processes are believed to occur during aluminosilicate mineral weathering. Incongruent dissolution typically releases cations from the silicate mineral structure and generates residual secondary and possibly tertiary minerals that are more

stable under the geochemical conditions imposed by the weathering environment (pH, ion activity and redox conditions). In addition to the conditions imposed by the weathering environment, the rate of dissolution is also dependent on the crystallography, stoichiometry, and micro-textural features of the mineral, which makes some cation sites within the silicate mineral structure more susceptible to weathering than others. Thus, the rate of cation release is dependent on the site that it maintains within the original mineral structure. The relative extent to which congruent and incongruent dissolution processes contribute to aluminosilicate weathering is still being investigated. Descriptions of the current understanding of weathering for the key aluminosilicate minerals that may contribute to the NP in the High Lake granodiorite samples are provided below.

Hornblende

Comparative laboratory-based dissolution experiments indicate that hornblende weathering rates are an order of magnitude more rapid than biotite and twice as rapid as pyroxene (Franke and Teschner-Steinhardt, 1994). Thus, the amphibole observed in the granodiorite humidity cell samples is a likely contributor to the non-carbonate NP measured in the samples.

An evaluation of the amphibole dissolution and weathering literature indicates that a variety of weathering mechanisms may occur (Wilson, 2004). Under near equilibrium conditions observed near the base of a weathered bedrock profile or in some laboratory dissolution experiments, amphiboles weather to hydrous layer silicates (smectites) and other clay minerals in addition to iron oxides. The smectites are ephemeral and typically do not persist under more intense weathering conditions. These types of weathering reactions occur in environments with a high solid/fluid ratio and the weathered by-products preserve many of the chemical and structural characteristics of the original amphibole. Observations of weathered rock horizons also indicate that amphiboles weather to smectite with large quantities of Mg, Fe, Si and Al removed from reaction sites (Banfield and Barker, 1994). Other studies have also concluded that a residual cation leached layer is produced at the mineral surface that is enriched in Si relative to Ca, Al and Mg (Zang *et al.*, 1993; Petite *et al.* 1987). However, there are contrasting findings in other studies. Under intense weathering (far-from-equilibrium) conditions amphiboles are observed to weather directly to kaolinite group clay minerals and iron oxides with exposed fresh mineral surfaces or under extreme conditions the primary mineral will dissolve stoichiometrically and these secondary minerals will reprecipitate from solution. Examinations of intense saprolitic weathering profiles indicate that hornblende weathers to produce kaolin group minerals and iron oxides as residual by-products (Schroeder *et al.*, 2000). This form of weathering typically occurs in

environments with low solid/fluid ratios and high chemical leaching rates (Proust *et al.*, 2006). Schott *et al.* (1981) observed that Ca and Mg are initially released preferentially from the amphibole for structural reasons, after which dissolution becomes congruent and linear. Evidence for congruent stoichiometric dissolution of amphiboles has also been observed in weathered soil profiles (Vebel, 1989). Thus, the geochemical equation that describes the overall dissolution of magnesiohornblende to kaolinite under the intense geochemical weathering regime that would be expected in an oxidizing sulphide waste rock dump is listed below.

$$2(Ca_{1.8}Fe_{0.2}Na_{0.3})Mg_3(Fe_{1.5}Al_{0.2})Si_7AlO_{22}(OH)_2 + 18H^+ + 21H_2O \; ?$$
$$3.6Ca^{2+} + 6Mg^{2+} + 0.6Na^+ + 3.4Fe(OH)_{3(s)} + 0.4Al(OH)_{3(s)} + 12H_4SiO_4 + Al_2Si_2O_5(OH)_{4(s)}$$

Chlorite

Laboratory based dissolution experiments have determined that at pH ~ 4.5 the chlorite dissolution rate is 10^{-12} moles m^2 s^{-1} which is similar to that observed for biotite but lower than for amphiboles (Hamer *et al.,* 2003; Brandt *et al.,* 2003). Chlorite displays a distinct relationship between decreasing pH and increasing dissolution rates under acidic conditions (Hamer *et al.,* 2003). Observations of chlorite weathering indicate that it tends to be incongruent under many conditions. Chlorite has been shown to weather to vermiculite, forming interstratified layers of the two minerals within the weathered rock (Proust *et al.*, 1986; Aspandiar and Eggleton, 2002). The vermiculization process is characterized by a depletion of Fe and Mg and by a slight loss of Al through the preferential dissolution of the brucite sheet $Mg(OH)_3$ within the chlorite structure (Murakami *et al*., 1996; Banfield and Murakami, 1998). The preferential dissolution of the brucite sheet was also observed in laboratory dissolution experiments (Brandt *et al.*, 2003) that demonstrated that cation release followed the sequence Al > Mg > Fe > Si, with Si release at ~ 50 to 60% of the other cations when normalized to chemical composition and specific surface area of the original mineral.

However, numerous other studies indicate that under more intense weathering conditions the vermiculitized chlorite converts to a mixture of kaolinite and iron oxide (Murakami *et al*., 1996; Aspandiar and Eggleton, 2002). Under extreme weathering conditions the vermiculitization stage of chlorite decomposition may be completely bypassed, forming smectite and goethite as byproducts or only iron oxides (Ross et al., 1982; Bain and Duthie, 1984). This style of weathering was supported by stoichiometric dissolution of chlorite observed by Malstrom *et al*. (1996). Hamer *et al.* (2003) determined that at pH<4.5 that the dissolution process is initially non-stoichiometric but under increasingly acidic conditions when using inorganic acids (sulphuric or nitric), dissolution becomes almost stoichiometric.

Epidote

Epidote-group minerals have a structure based on chains of edge-sharing AlO_6 and $AlO_4(OH)_2$ octahedra with independent SiO_4 tetrahedra and Si_2O_7 dimmers with an ideal formula $A_2M_3Si_3O_{12}OH$, where the A site contains Ca and lanthanides and the M site contains Al, Fe, Mn and Mg. Laboratory-based dissolution experiments indicate that the epidote weathering rate at pH 4 is ~10^{-16} moles cm^2 s^{-1} (Kalinowski *et al*., 1998), which is the same order of magnitude that is reported for chlorite. However, there is some controversy regarding the actual rate of epidote weathering based on field observations of weathered rock / soils and watershed mass balance models. Sverdrup and Warfvinge (1995) stated that plagioclase, K-feldspar, hornblende and epidote account for 85% of the weathering rate observed in most soils of granitic origin. Schroeder *et al.* (2000) report that epidote was completely weathered from the A soil horizon derived from the meta-gabbro Georgia Piedmont. Thus, epidote would appear to have a relatively high dissolution rate and contribute significantly to the weathered load in natural watersheds. However, observations of weathered soils often indicate that epidote is a resistant heavy mineral in clastic sediments (Poppe *et al.*, 1995) and is often observed to persist in weathered horizons (Gupta and Talwar 1997). The discrepancy in the observed dissolution rate of epidote is demonstrated to be due to significantly different reaction rates of specific epidote-group minerals by Price *et al.* (2005). Specifically, the epidote-group mineral allanite was documented to weather rapidly and was a major contributor to the Ca load in waters draining the basin underlain by weathering metasediments, while epidote. Allanite is an epidote mineral characterized by an abundance of REE in the A site and Fe^{2+} is an essential constituent.

Epidote-group minerals are believed to weather in a non-stoichiometric fashion due to crystallographic controls. Ca is most easily removed from its position in interchain tunnels, outside the octahedral chain (Kalinowski *et al.*, 1998). Cation solubilization during epidote dissolution is shown to follow the order Ca>Si>Fe>Al. The Si tetrahedral are only present as links between adjacent Al chains and are more readily removed from the structure than the Al located in polymeric chains. Epidote minerals that contain significant Fe^{2+} rather than Fe^{3+} weather more rapidly due to their vulnerability to oxidation (Price *et al*., 2005).

Biotite

Biotite weathers very easily through to the formation of vermiculite or under more intense weathering situations may weather directly to form kaolinite. The vermiciculitization process proceeds via the exchange of K^+ from the interlayer cation site with contact waters. K is replaced by H^+ or Al^{3+} in the interlayer of biotite's crystal

lattice, thus acting to directly consume acidity from contact waters. Potassium may not have concomitant flux increases with decreasing pH values to the same extent as Al, Mg or Fe, which is supported by Acker and Bricker's studies (1992) that showed a weak dependence between the pH and K release.

Octahedral layer cations (*e.g.*, Mg^{2+}, Fe^{2+}) are released and acid is consumed (Cleaves *et al.*, 1970), resulting in the formation of vermiculite/mica clay minerals or vermiculized biotite edges. The cation loss from biotite results in the formation of discontinuities in biotite's crystal lattice that can act as conduits for subsequent weathering reactions and partial vermiculization (Jeong and Kim, 2003).

At pH < 6.3

$$3K_2(Mg_3Fe_3)Al_2Si_6O_{20}(OH)_4 + 6H^+ + 3/2O_2 \rightarrow 2[(Mg_3Fe_3)Al_3Si_5O_{20}(OH)_4*H_2O] + 6K^+ + 3Mg^{2+} + 3Fe^{2+} + 8SiO_2 + 3H_2O$$

In the biotite structure, aluminum is a disordered tetrahedral cation that substitutes for silicon. Al has a lower positive charge and is smaller than silicon. As such, its presence makes it susceptible to weathering and dissociation by acid. Biotite weathering studies by Acker and Bricker (1992) also showed aluminum concentrations increase with decreasing pH and, above pH 5.3, leachate concentrations are likely to be controlled by the precipitation of $Al(OH)_3$ or gibbsite.

Mg is the first octahedral element to dissociate from the biotite crystal lattice under acidic to neutral conditions (Acker and Bricker, 1992). Under acidic conditions the octahedral cation becomes progressively leached into solution.

Fe release is greatly influenced by an increase in acidity. Iron is low to undetectable above pH 4 due to its insolubility at circum-neutral pHs and formation of Fe (oxy) hydroxides (Acker and Bricker, 1992). Below pH 4, iron is readily oxidized and removed from the crystal lattice of silicate minerals. However, the loss of iron is the final step of the vermiculization of biotite (Acker and Bricker, 1992).

Cation Release Indicators

A comparison of the major ion release rates from the pH-neutral High S granodiorite sample (HC1) and the pre-leached granodiorite (HC11) provides an indication on how drainage chemistry would be expected to evolve from the initial carbonate buffered situation (HC1) to the subsequent condition when the carbonate NP has been exhausted and pH is buffered by non-carbonate sources (HC11). A comparison of the molar release rates during the final 3 cycles of the two humidity cells is provided in Table 4-3. The comparison indicates that the Si release rate is approximately 2.5 times greater from

HC11 (Figure 4-7), which confirms that silicate mineral dissolution is contributing to the cation release in the pre-leached sample and given the knowledge on mineral dissolution, also confirms that silicate dissolution is contributing to pH buffering.

Table 4-3:
Normalized Cation Release Rate (µmol/kg).

	HC1	HC11
Ca	89.9	55.3
Mg	15.5	69.3
Na	3.1	6.1
K	5.7	3.8
Al	2.3	0.1
Si	12.0	30.1

Initial Na release rates decrease rapidly in HC11 as the residual Na is released from surface cation exchange sites. The stabilized Na release rate in HC11 is roughly 2 times greater than observed in HC1 (Figure 4-7). This indicates that albite dissolution is occurring, but at rates an order of magnitude lower than a Ca-Mg phase as documented by the higher Ca and Mg release rates. Thus, Na is not a major contributor to the silicate buffering capacity of the granodiorite.

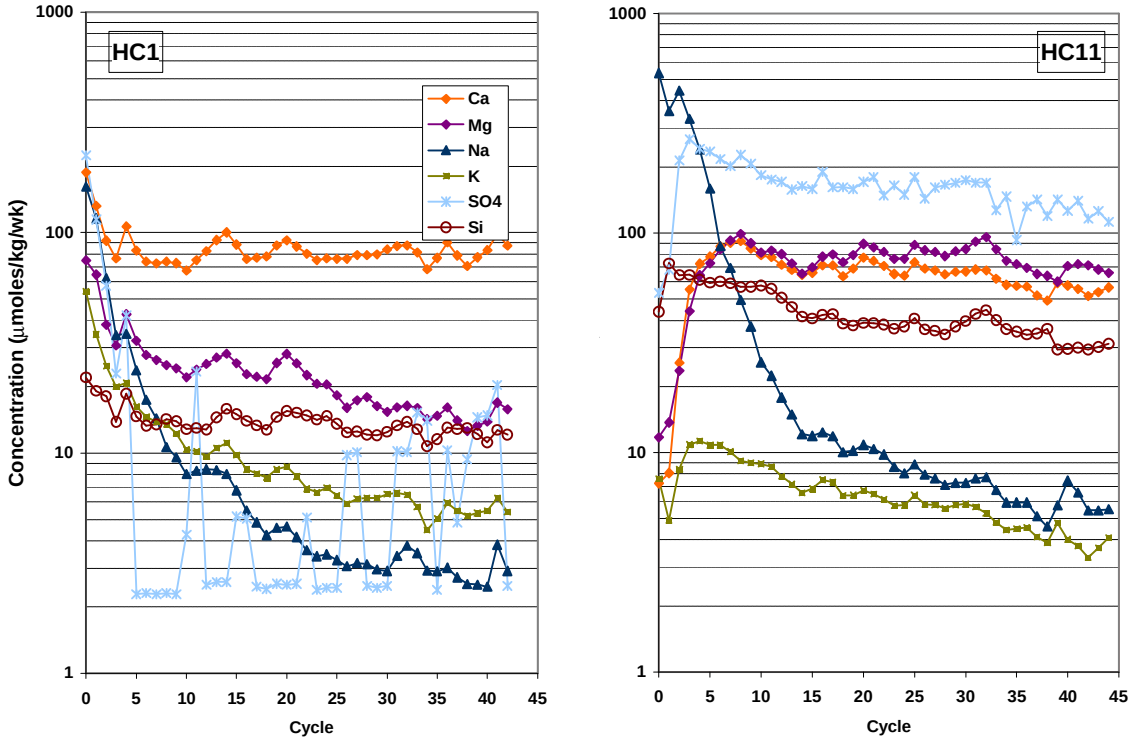

Figure 4-7: Major Cation & Sulphate Release Rates – High S Granodiorite (HC1) and Na-Leached High S Granodiorite (HC11) Humidity Cells.

Also of note is that aluminum release is lower in HC11 than in HC1. At first glance this would seem to indicate that an aluminum silicate mineral is not responsible for buffering. However, a review of the weathering literature indicates that the Al-containing octahedral layers within many of the aluminosilicate minerals are the most resistant to weathering and that the reprecipitation of aluminum in secondary minerals such as gibbsite, limits the concentration of aluminum in leaching solutions. A lower rate of K release is observed in HC11 than HC1. This is due to the lack of biotite in HC11, which would release K to solution when subjected to leaching conditions.

In HC11, Ca and Mg show a concomitant increase with the decrease in Na release (Figure 4-7). Ca and Mg releases stabilize subsequent to cycle 10 and roughly mimic the sulphate release trend. This suggests that Ca and Mg are released in direct response to the rate of sulphide oxidation. Also of note is that $Ca+Mg/SO_4$ ratio (Figure 4-5a) is maintained at a value near unity in the range of 0.8 to 1.1.

The differential cation release between HC1 and HC11 is indicative of the source mineral/minerals responsible for pH buffering. The stabilized Ca release is only 60% to 80% of the Ca release observed from the carbonate-containing sample HC1 but the Mg release increases by a factor of 4 times. The relative release of Ca and Mg suggest that the predominant mineral is Mg-Ca rich with a stoichiometry that has a higher relative quantity of Mg or contains Mg in a structural site that is more susceptible to weathering. A review of the minerals contained in the granodiorite samples indicates that magnesiohornblende has a stoichiometry (*i.e.* Mg>Ca Table 4-2) and weathering characteristics that could produce this signature (*i.e.* preferential release of Ca and Mg from the octahedral cation sites). The minor quantities of Na released to the leachate may also be derived from this source. The literature review documented that amphiboles are believed to have a high dissolution rate relative to other aluminosilicate minerals with the exception of biotite and Ca plagioclase. Thus, magnesiohornblende would be a likely source of non-carbonate NP in the granodiorite.

A closer evaluation of the cation relative to silica indicates that Mg and Ca are being released at rates 2.2 and 1.8 times greater than the silicon release (Figure 4-8). Assuming that cations are exclusively derived from a specific mineral these ratios indicate that the leachate signature is not a direct result of stoichiometric dissolution of a single mineral. The major cation: Si stoichiometry of magnesiohornblende, chlorite and epidote is 1.0, 1.9 and 1.7, respectively (Table 4-2). These stoichiometric ratios are lower than cation/silicon ratio in solution (Figure 4-8), thus, one of two possible situations is occurring with regards to silicate mineral dissolution and acid buffering: 1) incongruent dissolution is occurring with the preferential release of Ca and Mg from octahedral sites or 2) a secondary silicate mineral is precipitating and being retained with the sample.

The Ca/Mg stoichiometric ratio in the magnesiohornblende is 0.6 (3.0/1.8) if Ca and Mg are being released at equivalent rates from the octahedral sites the leachate Ca/Mg ratio should be similar. However, the leachate Ca/Mg ratio is greater at 0.8 (55.3/69.3) suggesting that there is another source of Ca. The most likely mineral that would provide Ca but limited to no Mg during dissolution is clinozoisite, the epidote-group mineral identified in the samples.

The analysis of these results indicates that the non-carbonate NP that is buffering the pH in granodiorite sample (HC11) is predominately magnesiohornblende (75%) and additional non-carbonate NP is provided by clinozoisite (25%). Ongoing humidity cell testing will help to evaluate the duration and continued availability of the non-carbonate NP to buffer the leachate solutions.

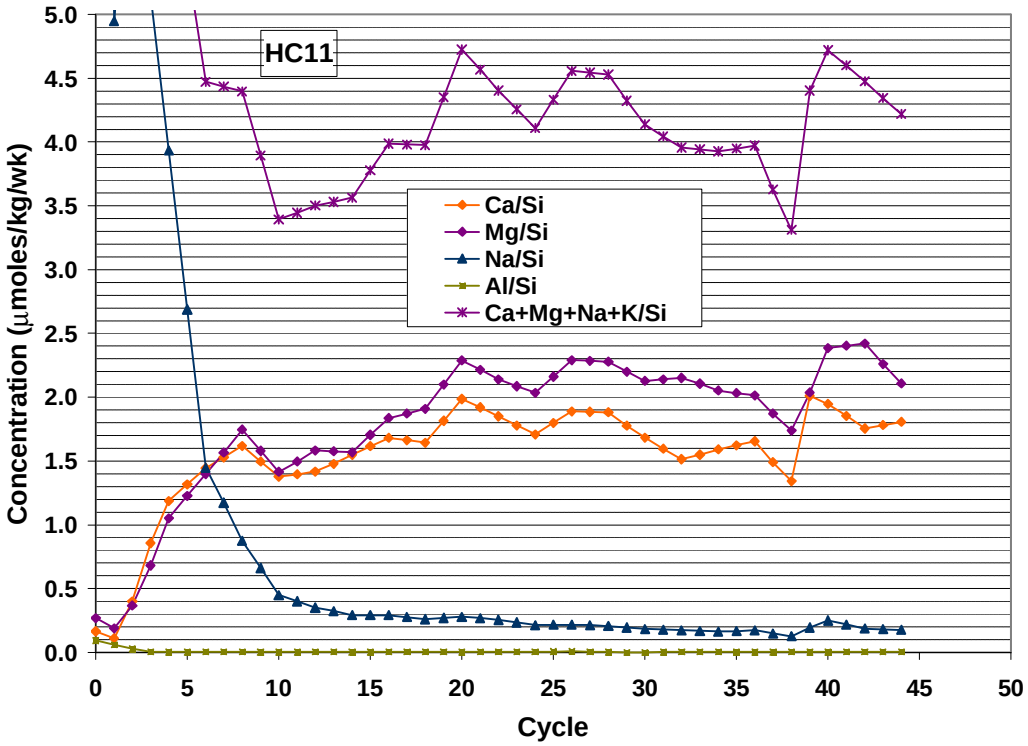

Figure 4-8: Major Cation & Silicon Ratios –Na-Leached High S Granodiorite (HC11) Humidity Cell.

4.3 Metal Release Rates

Humidity cell leachate concentrations represent primary metal release rates with no consideration given to the influence of field conditions that govern actual metal concentrations in mine drainage. In addition, concentrations measured in the humidity cell leachates are susceptible to changes in the volume of water collected. Hence, humidity cell concentration data do not provide a strictly quantitative estimate of drainage chemistry. To provide a more functional parameter, metal concentrations in the

humidity cell leachates were normalized to the mass of sample and volume of leachate collected. This manipulation allows the measured parameters to be documented in units of mass loading (mg/kg/wk). Loading values provide consistent representations of the amount of metal released and facilitate inter-cycle comparison. The complete humidity cell metal release data set is provided in Appendix E. Selected metals from the High Lake humidity cell leachates are discussed in greater detail below.

Metal loading predictions from the mine waste storage areas were made using data from the humidity cells that did not undergo the sodium acetate pre-leach. The pre-leached samples were designed to evaluate NP availability and are not appropriate for estimating metal loading from waste rock that will be exposed on surface for < 12 years.

Particular attention is given to the humidity cells that were used for metal loading predictions. The high sulphur granodiorite sample (HC1) is used to calculate metal loading from granodiorite waste rock. However, it should be noted that the sulphur content of HC3 is more typical of the sulphur content in the available granodiorite sample database. Thus, HC1 provides a more conservative estimate of metal loading than the lower sulphur sample in HC3. The other cells used for metal loading predictions include mafic subvolcanic HC5, felsic volcanic HC6, mafic volcanic HC7, clastic sediment HC8 and diabase HC9.

Predicting long term metal loading from the High Lake humidity cells and illustrating the trends is difficult due to the low rates of metal leaching observed from most cells. Typically, the leachate concentrations are near or below the analytical detection limit. Values that were reported to be less than the detection limit were assigned a value equal to ½ the detection limit.

The lithologic units that display the highest loading rates under pH neutral conditions are the PAG felsic volcanic (HC6) and sedimentary (HC8) samples. In particular, elements that form oxyanions in solution such as arsenic, molybdenum and selenium display relatively high rates as compared to the other lithologic samples tested. Elements that form oxyanions in solution are often elevated in the pH neutral leachate relative to metal cations such as copper (Cu), nickel (Ni) and zinc (Zn).

Metal cations (Cd, Cu, Ni, Pb and Zn) release rates from the major lithologic samples are low. Cadmium has remained below the detection limit in the humidity cell leachate throughout the available test period in all cells. Zn is released at rates that are <0.004 mg/kg/wk except in the pre-leached samples. Zn, Ni and Pb release rates increased in the pre-leached samples. Cu release is maintained at values <0.003 mg/Kg for all samples.

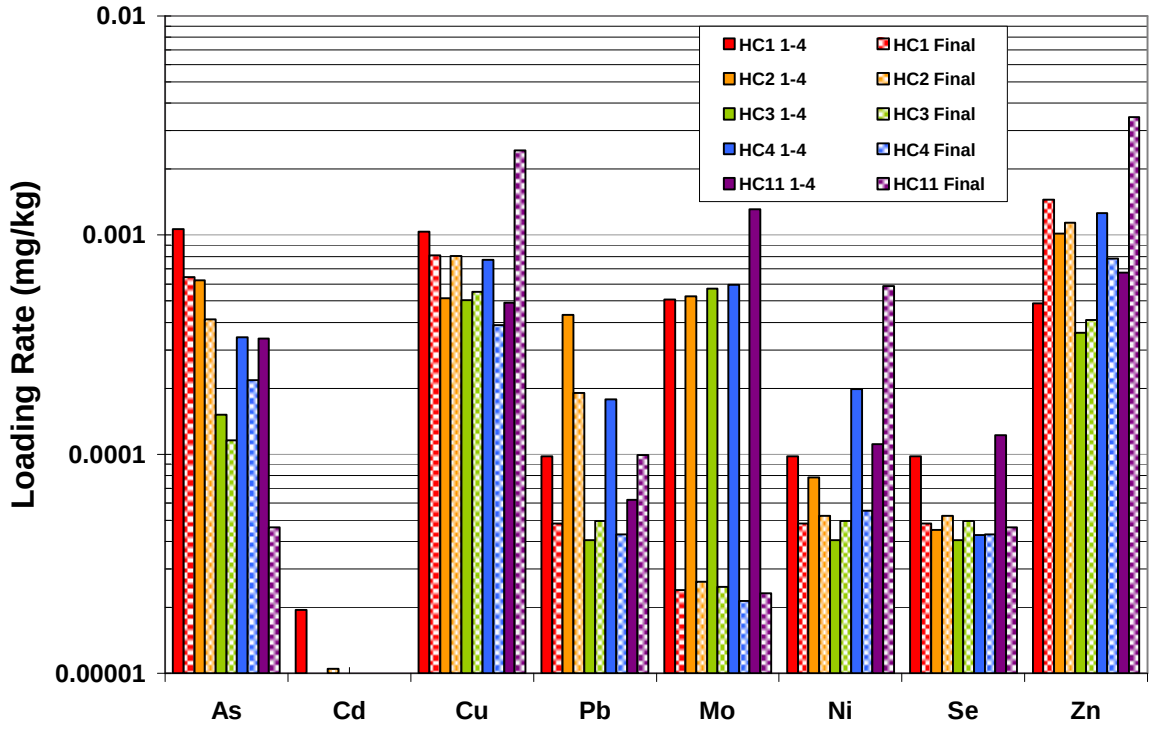

Figure 4-9a: Average Metal Release Rates From Test Cycles 1 through 4 and the Final Test Cycle – Granodiorite (As, Cd, Cu, Pb, Mo, Ni, Se and Zn).

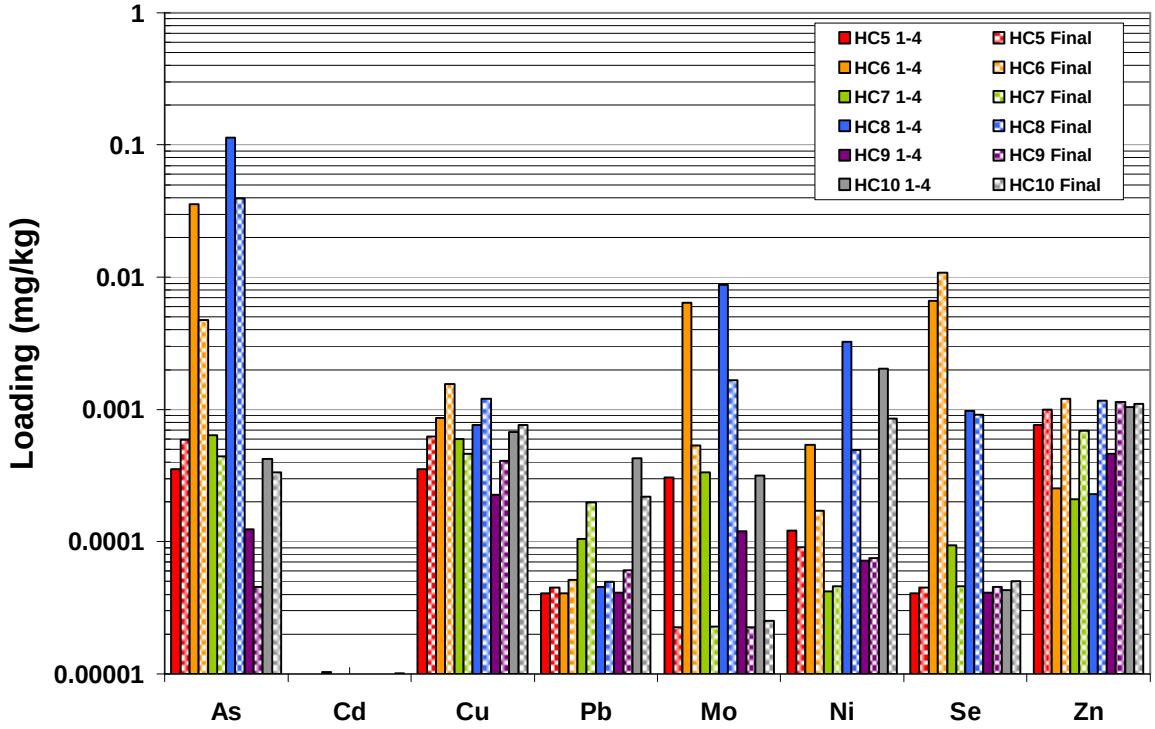

Figure 4-9b: Average Metal Release Rates From Test Cycles 1 through 4 and the Final Test Cycle – Waste Rock (As, Cd, Cu, Pb, Mo, Ni, Se and Zn).

Metal loading predictions made in the High Lake Environmental Impact Study, used the average loading values obtained from Cycles 1 through 4 since the humidity cell tests were still operating. This report provides the complete results through to the termination of the humidity cells. In order to evaluate the efficacy of using the initial leaching rates for longer term leaching predictions, this section compares the results from Cycles 1 through 4 with average elemental loading for the final three (3) cycles in which metals are measured. The average rates of metal loading over the final three (3) cycles in which metals are measured provides a more conclusive indication of long term elemental leaching rates from the waste storage areas.

Illustrations of the average loading values from Cycles 1 through 4 compared with the value from the average of final three (3) cycles in which metals are measured are provided in Figure 4-9. The comparison between the original values and the final loading values for the complete analytical suite is provided in Appendix E.

The most significant result of the comparison is that metal leaching and sulphide oxidation remained very low from the granodiorite humidity cells and in particular HC1, which was used as the indicator for granodiorite metal loading predictions in the High Lake Environmental Impact Study. The HC1 granodiorite final leaching rates were lower than the initial leaches for all metals examined except Zn (Figure 4-9a). However, the Zn prior to the final two cycles Zn concentrations were maintained at levels similar or lower than the initial concentrations (Figure 4-10). Thus, the continued leaching of the humidity cells demonstrates that the initial metal loading predictions that were made for the granodiorite are consistent with the longer term kinetic test data.

4.3.1 Copper, Lead, Nickel and Zinc

The primary release rates of copper, lead, nickel and zinc are low relative to those typically observed from metal mine samples.

Copper release from the majority of humidity cell samples remained <0.0025 mg/Kg/wk throughout the test period with the exception of the initial rinse (Figure 4-10). Increased rates of greater than 0.01 mg/Kg/wk were observed from the pre-leached HC11 during the cycle 22. The greatest Cu release rate for samples that were not pre-leached is consistently observed from both the felsic volcanic (HC6) and the clastic sediment (HC8). The pre-leached HC11 sample exhibits the greatest Cu release.

Lead is released from most humidity cells near or below the detection limit (Figure 4-11). Each of the pre-leached low sulphur granodiorite (HC4), the two pre-leached high sulphur granodiorite samples (HC2 and HC11), mafic volcanic (HC7) and pre-leached diabase (HC10) released Pb at levels above the detection limit.

Nickel releases from granodiorite samples remained very low throughout the test period, only the pre-leached high sulphur sample (HC11) consistently displayed detectable nickel concentrations in the leachate. Clastic sediments (HC8) have the greatest initial nickel release rates of all the samples. However, the rate has decreased to levels similar to the felsic volcanic (HC6) during the most recent test cycles. The pre-leached diabase sample (HC10) is the only other sample that displayed measurable leaching rates that increased during the course of the test period (Figure 4-12). The pre-leach granodiorite sample (HC2) typically leached Ni at rates that were below the detection limit, during cycle 24 the amount of Ni inexplicably increased to seventy (70) times the measured levels in cycle 22 and cycle 26.

For a majority of samples the zinc release rate has been maintained at levels at or below the analytical detection limit, Figure 4-13. The exceptions are the low sulphur granodiorite pre-leach sample (HC4), the pre-leach diabase (HC10), and the pre-leach high sulphur granodiorite (HC11).

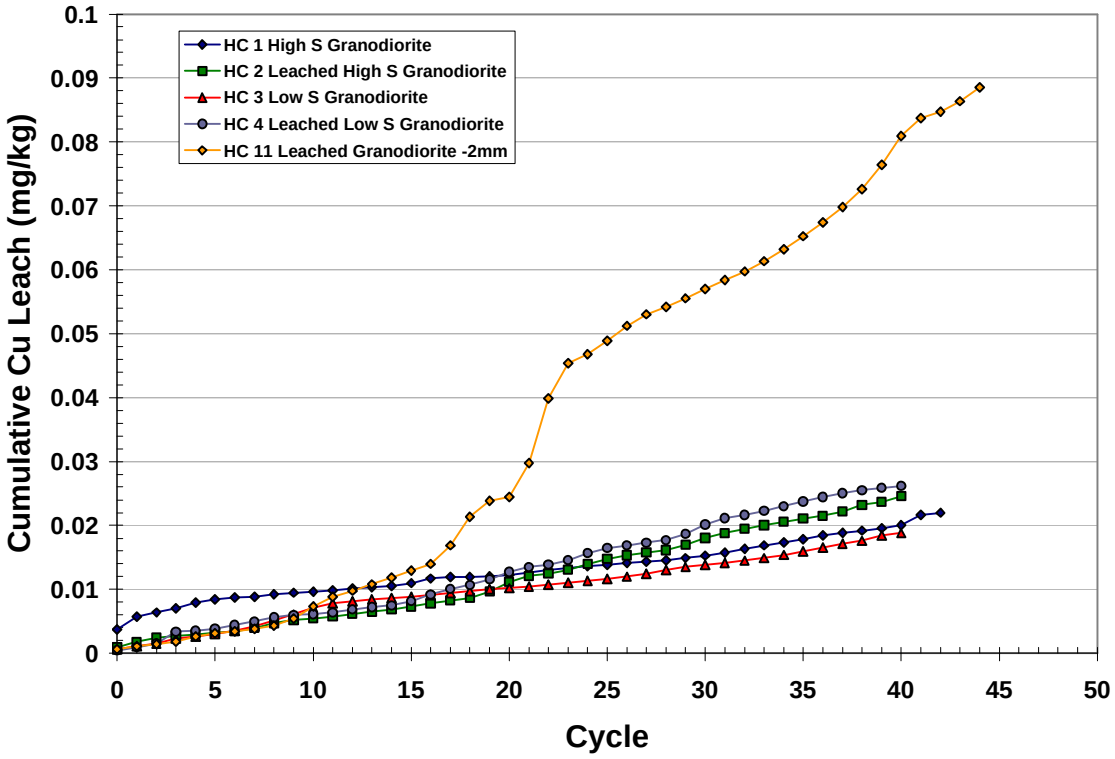

Figure 4-10a: Cumulative Cu Release Rates from Humidity Cell Samples.

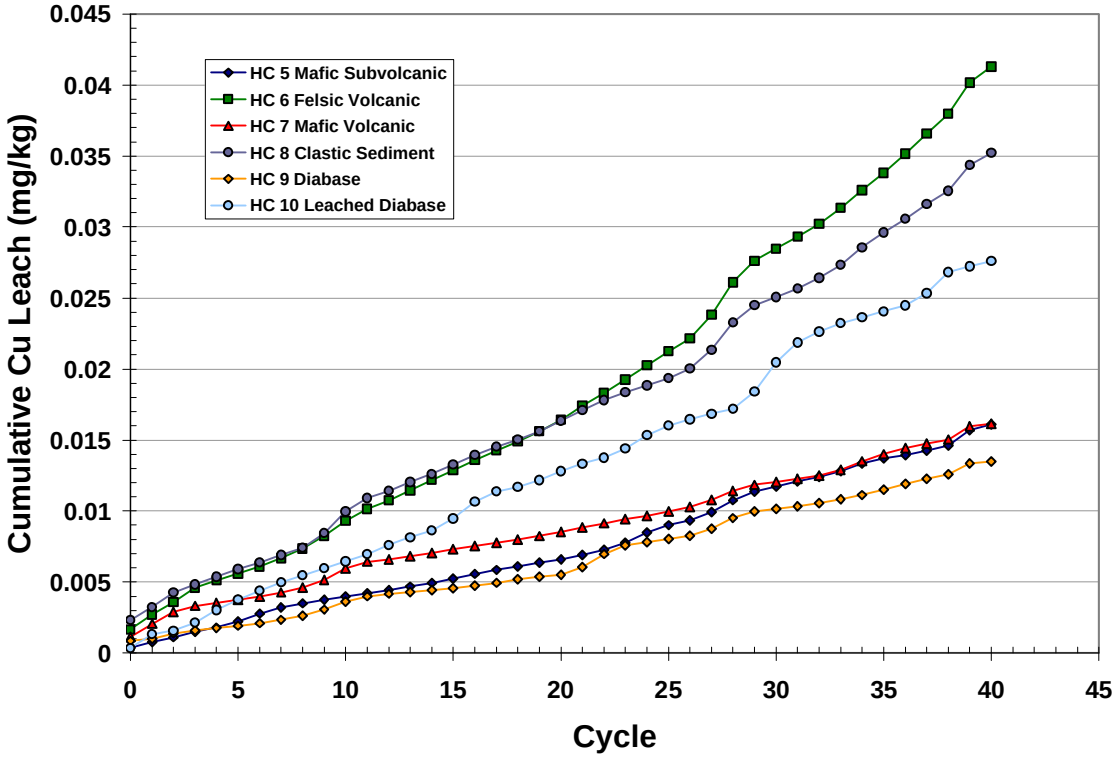

Figure 4-10b Cumulative Cu Release Rates from Humidity Cell Samples.

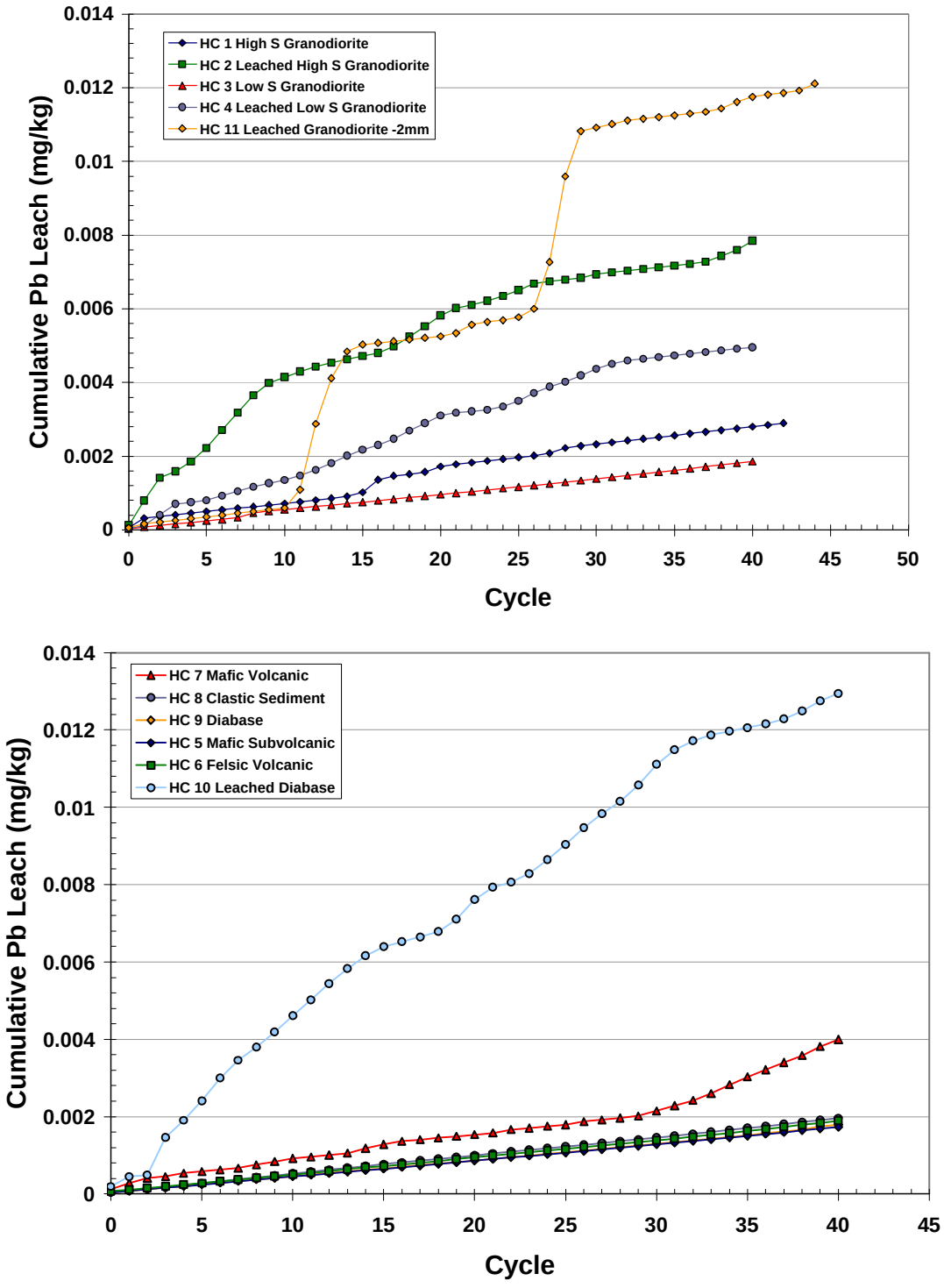

Figure 4-11: Cumulative Pb Release Rates from Humidity Cell Samples.

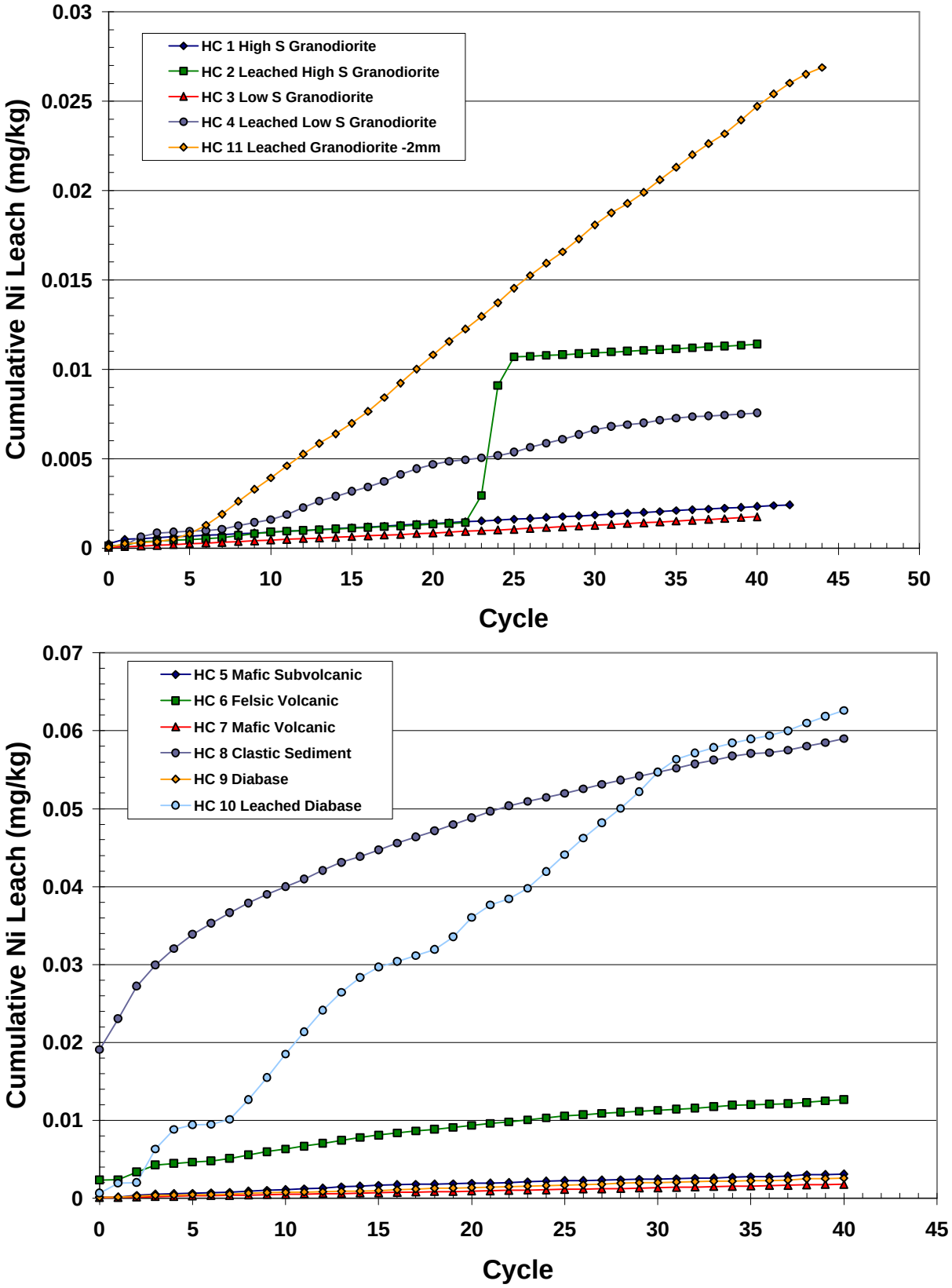

Figure 4-12: Cumulative Ni Release Rates from Humidity Cell Samples.

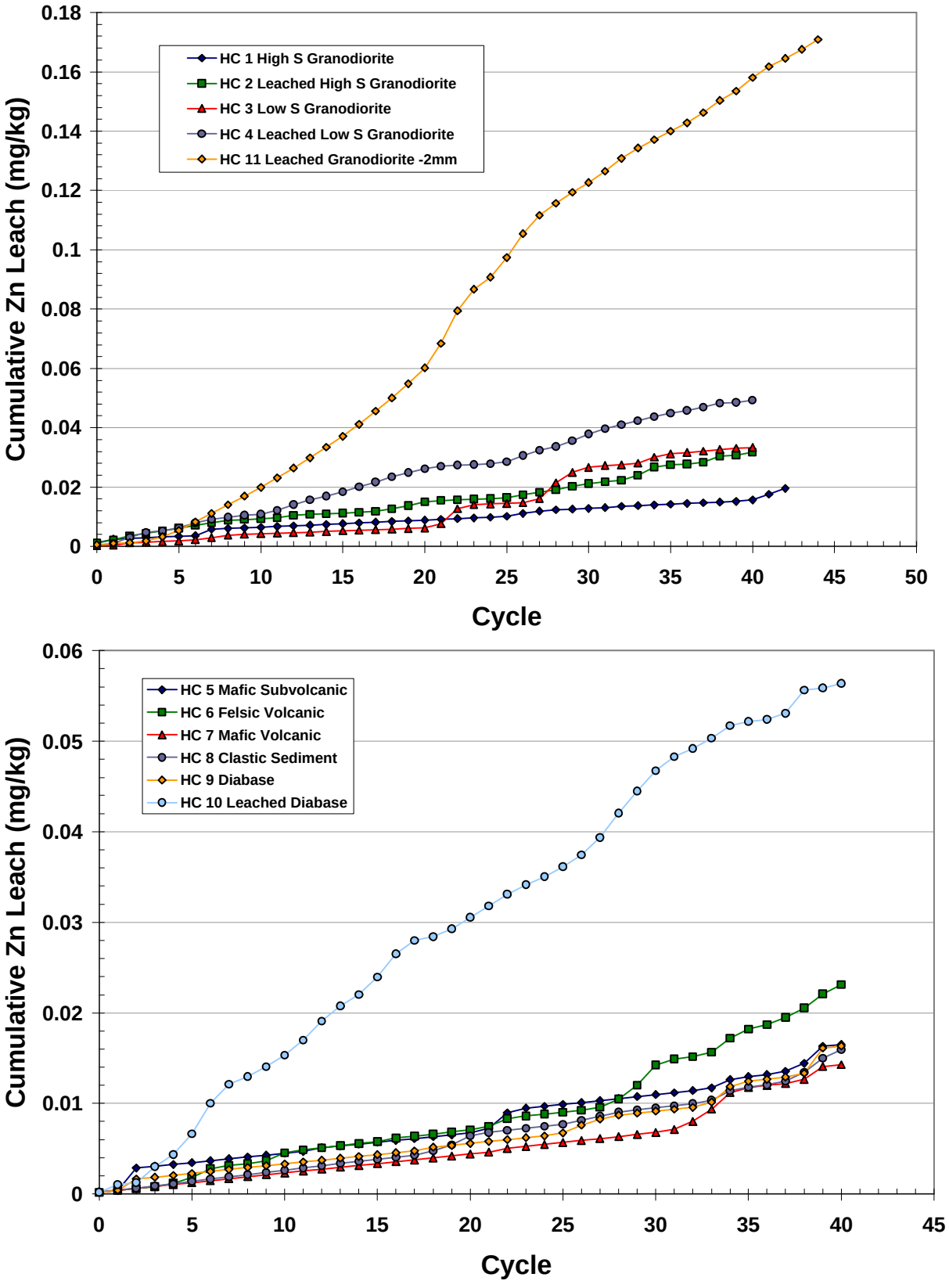

Figure 4-13: Cumulative Zn Release Rates from Humidity Cell Samples.

4.3.2 Arsenic and Selenium

The greatest rate of arsenic release was observed from the clastic sediment (HC8) and the felsic volcanic (HC6). The unleached high sulphur granodiorite (HC1) had the next highest rate of arsenic release. Arsenic release from the remaining samples were maintained < 0.002 mg/Kg (Figure 4-14). For the remaining active humidity cell, HC11, there is currently no indication of increasing rates.

The greatest Se release rates were observed from the felsic volcanic (HC6) and the clastic sediment (HC8). All other humidity cell samples displayed low rates of selenium release (below detection limit) except the pre-leached high sulphur granodiorite sample (HC11) that had some values above the detection limit (Figure 4-15).

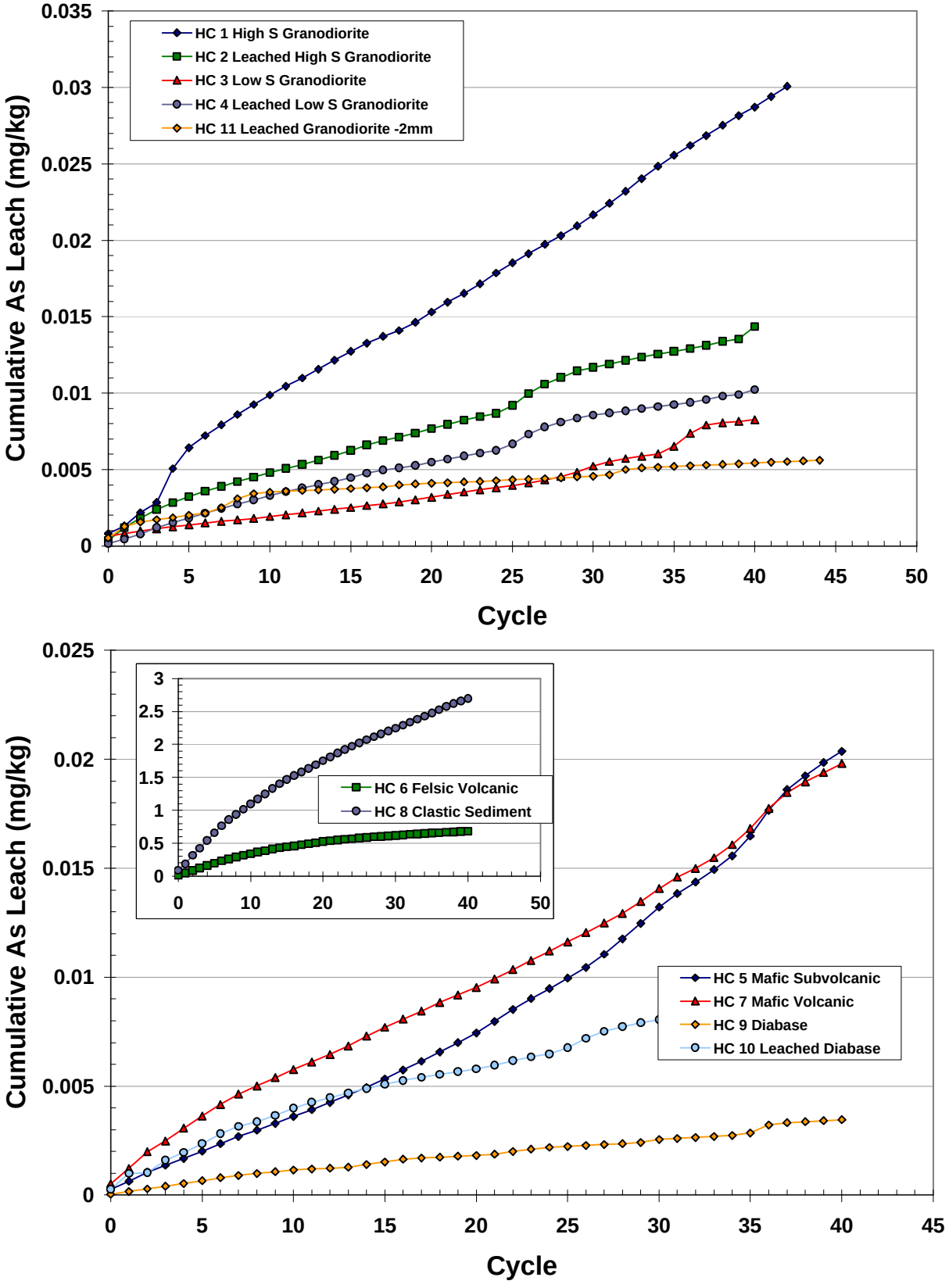

Figure 4-14: Cumulative As Release Rates from Humidity Cell Samples.

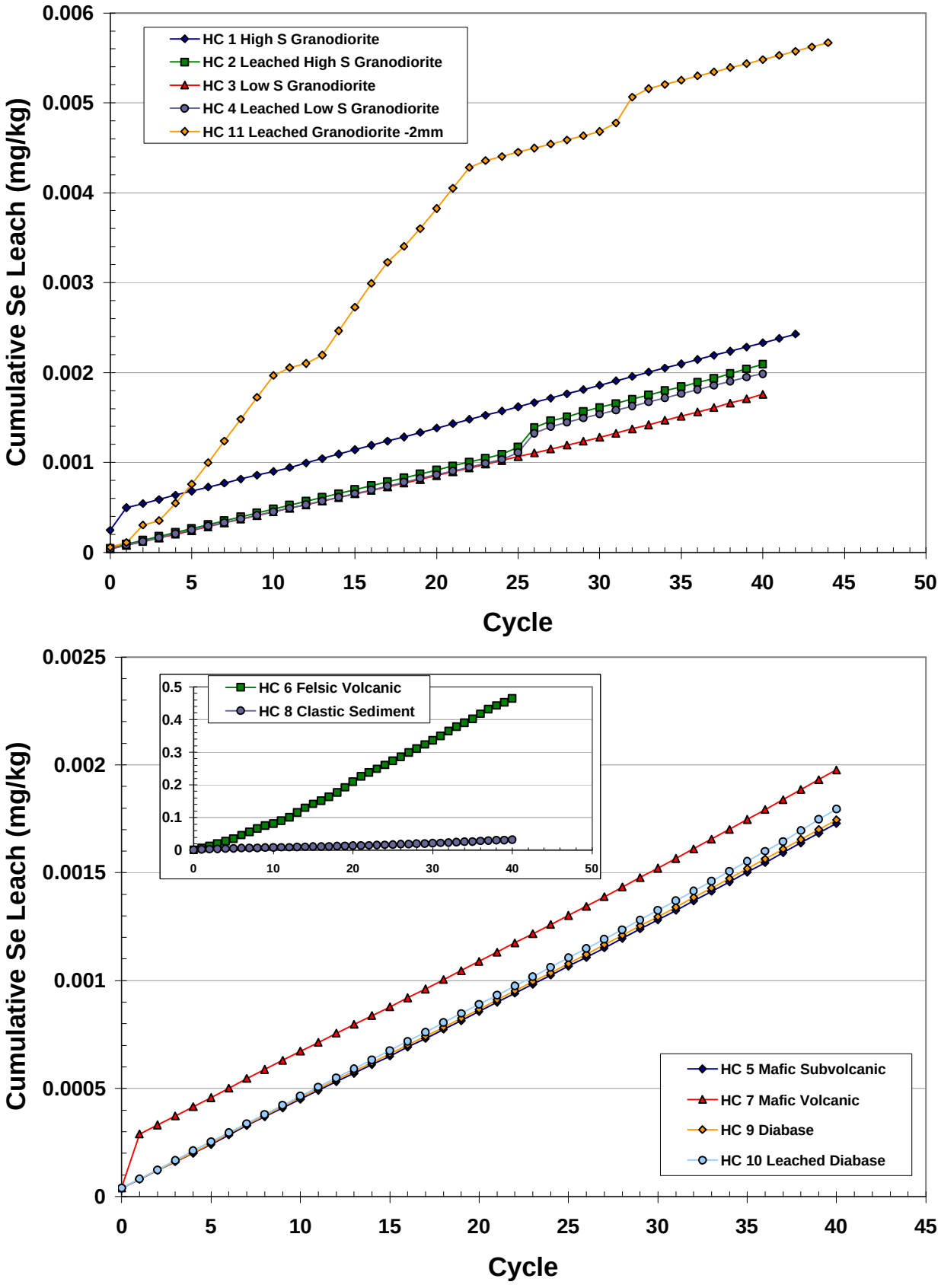

Figure 4-15: Cumulative Se Release Rates From Humidity Cell Samples.

5. Summary and Implications for Waste Management

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5. Summary and Implications for Waste Management

The waste management plans that have been developed for the High Lake property are based on the geochemical characteristics of the various mine waste materials that will be produced during the operation of the mine. Static testing has provided information on the general geochemical characteristics of the various rock lithologies that will be encountered during operations. The results of 11 humidity cells has provided further insight into issues related to the ARD/ML potential of the waste rock. A summary of the key findings from the kinetic tests and the implications of the test results on management of the mine waste are discussed below.

5.1 Summary of Key Study Components

The primary finding of the static testing was that definitive ARD potential trends can be associated with lithology. Both lithologic units (granodiorite and mafic subvolcanic) positioned in the hanging wall of the mineralized zone in AB and D Zones typically have low sulphur content and the sample database indicate these materials are largely non-acid generating. The static test program also determined that there was a significant portion of the bulk NP measurement that was associated with non-carbonate minerals. The kinetic test program was designed to evaluate the rate of metal loading that can be expected from the rock units that will be mined at the site. Particular emphasis was placed on the granodiorite because this material is the keystone to the waste rock management plan due to a number of factors that allow it to be segregated during mining and used for construction purposes. The factors that contribute to this include: the release schedule of this material in the mining sequence that allows it to be available at various times including the early stages, the geochemical characteristics and the predictable location and quantity within the pit limits.

The key finding from the kinetic test work was that all materials tested demonstrated a low degree of sulphide reactivity with the exception of the felsic volcanic and sediment humidity cell samples. The results and conclusions from the kinetic test results are listed below.

- Humidity cell tests have been completed on ten (10) of the eleven (11) humidty cells that were initiated for the project. There are 40 to 44 test cycles available for evaluation of the humidity cells. Only one humidity cell, HC11, remains active to evaluate the source and availability of the non-carbonate NP measured in the

granodiorite samples. This cell will continue to run for long term verification of the non-carbonate NP in the granodiorite.

- Optical mineralogic examinations of the kinetic test samples indicate that intrusive material near the contact between the granodiorite and the other lithologic units has incorporated clasts of the country rock lithologies into the intrusive complex. These lithological units often have higher S content than the granodiorite and as a result the "granodiorite" near the contact has higher S content than typically found in the interior of the intrusion.
- Kinetic test results indicate that sulphides contained in the majority of the kinetic test samples do not oxidize rapidly. The low reactivity of the sulphides, particularly in the granodiorite (in both the AB and D pits) and the mafic subvolcanic unit in the D pit, indicates that low rates of acid loading will be released from these lithologic units.
- The low sulphide reactivity of the granodiorite appears to be related to the occlusion of the sulphide minerals within a silicate mineral mass that is resistant to both physical and chemical weathering. Optical examination of the intrusive samples indicate that sulphides are present as distinct grains or disseminated within the silicate mineral mass, rather than being present as veins. This morphology leads to limited exposure of the sulphide minerals on the edge of waste rock particles and a significant proportion of the total sulphur appears to be occluded and unavailable for water-atmosphere-rock interactions that accentuate sulphide oxidation processes. This physical occlusion of sulphide minerals is also a likely contributor to low reactivity of the mafic subvolcanic lithology.
- The lithologic units that display the highest loading rates under pH neutral conditions are the PAG felsic volcanic (HC6) and sedimentary (HC8) samples. In particular, elements that form oxyanions in solution such as arsenic, molybdenum and selenium display relatively high rates as compared to the other lithologic samples tested.
- Metal cations (Cd, Cu, Ni, Pb and Zn) release rates are low under pH neutral conditions for all lithologies. Cadmium and mercury have remained below the detection limit in the humidity cell leachate throughout the available test period in all cells.
- On-going kinetic testing for the granodiorite indicates that the non-carbonate NP measured by ABA is capable of actively buffering the pH of the leaching solution under the laboratory conditions imposed during humidity cell testing.

- The most likely source of the non-carbonate NP is hornblende and clinozoisite may also contribute to the buffering capacity. The dissolution of the non-carbonate NP appears to be non-stoichiometric with the preferential leaching of Ca and Mg from the silicate mineral structure. The ongoing humidity cell testing for HC11 will help to evaluate the duration and continued availability of the non-carbonate NP to buffer the leachate solutions.

5.2 Implications of Geochemical Study on Waste Management

The geochemical and geological relationships of the *in situ* waste materials at High Lake, provides an opportunity to implement waste segregation during mining that will allow for the safe long term placement of PAG materials. The geochemical characterization program has been designed to identify those materials that pose a high ARD/ML risk and evaluate the long-term leaching behaviour of materials with a low ARD/ML risk. Conducting geochemical characterization programs in this manner provides sufficient information to design effective waste management plans and focuses characterization studies on those waste materials that will be exposed in the environment for long periods of time. This focus is warranted because it is these materials that will have the most influence on the long-term leaching from the waste storage facilities once management plans have been implemented.

Applying this approach to the High Lake project, both static and kinetic testing was undertaken on the potential waste materials. The implications of the key findings of the study are listed below.

1. The granodiorite in the hanging wall of the AB mineralized ore zone has a low sulphide content and sufficient measured neutralization potential to be deemed NAG. Higher risk material within the granodiorite in the proposed AB Pit is observed near the intrusive contact with the other lithologic units. Kinetic testing indicates that this waste rock material has limited reactivity and has low metal leaching potential

   Waste Management Implication

   Granodiorite waste rock mined from the AB pit is designated as NAG and will be used for construction purposes or placed in the exterior shell of the AB Dump. Operational monitoring of waste rock removed from near the intrusive contact in the AB Pit will be required to map the position of the NAG/PAG boundary near the contact.

2. Hanging wall material from the D Pit, which includes granodiorite, diabase and mafic subvolcanic lithologies, is designated as NAG.
   Waste Management Implication
   Granodiorite waste rock mined from the D pit is designated as NAG and will be used for construction purposes or placed in the permanent waste rock stockpiles. Operational monitoring of waste rock removed from near the hanging wall contact in D Pit will be required to accurately delineate the position of the NAG/PAG boundary.

3. A high percentage of felsic volcanic and sediment samples were PAG and these materials display relatively high arsenic, molybdenum and selenium release rates as compared to the other lithologic samples tested.
   Waste Management Implication
   All waste material below the NAG/PAG contact will be handled as PAG. PAG waste rock from the AB pit will be placed in the core of the AB dump. PAG waste rock from D pit will be temporarily stored on surface and permanently placed underground as backfill during the latter half of the mine life.

4. Waste derived from lithologies in close proximity to the mineralized ore bodies may have total sulphur contents greater than 10%.
   Waste Management Implication
   High sulphur waste will also have a high ML/ARD risk. High sulphur waste rock mined near the ore body should be special handled so that it is the first material that is placed as backfill in the underground mine voids or in the center of the AB waste rock dump.

5. Ongoing humidity cell testing confirms that at least a portion of the non-carbonate NP measured in the granodiorite using the Sobek NP measurement is available to buffer pH > 4.5. Buffered at this pH the metal leaching rates do not change significantly from those observed from similar materials buffered at pH > 7.0.
   Waste Management Implication
   Kinetic testing will be continued on the remaining humidity cell to evaluate the quantitiy of non-carbonate NP that is available. Ultimately the Sobek NP value (or a portion of this value) will be able to be used to quantify available NP in granodiorite waste rock, rather than using the lower CaNP values.

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Appendix A: Methodology

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Canadian Environmental & Metallurgical Inc.

Procedures for Wolfden Resources High Lake Project

November 7, 2005

1.0 Sample Receiving

Samples were received in August, September and in early October. The samples were logged in and sample weights recorded.

2.0 Sample Preparation

The samples were air dried and crushed in a 6 inch jaw crusher to approximately 80% - 1/4 inch. Each sample was mixed by passing through a ½ inch splitter box and recombining. A 200 g split was then made and pulverized in a ring pulverizer to 80% - 200 mesh. Splits of the pulverized sample was then submitted for analysis.

3.0 Analysis

3.1 Paste pH

Paste pH was conducted according to the procedure by Sobek A., et. al. 1978 "Field and Laboratory Methods Applicable to Overburdens and Minesoils" (Report EPA-600/2-78-054).

3.2 Acid Base Accounting

Acid base accounting was conducting according to Method 3: Modification of Conventional EPA Neutralization Potential Determination by Addition of Hydrogen Peroxide. The procedure is outlined in MEND Project 1.16.1c, 1991.

3.3 Total Sulphur and Carbon

Total sulphur and carbon were determined by Acme Analytical Laboratories using a Leco furnace.

3.4 Inorganic carbon

Inorganic carbon was determined by Acme using a direct analysis method. In this procedure a known weight of sample is placed in a closed vessel with hydrochloric acid and heated to approximately 90oC to evolve carbon dioxide from the sample. The gas

is then purged into a Leco analyzer where the concentration of CO2 is determined by an infrared detector.

3.6 Sulphate-Sulphur

Sulphate-sulphur was determined by IPL Labs Ltd. by the procedure outlined in ASTM D2492-02, "Standard Test Method for Forms of Sulfur in Coal". In this procedure sulphate sulphur is dissolved with hydrochloric acid and measured gravimetrically after precipitation of barium chloride.

3.5 Pyritic Sulphur

Pyritic sulphur was determined by Assayers Canada Ltd. using the procedure outlined in ASTM D2492-02, "Standard Test Method for Forms of Sulfur in Coal". In this procedure sulphate sulphur is first removed by hydrochloric acid. The sulphide in the residue are then oxidized with 1:7 nitric acid and measured gravimetrically after precipitation with barium chloride.

3.6 Total Metals

Total metals were conducted on the pulverized sample by digesting 0.500 g in aqua regia at 95^{o}C for one hour. The extract is then diluted to 10.0 mL and analysed for metals by ICP-MS.

4.0 Kinetic Testing

4.1 Humidity Cell

Humidity cell is made from acrylic tubing, with height and diameter appropriate for the sample size. An 8 inch height and 4 inch diameter is suitable for a 1 kg sample.

The cell has a fixed base plate with a leachate drainage hole fitted with a tubing nipple. Approximately one inch above the base, a perforated plexiglas plate is fitted to support the sample. The plate is covered with 6 layers of nylon mesh to prevent fine sample falling through the support, while allowing upward flow of air and downward flow of leachate. A hose nipple is fitted to the side wall below the support plate for the dry and humid air inlet. The cell is equipped with a removable lid with a central hose nipple for air outlet. The air inlet and leachate drain are equipped with suitable pinch valves.

4.11 Procedure:

The sample was crushed to a target size of 80 percent minus ¼ inch, or as required by the test program. A 100 g split was taken for grain size determination.

1.00 kg was placed in the cell and an initial volume of 750 mL consisting of nanopure was applied and allowed to stand quiescent for 1h. The cell was then drained and the leachate collected for analysis.

The cell was operated on a 7 day cycle. For the first 3 days, dry air was passed through the cell. For the next 3 days, humid air from the humidifier was passed through the cell.

On the last day of the cycle, the air line was disconnected and 500 mL of nanopure water was added and allowed to soak for 1 hour (leachate drain closed). The cell was then drained and the leachate volume collected and recorded.

The 7 day cycle was then re-started.

The leachate was filtered through a 0.45 micron membrane filter and any solids recovered were returned to the cell.

pH and other parameters as required by the experimental design were measured. These included conductivity, acidity, alkalinity, sulphate fluoride and dissolved metals.

pH was measured using the pH meter; conductivity was determined using the conductivity meter; acidity was determined by titration with base to an end point of either pH 4.5 (free acidity) or pH 8.3 (total acidity); alkalinity was determined by titration with an acid to an end point of pH 4.5; fluoride was determined by ion chromatography, dissolved metals by ICP-OES and ICP-MS and mercury by cold vapour AA.

Source: Acid Rock Drainage Prediction Manual. March 1991

Appendix B: Composite Humidity Cell Sample Details

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Drill core sample intervals by mass and length per bin

Bin 1	Interval (m)			Mass	
Drill Hole	**From**	**To**	**Length**	**kg**	**Comments**
HD 92-56	x14.02	14.82	0.8	4.0	
	17.07	17.87	0.8	4.0	
	20.07	28.07	8.0	4.0	
	26.27	27.07	0.8	3.5	
	29.26	30.06	0.8	3.1	
	35.31	36.11	0.8	3.9	
	40.04	40.84	0.8	3.1	
	43.7	44.5	0.8	4.1	
	47.55	48.35	0.8	3.5	
	52.8	53.6	0.8	4.0	
	54.5	55.4	0.9	4.6	
	59.4	60.4	1.0	3.8	
	63.4	64.2	0.8	4.3	
	68.1	68.93	0.8	4.4	
	72.68	73.53	0.8	4.6	
	76.3	77.1	0.8	4.1	
	83.25	84.1	0.8	4.2	
	87.3	88.1	0.8	3.8	
HD 92-65	11	12	1.0	5.2	
	15.3	16.3	1.0	4.9	
	19.3	20.3	1.0	4.7	
	26.9	27.9	1.0	3.6	
	32.1	33.1	1.0	4.4	
	35.9	37	1.1	4.7	
	42.4	43.4	1.0	4.7	
	43.45	44.5	1.1	4.0	
	51	52	1.0	4.8	
	52.5	53.5	1.0	5.5	
	57	58	1.0	4.9	
	60	61	1.0	5.4	
	66.5	67.5	1.0	5.1	
	69.5	70.5	1.0	4.6	
	73.5	74.5	1.0	5.2	
	81	82	1.0	5.3	
	84.1	85.1	1.0	5.0	
	89.17	90.07	0.9	4.6	
HD 92-55	10.1	11.6	1.5	7.0	
	14.05	15.55	1.5	6.2	
	17.95	19.45	1.5	7.3	
	23.15	24.65	1.5	7.5	
	29.25	30.75	1.5	7.4	
	32.3	33.8	1.5	7.2	
	35.6	37.1	1.5	7.4	
	41	42.95	2.0	8.5	
	44.5	46	1.5	7.2	
	49.7	51.2	1.5	6.9	trace sulphides
	52	53.2	1.2	5.4	

Bin 2	Interval (m)			Mass	
Drill Hole	**From**	**To**	**Length**	**kg**	**Comments**
HLW 02-13	130.7	131.9	1.2	6.4	
	134.8	135.8	1.0	4.9	
	140.5	141.5	1.0	5.3	
HLW 01-06	10.5	11	0.5	2.7	
	14	14.5	0.5	2.3	
	23	23.6	0.6	3.1	
	26	26.5	0.5	2.8	
	32	32.6	0.6	2.4	
	38	38.5	0.5	2.1	
	46.3	47	0.7	3.3	
	49.3	50	0.7	3.2	
	53	53.6	0.6	3.1	
	59	59.6	0.6	3.2	
	64.4	65	0.6	2.9	
	70.4	71	0.6	3	
	77.1	77.7	0.6	3	
	85.4	86	0.6	2.7	
	89	89.6	0.6	3.2	
HB 93-96	10.5	11.2	0.7	3.3	granodiorite
	17.4	18.1	0.7	3.3	granodiorite
	20	20.6	0.6	3.2	granodiorite
	25	25.5	0.5	2.9	granodiorite
	28.7	29.2	0.5	2.5	granodiorite
	31.6	32.2	0.6	3	granodiorite
	36.1	36.6	0.5	2.8	granodiorite
	40.4	40.9	0.5	2.5	gabbro
	47.85	48.35	0.5	2.5	granodiorite
	50.4	50.9	0.5	2.5	
	53.1	53.7	0.6	2.7	
	57.4	58	0.6	2.8	
	61.5	62.1	0.6	3.2	
	68.8	69.4	0.6	3	
	72.2	72.8	0.6	3.4	diorite
	77.7	78.3	0.6	2.7	
	86.8	87.4	0.6	3.2	
	88.5	89.1	0.6	3	
	90.5	91.1	0.6	3.2	
	93.6	94.2	0.6	2.9	
	96	96.6	0.6	2.7	fine grained
	104.3	104.9	0.6	2.6	zenolith
	108.3	108.9	0.6	3.5	epidote
	112.7	113.6	0.9	2.9	
	116.75	117.35	0.6	2.7	
	123.6	124.2	0.6	2.7	
	126.5	127.1	0.6	3.2	sphalerite

Bin 2	Interval (m)			Mass	
Drill Hole	**From**	**To**	**Length**	**kg**	**Comments**
HB 93-96					
	129.55	130.15	0.6	3.5	
	133.2	134.5	1.3	3.8	massive sulphides - pyrite, chalcopyrite
	180.25	181.75	1.5	3.9	split core - 1% chalco, sphal
	184.5	186	1.5	4	split core - 1% chalco, sphal
	188.7	191.7	3.0	7.5	split core - 1% chalco, sphal
	193.15	194.65	1.5	6.9	
	197.3	198.8	1.5	7.1	
	201.5	203	1.5	6.8	
	205.7	207.2	1.5	5.3	
	209.86	210.86	1.0	4.4	
	213.6	214.4	0.8	3.8	patchy chalcopyrite - up to 10%
	217.7	219.2	1.5	3.9	patchy chalcopyrite - up to 10%
	225.1	226.2	1.1	3.3	patchy chalcopyrite - up to 10%

Bin 3	Interval (m)			Mass	
Drill Hole	**From**	**To**	**Length**	**kg**	**Comments**
HLW 03-20	8.7	11.2	2.5	4.9	split core
	13	15	2.0	3.7	split core
	15	18	3.0	6.4	split core
	19	22	3.0	6	split core
	23	24.2	1.2	5.8	
	29	30.2	1.2	6.1	
	32	33.2	1.2	5.6	
	35.2	36.4	1.2	4.9	
	39.3	40.3	1.0	4.2	
HB 93-96	230.4	231.6	1.2	5.2	
	234.1	235.3	1.2	6.1	
	238.4	239.6	1.2	5.2	
	242.7	243.7	1.0	3.6	
	246.9	248.8	1.9	4.5	split core - semi-massive chalcopyrite
	251.2	252.2	1.0	4.3	
	255	256	1.0	4.7	
	259.2	269.2	10.0	3.6	
	262.1	263.3	1.2	5.2	
	267.3	268.4	1.1	5.6	
	271.3	272.4	1.1	5.3	
	275.4	276.5	1.1	4.8	
	278.8	281	2.2	5.3	
	283.1	284.2	1.1	5.2	
HLW 02-08	129.3	130.5	1.2	5.1	

Bin 3	Interval (m)			Mass	
Drill Hole	**From**	**To**	**Length**	**kg**	**Comments**
HLW 01-08	227	228	1.0	4.6	
	229	230	1.0	4.3	
	233	234	1.0	3.8	
	236	237.2	1.2	5.1	
	242	243.2	1.2	5.4	
	245	246.2	1.2	6	
	248	249.1	1.1	4.7	
	254	255	1.0	4.1	
	257	258.1	1.1	5.3	
	260	261.1	1.1	5.5	
	264	265.1	1.1	4.8	
HLW 01-09	98	99.1	1.1	5.4	
	101	102.1	1.1	5	
HLW 01-02	82	83.1	1.1	4.2	
	85.4	86.9	1.5	5	
	89	90.3	1.3	5.6	
	93.3	95	1.7	5.9	
	97.2	98.7	1.5	5.2	

Bin 4	Interval (m)			Mass	
Drill Hole	**From**	**To**	**Length**	**kg**	**Comments**
HLW 03-47	312.4	313.9	1.5	3.5	split core
	316.9	318.1	1.2	5.8	~1% sulphides
	320	321.2	1.2	5.3	trc sulphides
	323	324.2	1.2	5.6	
	326.3	327.5	1.2	5.6	
	332	333.2	1.2	5.7	
	335	336.2	1.2	5.9	
	338.65	339.85	1.2	5.7	
	345.8	347	1.2	5.7	
	350.05	351.25	1.2	5.6	
	353	354.2	1.2	5.5	
	356.75	357.95	1.2	5.9	
	360.8	362	1.2	5.8	
	366.8	368	1.2	5.7	
	369.7	370.9	1.2	6.1	
HLW 03-55	520.2	522.3	2.1	4.7	split core
	524.5	526.7	2.2	4.8	split core
	531.45	532.55	1.1	4.6	
	533	534.1	1.1	4.7	
	536.4	537.5	1.1	4.6	
	540	541.1	1.1	5.1	
	545	546.1	1.1	5.0	
	548.5	549.6	1.1	5.6	
	552.75	553.85	1.1	5.2	

Bin 4	Interval (m)			Mass	
Drill Hole	**From**	**To**	**Length**	**kg**	**Comments**
HLW 03-55	561.45	562.55	1.1	5.2	
	557	558.1	1.1	5.4	
HLW 03-42	548	549	1.0	5.1	
	551	552	1.0	4.5	
	554	555	1.0	4.9	
	560	561	1.0	4.8	
	563	564.1	1.1	4.7	
	568.9	569.9	1.0	4.4	
	571.9	572.9	1.0	5.2	
	578.8	579.8	1.0	5.0	
	581.1	582.1	1.0	5.0	
	584	585	1.0	5.0	
	590	591	1.0	3.6	
	595	596	1.0	5.0	

Bin 5	Core Interval (ft)			Mass	
Drill Hole	**From**	**To**	**Length (m)**	**kg**	**Comments**
HA 57-31	146.1		~3.1	6.2	
3cm core	169.8		~3.1	5.9	
	191.2		~3.1	6.1	
	213.8		~3.1	6.2	
	235.8		~3.1	6.1	
	258.8		~3.1	6.0	
	280.0		~3.1	6.4	
	303.0		~3.1	6.3	
	325.0		~3.1	6.8	pyrite
	346.0		~3.1	6.8	
HB 56-06		73.1	~4.0	7.6	
3cm core	73.1		~4.0	6.5	
	97.4		~4.0	8.7	
	142.8		~4.0	8.1	
	166.6		~4.0	8.9	chalcopyrite
	191.0		~4.0	7.9	
	212.6		~4.0	8.4	
	236.5		~4.0	8.5	
	259.0		~4.0	7.8	
	282.8		~4.0	7.2	
	306.0		~4.0	6.0	hematite, pyrite
	330.4		~4.0	7.8	pyrite
HB 56-25		203.3	~7.0	6.7	split core; chalcopyrite
3cm core	203.3		~4.0	5.6	chalcopyrite
	226.3		~4.0	5.2	chalcopyrite
	246.6		~4.0	4.9	chalcopyrite
	268.8		~4.0	5.8	
	293.9		~4.0	4.5	
	320.1		~7.0	10.3	

Appendix C: Mineralogy

LORAX ENVIRONMENTAL

COMPOSITIONS OF NON-LEACHED AND ACETATE-LEACHED BIOTITE AND ASSOCIATED MINERALS FROM HIGH LAKE, NUNAVUT

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EXECUTIVE SUMMARY

Electron-microprobe analyses of biotite in samples HC-3 and HC-4, representing non-leached and acetate-leached low-sulfide granodiorite from the High Lake project, were obtained to determine whether the leaching had produced a measurable compositional change in the mica, especially with regard to the incongruent depletion of potassium. The analytical results indicate that the specific mica species present is annite, which is the Fe-dominant analogue of phlogopite. Occupancy of the K^+ site in the mica ranges from 0.92 to 0.97 in HC-3, and from 0.92 to 0.95 in HC-4, from which it is concluded that the leaching has not produced a significant (measurable) compositional change. Supplementary microprobe analyses suggest that the predominant chlorite species in the samples is clinochlore, which by definition has formula Mg > Fe, but that chamosite (Fe > Mg) is locally present where interleaved chlorite replacement of biotite has occurred on a micro scale. Analyses of the High Lake amphibole indicate that the specific species is magnesiohornblende.

INTRODUCTION

The results of a mineralogical examination of eight samples from the High Lake project were submitted recently to Lorax Environmental Services by LRC (*Mineralogy of Leached and Non-leached Rocks from the High Lake Project, Nunavut*; submitted March, 2006). Some of the samples in the examined suite consisted of pairs in which one of the duo was untreated material whereas the other had been laboratory-leached with sodium acetate solution. The observed effect of the leaching was primarily a dissolution of liberated carbonates and of occluded carbonate grains that occurred near the periphery of the host silicate-mineral particles. No effect on the silicate or sulfide minerals was discernible by optical microscopy. However, biotite is known to be particularly susceptible to an early, incongruent release of K^+ under leaching conditions (Kalinowski and Schweda 1996; Malmström and Banwart 1997), and the depletion may not be optically evident upon routine examination because K^+ is not one of the chromophore ions. Consequently, as a follow-up to the LRC initial report, it was requested by Lorax that electron-microprobe analyses of the biotite be obtained for samples HC-3 and HC-4, which are the non-leached and acetate-leached equivalents, respectively, of low-sulfide AB granodiorite.

The polished thin-sections of HC-3 and HC-4 were re-examined by optical microscopy for the current study, and several random grains were selected for analysis. Photomicrographs of the relevant grains were prepared and are shown as Figures 1 to 7. The microbeam analyses were obtained with a Cameca microprobe in the Department of Earth and Ocean Sciences at the University of British Columbia (M. Raudsepp, analyst). For each of the selected grains, two spots were analyzed. Thus, with only one exception in Table 2, the probe results in Tables 1, 2, and 3 have paired analyses for each grain.

Much of the biotite in the granodiorite is partly chloritized, as is visible by optical microscopy and with better resolution in backscattered-electron images. A few analyses of chlorite were therefore obtained to illustrate the distinct compositional difference between biotite and chlorite, even on a microbeam scale in which the chlorite occurs as laths (sheets) along the cleavage planes of the host biotite.

Although the focus of the study was on biotite, the particular species of amphibole was not identified in the LRC (2006) report. The question arose as to whether the amphibole is actinolite (B. Matson, written communication, March 22, 2006). Table 3 contains the microprobe results for a few grains of the amphibole.

RESULTS

Biotite and Chlorite

Biotite is not a specific mineral species; rather, the term is used in a general way for dark micas that do not contain significant amounts of Li (Rieder et al. 1998). Typically the minerals referred to as biotite are in the phlogopite – annite solid-solution series: $KMg_3AlSi_3O_{10}(OH)_2$ – $KFe_3AlSi_3O_{10}(OH)_2$; thus, phlogopite has formula Mg > Fe, and annite has Fe > Mg. For the High Lake samples, the results in Table 1 for HC-3 indicate that the cation proportions correspond to a simplified formula approximating $K(Fe_{1.4}Mg_{1.1}Al_{0.2}Ti_{0.1})_{S2.8}Al_{1.0}(Si_{2.8}Al_{0.2})_{S3.0}$. Thus, the High Lake biotite is annite.

The microprobe compositions for biotite in sample HC-4 are listed in Table 2. Comparison of the results with those for HC-3 indicates that the biotite has not been measurably affected by the acetate leach; the sum of the cations at the K^+ site ranges from 0.92 to 0.97 in HC-3, and from 0.92 to 0.95 in HC-4. The compositions in HC-4, like those in HC-3, show a slight but consistently higher value for formula Fe relative to Mg.

Chlorite is a group name for about ten mineral species. The most common of these is clinochlore $(Mg,Al)_6(Si,Al)_4O_{10}(OH)_8$, which forms a solid-solution series with its Fe-dominant analogue, chamosite. The sole analysis of interlayered chlorite that has replaced biotite in HC-3 corresponds to $(Fe_{2.28}Mg_{2.18}Al_{1.15}K_{0.26}Ti_{0.03}Na_{0.02}Mn_{0.02})_{S5.94}(Si_{3.07}Al_{0.93})_{S4.00}$ on the basis of 14 anions; the composition is thus in good agreement with the ideal formula for chlorite. Formula Fe in the HC-3 analysis slightly exceeds that of Mg, and the mineral species is therefore chamosite rather than clinochlore.

Two types of chlorite were analyzed in HC-4. The chlorite in Figure 4 is a partial replacement of biotite, whereas the chlorite in Figure 5 is interpreted to be metavolcanic-sourced. Although both have high contents of Fe, their formula Mg exceeds that of Fe, and both are therefore clinochlore.

Table 1. Electron-microprobe compositions of biotite and chlorite in sample HC-3

Wt%	HC-3 (Fig. 1)				HC-3 (Fig. 2)					
	grain a		grain b		grain a		grain b		grain c	
	1	2	1	2	1	2	1	2	1	2
Na_2O	0.12	0.06	0.04	0.07	0.09	0.10	0.06	0.09	0.17	0.09
K_2O	9.35	9.68	9.72	9.67	9.56	9.60	9.63	9.17	9.25	9.27
CaO	0.01	0.00	0.01	0.02	0.00	0.00	0.00	0.03	0.08	0.01
BaO	0.44	0.47	0.51	0.65	0.50	0.46	0.35	0.32	0.72	0.58
MgO	10.67	10.27	9.83	9.58	10.14	10.15	10.07	10.21	10.10	10.51
MnO	0.19	0.23	0.27	0.26	0.29	0.25	0.29	0.31	0.20	0.21
FeO	21.50	20.78	21.51	21.35	21.14	22.36	21.37	21.75	21.28	20.51
Al_2O_3	15.05	15.15	15.06	15.25	15.16	15.01	15.07	15.26	15.16	15.32
Cr_2O_3	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.02
SiO_2	36.75	37.03	37.29	37.08	37.45	37.08	36.99	36.84	36.71	37.23
TiO_2	1.89	2.06	2.42	2.31	2.33	2.28	2.40	2.07	1.88	1.64
F	0.30	0.33	0.39	0.35	0.38	0.35	0.45	0.28	0.45	0.46
$O \equiv F$	0.13	0.14	0.16	0.15	0.16	0.15	0.19	0.12	0.19	0.19
sum	96.28	95.92	96.89	96.44	97.15	97.49	96.49	95.83	95.81	95.66
	Number of cations for 11 (O,OH,F)									
Na	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01
K	0.91	0.94	0.94	0.94	0.92	0.93	0.94	0.90	0.91	0.90
Ca	-	-	-	-	-	-	-	-	0.01	-
Ba	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.02
∑	0.94	0.96	0.97	0.97	0.94	0.95	0.96	0.92	0.97	0.93
Mg	1.22	1.17	1.11	1.09	1.14	1.15	1.14	1.17	1.16	1.20
Mn	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
Fe	1.38	1.33	1.37	1.36	1.34	1.42	1.36	1.37	1.37	1.31
Al	1.36	1.37	1.35	1.37	1.35	1.34	1.34	1.38	1.37	1.38
Cr	-	-			0.01	-	-	-	-	-
Si	2.81	2.83	2.83	2.83	2.83	2.81	2.82	2.82	2.82	2.84
Ti	0.11	0.12	0.14	0.13	0.13	0.13	0.14	0.12	0.11	0.09
F	0.07	0.08	0.09	0.08	0.09	0.08	0.11	0.07	0.11	0.11

Wt%	HC-3 (Fig. 3)			*Number of Cations* †			
	grain a	grain a	3*		grain a	grain a	3*
Na_2O	0.09	0.04	0.10	Na	0.01	0.01	0.02
K_2O	9.64	9.67	1.97	K	0.94	0.94	0.26
CaO	0.02	0.01	0.00	Ca	-	-	-
BaO	0.55	0.43	0.07	Ba	0.02	0.01	-
MgO	10.60	10.36	14.02	∑	0.97	0.96	-
MnO	0.18	0.22	0.28	Mg	1.21	1.18	2.18
FeO	20.86	20.91	26.14	Mn	0.01	0.01	0.02
Al_2O_3	14.89	14.90	16.93	Fe	1.33	1.33	2.28
Cr_2O_3	0.00	0.02	0.02	Al	1.34	1.34	2.08
SiO_2	37.19	37.04	29.53	Cr	-	-	-
TiO_2	2.10	2.47	0.42	Si	2.84	2.82	3.07
F	0.26	0.40	0.27	Ti	0.12	0.14	0.03
$O \equiv F$	0.11	0.17	0.11	F	0.06	0.10	0.09
sum	96.27	96.30	89.64				

* Interlayered chlorite †based on 11 anions for mica, and 14 (O,OH,F) for chlorite

Table 2. Electron-microprobe compositions of biotite and chlorite in sample HC-4

Wt%	HC-4 (Fig. 4)				HC-4 (Fig. 5)		HC-4 (Fig. 6)		HC-4 (Fig. 7)	
	grain a		grain b		chlor	bi				
	1	2	1	2*			1	2	1	2
Na_2O	0.08	0.04	0.08	0.02	0.02	0.08	0.09	0.12	0.02	0.10
K_2O	8.98	9.21	9.36	0.38	0.50	9.42	9.38	9.02	9.47	9.37
CaO	0.36	0.04	0.01	0.05	0.45	0.00	0.03	0.02	0.00	0.00
BaO	0.51	0.45	0.55	0.04	0.01	0.58	0.49	0.41	0.38	0.52
MgO	9.80	10.12	9.99	15.22	17.33	10.69	10.37	10.52	10.44	10.48
MnO	0.26	0.25	0.20	0.42	0.27	0.13	0.27	0.19	0.25	0.27
FeO	20.48	20.45	21.28	25.24	23.68	20.92	21.46	21.65	21.71	21.21
Al_2O_3	15.07	15.38	15.11	17.83	15.85	15.16	15.32	15.36	15.10	15.02
Cr_2O_3	0.00	0.00	0.02	0.00	0.00	0.04	0.00	0.03	0.00	0.03
SiO_2	36.73	36.72	36.62	27.68	29.64	37.00	37.22	37.21	37.03	37.21
TiO_2	2.43	1.94	2.34	0.18	0.65	1.83	2.14	1.90	2.07	2.04
F	0.34	0.46	0.41	0.25	0.10	0.40	0.26	0.41	0.42	0.43
$O \equiv F$	0.14	0.19	0.17	0.11	0.04	0.17	0.11	0.17	0.18	0.18
sum	94.90	94.87	95.85	87.20	88.46	96.08	96.92	96.84	96.71	96.50
	Number of cations for 11 (O,OH,F) in biotite									
Na	0.01	0.01	0.01	-	-	0.01	0.01	0.02	-	0.01
K	0.88	0.90	0.92	0.05	0.07	0.92	0.91	0.91	0.92	0.91
Ca	0.03	-	-	0.01	0.05	-	-	-	-	-
Ba	0.02	0.01	0.02	-	-	0.02	0.01	0.01	0.01	0.02
∑	0.94	0.92	0.95	-	-	0.95	0.94	0.94	0.93	0.94
Mg	1.13	1.16	1.14	2.41	2.68	1.22	1.17	1.19	1.18	1.19
Mn	0.02	0.02	0.02	0.04	0.02	0.01	0.02	0.01	0.02	0.02
Fe	1.32	1.32	1.37	2.24	2.05	1.34	1.36	1.36	1.38	1.35
Al	1.37	1.40	1.37	2.23	1.94	1.36	1.37	1.37	1.35	1.35
Si	2.83	2.83	2.81	2.94	2.94	3.07	2.82	2.82	2.82	2.83
Ti	0.14	0.11	0.14	0.01	0.05	0.11	0.12	0.11	0.12	0.12
F	0.08	0.11	0.10	0.08	0.03	0.10	0.06	0.10	0.10	0.10

*intergrown chlorite. Cations for chlorite are based on 14 (O,OH,F).

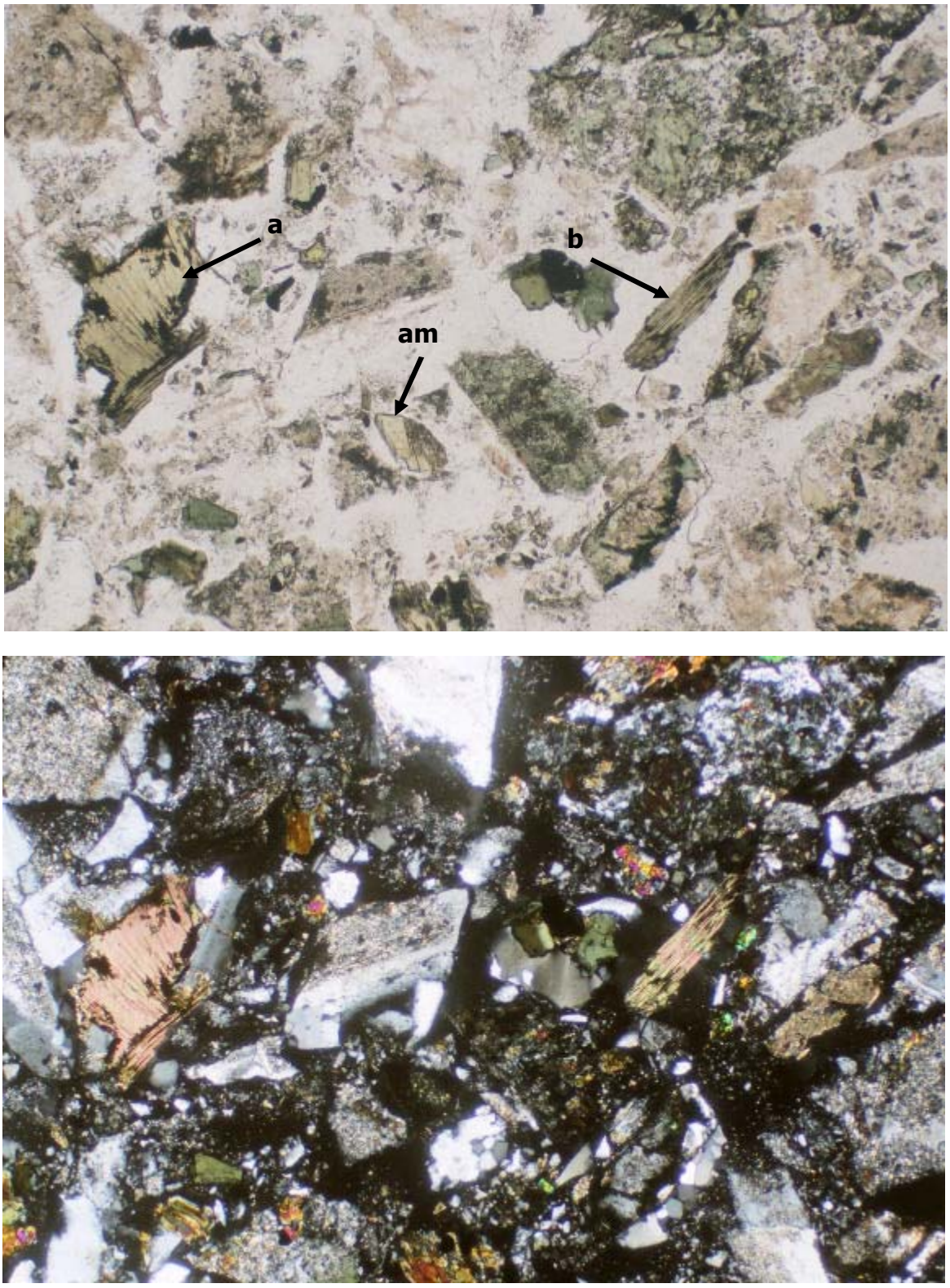

Figure 1. Sample HC-3 in plain transmitted light (top) and with crossed polarizers (bottom), width of field 2.6 mm, showing analyzed biotite grains **a** and **b** (Table 1) and analyzed amphibole (Table 3).

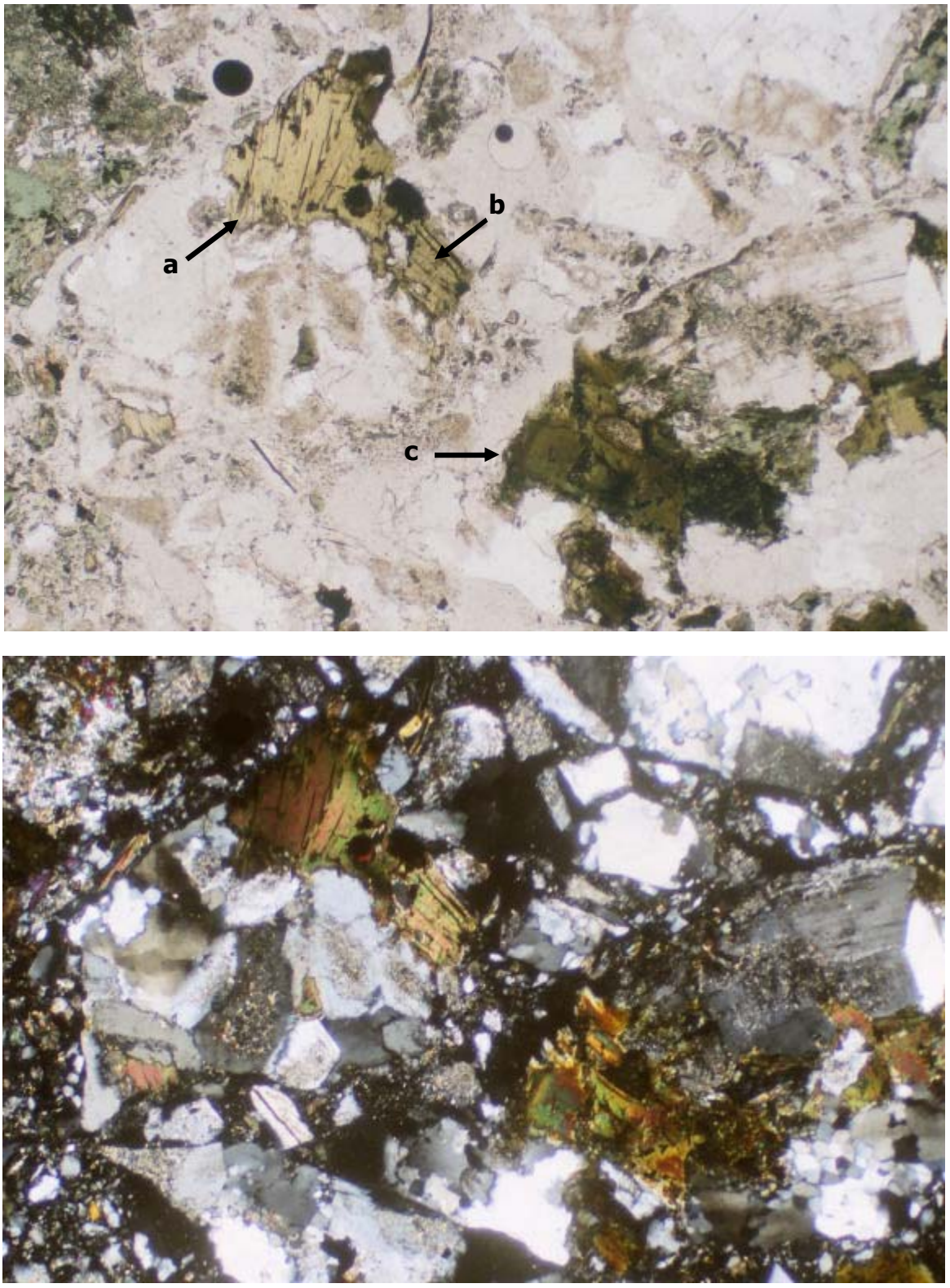

Figure 2. Sample HC-3 in plain transmitted light (top) and with crossed polarizers (bottom), width of field 2.6 mm, showing analyzed biotite grains **a**, **b**, and **c** (Table 1).

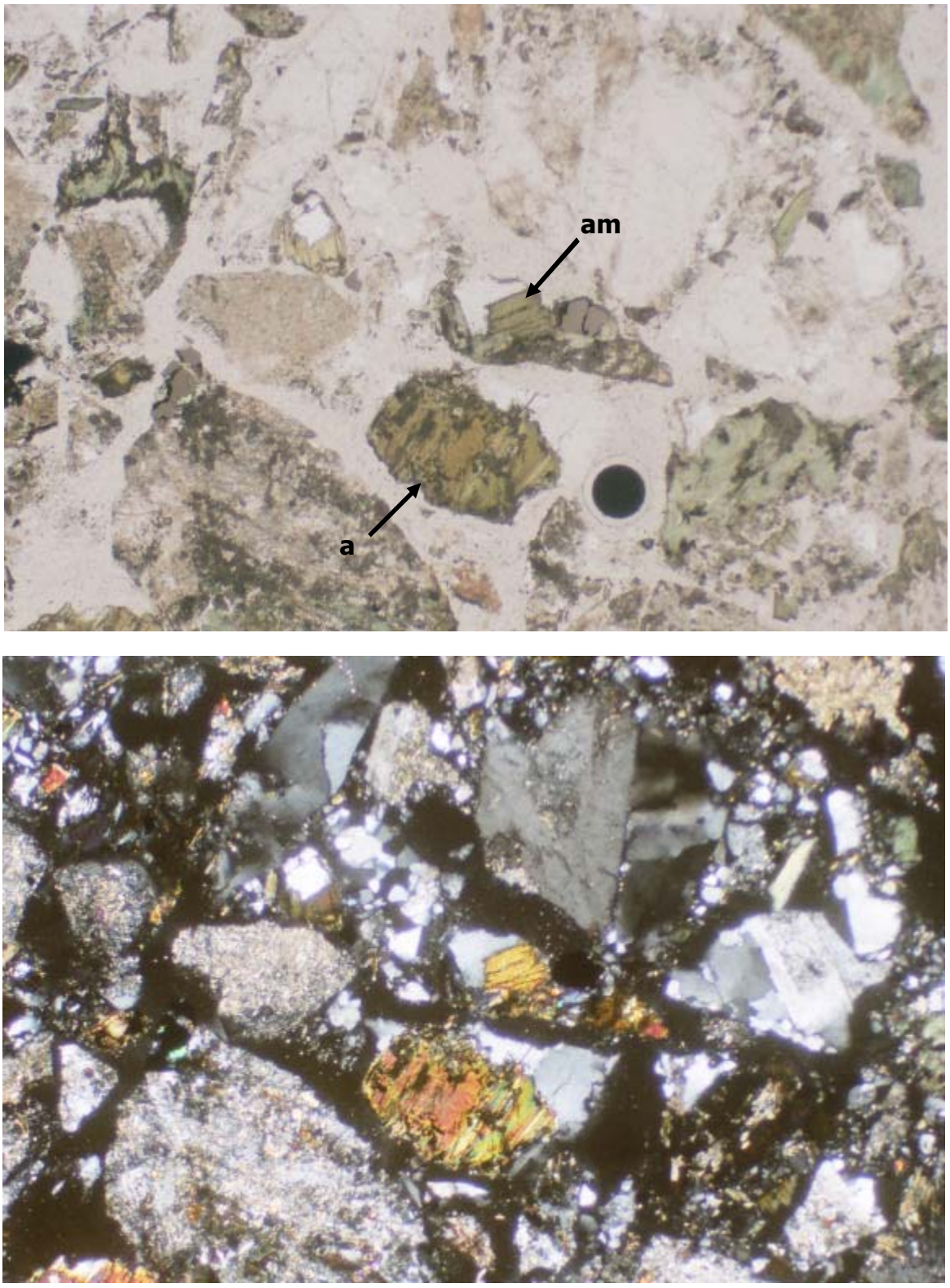

Figure 3. Sample HC-3 in plain transmitted light (top) and with crossed polarizers (bottom), width of field 2.6 mm, showing analyzed biotite grain **a**, which is partly chloritized (Table 1). Also shown is an analyzed grain of amphibole (Table 3).

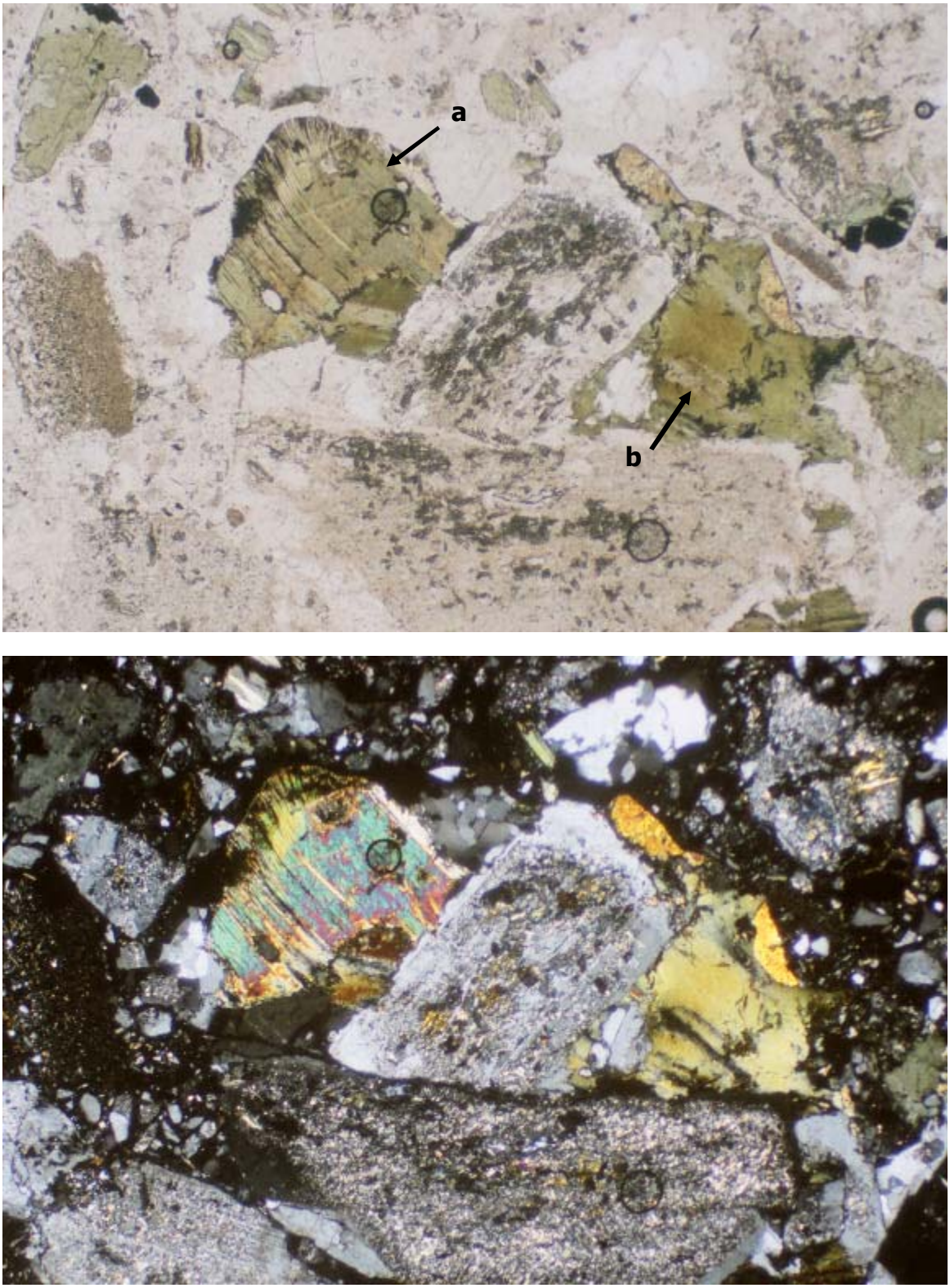

Figure 4. Sample HC-4 in plain transmitted light (top) and with crossed polarizers (bottom), width of field 2.6 mm, showing analyzed biotite grains **a** and partly chloritized grain **b** (Table 2).

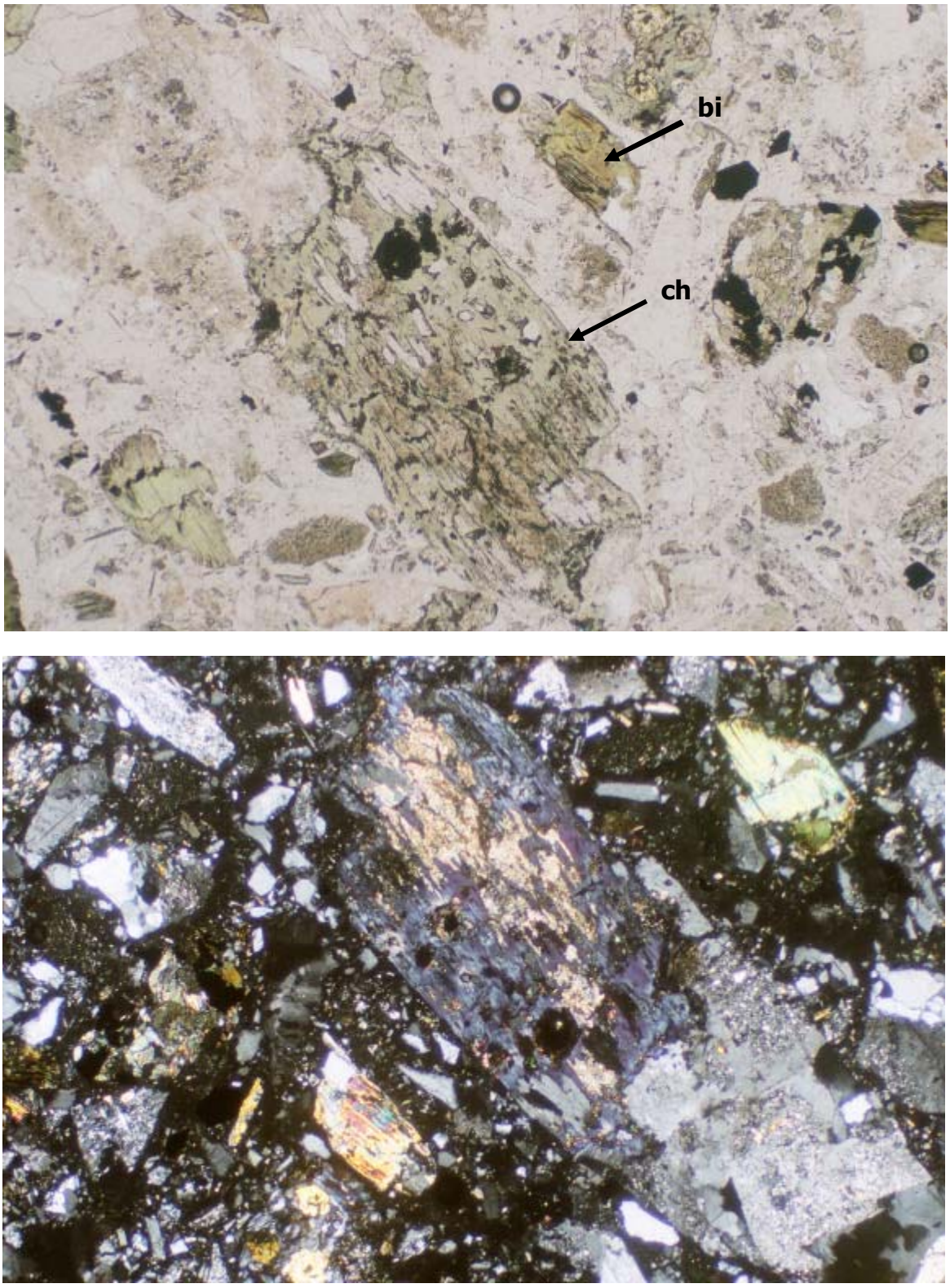

Figure 5. Sample HC-4 in plain transmitted light (top) and with crossed polarizers (bottom), width of field 2.6 mm, showing the analyzed chlorite (**ch**) and biotite (**bi**) of Table 2.

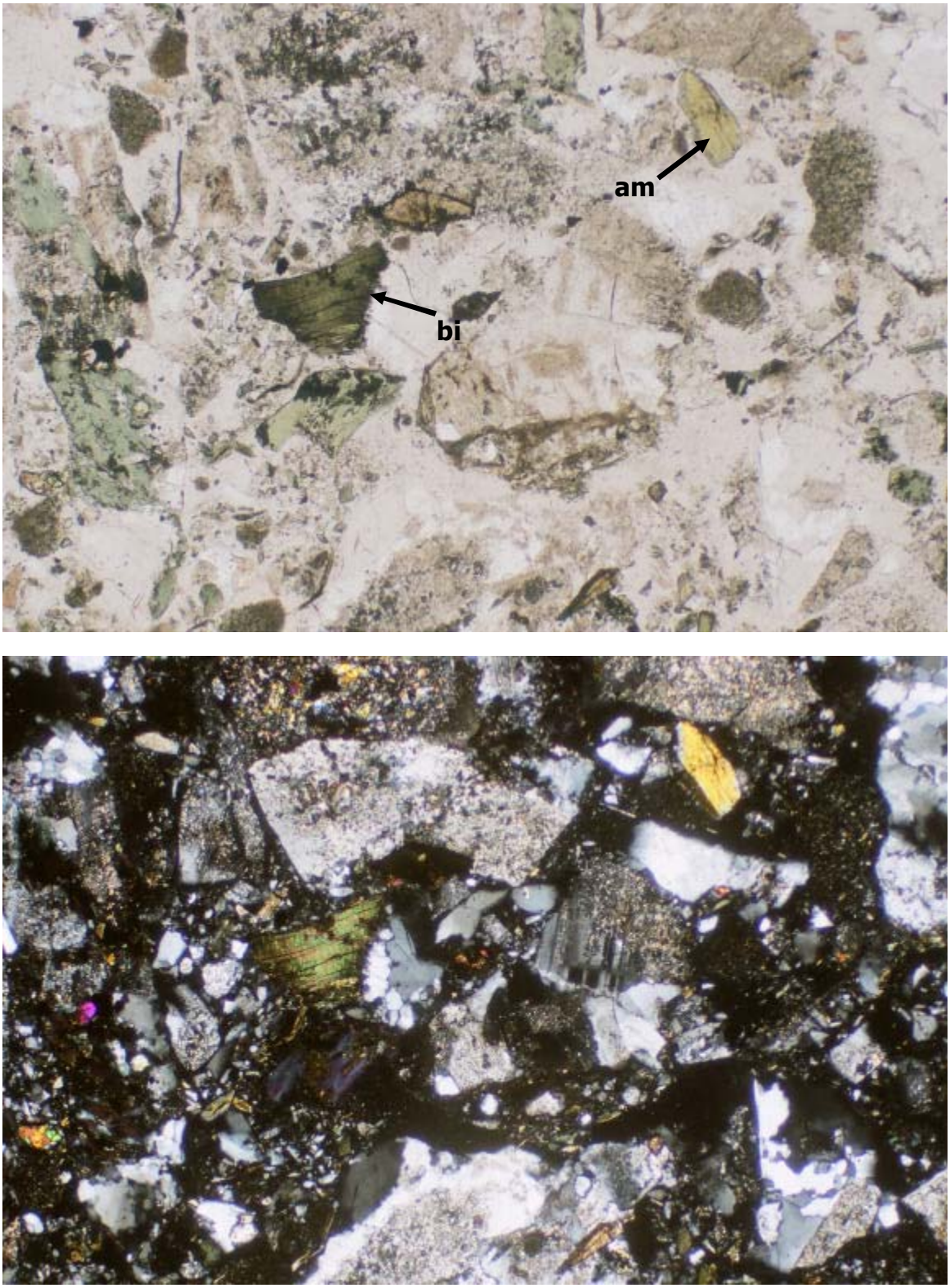

Figure 6. Sample HC-4 in plain transmitted light (top) and with crossed polarizers (bottom), width of field 2.6 mm, showing analyzed biotite (Table 2) and amphibole (Table 3).

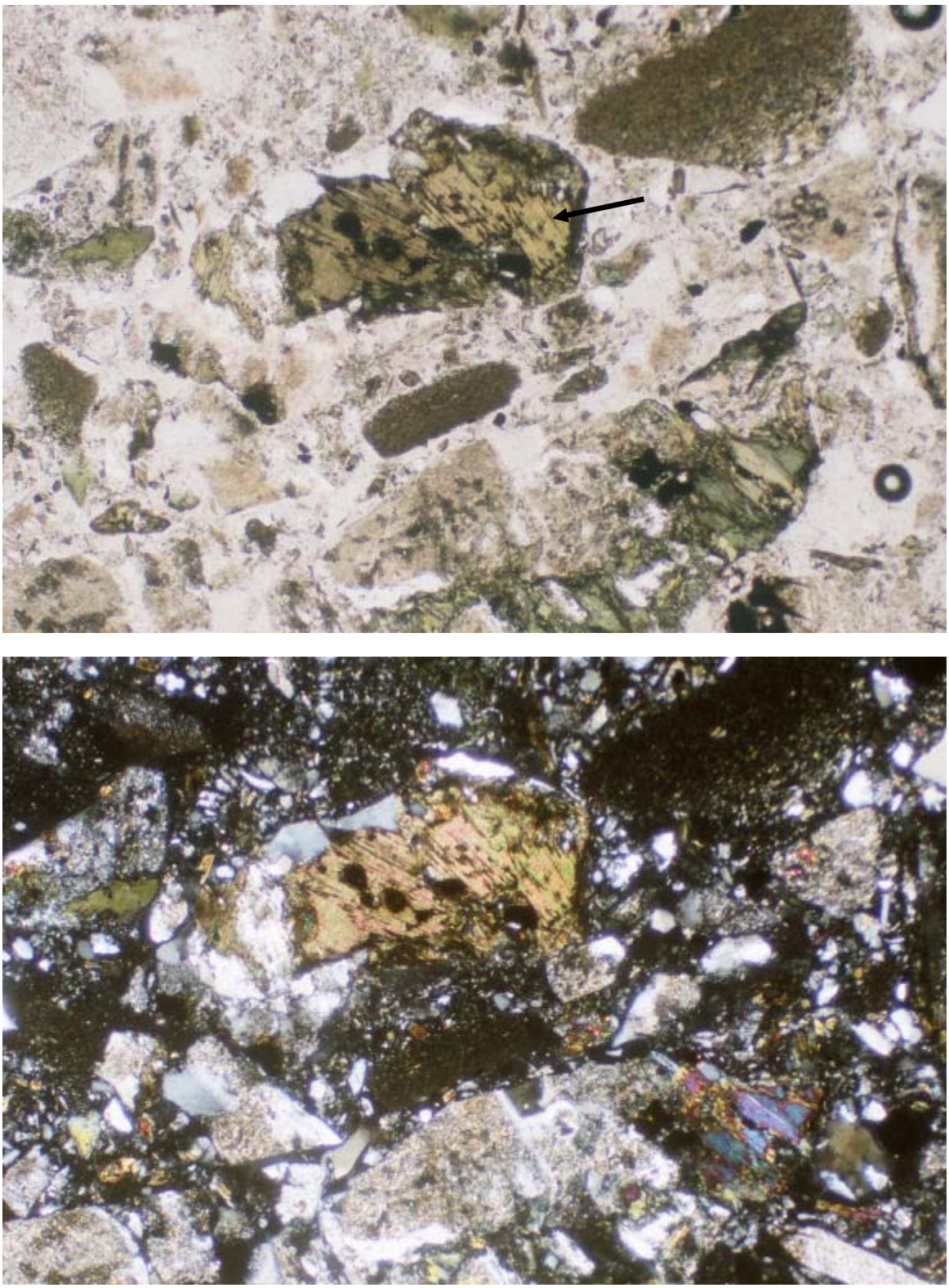

Figure 7. Sample HC-4 in plain transmitted light (top) and with crossed polarizers (bottom), width of field 2.6 mm, showing analyzed biotite (Table 2).

Amphibole

The nomenclature system for the amphibole group is complex (Leake et al. 1997, 2003); the number of approved species within the group seems to be increasing monthly and is now approaching 100. In most cases it is not possible to determine which species is present unless a quantitative chemical analysis has been obtained.

Microprobe compositions of three random grains in the High Lake samples are given in Table 3. Calculated formulas are also given, but only for the first three of the analyses because visual inspection shows that the remaining analyses do not exceed the compositional range of the first three. Figure 8 illustrates the portion of the amphibole classification system that is relevant to the nomenclature of the High Lake mineral. The calculated formulas at the bottom of Table 3 indicate that the specific species is magnesiohornblende.

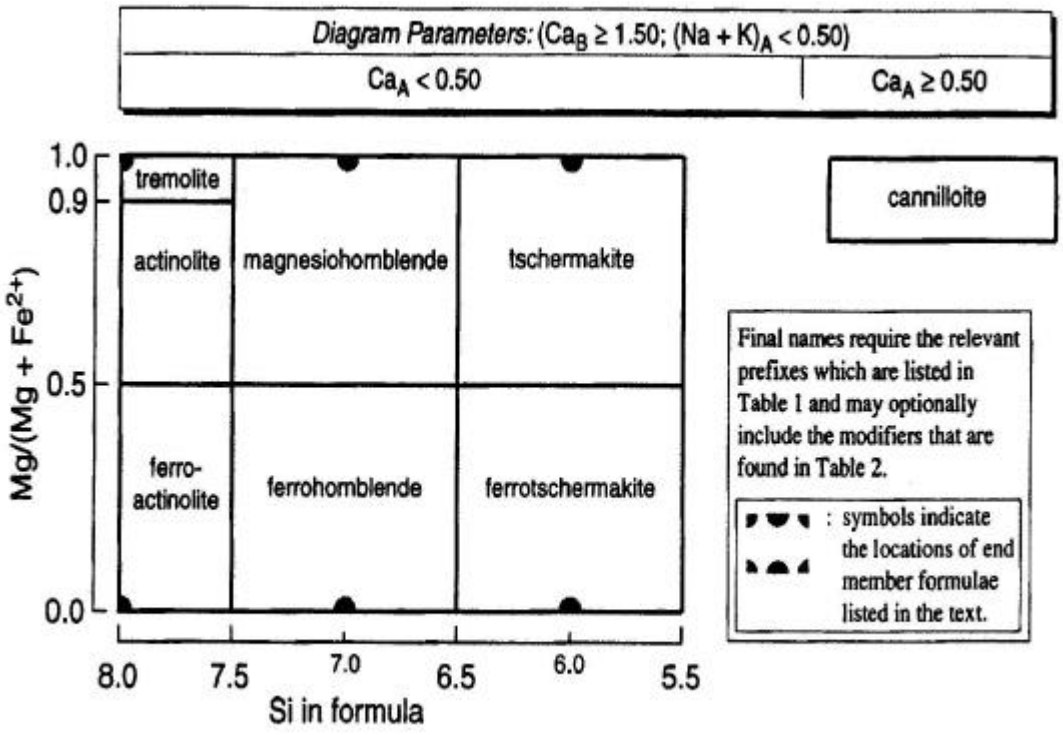

Figure 8. Part of the classification scheme for the amphiboles, as approved by the International Mineralogical Association (Leake et al. 1997). The general formula is $AB_2C_5D_8(O,OH)_{23}$. In the formulas given in Table 3, Na+K in *A* is <0.50, Ca in *B* is >1.50, Mg/(Mg+Fe) is 0.58 to 0.68, and Si is ~7, thus placing the compositional results unambiguously into the field for magnesiohornblende.

Table 3. Electron-microprobe compositions of High Lake amphibole

Wt%	HC-3 (Fig.1)		HC-3 (Fig. 3)		HC-4 (Fig. 6)	
	1	2	1	2	1	2
Na_2O	1.29	1.16	1.03	1.13	1.01	1.00
K_2O	0.34	0.31	0.84	0.63	0.25	0.26
CaO	11.31	11.15	10.00	11.21	11.09	11.26
MgO	14.19	14.79	12.74	12.29	13.34	14.24
MnO	0.28	0.30	0.57	0.60	0.39	0.48
FeO	13.37	12.64	16.66	16.40	15.00	14.10
Al_2O_3	6.97	6.36	6.47	6.58	6.41	6.01
Cr_2O_3	0.00	0.00	0.02	0.04	0.00	0.00
SiO_2	47.75	48.49	48.50	47.22	47.81	48.65
TiO_2	1.56	1.41	0.93	1.12	1.37	1.34
Cl	0.05	0.06	0.12	0.13	0.11	0.06
F	0.18	0.23	0.13	0.11	0.19	0.22
sum	97.29	96.91	98.02	97.45	96.97	97.62
O ≡ F,Cl	0.09	0.11	0.08			
sum	97.20	96.80	97.94			
	Number of ions for 23 (O,OH,F,Cl)					
Na	0.37	0.33	0.29			
K	0.06	0.06	0.16			
Ca	1.78	1.75	1.58			
Mg	3.11	3.23	2.80			
Mn	0.04	0.04	0.07			
Fe	1.64	1.55	2.06			
Al	1.21	1.10	1.13			
Si	7.01	7.11	7.16			
Ti	0.17	0.16	0.10			
F	0.08	0.11	0.06			
Cl	0.01	0.01	0.03			
Mg/(Mg+Fe)	0.65	0.68	0.58			

Formulas (cations):

Fig. 1, point 1:
$(Na_{0.33}K_{0.06})_{S0.39}(Ca_{1.78}Fe_{0.14}Na_{0.04}Mn_{0.04})_{S2.00}(Mg_{3.11}Fe_{1.50}Al_{0.22}Ti_{0.17})_{S5.00}(Si_{7.01}Al_{0.99})_{S8.00}$

Fig. 1, point 2:
$(Na_{0.28}K_{0.06})_{S0.34}(Ca_{1.75}Fe_{0.16}Na_{0.05}Mn_{0.04})_{S2.00}(Mg_{3.23}Fe_{1.39}Al_{0.22}Ti_{0.16})_{S5.00}(Si_{7.11}Al_{0.89})_{S8.00}$

Fig. 3, point 1
$(Na_{0.19}K_{0.16})_{S0.35}(Ca_{1.58}Fe_{0.25}Na_{0.10}Mn_{0.07})_{S2.00}(Mg_{2.80}Fe_{1.81}Al_{0.29}Ti_{0.10})_{S5.00}(Si_{7.16}Al_{0.84})_{S8.00}$

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Quantitative Phase Analysis of Four Rock Samples Using the Rietveld Method and X-ray Powder Diffraction Data.

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November 15, 2004

EXPERIMENTAL METHOD

The particle size of the four samples (HLW12, HLW01-06, HLW01-04 and HLW02-01) was further reduced to the optimum grain-size range for X-ray analysis (<5 μm) by grinding under ethanol in a vibratory McCrone Micronising Mill (McCrone Scientific Ltd., London, UK) for 7 minutes. Fine grain-size is an important factor in reducing micro-absorption contrast between phases.

Step-scan X-ray powder-diffraction data were collected over a range 3-70°2θ with CuKα radiation on a standard Siemens (Bruker) D5000 Bragg-Brentano diffractometer equipped with a diffracted-beam graphite monochromator crystal, 2 mm (1°) divergence and antiscatter slits, 0.6 mm receiving slit and incident-beam Soller slit. The long fine-focus Cu X-ray tube was operated at 40 kV and 40 mA, using a take-off angle of 6°.

RESULTS AND DISCUSSION

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 and Search-Match software by Siemens (Bruker). X-ray powder-diffraction data were refined with Rietveld Topas 2.0 (Bruker AXS). Rietveld refinement plot are given in Figures 1-4. The results of quantitative phase analysis by Rietveld refinement are given in Table 1.

Table 1: Results of quantitative analysis from Rietveld refinements (wt.%)

Phase	Ideal Formula	1Lorax HLW12	2Lorax HLW01-06	3Lorax HLW01-04	4Lorax HLW02-01
Quartz	SiO_2	82.2	27.0	22.9	13.7
Muscovite	$KAl_2AlSi_3O_{10}(OH)_2$	9.0	6.1	7.1	7.1
K-feldspar	$KAlSi_3O_8$		1.1		
Plagioclase	$NaAlSi_3O_8 – CaAl_2Si_2O_8$			36.0	36.0
Clinochlore	$(Mg,Fe^{2+})_5Al(Si_3Al)O_{10}(OH)_8$	8.6	58.3	11.2	8.2
Pargasite	$NaCa_2(Mg_4Al)Si_6Al_2O_{22}(OH)_2$			5.6	22.7
Epidote	$Ca_2(Fe^{3+},Al)_3(SiO_4)_3(OH)$			12.0	4.5
Calcite	$CaCO_3$	0.2	0.4	3.5	
Ankerite	$Ca(Fe^{2+},Mg,Mn)(CO_3)_2$		0.7		
Pyrite	FeS_2		6.5	1.8	
Magnetite	Fe_3O_4				5.6
Hydroxylapatite	$Ca_5(PO_4)_3(OH)$				2.2
Total		100.0	100.0	100.0	100.0

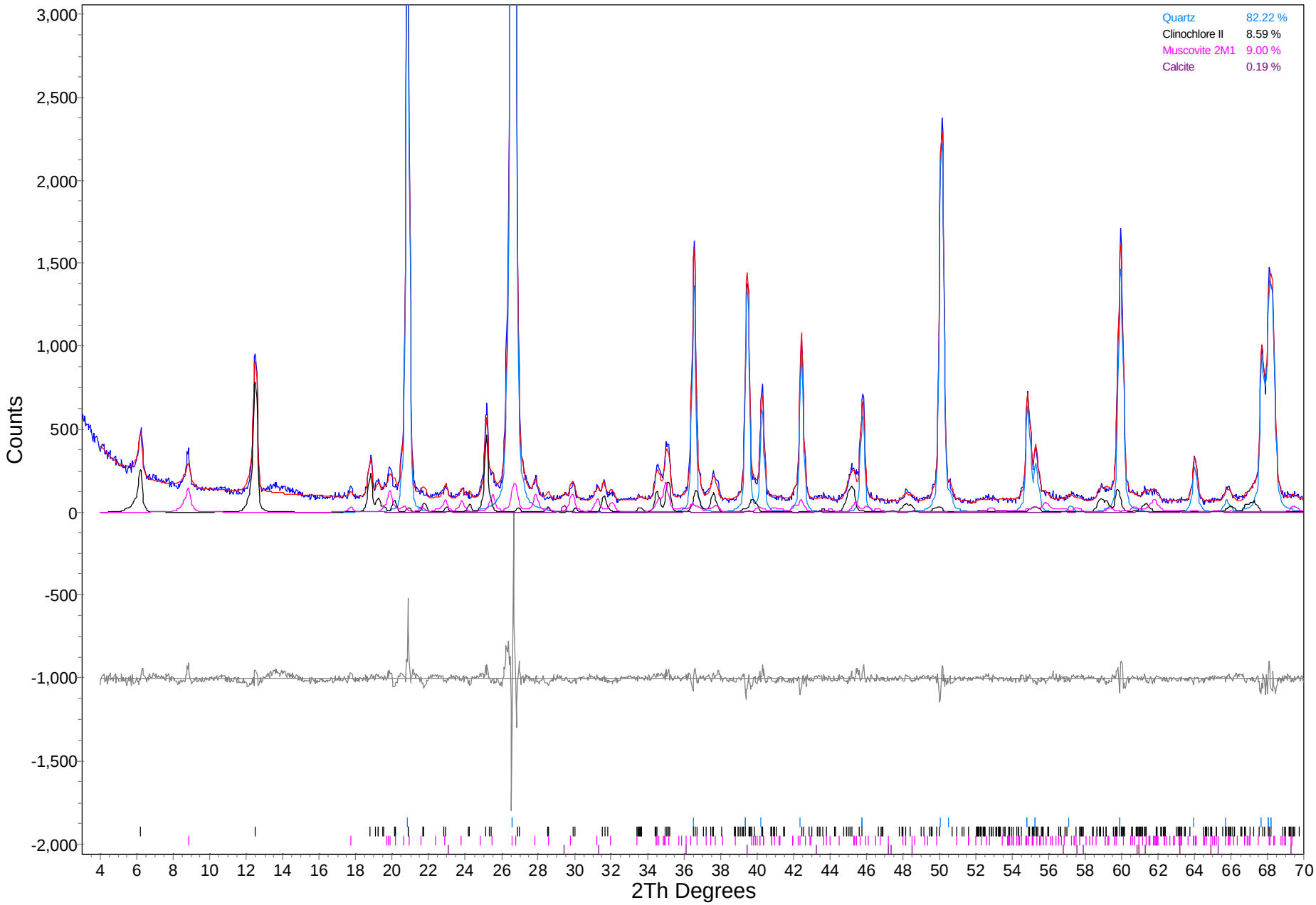

Figure 1: . Rietveld refinement plot for sample **1Lorax HLW12** (blue line - observed intensity at each step; red line - calculated pattern, solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections. Coloured lines are individual diffraction patterns of all phases

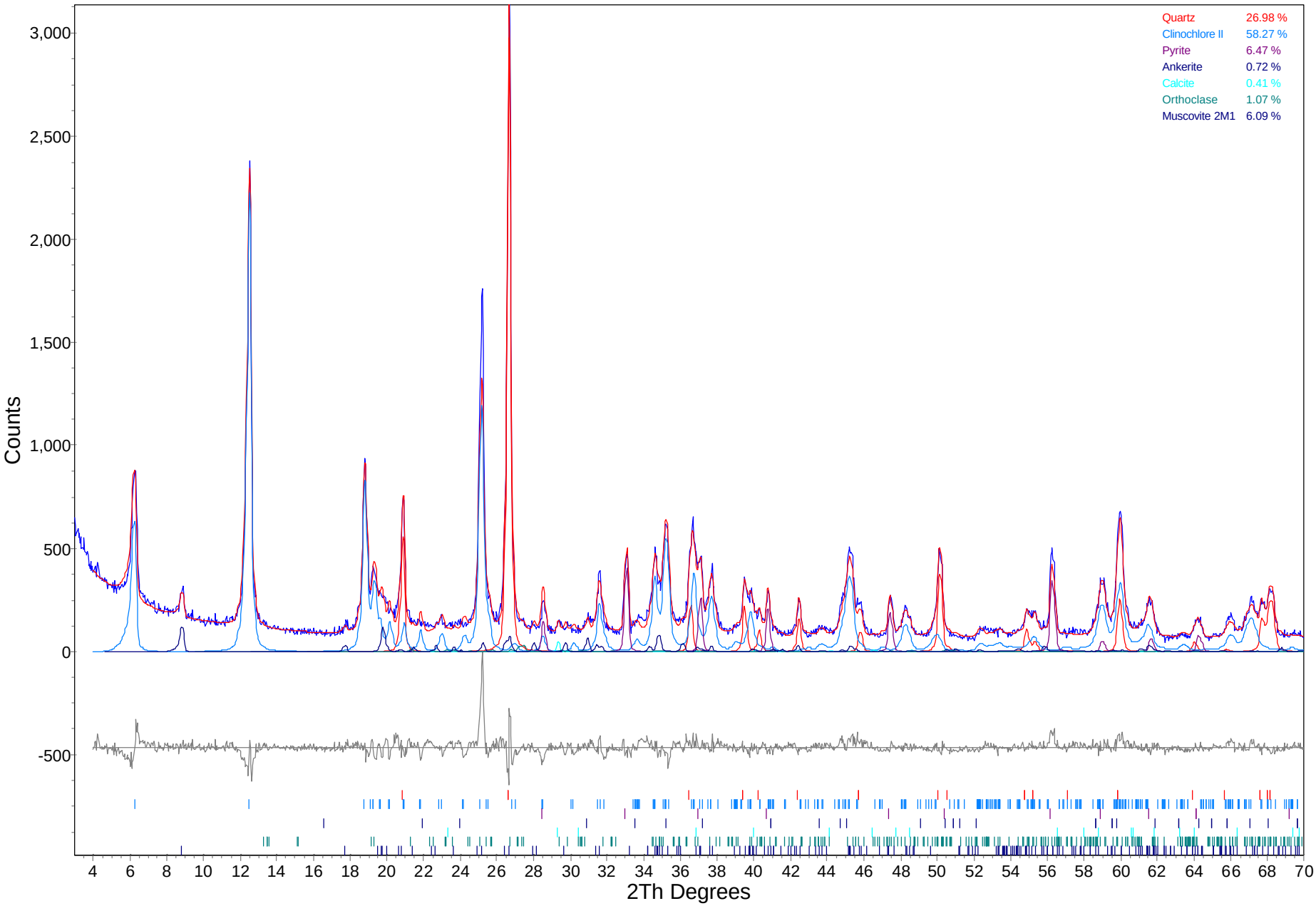

Figure 2: . Rietveld refinement plot for sample **2Lorax HLW01-06** (blue line - observed intensity at each step; red line - calculated pattern, solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections. Coloured lines are individual diffraction patterns of all phases

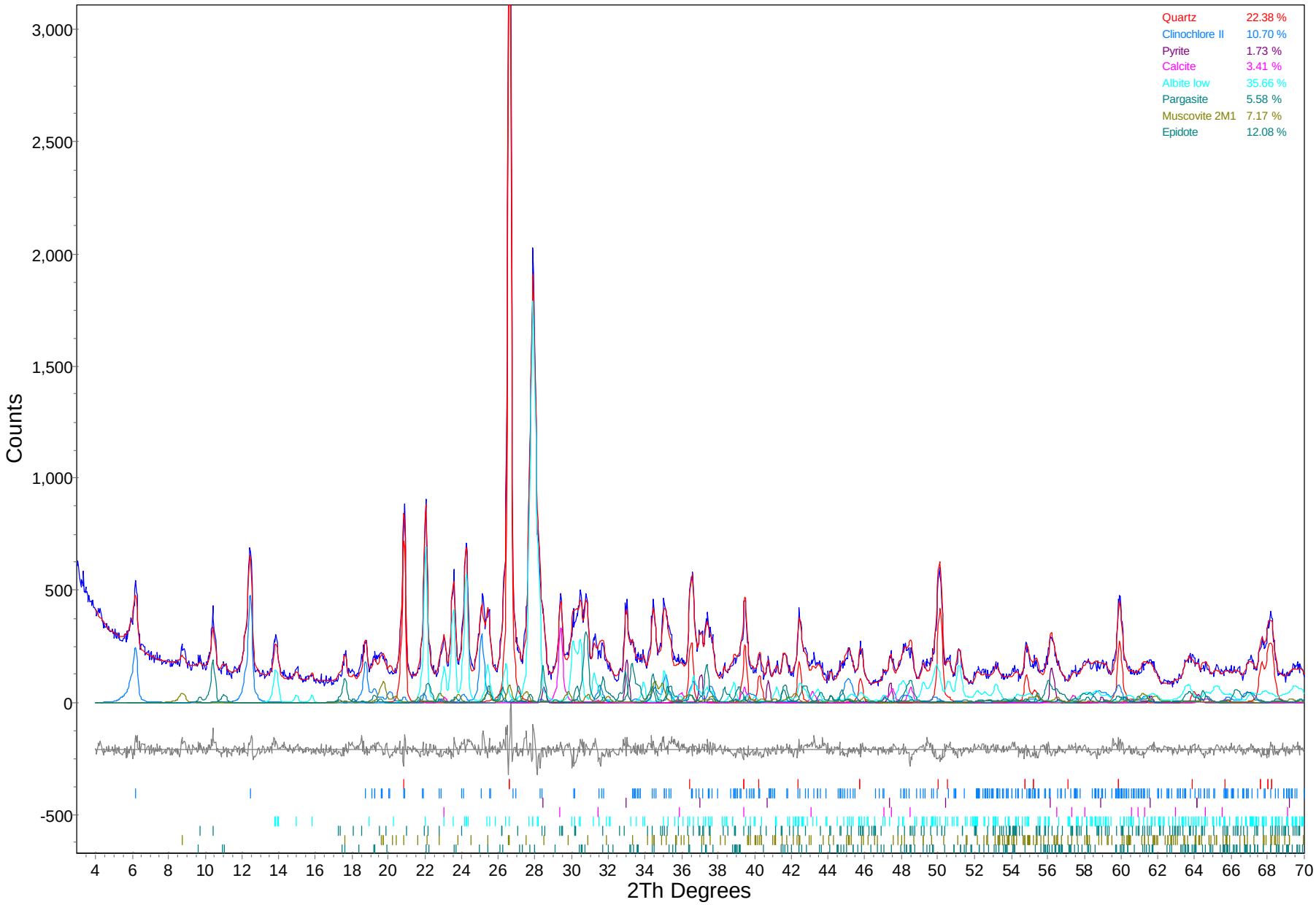

Figure 3: . Rietveld refinement plot for sample **3Lorax HLW01-04** (blue line - observed intensity at each step; red line - calculated pattern, solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections. Coloured lines are individual diffraction patterns of all phases

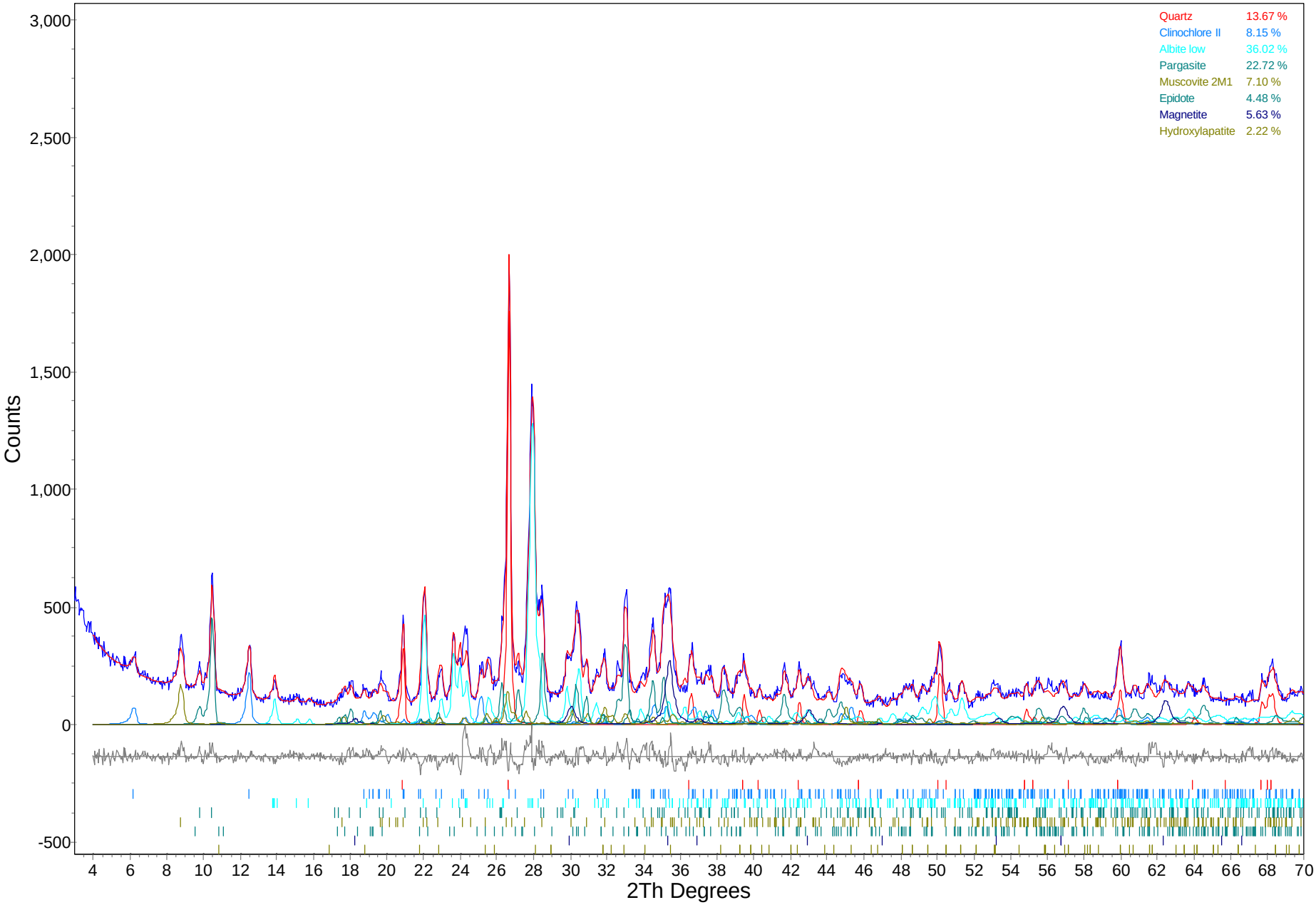

Figure 4: . Rietveld refinement plot for sample **4Lorax HLW02-01** (blue line - observed intensity at each step; red line - calculated pattern, solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections. Coloured lines are individual diffraction patterns of all phases

QUANTITATIVE PHASE ANALYSIS OF TWELVE POWDER SAMPLES USING THE RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA.

(Proj.# 450-1 – High Lake)

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February 23, 2006

EXPERIMENTAL METHOD

The twelve samples were reduced into fine powder to the optimum grain-size range for X-ray analysis (<10μm) grinding under ethanol in a vibratory McCrone Micronising Mill for 7 minutes. Step-scan X-ray powder-diffraction data were collected over a range 3-80°2θ with CoKα radiation on a standard Siemens (Bruker) D5000 Bragg-Brentano diffractometer equipped with a diffracted-beam with a Fe monochromator foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Sollers slits and a Vantec-1 strip detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6°.

RESULTS AND DISCUSSION

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 using Search-Match software by Siemens (Bruker). X-ray powder-diffraction data were refined with Rietveld Topas 3 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinement are given in Table 1 (separate file, **Lorax Table 1 Proj 450-1.xls**). These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots for the samples are shown in Figures 1-12.

Table1. Results of quantitative X-ray analysis (wt%)

	HC1		**HC2**		**HC3**		**HC4**		**HC5**		**HC6**
Quartz	21.8	Quartz	20.2	Quartz	24.8	Quartz	24.5	Quartz	5.7	Quartz	68.4
Calcite	3.1	Calcite	1.3	Clinochlore	8.0	Clinochlore	7.1	Clinochlore	7.6	Clinochlore	12.2
Clinochlore	10.2	Clinochlore	9.9	Actinolite	6.6	Actinolite	7.2	Actinolite	43.1	Calcite	1.0
Actinolite	6.7	Actinolite	7.6	Plagioclase	40.0	Plagioclase	43.1	Plagioclase	28.9	Pyrite	0.5
Plagioclase	34.8	Plagioclase	33.1	Biotite	4.4	Biotite	6.2	K-feldspar	3.0	Muscovite	16.3
Pyrite	1.9	Pyrite	2.0	K-feldspar	4.3	K-feldspar	4.0	Muscovite	6.5	K-feldspar	1.6
Clinozoisite	13.8	Clinozoisite	16.4	Muscovite	6.0	Muscovite	6.6	Calcite	2.1		
Titanite	2.1	Titanite	1.5	Magnetite	1.3	Magnetite	1.3	Clinozoisite	3.2		
K-feldspar	1.9	K-feldspar	1.8	Clinozoisite	3.7						
Muscovite	3.7	Muscovite	6.0	Calcite	0.8						
Total	100.0		100.0		100.0		100.0		100.0		100.0

	HC7		**HC8**		**HC9**		**HC10**		**HC11**		**HC11PL**
Quartz	29.7	Quartz	66.3	Quartz	6.2	Quartz	6.2	Quartz	22.2	Quartz	22.8
Clinochlore	15.9	Clinochlore	14.9	Clinochlore	13.0	Clinochlore	11.9	Clinochlore	11.4	Clinochlore	11.2
Calcite	1.9	Muscovite	15.2	Calcite	2.2	Actinolite	47.3	K-feldspar	2.8	K-feldspar	2.3
Pyrite	0.5	Calcite	0.4	Actinolite	46.5	Biotite	2.0	Actinolite	6.9	Actinolite	6.9
Plagioclase	25.8	Pyrite	0.3	Biotite	2.8	Muscovite	2.3	Plagioclase	36.0	Plagioclase	35.4
Actinolite	6.0	K-feldspar	2.8	Ankerite	0.3	Calcite	0.7	Calcite	0.5	Calcite	3.7
Biotite	11.1			Titanite	2.0	Plagioclase	28.2	Pyrite	2.0	Pyrite	2.1
Clinozoisite	2.4			Plagioclase	27.0	Titanite	1.5	Muscovite	5.5	Muscovite	3.4
Muscovite	4.2							Clinozoisite	12.6	Clinozoisite	12.1
K-feldspar	2.5										
	100.0		100.0		100.0		100.0		100.0		100.0

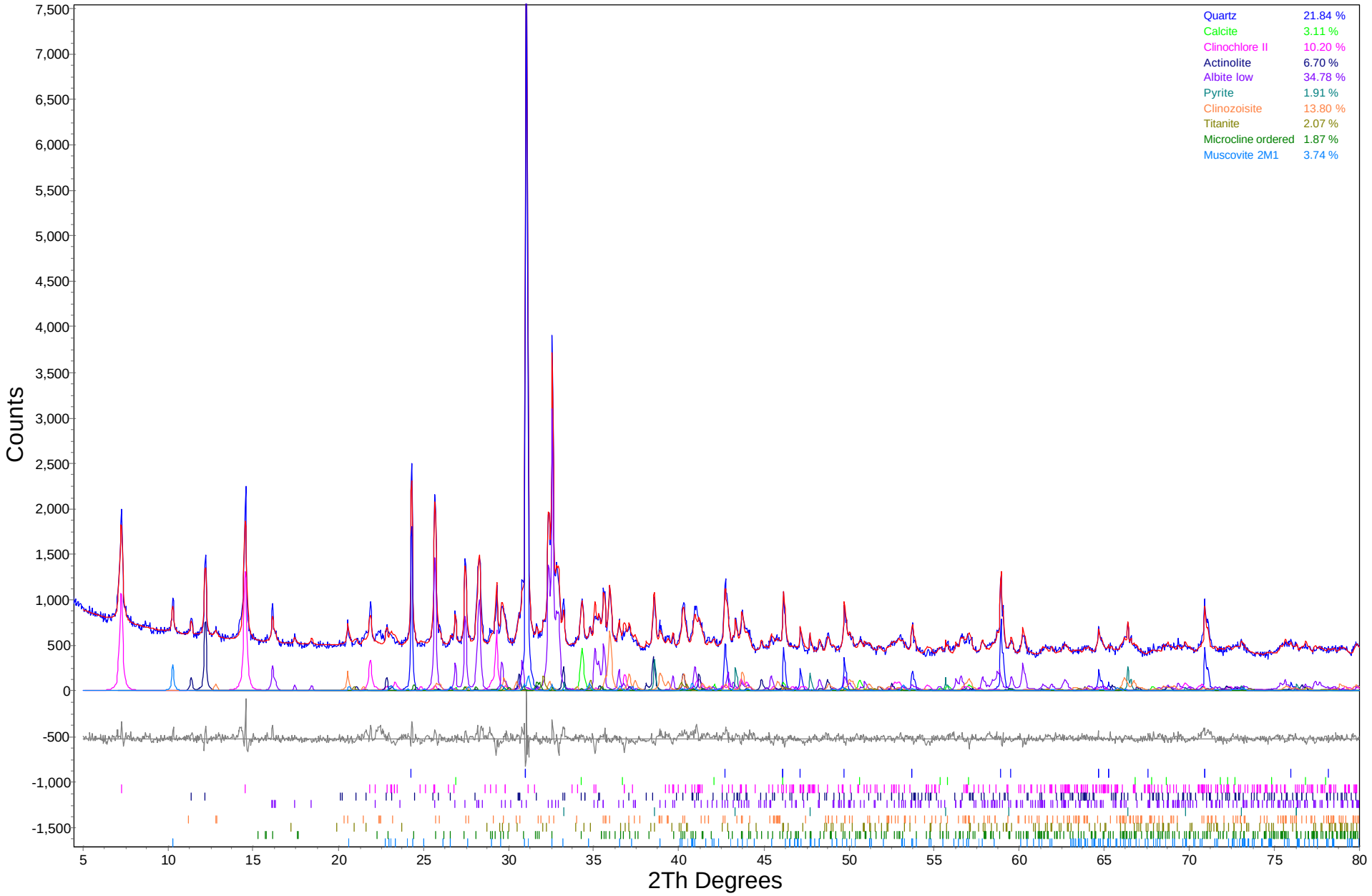

Figure 1. . Rietveld refinement plot of sample **Lorax HC #1** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

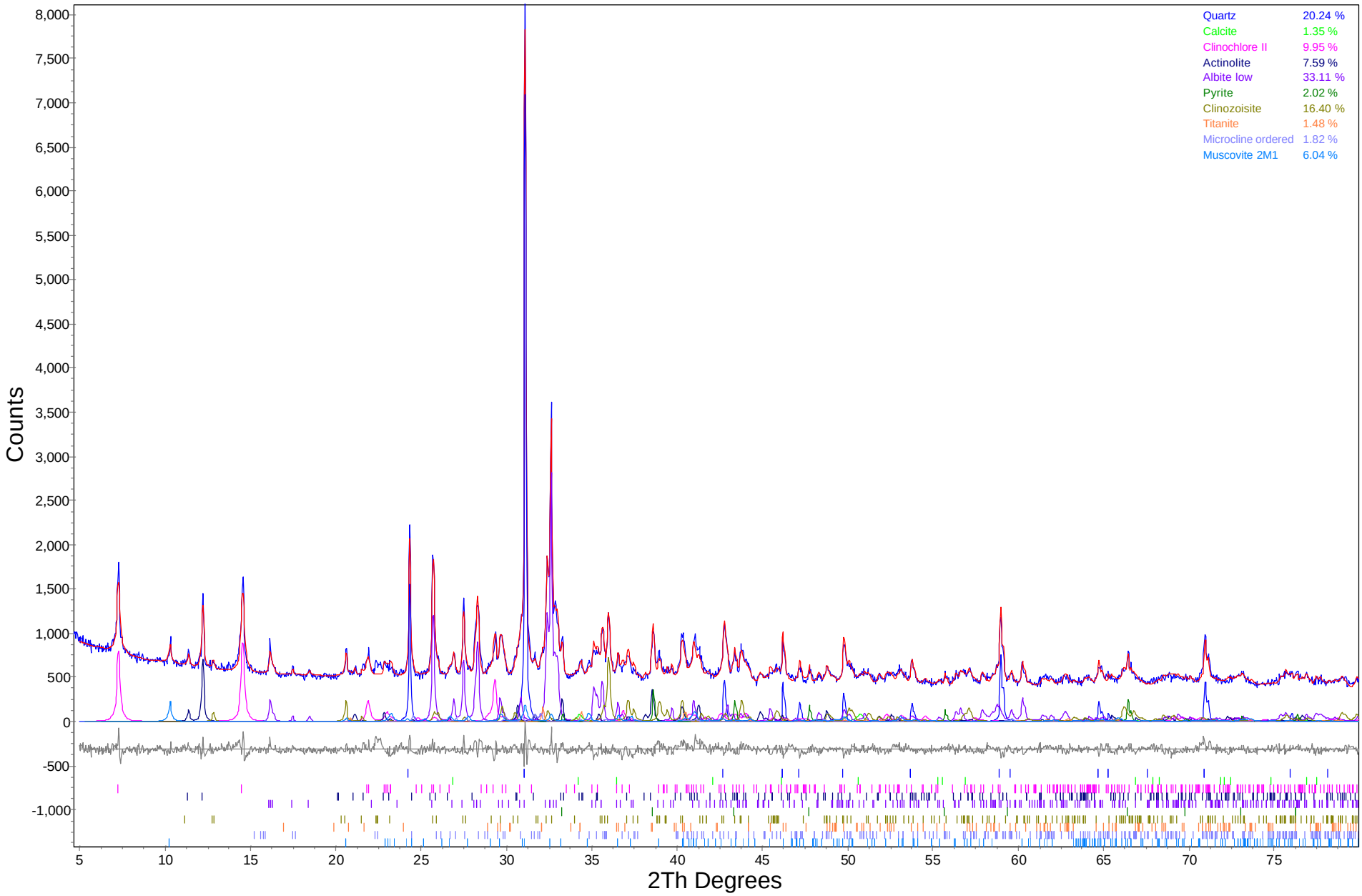

Figure 2. . Rietveld refinement plot of sample **Lorax HC #2** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

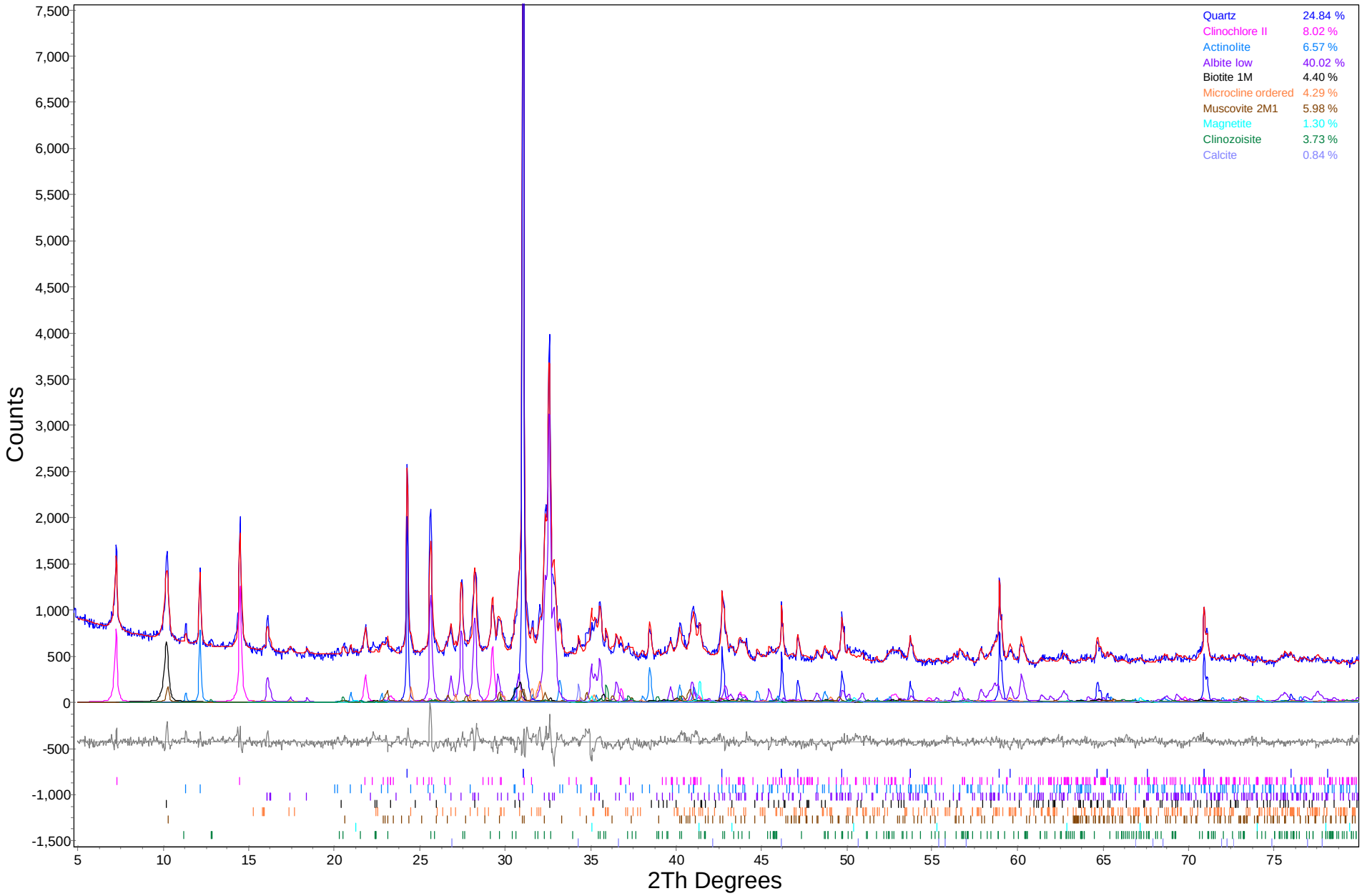

Figure 3. . Rietveld refinement plot of sample **Lorax HC #3** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

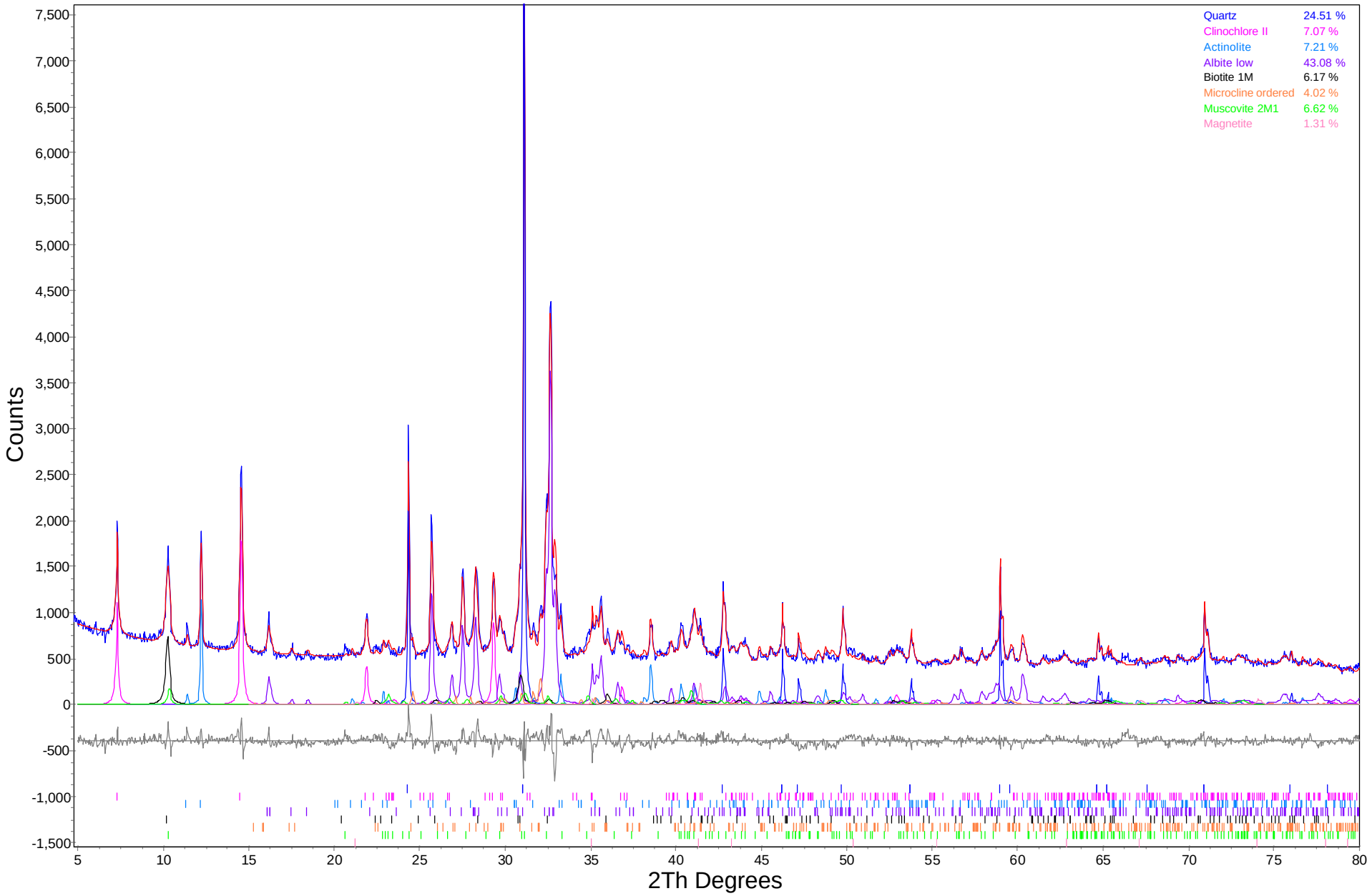

Figure 4. . Rietveld refinement plot of sample **Lorax HC #4** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

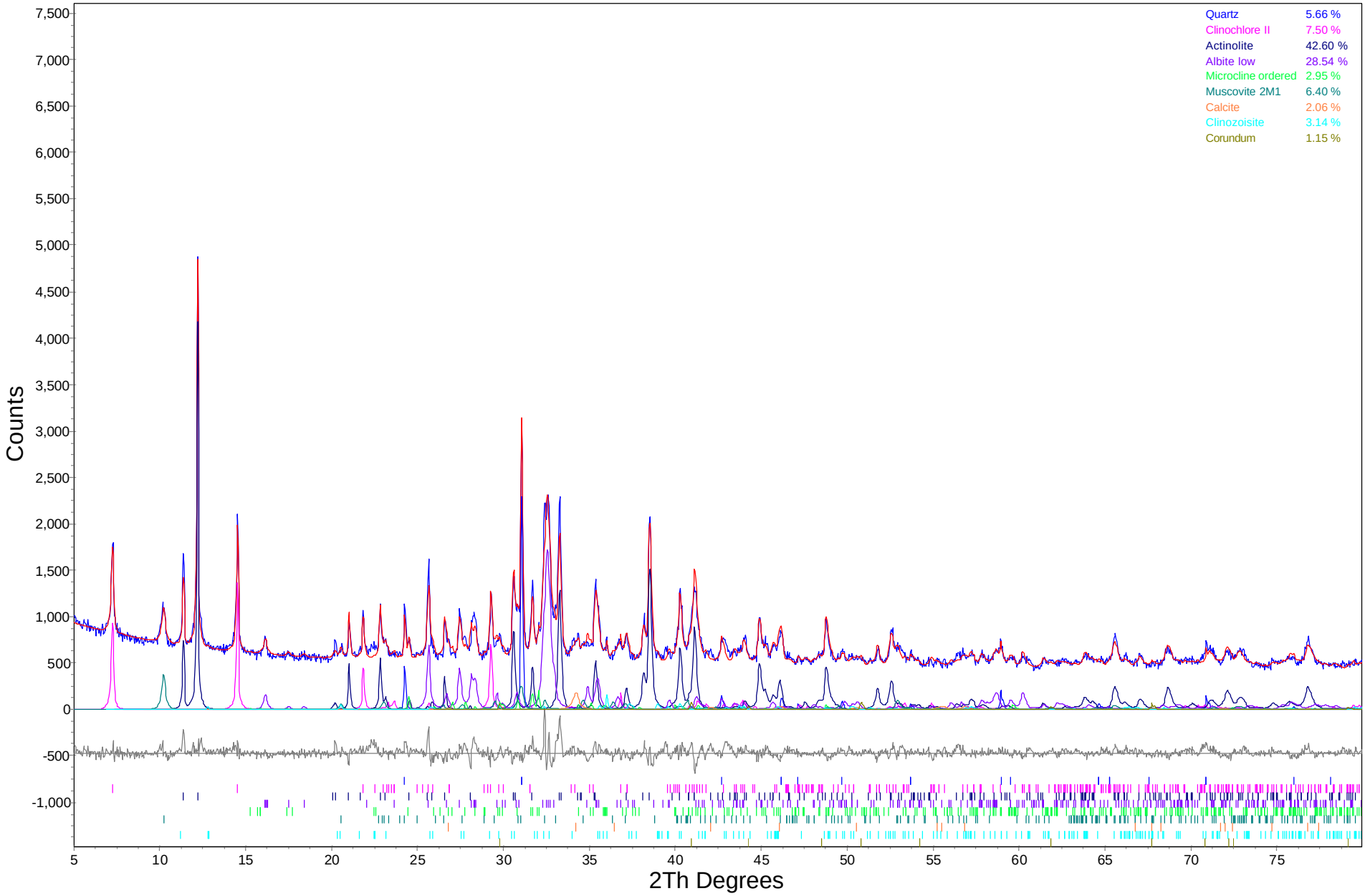

Figure 5. . Rietveld refinement plot of sample **Lorax HC #5** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

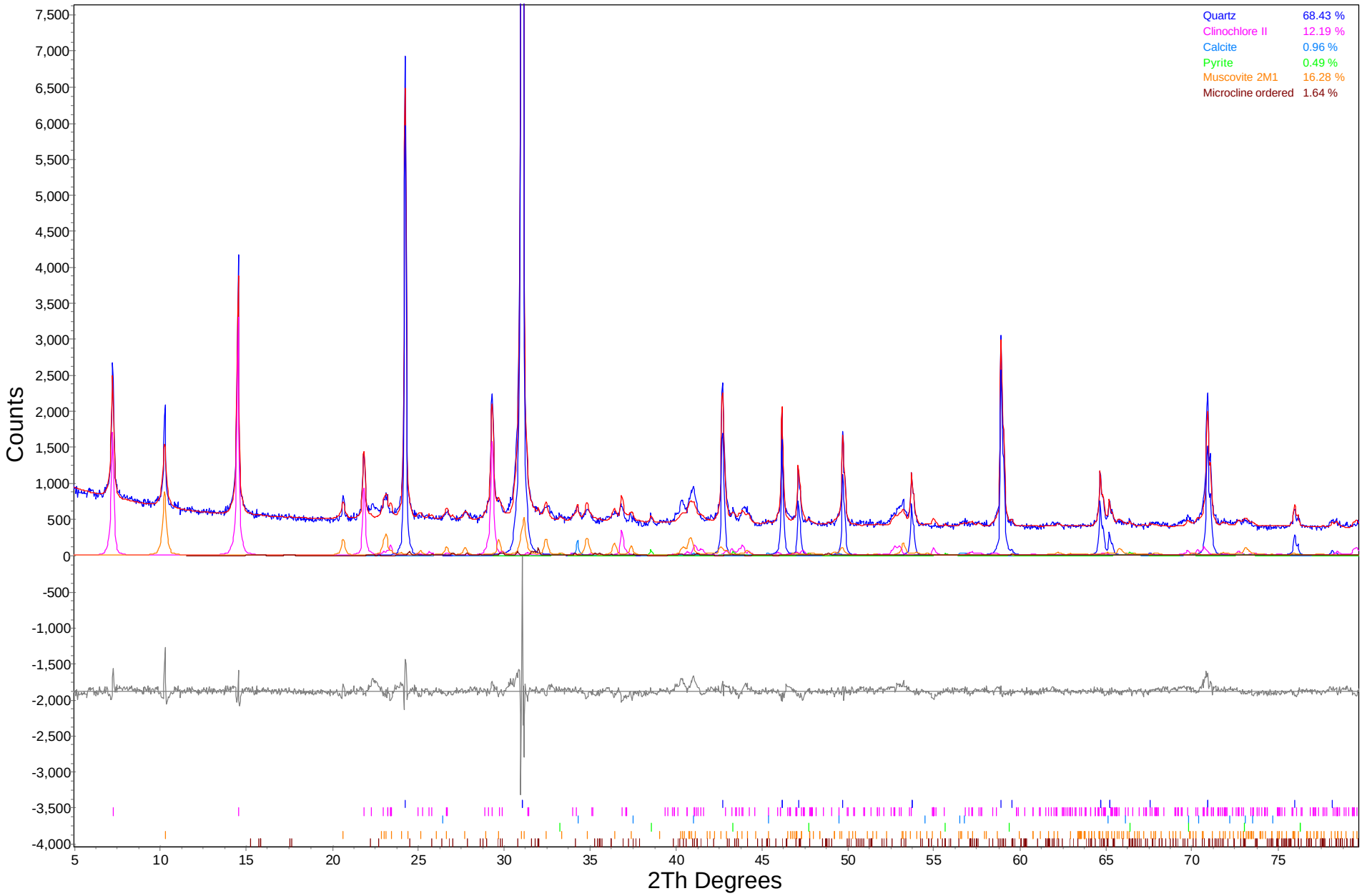

Figure 6. . Rietveld refinement plot of sample **Lorax HC #6** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

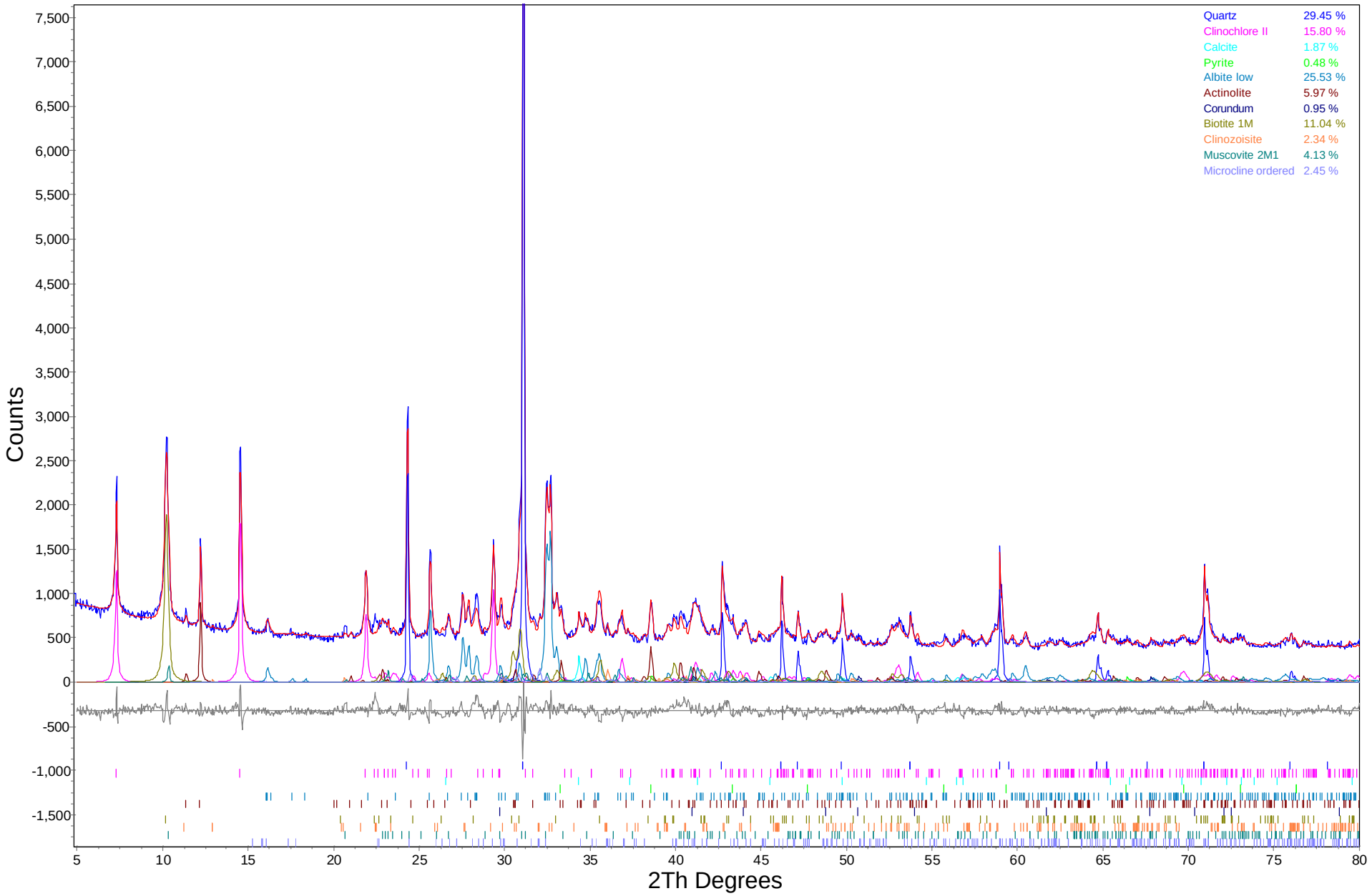

Figure 7. . Rietveld refinement plot of sample **Lorax HC #7** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

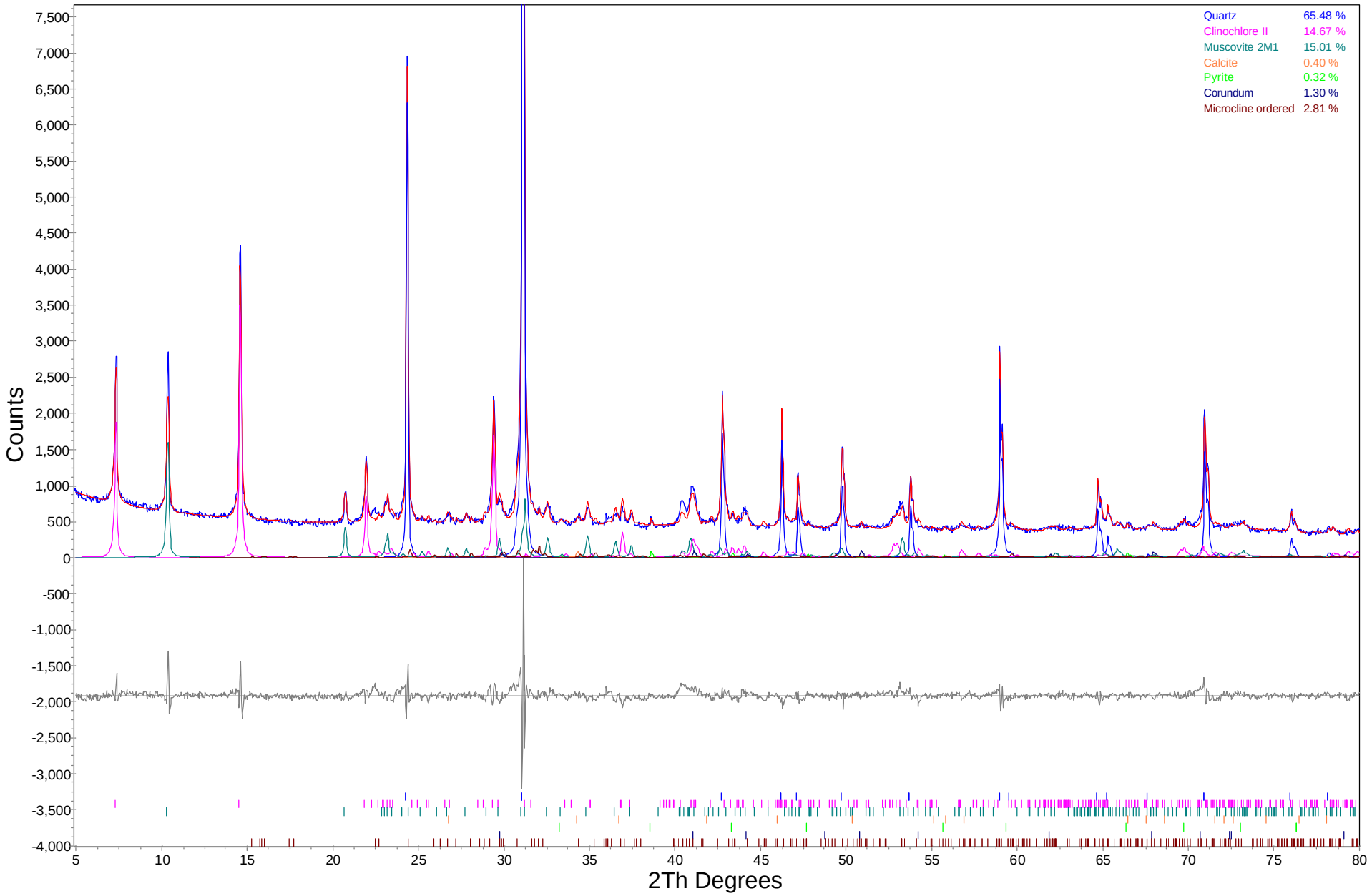

Figure 8. . Rietveld refinement plot of sample **Lorax HC #8** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

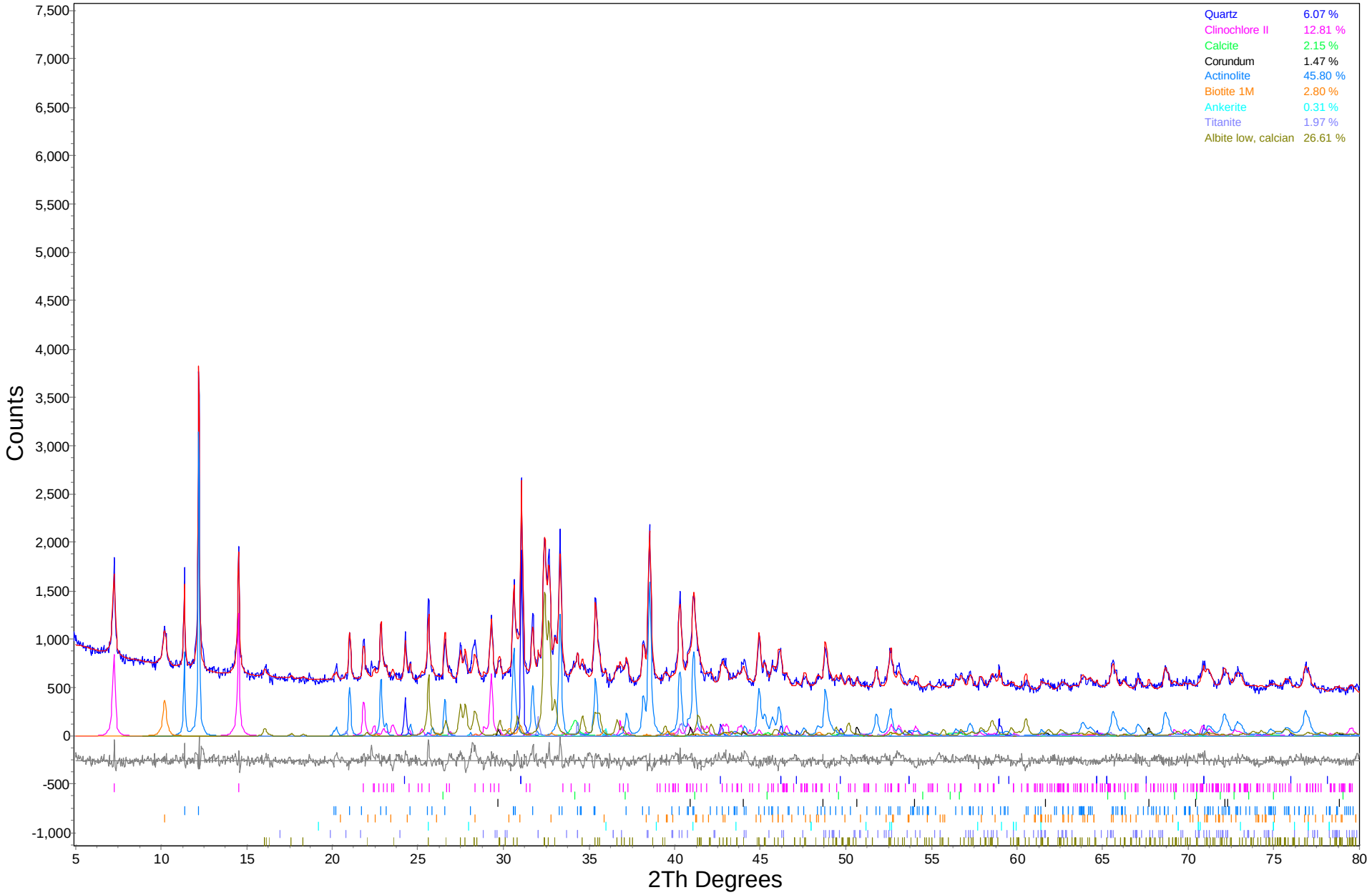

Figure 9. . Rietveld refinement plot of sample **Lorax HC #9** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

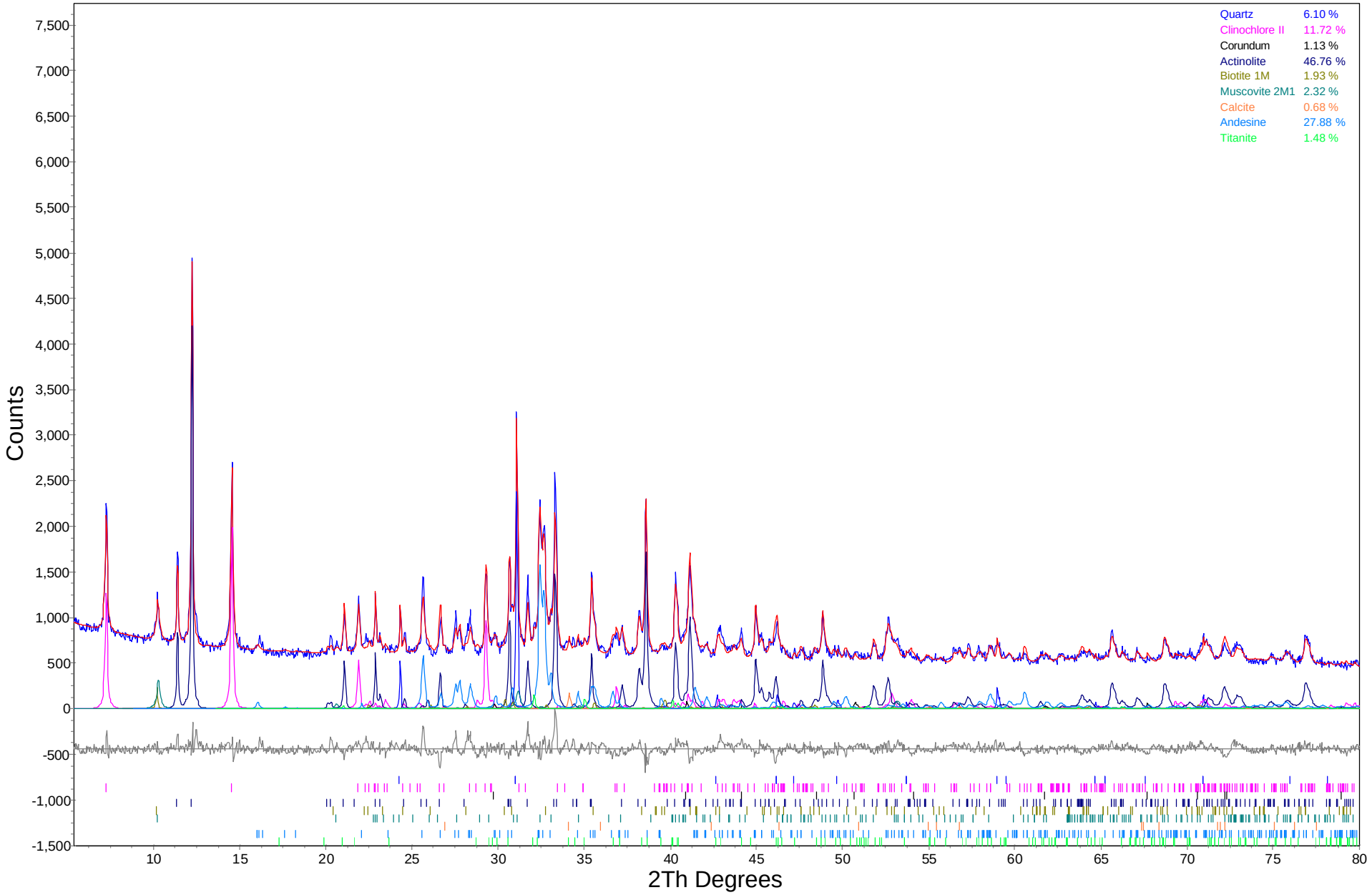

Figure 10. . Rietveld refinement plot of sample **Lorax HC #10** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

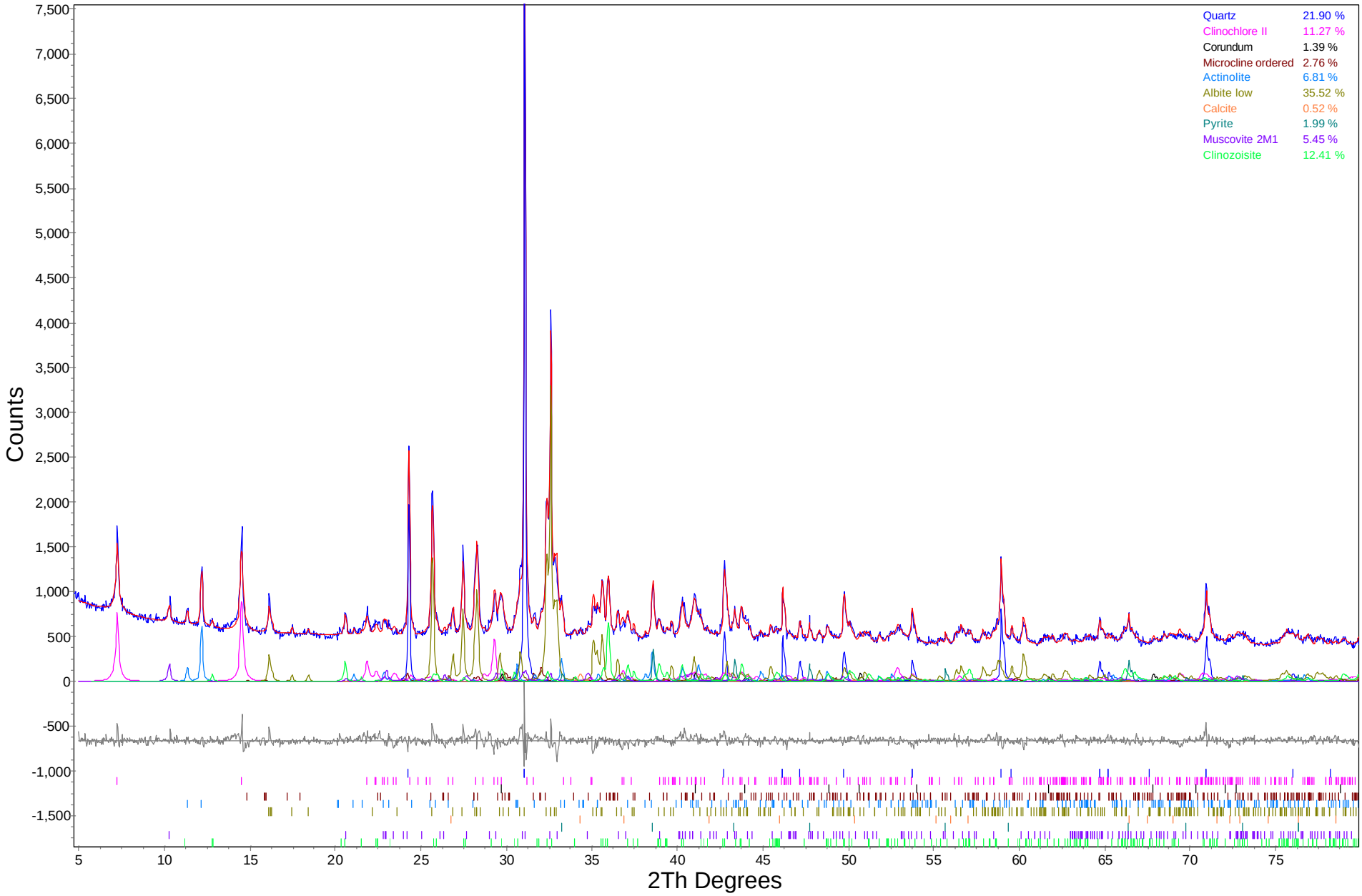

Figure 11. . Rietveld refinement plot of sample **Lorax HC #11** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

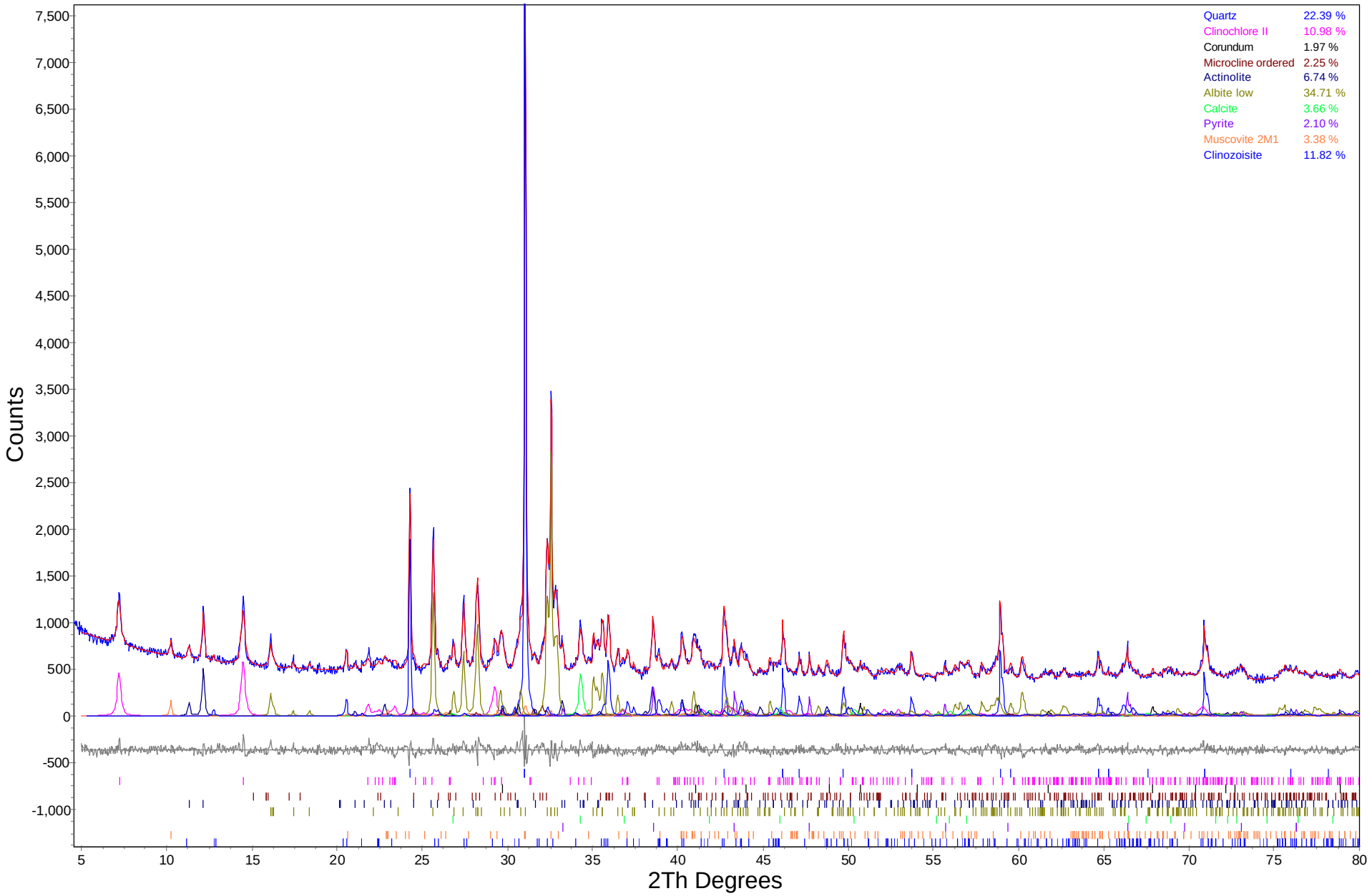

Figure 12. . Rietveld refinement plot of sample **Lorax HC #11PreLeach** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

Epidote Group wt.% oxide

	HC-11-1	HC-11-2	HC-11-3	HC-11-4	HC-11-5	HC-11-6	HC-11-7	HC-11-8	HC-11-9	C-11-10	C-11-11	C-11-12	C-11-13	C-11-14	C-11-15	C-11-16	C-11-17	C-11-18	C-11-19	C-11-20
NA2O	0.01	0.01	0.00	0.00	0.01	0.03	0.00	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.01	0.02	0.01	0.01	0.04	0.00
MGO	0.02	0.03	0.02	0.04	0.03	0.02	0.04	4.06	0.03	0.44	0.01	0.05	0.06	0.06	0.06	0.02	0.01	0.01	0.29	0.81
AL2O3	23.58	23.57	22.30	21.62	22.94	22.83	24.56	20.55	22.19	21.94	23.42	22.07	21.91	23.40	22.76	21.30	21.53	21.34	21.46	20.77
SIO2	37.54	37.36	37.13	36.84	37.22	37.02	37.49	39.24	37.25	36.40	37.16	36.81	36.74	37.15	37.10	36.62	36.62	36.71	36.76	37.45
K2O	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.05	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.01
CAO	23.08	23.16	23.04	23.10	23.05	22.90	23.24	20.15	22.95	22.54	23.11	23.05	22.94	23.16	23.02	23.06	23.00	22.63	22.71	22.61
TIO2	0.03	0.05	0.01	0.00	0.02	0.30	0.06	0.06	0.02	0.03	0.10	0.07	0.08	0.09	0.12	0.03	0.02	0.05	0.06	0.07
CR2O3	0.08	0.02	0.00	0.00	0.00	0.06	0.00	0.05	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
MNO	0.16	0.10	0.04	0.00	0.11	0.03	0.16	0.21	0.13	0.15	0.17	0.09	0.11	0.20	0.16	0.13	0.11	0.13	0.08	0.12
FE2O3	12.50	12.74	14.62	15.04	13.77	13.43	11.72	12.39	14.83	15.31	13.04	14.76	15.04	13.23	13.91	15.59	15.46	15.80	15.43	15.18
TOTAL	97.00	97.05	97.17	96.66	97.16	96.63	97.27	96.77	97.42	96.82	97.04	96.93	96.89	97.30	97.14	96.77	96.78	96.68	96.84	97.05

Structural formula on the basis of 13 oxygen (atoms per formula unit)

NA+	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
MG2+	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.50	0.00	0.06	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.04	0.10
AL3+	2.32	2.32	2.21	2.16	2.26	2.26	2.40	2.01	2.19	2.19	2.31	2.19	2.18	2.30	2.25	2.13	2.15	2.13	2.14	2.06
SI4+	3.13	3.12	3.12	3.12	3.11	3.11	3.11	3.25	3.12	3.08	3.11	3.10	3.10	3.10	3.11	3.10	3.10	3.11	3.11	3.15
K+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CA2+	2.06	2.07	2.07	2.09	2.07	2.06	2.06	1.79	2.06	2.04	2.07	2.08	2.07	2.07	2.07	2.09	2.09	2.05	2.06	2.04
TI4+	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
CR3+	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MN2+	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
FE3+	0.78	0.80	0.92	0.96	0.87	0.85	0.73	0.77	0.93	0.97	0.82	0.94	0.96	0.83	0.88	0.99	0.99	1.01	0.98	0.96
SUM	8.32	8.32	8.32	8.33	8.32	8.32	8.32	8.35	8.32	8.34	8.33	8.33	8.33	8.33	8.32	8.34	8.33	8.32	8.33	8.33

Plagioclase wt.% oxide

	HC-1-1	HC-1-2	HC-1-3	HC-1-4	HC-1-5	HC-1-6	HC-1-7	HC-1-8	HC-1-9	HC-1-10	HC-1-11	HC-1-12	HC-1-13
NA2O	9.51	11.09	11.43	9.62	11.31	10.74	10.49	10.29	10.20	11.29	11.17	11.22	11.19
MGO	0.19	0.01	0.02	2.98	0.01	0.01	0.03	0.00	0.02	0.00	0.00	0.00	0.02
AL2O3	22.48	19.67	19.59	19.63	19.70	20.31	20.79	21.35	21.48	19.66	19.74	19.73	19.69
SIO2	64.64	68.35	68.67	61.99	68.08	67.96	66.78	66.11	66.05	68.69	68.26	68.23	67.93
K2O	2.05	0.09	0.01	0.09	0.07	0.07	0.33	0.06	0.05	0.06	0.13	0.07	0.16
CAO	0.45	0.16	0.00	0.52	0.23	0.81	1.13	1.96	2.15	0.11	0.27	0.21	0.18
MNO	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.03	0.00
FE2O3	0.65	0.24	0.18	3.28	0.31	0.03	0.12	0.12	0.11	0.26	0.25	0.19	0.24
TOTAL	99.98	99.62	99.90	98.11	99.72	99.93	99.67	99.90	100.07	100.07	99.82	99.68	99.41

Structural formula on the basis of 8 oxygen (atoms per formula unit)

NA+	0.82	0.94	0.97	0.84	0.96	0.91	0.89	0.88	0.87	0.95	0.95	0.95	0.95
MG2+	0.01	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AL3+	1.17	1.02	1.01	1.05	1.02	1.05	1.08	1.11	1.11	1.01	1.02	1.02	1.02
SI4+	2.86	2.99	3.00	2.81	2.98	2.97	2.93	2.90	2.90	2.99	2.99	2.99	2.98
K+	0.12	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01
CA2+	0.02	0.01	0.00	0.03	0.01	0.04	0.05	0.09	0.10	0.01	0.01	0.01	0.01
MN2+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FE3+	0.02	0.01	0.01	0.11	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
SUM	5.01	4.97	4.98	5.04	4.99	4.97	4.98	4.98	4.98	4.98	4.98	4.98	4.98

Plagioclase wt.% oxide

	HC-11-1	HC-11-2	HC-11-3	HC-11-4	HC-11-5	HC-11-6	HC-11-7	HC-11-8	HC-11-9	HC-11-10	HC-11-11	HC-11-12	HC-11-13	HC-11-14
NA2O	11.27	11.49	10.87	11.39	10.31	10.40	11.29	11.19	10.02	10.12	9.01	9.57	10.72	11.21
MGO	0.00	0.00	0.02	0.00	0.00	0.03	0.01	0.02	0.00	0.01	0.02	0.01	0.00	0.01
AL2O3	19.67	19.92	20.03	19.99	21.40	21.20	19.80	20.28	21.73	21.56	22.84	22.33	20.55	20.06
SIO2	68.45	68.38	67.26	68.39	66.32	65.58	68.52	68.44	65.45	65.53	63.68	64.69	67.84	68.01
K2O	0.12	0.11	0.04	0.06	0.18	0.32	0.05	0.06	0.04	0.09	0.17	0.06	0.10	0.10
CAO	0.09	0.05	0.62	0.24	1.93	1.54	0.32	0.52	2.38	2.24	3.98	3.16	1.19	0.53
MNO	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.03	0.01	0.00	0.00	0.02	0.02
FE2O3	0.19	0.14	0.02	0.03	0.14	0.23	0.17	0.22	0.07	0.15	0.16	0.19	0.06	0.02
TOTAL	99.79	100.11	98.86	100.11	100.28	99.31	100.16	100.73	99.72	99.71	99.86	100.01	100.48	99.96

Structural formula on the basis of 8 oxygen (atoms per formula unit)

NA+	0.96	0.97	0.93	0.96	0.88	0.89	0.95	0.94	0.86	0.86	0.77	0.82	0.91	0.95
MG2+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AL3+	1.01	1.02	1.04	1.03	1.10	1.11	1.02	1.04	1.13	1.12	1.19	1.16	1.05	1.03
SI4+	2.99	2.98	2.97	2.98	2.90	2.90	2.99	2.97	2.88	2.89	2.81	2.85	2.95	2.97
K+	0.01	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01
CA2+	0.00	0.00	0.03	0.01	0.09	0.07	0.02	0.02	0.11	0.11	0.19	0.15	0.06	0.03
MN2+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FE3+	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00
SUM	4.98	4.99	4.98	4.99	4.99	5.00	4.98	4.98	4.98	4.99	4.98	4.98	4.98	4.99

Plagioclase wt.% oxide

	HC-1-1	HC-1-2	HC-1-3	HC-1-4	HC-1-5	HC-1-6	HC-1-7	HC-1-8	HC-1-9	HC-1-10	HC-1-11	HC-1-12	HC-1-13
NA2O	11.31	11.47	11.69	11.68	11.52	11.27	11.31	11.34	11.55	11.43	10.90	8.95	11.11
MGO	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.02	0.05	0.02	0.00	0.30	0.01
AL2O3	20.56	19.88	19.71	19.78	20.13	20.01	19.79	19.86	19.96	19.96	19.97	22.35	20.64
SIO2	68.22	69.45	68.91	69.43	68.61	68.55	68.71	68.41	69.25	68.94	69.04	64.62	67.92
K2O	0.06	0.05	0.08	0.05	0.10	0.09	0.10	0.10	0.10	0.04	0.04	1.60	0.41
CAO	0.91	0.20	0.08	0.05	0.34	0.41	0.25	0.28	0.12	0.20	0.20	2.61	0.47
MNO	0.05	0.00	0.00	0.01	0.03	0.02	0.05	0.00	0.00	0.04	0.00	0.00	0.01
FE2O3	0.22	0.11	0.07	0.19	0.03	0.00	0.05	0.04	0.05	0.08	0.09	0.54	0.14
TOTAL	101.33	101.16	100.55	101.19	100.76	100.36	100.27	100.05	101.08	100.71	100.24	100.97	100.71

Structural formula on the basis of 8 oxygen (atoms per formula unit)

NA+	0.95	0.96	0.98	0.98	0.97	0.95	0.95	0.96	0.97	0.96	0.92	0.76	0.94
MG2+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
AL3+	1.05	1.01	1.01	1.01	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.16	1.06
SI4+	2.95	3.00	2.99	3.00	2.98	2.98	2.99	2.99	2.99	2.99	3.00	2.84	2.95
K+	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.09	0.02
CA2+	0.04	0.01	0.00	0.00	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.12	0.02
MN2+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FE3+	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01
SUM	5.00	4.98	5.00	4.99	5.00	4.98	M 4.981	4.99	4.99	4.98	4.95	5.00	5.00

	HC-11-1	HC-11-2	HC-11-3	HC-11-4	HC-11-5	HC-11-6	HC-11-7	HC-11-8	HC-11-9	HC-11-1(	HC-11-11	HC-11-12	HC-11-13	HC-11-14
NA2O	11.07	11.65	11.76	10.68	10.44	11.22	11.62	11.08	11.65	11.8	11.17	11.06	10.97	11.46
MGO	0.02	0.01	0.00	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.03	0.00	0.01	0.00
AL2O3	20.30	19.84	19.94	20.80	21.47	20.26	19.81	20.61	20.03	19.49	20.40	20.53	20.45	19.69
SIO2	67.94	69.56	68.90	66.39	66.81	68.72	69.27	68.16	69.32	70.19	68.02	68.10	68.10	69.21
K2O	0.05	0.02	0.01	0.12	0.05	0.05	0.09	0.06	0.06	0.04	0.05	0.14	0.31	0.03
CAO	0.81	0.07	0.01	1.64	2.14	0.69	0.11	1.04	0.60	0.12	0.89	0.70	0.74	0.13
MNO	0.06	0.01	0.03	0.00	0.05	0.05	0.02	0.00	0.04	0.02	0.00	0.01	0.01	0.00
FE2O3	0.13	0.29	0.29	0.40	0.18	0.37	0.33	0.27	0.06	0.00	0.11	0.06	0.08	0.00
TOTAL	100.38	101.45	100.94	100.11	101.14	101.36	101.26	101.23	101.76	101.67	100.67	100.60	100.67	100.52

Structural formula on the basis of 8 oxygen (atoms per formula unit)

NA+	0.94	0.97	0.99	0.91	0.88	0.94	0.97	0.93	0.97	0.98	0.94	0.93	0.92	0.96
MG2+	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AL3+	1.04	1.01	1.02	1.08	1.10	1.03	1.01	1.05	1.02	0.99	1.05	1.05	1.05	1.01
SI4+	2.96	2.99	2.98	2.91	2.90	2.97	2.99	2.95	2.98	3.01	2.96	2.96	2.96	3.00
K+	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.00
CA2+	0.04	0.00	0.00	0.08	0.10	0.03	0.01	0.05	0.03	0.01	0.04	0.03	0.03	0.01
MN2+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FE3+	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
SUM	4.99	4.99	5.00	5.00	4.99	4.98	4.99	4.99	5.00	4.99	4.99	4.98	4.99	4.98

Appendix D:
HC Static Test Data

LORAX ENVIRONMENTAL

			Litho				Paste	(Wt. %)		(Wt. %)					(kg $CaCO_3$/Tonne)									
Hole #	**From**	**To**	**Codes**	**Lab ID**	**Lorax #**	**Loc**	**pH**	**TIC**	**CO_2**	**Total S**	**$SO_4 - S^1$**	**$SO_4 - S^2$**	**Pyritic S**	**Sulphide-S**	**TAP[3]**	**PAP[4]**	**SAP[5]**	**Mend NP**	**CaNP**	**NNP**	**Mend NP/TAP**	**Mend NP/SAP**	**CaNP/TAP**	**CaNP/SAP**	**Fizz**
Humidity cells (N=11)																									
HLW01-04	38.75	40.25	9G		HC1		8.70	0.45	1.64	0.98	0.01	<0.01	0.97	0.98	30.6	30.3	30.5	71.8	37.3	41.2	2.3	2.4	1.2	1.2	moderate
HLW01-04	38.75	40.25	9G		HC2		9.30	0.14	0.53	1.14					35.6			44.4	12.0	8.8	1.2		0.3		slight
HB93-96	98.50	99.50	9G		HC3	HW	9.28	0.14	0.53	0.11		<0.01	0.10	0.11	3.4	3.1	3.3	35.4	12.0	32.0	10.3	10.8	3.5	3.7	slight
HB93-96	98.50	99.50	9G		HC4	HW	9.50	0.04	0.13	0.11					3.4			22.8	3.0	19.4	6.6		0.9		none
			6MV	Bin 1	HC5	HW	9.00	0.23	0.83	0.06		<0.01	0.15	0.06	1.9	4.7	1.7	39.2	18.9	37.3	20.9	22.8	10.1	11.0	slight
			3T/3L	Bin 3	HC6	FW	8.80	0.06	0.21	0.74		<0.01	0.54	0.74	23.1	16.9	23.0	17.7	4.8	-5.4	0.8	0.8	0.2	0.2	none
			1QA	Bin 4	HC7	FW	9.20	0.26	0.95	0.49		<0.01	0.51	0.49	15.3	15.9	15.2	47.5	21.6	32.2	3.1	3.1	1.4	1.4	slight
			4SCF	Bin 5	HC8	FW	8.90	0.12	0.44	0.67		<0.01	0.55	0.67	20.9	17.2	20.8	19.7	10.0	-1.2	0.9	0.9	0.5	0.5	none
HLW02-10	111.00	112.00	11D		HC9	HW	9.17	0.28	1.01	0.25		0.01	0.29	0.24	7.8	9.1	7.5	37.3	23.0	29.5	4.8	5.0	2.9	3.1	slight
			11D		HC10		9.70	0.06	0.21	0.25					7.8			24.3	4.8	16.5	3.1		0.6		none
HLW01-04	38.75	40.25	9G		HC11		9.30	0.06	0.23	1.10					34.4			26.5	5.2	-7.9	0.8		0.2		none

			Ag	Al	As	Au	B	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	Hg	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Sn	Se	Sr	Th	Ti	Tl	U	V	W	Zn
Hole #	**Lorax #**	**Loc**	**ppm**	**%**	**ppm**	**ppb**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**%**	**ppm**	**%**	**ppm**	**ppm**	**%**	**ppm**	**%**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**%**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
HLW01-04	HC1		3.1	1.3	1.9	16.2	3	7	0.3	1.61	<0.1	38.7	36.4	113.6	2.8	4	<0.01	0.04	12	1.7	360	2.1	0.02	20.7	0.08	9.6	0.9	0.5	4.6	0.8		27.0	7.8	0.06	<0.1	0.9	44.0	0.1	34
HLW01-04	HC2	HW	0.5	2.0	2.8	11.2	6	22	0.4	1.15	0.1	46.8	197.1	148.9	3.8	6	0.04	0.11	12	2.3	373	3.2	0.08	32.8	0.09	16.2	1.1	0.3	5.6		0.6	57.0	7.0	0.12	<0.1	0.8	60.0	0.1	48
HB93-96	HC3	HW	<0.1	1.5	0.5	<0.5	8	53	0.1	0.95	<0.1	15.4	89.0	49.0	3.5	8	<0.01	0.21	22	1.5	377	1.7	0.04	19.5	0.12	2.6	0.1	<0.1	4.4		<0.5	22.0	5.1	0.18	0.1	1.0	82.0	0.1	60
HB93-96	HC4	HW	<0.1	1.7	0.9	1.4	9	62	0.1	0.74	<0.1	16.5	147.6	63.8	3.9	8	0.02	0.23	24	1.6	377	2.8	0.07	24.0	0.11	6.1	0.1	0.1	4.7		<0.5	27.0	6.5	0.22	0.1	1.0	93.0	0.1	64
	HC5	FW	0.1	2.2	0.8	1.5	3	28	<0.1	1.37	<0.1	19.9	89.5	57.5	2.4	5	0.07	0.23	5	1.9	291	0.8	0.10	101.5	0.05	4.2	0.1	<0.1	2.9		<0.5	19.0	0.8	0.11	0.6	0.1	46.0	0.1	32
	HC6	FW	1.3	2.7	21.3	12.3	1	20	48.8	0.12	0.2	20.9	156.0	2094.3	4.6	10	0.06	0.21	18	2.4	303	3.9	0.01	16.3	0.01	27.4	0.7	0.8	3.3		12.3	2.0	3.2	0.01	0.2	0.5	5.0	0.1	133
	HC7	FW	0.7	3.4	2.3	3.5	2	178	1.1	1.10	0.1	16.8	85.5	97.0	4.0	9	0.04	0.92	11	3.6	991	1.4	0.05	21.5	0.06	69.1	0.4	0.5	6.4		0.8	11.0	1.9	0.14	10.4	0.2	82.0	0.1	132
	HC8	HW	0.9	2.8	48.4	12.6	1	25	16.2	0.19	0.3	23.9	140.1	1151.9	4.7	10	0.04	0.24	14	2.5	323	4.3	0.01	43.8	0.02	9.6	0.6	1.3	3.6		2.2	3.0	2.8	0.01	0.3	0.9	21.0	0.1	171
HLW02-10	HC9		0.1	2.1	0.9	0.9	3	47	0.2	1.29	<0.1	30.4	60.5	44.5	2.9	5	0.01	0.22	4	2.0	361	0.7	0.09	178.9	0.06	7.4	0.2	<0.1	2.0		<0.5	19.0	0.5	0.12	0.5	0.1	51.0	<0.1	50
	HC10		0.1	2.5	0.8	1.5	2	49	0.1	0.96	0.1	33.8	87.9	57.9	3.2	6	0.07	0.22	4	2.4	372	0.7	0.15	208.7	0.06	10.4	0.2	0.1	2.7		<.5	23.0	0.6	0.14	0.5	0.1	57.0	0.1	58
HLW01-04	HC11		0.8	1.8	3.0	13.5	5	19	0.3	0.85	<0.1	46.9	163.4	130.7	3.6	6	0.04	0.10	12	2.1	329	2.8	0.07	32.2	0.08	11.0	1.0	0.7	5.0		0.6	48.0	8.3	0.12	<0.1	0.9	57.0	0.1	44
		Min	**<0.1**	**1.3**	**0.5**	**<0.5**	**1**	**7**	**<0.1**	**0.12**	**<0.1**	**15.4**	**36.4**	**44.5**	**2.4**	**4**	**<0.01**	**0.04**	**4**	**1.5**	**291**	**0.7**	**0.01**	**16.3**	**0.01**	**2.6**	**0.1**	**<0.1**	**2.0**	**0.8**	**<0.5**	**2.0**	**0.5**	**0.01**	**<0.1**	**0.1**	**5.0**	**0.1**	**32.0**
		Max	**3.1**	**3.4**	**48.4**	**16.2**	**9**	**178**	**48.8**	**1.61**	**0.3**	**46.9**	**197.1**	**2094.3**	**4.7**	**10**	**0.07**	**0.92**	**24**	**3.6**	**991**	**4.3**	**0.15**	**208.7**	**0.12**	**69.1**	**1.1**	**1.3**	**6.4**	**0.8**	**12.3**	**57.0**	**8.3**	**0.22**	**10.4**	**1.0**	**93.0**	**0.1**	**171.0**
		Median	**0.5**	**2.1**	**1.9**	**3.5**	**3**	**28**	**0.3**	**0.96**	**0.1**	**23.9**	**89.5**	**97.0**	**3.6**	**6**	**0.04**	**0.22**	**12**	**2.1**	**361**	**2.1**	**0.07**	**32.2**	**0.06**	**9.6**	**0.4**	**0.3**	**4.4**	**0.8**	**0.4**	**22.0**	**3.2**	**0.12**	**0.2**	**0.8**	**57.0**	**0.1**	**58.0**

Appendix E: Humidity Cell Leachate Data

LORAX ENVIRONMENTAL

Project: High Lake
Sample: HC 1 High S Granodiorite
Dry Sample Weight: 1.00 Kg

	Original	
S - Total	0.98	%
S - Sulphate	<0.01	%
S - Sulphide	1.0	%
NP	72.0	kg $CaCO_3$/t

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Values shaded in grey are averages

Analytical Results

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Production Rate: Acidity (mg CaCO3/kg/wk)	Production Rate: Alkalinity (mg CaCO3/kg/wk)	Production Rate: Cumulative Alkalinity (mg CaCO3/kg)	Production Rate: Sulphate (mg/kg/wk)	Production Rate: Cumulative Sulphate (mg/kg)	Molar Ratios: Fraction of Total Sulphur Remaining	Molar Ratios: Alkalinity / Sulphate Production	Molar Ratios: Carbonate Molar Ratio [(Ca+Mg+Sr) /SO4]	Molar Ratios: Calcium / Sulphate Ratio	Molar Ratios: Ca+Mg/ Alkalinity	Molar Ratios: Ca/Mg	NP Consumption: Theoretical NP Consumption at pH 6	NP Consumption: Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)														
5-Oct-05	0	750	615	7.23	139	<1.0	2.5	23.8	35	21.53	1.54	14.6	14.6	21.53	21.53	0.9992668	0.6785714	1.1709789	0.8355104	1104391.7	2.4999157	22.425703	0.9992903
12-Oct-05	1	500	500	8.44	114	<1.0	<1.0	22.8	22	11.00	0.25	11.4	26.0	11.00	32.53	0.9988921	1.0340909	1.7187354	1.154897	864921.4	2.0540867	11.460289	0.9987579
19-Oct-05	2	500	460	7.61	74	<1.0	2.5	25.5	12	5.52	1.15	11.7	37.7	5.52	38.05	0.9987041	2.125	2.2673014	1.5999682	510816.53	2.4051291	5.7509816	0.9984055
26-Oct-05	3	500	440	7.67	50	<1.0	2.8	23.3	5	2.20	1.21	10.2	47.9	2.20	40.25	0.9986291	4.65	4.6843657	3.3365629	461342.61	2.4832335	2.2920579	0.9981153
2-Nov-05	4	500	505	7.70	52	<1.0	2.5	26.0	8	4.04	1.26	13.1	61.1	4.04	44.29	0.9984915	3.25	3.5563187	2.5407735	575196.96	2.5089918	4.2090517	0.9977108
9-Nov-05	5	500	440	7.95	37	<1.0	1.5	23.0	<1	0.22	0.66	10.1	71.2	0.22	44.51	0.998484	46	50.438665	36.289915	502190.5	2.5722602	0.2292058	0.9973983
16-Nov-05	6	500	445	8.07	34	<1.0	1.0	22.5	<1	0.22	0.45	10.0	81.2	0.22	44.73	0.9984764	45	43.976231	31.927455	452666.52	2.6575894	0.2318104	0.9971228
23-Nov-05	7	500	440	7.54	34	<1.0	1.8	22.0	<1	0.22	0.77	9.7	90.9	0.22	44.95	0.9984689	44	43.212179	31.63982	449816.06	2.7418793	0.2292058	0.9968551
30-Nov-05	8	500	445	7.78	29	<1.0	2.3	21.5	<1	0.22	1.00	9.6	100.5	0.22	45.17	0.9984614	43	42.790669	31.927455	460939.47	2.9485664	0.2318104	0.996587
7-Dec-05	9	500	440	8.00	25	0.5	2.1	21.8	<1	0.22	0.94	9.6	110.0	0.22	45.39	0.9984539	43.5	42.335638	31.711729	445750.13	2.9942103	0.2292058	0.9963247
14-Dec-05	10	500	410	7.72	29	<1.0	2.0	22.0	1	0.41	0.82	9.0	119.0	0.41	45.80	0.9984399	22	20.940304	15.748001	406242.34	3.0419447	0.4271562	0.996083
21-Dec-05	11	500	450	7.93	32	0.5	2.3	21.9	5	2.25	1.01	9.8	128.9	2.25	48.05	0.9983633	4.375	4.2273832	3.2047303	452637.02	3.1431778	2.3441501	0.9958152
28-Dec-05	12	500	485	7.57	33	<1.0	2.5	21.8	<1	0.24	1.21	10.5	139.4	0.24	48.29	0.998355	43.5	42.667057	32.598603	495213.04	3.2475993	0.2526473	0.9955238
4-Jan-06	13	500	500	7.70	43	0.5	2.4	23.6	<1	0.25	1.19	11.8	151.2	0.25	48.54	0.9983465	47.25	46.012693	35.546859	506867.88	3.4071752	0.2604611	0.9951999
11-Jan-06	14	500	500	7.62	46	<1.0	2.3	25.5	<1	0.25	1.13	12.8	164.0	0.25	48.79	0.998338	51	49.358329	38.495115	503745.24	3.5551033	0.2604611	0.9948525
18-Jan-06	15	500	495	7.69	42	0.5	2.5	23.6	1	0.50	1.24	11.7	175.7	0.50	49.29	0.9983211	23.625	22.113185	17.138236	482328.15	3.4555689	0.515713	0.9945442
25-Jan-06	16	500	485	7.61	33	<1.0	2.8	21.8	1	0.49	1.33	10.5	186.2	0.49	49.77	0.9983046	21.75	19.547206	15.028915	453768.39	3.3359531	0.5052946	0.9942773
1-Feb-06	17	500	475	8.01	29	0.5	2.1	20.9	<1	0.24	1.01	9.9	196.2	0.24	50.01	0.9982965	41.75	40.109553	31.11249	475072.01	3.4682156	0.2474381	0.9940091
8-Feb-06	18	500	465	7.76	34	<1.0	1.5	20.0	<1	0.23	0.70	9.3	205.5	0.23	50.24	0.9982886	40.00	41.124695	32.167151	497710.93	3.6016485	0.2422288	0.9937398
15-Feb-06	19	500	490	7.89	36	0.5	1.6	21.4	<1	0.25	0.80	10.5	215.9	0.25	50.49	0.9982802	42.75	44.415739	34.348381	529988.92	3.421919	0.2552519	0.9934334
22-Feb-06	20	500	485	7.53	38	<1.0	1.8	22.8	<1	0.24	0.85	11.0	227.0	0.24	50.73	0.998272	45.50	47.706782	36.529611	529383.53	3.2778804	0.2526473	0.9931077
1-Mar-06	21	500	490	7.79	35	0.5	1.9	21.4	<1	0.25	0.92	10.5	237.4	0.25	50.98	0.9982636	42.75	44.016676	33.988837	525223.96	3.3994836	0.2552519	0.992804
8-Mar-06	22	500	490	7.48	30	<1.0	2.0	20.0	1	0.49	0.98	9.8	247.2	0.49	51.47	0.9982469	20.00	20.163285	15.724032	514284.46	3.5525734	0.5105038	0.9925258
15-Mar-06	23	500	460	7.87	28	0.5	1.8	20.5	<1	0.23	0.81	9.4	256.7	0.23	51.70	0.9982391	41.00	39.945641	31.304247	466569.87	3.633657	0.2396242	0.9922671
22-Mar-06	24	500	470	7.66	34	<1.0	1.5	21.0	<1	0.24	0.71	9.9	266.5	0.24	51.93	0.9982311	42.00	39.564712	31.160429	460921.68	3.7193302	0.2448335	0.9920053
29-Mar-06	25	500	470	7.92	31	0.5	0.4	20.5	<1	0.24	0.18	9.6	276.2	0.24	52.17	0.9982231	41.00	38.629399	31.13646	461023.07	4.1687379	0.2448335	0.9917497
5-Apr-06	26	500	470	7.97	30	<1.0	<1.0	20.0	2	0.94	0.24	9.4	285.6	0.94	53.11	0.9981911	10.00	9.4235218	7.7781225	461129.53	4.7426803	0.9793338	0.9915003
12-Apr-06	27	500	485	8.03	32	0.5	0.8	19.8	2	0.97	0.36	9.6	295.2	0.97	54.08	0.998158	9.88	9.562538	7.8380464	488979.61	4.5594845	1.0105892	0.9912391
19-Apr-06	28	500	480	7.72	29	<1.0	1.0	19.5	<1	0.24	0.48	9.4	304.5	0.24	54.32	0.9981499	39.00	38.806216	31.591881	497269.65	4.3923938	0.2500427	0.9909768
26-Apr-06	29	500	470	7.78	25	0.5	1.3	20.2	<1	0.24	0.61	9.5	314.0	0.24	54.55	0.9981419	40.33	39.276322	32.574633	476526.07	4.8774182	0.2448335	0.9907169
3-May-06	30	500	480	7.54	43	<1.0	1.6	20.8	<1	0.24	0.77	10.0	324.0	0.24	54.79	0.9981337	41.66	39.746427	33.557385	476738.14	5.4432801	0.2500427	0.9904483
10-May-06	31	500	490	7.56	42	0.5	2.0	19.8	2	0.98	1.00	9.7	333.7	0.98	55.77	0.9981003	9.88	10.113567	8.5271713	522101.28	5.3943878	1.0210076	0.9901692
17-May-06	32	500	485	7.38	43	<1.0	2.5	18.7	2	0.97	1.20	9.1	342.7	0.97	56.74	0.9980673	9.35	10.290527	8.6649963	555845.49	5.3478805	1.0105892	0.9898882
24-May-06	33	500	490	7.62	43	0.5	2.0	17.7	3	1.47	0.98	8.7	351.4	1.47	58.21	0.9980172	5.90	6.3638428	5.3132527	550075.85	5.0735479	1.5315114	0.9896248
31-May-06	34	500	450	7.37	37	<1.0	1.5	16.7	3	1.35	0.67	7.5	358.9	1.35	59.56	0.9979712	5.57	5.8673346	4.8498412	493358.41	4.7814015	1.4064901	0.9894017
7-Jun-06	35	500	460	7.58	35	0.5	1.9	19.3	<1	0.23	0.86	8.9	367.8	0.23	59.79	0.9979634	38.53	38.256586	32.071272	475504.66	5.2022206	0.2396242	0.989154
14-Jun-06	36	500	495	7.46	46	<1.0	2.2	21.8	2	0.99	1.10	10.8	378.6	0.99	60.78	0.9979296	10.91	10.327291	8.7608745	487924.9	5.612386	1.031426	0.9888661
21-Jun-06	37	500	465	7.70	37	0.5	1.9	19.4	1	0.47	0.87	9.0	387.6	0.47	61.25	0.9979138	19.39	19.189935	16.275332	479136.24	5.6032459	0.4844577	0.9886148
28-Jun-06	38	500	450	7.42	37	<1.0	1.5	17.0	2	0.90	0.68	7.6	395.3	0.90	62.15	0.9978831	8.48	8.8626439	7.5144573	489545	5.5926272	0.93766	0.9883902
5-Jul-06	39	500	465	7.75	40	0.5	1.6	16.6	3	1.40	0.74	7.7	403.0	1.40	63.54	0.9978356	5.54	6.235798	5.3172476	545050.73	5.8079183	1.4533731	0.9881453
12-Jul-06	40	500	475	7.42	39	<1.0	1.7	16.3	3	1.43	0.80	7.7	410.7	1.43	64.97	0.9977871	5.42	6.5631667	5.624857	598509.37	6.0141126	1.4846284	0.9878819
19-Jul-06	41	500	490	7.67	39	0.5	1.9	18.2	4	1.96	0.95	8.9	419.6	1.96	66.93	0.9977203	4.56	5.6804778	4.8478437	635931.32	5.8415283	2.0420152	0.9875684
26-Jul-06	42	500	480	7.40	42	<1.0	2.2	20.2	<1	0.24	1.05	9.7	429.3	0.24	67.17	0.9977121	40.38	41.339605	34.995559	511697.69	5.5346495	0.2500427	0.9872891

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
5-Oct-05	0	0.065	0.0064	0.0013	0.056	< 0.0002	< 0.0002	0.04	< 0.00004	12.2	0.0008	0.0003	0.0061	< 0.01	< 0.0002	0.0026	2.96	0.011	< 0.02	0.001	0.0004	0.0358713	3.44	0.0004	1.0052413	< 0.00005	6.05	0.04	< 0.0002	< 0.00002	< 0.0001	0.0005	< 0.0002	< 0.0001	0.0014	0.002	< 0.002
12-Oct-05	1	0.07	0.031	0.001	0.044	< 0.001	< 0.001	0.22	< 0.0002	10.6	< 0.001	< 0.001	0.004	< 0.05	< 0.001	0.003	3.13	0.03	< 0.02	0.0014	< 0.001	0.0978309	2.7	< 0.001	1.0753744	< 0.00025	5.34	0.032	< 0.001	< 0.0001	< 0.0005	< 0.001	< 0.001	< 0.0005	0.002	< 0.005	< 0.01
19-Oct-05	2	0.098	0.026	0.0019	0.057	< 0.0002	< 0.0002	0.12	< 0.00004	8.01	0.0003	< 0.0002	0.0014	< 0.01	< 0.0002	0.0027	2.02	0.021	< 0.02	0.0011	< 0.0002	0.0554375	2.11	< 0.0002	1.1034276	< 0.00005	3.1	0.023	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0003	0.0024	< 0.001	< 0.002
26-Oct-05	3	0.11	0.017	0.0015	0.055	< 0.0002	< 0.0002	0.07	< 0.00004	6.96	< 0.0002	< 0.0002	0.0015	< 0.01	< 0.0002	0.0023	1.7	0.014	< 0.02	0.0005	< 0.0002	0.0521765	1.78	< 0.0002	0.8836772	< 0.00005	1.79	0.019	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0002	0.0022	< 0.001	< 0.002
2-Nov-05	4	0.094	0.026	0.0044	0.041	< 0.0002	< 0.0002	0.11	< 0.00004	8.48	0.0003	< 0.0002	0.0017	< 0.01	< 0.0002	0.0022	2.05	0.018	< 0.02	0.0012	< 0.0002	0.0391324	1.61	< 0.0002	1.0332945	< 0.00005	1.58	0.021	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0004	0.0022	< 0.001	< 0.002
9-Nov-05	5	0.107	0.019	0.0031	0.0455	0.0001	0.0001	0.07	0.00002	7.57	0.000125	0.0001	0.00115	0.005	0.0001	0.00195	1.785	0.0145	0.01	0.0008	0.0001	0.0172831	1.445	0.0001	0.9366473	0.000025	1.24	0.0185	0.0001	0.00001	0.00005	0.0001	0.0001	0.00035	0.0022	0.0005	0.001
16-Nov-05	6	0.12	0.012	0.0018	0.05	< 0.0002	< 0.0002	0.03	< 0.00004	6.66	< 0.0002	< 0.0002	0.0006	< 0.01	< 0.0002	0.0017	1.52	0.011	< 0.02	0.0004	< 0.0002	< 0.03	1.28	< 0.0002	0.84	< 0.00005	0.9	0.016	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0003	0.0022	< 0.001	< 0.002
23-Nov-05	7	0.12	0.011	0.0016	0.045	< 0.0002	< 0.0002	0.03	< 0.00004	6.6	< 0.0002	< 0.0002	0.0004	< 0.01	< 0.0002	0.0015	1.46	0.012	< 0.02	0.0003	< 0.0002	< 0.03	1.23	< 0.0002	0.86	< 0.00005	0.75	0.015	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0002	0.0021	0.005	< 0.002
30-Nov-05	8	0.13	0.011	0.0015	0.06	< 0.0002	< 0.0002	0.03	< 0.00004	6.66	< 0.0002	< 0.0002	0.0008	0.01	< 0.0002	0.0018	1.37	0.01	< 0.02	0.0003	< 0.0002	< 0.03	1.19	< 0.0002	0.9	< 0.00005	0.55	0.016	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0002	0.0023	< 0.001	< 0.002
7-Dec-05	9	0.135	0.0094	0.0015	0.055	0.0001	0.0001	0.025	0.00002	6.615	0.0001	0.0001	0.0006	0.005	0.0001	0.00155	1.34	0.0105	0.01	0.00025	0.0001	0.015	1.09	0.0001	0.89	0.000025	0.5	0.015	0.0001	0.00001	0.00005	0.0001	0.0001	0.00025	0.0022	0.0005	0.001
14-Dec-05	10	0.14	0.0078	0.0015	0.05	< 0.0002	< 0.0002	0.02	< 0.00004	6.57	< 0.0002	< 0.0002	0.0004	< 0.01	< 0.0002	0.0013	1.31	0.011	< 0.02	0.0002	< 0.0002	< 0.03	0.99	< 0.0002	0.88	< 0.00005	0.45	0.014	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0003	0.0021	< 0.001	< 0.002
21-Dec-05	11	0.116	0.0094	0.0013	0.0425	0.0001	0.0001	0.02	0.00002	6.685	0.0001	0.0001	0.00045	0.005	0.0001	0.00125	1.29	0.011	0.01	0.00025	0.0001	0.015	0.885	0.0001	0.81	0.000025	0.425	0.014	0.0001	0.00001	0.00005	0.0001	0.0001	0.00035	0.0019	0.0005	0.001
28-Dec-05	12	0.092	0.011	0.0011	0.035	< 0.0002	< 0.0002	0.02	< 0.00004	6.8	< 0.0002	< 0.0002	0.0005	< 0.01	< 0.0002	0.0012	1.27	0.011	< 0.02	0.0003	< 0.0002	< 0.03	0.78	< 0.0002	0.74	< 0.00005	0.4	0.014	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0004	0.0017	< 0.001	< 0.002
4-Jan-06	13	0.0955	0.012	0.00115	0.04	0.0001	0.0001	0.02	0.00002	7.415	0.0001	0.0001	0.00045	0.005	0.0001	0.0013	1.32	0.0099	0.01	0.0001	0.0001	0.015	0.825	0.0001	0.815	0.000025	0.385	0.015	0.0001	0.00001	0.00005	0.0001	0.0001	0.0004	0.0017	0.0005	0.001
11-Jan-06	14	0.099	0.013	0.0012	0.045	< 0.0002	< 0.0002	0.02	< 0.00004	8.03	< 0.0002	< 0.0002	0.0004	< 0.01	< 0.0002	0.0014	1.37	0.0088	< 0.02	< 0.0001	< 0.0002	< 0.03	0.87	< 0.0002	0.89	< 0.00005	0.37	0.016	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0004	0.0017	< 0.001	< 0.002
18-Jan-06	15	0.1045	0.0111	0.00115	0.037	0.0001	0.0001	0.015	0.00002	7.15	0.0001	0.0001	0.00095	0.005	0.000225	0.0012	1.255	0.0081	0.01	0.00005	0.0001	0.015	0.775	0.0001	0.85	0.000025	0.315	0.014	0.0001	0.00001	0.00005	0.0001	0.0001	0.00045	0.0017	0.0005	0.001
25-Jan-06	16	0.11	0.0092	0.0011	0.029	< 0.0002	< 0.0002	0.01	< 0.00004	6.27	< 0.0002	< 0.0002	0.0015	< 0.01	0.0007	0.001	1.14	0.0074	< 0.02	< 0.0001	< 0.0002	< 0.03	0.68	< 0.0002	0.81	< 0.00005	0.26	0.012	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0005	0.0017	< 0.001	< 0.002
1-Feb-06	17	0.0705	0.00945	0.00095	0.0255	0.0001	0.0001	0.005	0.00002	6.49	0.0001	0.0001	0.000425	0.005	0.000225	0.00095	1.135	0.0077	0.01	0.00005	0.0001	0.015	0.665	0.0001	0.79	0.000025	0.235	0.012	0.0001	0.00001	0.00005	0.0001	0.0001	0.00035	0.00165	0.0005	0.001
8-Feb-06	18	0.031	0.0097	0.0008	0.022	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.71	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.0002	0.0009	1.13	0.008	< 0.02	< 0.0001	< 0.0002	< 0.03	0.65	< 0.0002	0.77	< 0.00005	0.21	0.012	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0002	0.0016	< 0.001	< 0.002
15-Feb-06	19	0.0705	0.00985	0.0011	0.0255	0.0001	0.0001	0.005	0.00002	7.165	0.0001	0.0001	0.000175	0.005	0.000125	0.00095	1.27	0.0078	0.01	0.00005	0.0001	0.015	0.675	0.0001	0.835	0.000025	0.215	0.0135	0.0001	0.00001	0.00005	0.0001	0.0001	0.00045	0.0017	0.0005	0.001
22-Feb-06	20	0.11	0.01	0.0014	0.029	< 0.0002	< 0.0002	0.01	< 0.00004	7.62	< 0.0002	< 0.0002	0.0005	< 0.01	0.0003	0.001	1.41	0.0076	< 0.02	< 0.0001	< 0.0002	< 0.03	0.7	< 0.0002	0.9	< 0.00005	0.22	0.015	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0007	0.0018	< 0.001	< 0.002
1-Mar-06	21	0.11	0.00975	0.0013	0.025	0.0001	0.0001	0.01	0.00002	7.09	0.00015	0.0001	0.00065	0.005	0.000125	0.0009	1.265	0.0069	0.01	0.00005	0.0001	0.015	0.625	0.0001	0.875	0.000025	0.195	0.0135	0.0001	0.00001	0.00005	0.000125	0.0001	0.00065	0.0017	0.0005	0.001
8-Mar-06	22	0.11	0.0095	0.0012	0.021	< 0.0002	< 0.0002	0.01	< 0.00004	6.56	0.0004	< 0.0002	0.0008	< 0.01	< 0.0002	0.0008	1.12	0.0062	< 0.02	< 0.0001	< 0.0002	< 0.03	0.55	< 0.0002	0.85	< 0.00005	0.17	0.012	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	0.0006	0.0016	< 0.001	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15-Mar-06	23	0.12	0.0093	0.00135	0.022	0.0001	0.0001	0.005	0.00002	6.53	0.00015	0.0001	0.0007	0.005	0.0001	0.0008	1.09	0.00575	0.01	0.00005	0.0001	0.015	0.565	0.0001	0.865	0.000025	0.17	0.012	0.0001	0.00001	0.00005	0.000125	0.0001	0.0006	0.00175	0.0005	0.001
22-Mar-06	24	0.13	0.0091	0.0015	0.023	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.5	< 0.0002	< 0.0002	0.0006	< 0.01	< 0.0002	0.0008	1.06	0.0053	< 0.02	< 0.0001	< 0.0002	< 0.03	0.58	< 0.0002	0.88	< 0.00005	0.17	0.012	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0006	0.0019	< 0.001	< 0.002
29-Mar-06	25	0.12	0.00905	0.0014	0.02	0.0001	0.0001	0.005	0.00002	6.495	0.0001	0.0001	0.00055	0.005	0.0001	0.0007	0.945	0.0056	0.01	0.00005	0.0001	0.015	0.535	0.0001	0.81	0.000025	0.16	0.0109	0.0001	0.00001	0.00005	0.0001	0.0001	0.0006	0.0017	0.00075	0.001
5-Apr-06	26	0.11	0.009	0.0013	0.017	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.49	0.0002	< 0.0002	0.0005	< 0.01	< 0.0002	0.0006	0.83	0.0059	< 0.02	< 0.0001	< 0.0002	< 0.03	0.49	< 0.0002	0.74	< 0.00005	0.15	0.0098	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0006	0.0015	0.002	< 0.002
12-Apr-06	27	0.11	0.0088	0.00125	0.0185	0.0001	0.0001	0.005	0.00002	6.54	0.00025	0.0001	0.0005	0.005	0.000125	0.0006	0.87	0.0055	0.01	0.00005	0.0001	0.015	0.5	0.0001	0.725	0.000025	0.15	0.0099	0.0001	0.00001	0.00005	0.0001	0.0001	0.00065	0.0015	0.0015	0.001
19-Apr-06	28	0.11	0.0086	0.0012	0.02	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.59	0.0003	< 0.0002	0.0005	< 0.01	0.0003	0.0006	0.91	0.0051	< 0.02	< 0.0001	< 0.0002	< 0.03	0.51	< 0.0002	0.71	< 0.00005	0.15	0.01	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0007	0.0015	0.001	< 0.002
26-Apr-06	29	0.11	0.0098	0.00135	0.0205	0.0001	0.0001	0.005	0.00002	6.795	0.000125	0.0001	0.00065	0.005	0.000125	0.0006	0.845	0.0049	0.01	0.00005	0.0001	0.015	0.52	0.0001	0.72	0.000025	0.145	0.0105	0.0001	0.00001	0.00005	0.0001	0.0001	0.00075	0.00165	0.0005	0.001
3-May-06	30	0.11	0.011	0.0015	0.021	< 0.0002	< 0.0002	< 0.01	< 0.00004	7	< 0.0002	< 0.0002	0.0008	< 0.01	< 0.0002	0.0006	0.78	0.0047	< 0.02	< 0.0001	< 0.0002	< 0.03	0.53	< 0.0002	0.73	< 0.00005	0.14	0.011	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0008	0.0018	< 0.001	< 0.002
10-May-06	31	0.12	0.0115	0.00155	0.019	0.0001	0.0001	0.005	0.00002	7.115	0.0001	0.0001	0.001	0.005	0.0001	0.0007	0.8	0.00495	0.01	0.00005	0.0001	0.015	0.525	0.0001	0.765	0.000025	0.16	0.0103	0.0001	0.00001	0.00005	0.0001	0.0001	0.0008	0.00195	0.0005	0.001
17-May-06	32	0.13	0.012	0.0016	0.017	< 0.0002	< 0.0002	< 0.01	< 0.00004	7.23	< 0.0002	< 0.0002	0.0012	< 0.01	< 0.0002	0.0008	0.82	0.0052	< 0.02	< 0.0001	< 0.0002	< 0.03	0.52	< 0.0002	0.8	< 0.00005	0.18	0.0096	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0008	0.0021	0.001	< 0.002
24-May-06	33	0.125	0.00965	0.0017	0.015	0.0001	0.0001	0.005	0.00002	6.65	0.0001	0.0001	0.0011	0.005	0.0001	0.00065	0.795	0.0047	0.01	0.00005	0.0001	0.015	0.455	0.0001	0.735	0.000025	0.165	0.00915	0.0001	0.00001	0.00005	0.0001	0.0001	0.0007	0.002	0.0005	0.001
31-May-06	34	0.12	0.0073	0.0018	0.013	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.07	0.0002	< 0.0002	0.001	< 0.01	< 0.0002	0.0005	0.77	0.0042	< 0.02	< 0.0001	< 0.0002	< 0.03	0.39	< 0.0002	0.67	< 0.00005	0.15	0.0087	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0006	0.0019	< 0.001	< 0.002
7-Jun-06	35	0.12	0.00865	0.00155	0.0155	0.0001	0.0001	0.005	0.00002	6.69	0.0001	0.0001	0.0011	0.005	0.0001	0.0006	0.78	0.0044	0.01	0.00005	0.0001	0.015	0.43	0.0001	0.705	0.000025	0.145	0.0093	0.0001	0.00001	0.00005	0.0001	0.0001	0.0007	0.0018	0.0005	0.001
14-Jun-06	36	0.12	0.01	0.0013	0.018	< 0.0002	< 0.0002	< 0.01	< 0.00004	7.31	< 0.0002	< 0.0002	0.0012	< 0.01	< 0.0002	0.0007	0.79	0.0046	< 0.02	< 0.0001	< 0.0002	< 0.03	0.47	< 0.0002	0.74	< 0.00005	0.14	0.0099	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0008	0.0017	< 0.001	< 0.002
21-Jun-06	37	0.135	0.0092	0.0014	0.015	0.0001	0.0001	0.005	0.00002	6.79	0.0001	0.0001	0.00095	0.005	0.0001	0.0007	0.735	0.00465	0.01	0.00005	0.0001	0.015	0.46	0.0001	0.775	0.000025	0.135	0.0091	0.0001	0.00001	0.00005	0.0001	0.0001	0.0007	0.0018	0.0005	0.001
28-Jun-06	38	0.15	0.0084	0.0015	0.012	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.27	< 0.0002	< 0.0002	0.0007	< 0.01	< 0.0002	0.0007	0.68	0.0047	< 0.02	< 0.0001	< 0.0002	< 0.03	0.45	< 0.0002	0.81	< 0.00005	0.13	0.0083	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0006	0.0019	< 0.001	< 0.002
5-Jul-06	39	0.14	0.00915	0.00135	0.012	0.0001	0.0001	0.005	0.00002	6.655	0.0001	0.0001	0.00085	0.005	0.0001	0.00065	0.695	0.0048	0.01	0.00005	0.0001	0.015	0.45	0.0001	0.735	0.000025	0.125	0.0083	0.0001	0.00001	0.00005	0.0001	0.0001	0.00065	0.0018	0.0005	0.001
12-Jul-06	40	0.13	0.0099	0.0012	0.012	< 0.0002	< 0.0002	< 0.01	< 0.00004	7.04	< 0.0002	< 0.0002	0.001	< 0.01	< 0.0002	0.0006	0.71	0.0049	< 0.02	< 0.0001	< 0.0002	< 0.03	0.45	< 0.0002	0.66	< 0.00005	0.12	0.0083	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0007	0.0017	0.001	< 0.002
19-Jul-06	41	0.15	0.013	0.0014	0.015	< 0.0002	< 0.0002	< 0.01	< 0.00004	8.09	< 0.0002	< 0.0002	0.0032	< 0.01	< 0.0002	0.0005	0.84	0.006	< 0.02	< 0.0001	< 0.0002	< 0.03	0.5	< 0.0002	0.73	< 0.00005	0.18	0.01	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0008	0.002	0.004	< 0.002
26-Jul-06	42	0.1	0.012	0.0014	0.012	< 0.0002	< 0.0002	< 0.01	< 0.00004	7.3	< 0.0002	< 0.0002	0.0008	< 0.01	< 0.0002	0.0006	0.8	0.0046	< 0.02	< 0.0001	< 0.0002	< 0.03	0.44	< 0.0002	0.71	< 0.00005	0.14	0.0096	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0008	0.0013	0.004	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

			Original		
Project:	High Lake	S - Total	1.14	%	
Sample:	HC 2 Leached High S Granodiorite	S - Sulphate	na	%	
Dry Sample Weight:	1.00 Kg	S - Sulphide	na	%	
		NP	44.0	kg $CaCO_3$/t	

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Values shaded in grey are averages

Analytical Results

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Acidity (mg CaCO3/kg/wk)	Alkalinity (mg CaCO3/kg/wk)	Cumulative Alkalinity (mg CaCO3/kg)	Sulphate (mg/kg/wk)	Cumulative Sulphate (mg/kg)	Fraction of Total Sulphur Remaining	Alkalinity / Sulphate Production	Carbonate Molar Ratio [(Ca+Mg+Sr)/SO4]	Calcium / Sulphate Ratio	Ca+Mg/ Alkalinity	Ca/Mg	Theoretical NP Consumption at pH 6	Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)													
											Production Rate							**Molar Ratios**				**NP Consumption**	
12-Dec-05	0	500	415	6.44	45	<1.0	3.0	15.0	2	0.83	1.25	6.2	6.2	0.83	0.83	0.9999757	7.5	3.1067576	1.8216866	179041.65	1.4183633	0.8647309	0.9997761
19-Dec-05	1	500	480	6.71	60	<1.0	4.3	19.5	9	4.32	2.04	9.4	15.6	4.32	5.15	0.9998492	2.1666667	0.6487394	0.2929613	149694.38	0.8236921	4.5007682	0.9995328
26-Dec-05	2	500	440	6.60	37	<1.0	3.8	7.3	14	6.16	1.65	3.2	18.8	6.16	11.31	0.9996688	0.5178571	0.2460332	0.0907419	217734.25	0.584481	6.417762	0.9994012
2-Jan-06	3	500	435	6.65	41	<1.0	2.3	6.0	14	6.09	0.98	2.6	21.4	6.09	17.40	0.9994905	0.4285714	0.2459008	0.1301205	259957.63	1.1243124	6.3448329	0.9992712
9-Jan-06	4	500	455	6.60	32	<1.0	2.8	4.5	8	3.64	1.25	2.0	23.4	3.64	21.04	0.9993839	0.5625	0.3901756	0.1677869	328701.54	0.7548015	3.7923139	0.9991479
16-Jan-06	5	500	430	6.83	20	0.5	3.6	5.5	7	3.01	1.56	2.4	25.8	3.01	24.05	0.9992958	0.7857143	0.5026471	0.2174382	286504.71	0.7626751	3.1359519	0.9990165
23-Jan-06	6	500	435	6.97	21	<1.0	4.5	6.5	7	3.05	1.96	2.8	28.6	3.05	27.10	0.9992066	0.9285714	0.5593792	0.2431198	272932.11	0.7690022	3.1724165	0.9988687
30-Jan-06	7	500	435	6.99	19	0.5	3.5	5.4	8	3.48	1.52	2.3	31.0	3.48	30.58	0.9991047	0.671875	0.5023464	0.215726	338741.78	0.7529424	3.6256188	0.9987169
6-Feb-06	8	500	430	6.59	15	<1.0	2.5	4.3	4	1.72	1.08	1.8	32.8	1.72	32.30	0.9990543	1.0625	1.0304719	0.4374445	434341.38	0.7379533	1.7919725	0.998563
13-Feb-06	9	500	435	6.60	12	0.5	2.4	4.6	5	2.18	1.03	2.0	34.8	2.18	34.47	0.9989906	0.925	0.745189	0.3379708	364981.81	0.8303078	2.2660118	0.9984223
20-Feb-06	10	500	420	6.76	12	<1.0	2.3	5.0	5	2.10	0.95	2.1	36.9	2.10	36.57	0.9989291	1	0.6660005	0.325986	291328.68	0.9591747	2.1878734	0.9983009
27-Feb-06	11	500	430	6.84	12	0.5	2.1	5.1	4	1.72	0.91	2.2	39.1	1.72	38.29	0.9988788	1.28125	0.8584275	0.4284559	300050.05	0.9969515	1.7919725	0.9981727
6-Mar-06	12	500	430	6.87	12	<1.0	2.0	5.3	4	1.72	0.86	2.3	41.4	1.72	40.01	0.9988284	1.3125	0.8843544	0.4494293	301750.02	1.0338698	1.7919725	0.9980406
13-Mar-06	13	500	435	6.86	12	0.5	2.1	5.0	<1	0.22	0.92	2.2	43.5	0.22	40.23	0.998822	10	6.8940827	3.6913124	312330.74	1.153169	0.2266012	0.9979104
20-Mar-06	14	500	435	6.87	12	<1.0	2.3	4.8	3	1.31	0.98	2.1	45.6	1.31	41.53	0.9987838	1.5833333	1.1188883	0.6311984	320147.16	1.2950383	1.3596071	0.9977837
27-Mar-06	15	500	445	6.64	9	0.5	2.5	5.1	8	3.56	1.11	2.3	47.9	3.56	45.09	0.9986796	0.640625	0.4374796	0.2471861	316493.32	1.299722	3.7089664	0.9976484
3-Apr-06	16	500	440	6.89	11	<1.0	2.8	5.5	6	2.64	1.21	2.4	50.3	2.64	47.73	0.9986023	0.9166667	0.607168	0.3435637	303532.39	1.3040544	2.7504694	0.9975093
10-Apr-06	17	500	430	6.99	9	0.5	2.1	5.4	<1	0.22	0.91	2.3	52.6	0.22	47.95	0.998596	10.75	8.1186021	4.3624601	338221.36	1.1619971	0.2239966	0.9973577
17-Apr-06	18	500	450	6.83	8	<1.0	1.5	5.3	3	1.35	0.68	2.4	55.0	1.35	49.30	0.9985565	1.75	1.4918647	0.7670259	399546.78	1.0586826	1.4064901	0.9971829
24-Apr-06	19	500	430	7.07	8	0.5	1.6	4.6	5	2.15	0.68	2.0	57.0	2.15	51.45	0.9984935	0.9262751	0.9461897	0.5033608	457473.08	1.1372567	2.2399657	0.9970062
1-May-06	20	500	430	6.54	15	<1.0	1.7	4.0	5	2.15	0.72	1.7	58.7	2.15	53.60	0.9984305	0.8025501	0.9972606	0.546506	556492.59	1.2130739	2.2399657	0.9968201
8-May-06	21	500	440	6.57	16	0.5	1.7	3.5	5	2.20	0.74	1.5	60.2	2.20	55.80	0.9983661	0.6924342	0.9671896	0.544109	640091.18	1.2867653	2.2920579	0.9966354
15-May-06	22	500	435	6.53	17	<1.0	1.7	2.9	2	0.87	0.73	1.3	61.5	0.87	56.67	0.9983406	1.4557959	2.3427963	1.3542802	729090.05	1.3707735	0.9064047	0.9964584
22-May-06	23	500	425	6.69	17	0.5	1.8	3.1	4	1.70	0.77	1.3	62.8	1.70	58.37	0.9982909	0.7830189	1.2941218	0.7850031	731552.55	1.5428415	1.7711356	0.9962674
29-May-06	24	500	440	6.26	15	<1.0	1.9	3.4	6	2.64	0.85	1.5	64.3	2.64	61.01	0.9982136	0.55876	0.9445637	0.5952441	774656	1.7051698	2.7504694	0.9960509
5-Jun-06	25	500	450	6.68	15	0.5	2.0	3.2	<1	0.23	0.91	1.4	65.7	0.23	61.23	0.998207	6.3363709	10.700661	6.2320858	791447.07	1.3955717	0.234415	0.9958419
12-Jun-06	26	500	435	6.49	16	<1.0	2.1	3.0	2	0.87	0.92	1.3	67.0	0.87	62.10	0.9981815	1.4919056	2.5166396	1.3303106	764180.57	1.1220933	0.9064047	0.9956518
19-Jun-06	27	500	435	6.85	16	0.5	2.1	3.1	4	1.74	0.89	1.4	68.4	1.74	63.84	0.9981305	0.7831125	1.315409	0.737064	760954.54	1.2752828	1.8128094	0.9954531
26-Jun-06	28	500	445	6.59	16	<1.0	2.0	3.3	5	2.23	0.89	1.5	69.8	2.23	66.07	0.9980654	0.6562177	1.0979985	0.6471781	775446.55	1.4365348	2.318104	0.9952409
3-Jul-06	29	600	575	6.63	13	0.5	2.0	4.0	2	1.15	1.18	2.3	72.1	1.15	67.22	0.9980317	1.9768098	2.8204419	1.6538997	854408.68	1.4186796	1.1981212	0.9949593
10-Jul-06	30	600	460	6.52	19	<1.0	2.1	4.6	4	1.84	0.96	2.1	74.2	1.84	69.06	0.9979778	1.1565377	1.4479438	0.844927	599794.35	1.4019952	1.9169939	0.994728
17-Jul-06	31	600	450	6.79	18	0.5	2.0	3.8	6	2.70	0.91	1.7	75.9	2.70	71.76	0.9978988	0.6282678	0.9607069	0.5652821	716655.9	1.4304163	2.8129801	0.9945028
24-Jul-06	32	600	470	6.38	18	<1.0	2.0	2.9	3	1.41	0.93	1.4	77.3	1.41	73.17	0.9978575	0.9710212	1.9122358	1.1345592	963967.03	1.4598007	1.4690007	0.9942687
31-Jul-06	33	600	465	6.82	18	0.5	2.6	3.5	5	2.33	1.22	1.6	78.9	2.33	75.49	0.9977894	0.6984705	1.2166168	0.7262777	843545.65	1.4821023	2.4222884	0.9940232
7-Aug-06	34	600	470	6.01	19	<1.0	3.3	4.1	6	2.82	1.55	1.9	80.8	2.82	78.31	0.9977068	0.6786069	1.0715768	0.6431832	772949.76	1.5023453	2.9380015	0.9937608
14-Aug-06	35	600	455	6.74	17	0.5	3.1	4.2	3	1.37	1.43	1.9	82.8	1.37	79.68	0.9976669	1.3993324	2.14292	1.2663918	725685.65	1.4456557	1.4221177	0.9935068
21-Aug-06	36	600	470	6.29	16	<1.0	3.0	4.3	7	3.29	1.40	2.0	84.8	3.29	82.97	0.9975705	0.6177647	0.9182942	0.5341788	727632.94	1.3914671	3.4276684	0.9932445
28-Aug-06	37	600	455	6.77	16	0.5	3.3	3.9	7	3.19	1.51	1.8	86.6	3.19	86.15	0.9974773	0.5563127	1.0103261	0.58383	860601.99	1.3697291	3.3182747	0.9929652
4-Sep-06	38	600	535	6.24	21	<1.0	3.7	3.5	5	2.68	1.96	1.9	88.4	2.68	88.83	0.9973989	0.692805	1.5433011	0.8868738	1241182.6	1.3519197	2.786934	0.9926067
11-Sep-06	39	600	535	6.61	17	<1.0	2.2	4.1	2	1.07	1.17	2.2	90.6	1.07	89.90	0.9973676	2.033596	3.1146418	1.8097018	853379.16	1.387683	1.1147736	0.9923174
18-Sep-06	40	600	505	6.45	19	<1.0	1.9	3.4	3	1.52	0.96	1.7	92.3	1.52	91.41	0.9973232	1.1383892	2.5095048	1.5340519	1159402.6	1.5737174	1.5783944	0.9919873

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12-Dec-05	0	0.035	0.0037	0.0008	< 0.0002	< 0.0002	< 0.0002	0.03	< 0.00004	1.52	< 0.0002	< 0.0002	0.0022	0.04	0.0003	0.0009	0.65	0.018	< 0.02	0.0008	0.0003	< 0.03	0.31	< 0.0002	0.65	< 0.00005	11.8	0.0013	< 0.0002	< 0.00002	< 0.0001	0.0005	0.0003	< 0.0001	0.0004	0.003	< 0.002
19-Dec-05	1	0.24	0.013	0.0018	0.0002	< 0.0002	< 0.0002	0.03	< 0.00004	1.1	0.0004	< 0.0002	0.0018	0.32	0.0014	0.0008	0.81	0.0094	< 0.02	0.0018	< 0.0002	0.03	0.34	< 0.0002	1.58	< 0.00005	17.4	0.0009	< 0.0002	< 0.00002	< 0.0001	0.0016	0.0023	< 0.0001	0.0018	0.002	< 0.002
26-Dec-05	2	0.25	0.014	0.0014	0.0003	< 0.0002	< 0.0002	0.02	< 0.00004	0.53	0.0003	< 0.0002	0.0015	0.31	0.0014	0.0006	0.55	0.0069	< 0.02	0.0013	0.0004	0.04	0.19	< 0.0002	1.26	< 0.00005	9.92	0.0005	< 0.0002	< 0.00002	< 0.0001	0.0022	0.0016	< 0.0001	0.0017	0.003	< 0.002
2-Jan-06	3	0.12	0.011	0.0013	0.0002	< 0.0002	< 0.0002	0.01	< 0.00004	0.76	< 0.0002	< 0.0002	0.0007	0.14	0.0004	0.0005	0.41	0.0058	< 0.02	0.0009	< 0.0002	0.03	0.23	< 0.0002	1.18	< 0.00005	9.91	0.0006	< 0.0002	< 0.00002	< 0.0001	0.0012	0.0011	< 0.0001	0.0013	0.002	< 0.002
9-Jan-06	4	0.18	0.0083	0.001	0.0003	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.56	0.0004	< 0.0002	0.0005	0.2	0.0006	0.0005	0.45	0.0041	< 0.02	0.0006	< 0.0002	< 0.03	0.22	< 0.0002	1.19	< 0.00005	7.32	0.0007	< 0.0002	< 0.00002	< 0.0001	0.0014	0.0013	< 0.0001	0.0014	0.002	< 0.002
16-Jan-06	5	0.2150	0.0077	0.0009	0.0003	0.0001	0.0001	0.0050	0.0000	0.6350	0.0004	0.0001	0.0006	0.2500	0.0009	0.0005	0.5050	0.0048	0.0125	0.0005	0.0001	0.0150	0.1950	0.0001	1.2200	0.0000	6.1350	0.0007	0.0001	0.0000	0.0001	0.0015	0.0019	0.0001	0.0014	0.0020	0.0010
23-Jan-06	6	0.25	0.007	0.0008	0.0003	< 0.0002	< 0.0002	0.01	< 0.00004	0.71	0.0003	< 0.0002	0.0006	0.3	0.0011	0.0005	0.56	0.0054	0.03	0.0003	< 0.0002	< 0.03	0.17	< 0.0002	1.25	< 0.00005	4.95	0.0007	< 0.0002	< 0.00002	< 0.0001	0.0016	0.0025	< 0.0001	0.0014	0.002	< 0.002
30-Jan-06	7	0.2400	0.0058	0.0008	0.0003	0.0001	0.0001	0.0050	0.0000	0.7200	0.0004	0.0001	0.0012	0.2700	0.0011	0.0005	0.5800	0.0052	0.0125	0.0003	0.0001	0.0150	0.1800	0.0001	1.2400	0.0000	4.3600	0.0008	0.0001	0.0000	0.0001	0.0014	0.0024	0.0001	0.0013	0.0020	0.0010
6-Feb-06	8	0.23	0.0046	0.0007	0.0003	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.73	0.0005	< 0.0002	0.0017	0.24	0.0011	0.0005	0.6	0.005	< 0.02	0.0002	0.0003	< 0.03	0.19	< 0.0002	1.23	< 0.00005	3.77	0.0009	< 0.0002	< 0.00002	< 0.0001	0.0012	0.0022	< 0.0001	0.0012	0.002	< 0.002
13-Feb-06	9	0.1650	0.0047	0.0007	0.0001	0.0001	0.0001	0.0050	0.0000	0.7050	0.0002	0.0001	0.0012	0.1800	0.0008	0.0005	0.5150	0.0041	0.0100	0.0001	0.0003	0.0150	0.1850	0.0001	1.0750	0.0000	3.3300	0.0008	0.0001	0.0000	0.0001	0.0009	0.0014	0.0001	0.0011	0.0008	0.0010
20-Feb-06	10	0.1	0.0047	0.0007	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.68	< 0.0002	< 0.0002	0.0006	0.12	0.0004	0.0004	0.43	0.0032	< 0.02	< 0.0001	0.0002	< 0.03	0.18	< 0.0002	0.92	< 0.00005	2.89	0.0007	< 0.0002	< 0.00002	< 0.0001	0.0006	0.0006	< 0.0001	0.001	< 0.001	< 0.002
27-Feb-06	11	0.0875	0.0043	0.0007	0.0001	0.0001	0.0001	0.0050	0.0000	0.7150	0.0002	0.0001	0.0008	0.0950	0.0004	0.0004	0.4350	0.0031	0.0100	0.0001	0.0001	0.0150	0.1800	0.0001	0.8900	0.0000	2.8500	0.0008	0.0001	0.0000	0.0001	0.0007	0.0005	0.0001	0.0009	0.0008	0.0010
6-Mar-06	12	0.075	0.0038	0.0006	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.75	0.0004	< 0.0002	0.0009	0.07	0.0003	0.0003	0.44	0.0029	< 0.02	< 0.0001	< 0.0002	< 0.03	0.18	< 0.0002	0.86	< 0.00005	2.81	0.0008	< 0.0002	< 0.00002	< 0.0001	0.0007	0.0004	< 0.0001	0.0008	0.002	< 0.002
13-Mar-06	13	0.0610	0.0036	0.0007	0.0002	0.0001	0.0001	0.0050	0.0000	0.7700	0.0002	0.0001	0.0009	0.0600	0.0003	0.0003	0.4050	0.0027	0.0100	0.0001	0.0001	0.0150	0.1800	0.0001	0.8100	0.0000	2.5150	0.0008	0.0001	0.0000	0.0001	0.0007	0.0004	0.0001	0.0008	0.0008	0.0010
20-Mar-06	14	0.047	0.0034	0.0007	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.79	< 0.0002	< 0.0002	0.0008	0.05	0.0002	0.0003	0.37	0.0025	< 0.02	< 0.0001	< 0.0002	< 0.03	0.18	< 0.0002	0.76	0.00008	2.22	0.0008	< 0.0002	< 0.00002	< 0.0001	0.0006	0.0004	< 0.0001	0.0007	< 0.001	< 0.002
27-Mar-06	15	0.0495	0.0035	0.0008	0.0002	0.0001	0.0001	0.0050	0.0000	0.8250	0.0001	0.0001	0.0010	0.0500	0.0002	0.0003	0.3850	0.0024	0.0100	0.0001	0.0001	0.0150	0.1850	0.0001	0.7700	0.0000	2.0400	0.0008	0.0001	0.0000	0.0001	0.0006	0.0004	0.0001	0.0008	0.0005	0.0010
3-Apr-06	16	0.052	0.0036	0.0008	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.86	< 0.0002	< 0.0002	0.0011	0.05	0.0002	0.0003	0.4	0.0023	< 0.02	< 0.0001	< 0.0002	< 0.03	0.19	< 0.0002	0.78	< 0.00005	1.86	0.0008	< 0.0002	< 0.00002	< 0.0001	0.0006	0.0003	< 0.0001	0.0008	< 0.001	< 0.002
10-Apr-06	17	0.0860	0.0033	0.0007	0.0001	0.0001	0.0001	0.0050	0.0000	0.9100	0.0002	0.0001	0.0011	0.0850	0.0004	0.0004	0.4750	0.0030	0.0100	0.0001	0.0001	0.0150	0.1900	0.0001	0.8000	0.0000	1.8200	0.0009	0.0001	0.0000	0.0001	0.0007	0.0007	0.0001	0.0008	0.0008	0.0010
17-Apr-06	18	0.12	0.0029	0.0005	0.0003	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.96	0.0004	< 0.0002	0.001	0.12	0.0006	0.0004	0.55	0.0037	< 0.02	< 0.0001	< 0.0002	< 0.03	0.19	< 0.0002	0.82	< 0.00005	1.78	0.0009	< 0.0002	< 0.00002	< 0.0001	0.0008	0.0011	< 0.0001	0.0008	0.002	< 0.002
24-Apr-06	19	0.1150	0.0033	0.0006	0.0004	0.0001	0.0001	0.0050	0.0000	1.0500	0.0003	0.0001	0.0023	0.1300	0.0007	0.0005	0.5600	0.0036	0.0100	0.0001	0.0001	0.0150	0.2100	0.0001	0.8150	0.0000	1.7000	0.0010	0.0001	0.0000	0.0001	0.0009	0.0009	0.0001	0.0009	0.0025	0.0010
1-May-06	20	0.11	0.0037	0.0007	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.14	0.0002	< 0.0002	0.0035	0.14	0.0007	0.0005	0.57	0.0035	< 0.02	< 0.0001	< 0.0002	< 0.03	0.23	< 0.0002	0.81	< 0.00005	1.62	0.0011	< 0.0002	< 0.00002	< 0.0001	0.0009	0.0007	< 0.0001	0.001	0.003	< 0.002
8-May-06	21	0.0840	0.0039	0.0007	0.0004	0.0001	0.0001	0.0050	0.0000	1.1350	0.0001	0.0001	0.0022	0.0950	0.0005	0.0005	0.5350	0.0030	0.0100	0.0001	0.0001	0.0150	0.2550	0.0001	0.7700	0.0000	1.5050	0.0011	0.0001	0.0000	0.0001	0.0007	0.0006	0.0001	0.0009	0.0010	0.0010
15-May-06	22	0.058	0.0041	0.0006	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.13	< 0.0002	< 0.0002	0.0008	0.05	0.0002	0.0004	0.5	0.0025	< 0.02	< 0.0001	< 0.0002	< 0.03	0.28	< 0.0002	0.73	< 0.00005	1.39	0.001	< 0.0002	< 0.00002	< 0.0001	0.0005	0.0004	< 0.0001	0.0007	< 0.001	< 0.002
22-May-06	23	0.0615	0.0033	0.0006	0.0004	0.0001	0.0001	0.0050	0.0000	1.3100	0.0001	0.0001	0.0015	0.0550	0.0003	0.0004	0.5150	0.0029	0.0100	0.0001	0.0036	0.0150	0.2350	0.0001	0.7200	0.0000	1.3200	0.0012	0.0001	0.0000	0.0001	0.0005	0.0005	0.0001	0.0007	0.0005	0.0010
29-May-06	24	0.065	0.0025	0.0005	0.0003	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.49	0.0003	0.0002	0.0021	0.06	0.0003	0.0003	0.53	0.0032	< 0.02	< 0.0001	0.014	< 0.03	0.19	< 0.0002	0.71	< 0.00005	1.25	0.0013	< 0.0002	< 0.00002	< 0.0001	0.0005	0.0005	< 0.0001	0.0007	< 0.001	< 0.002
5-Jun-06	25	0.0790	0.0024	0.0012	0.0004	0.0001	0.0001	0.0050	0.0000	1.3000	0.0001	0.0001	0.0017	0.0700	0.0004	0.0004	0.5650	0.0033	0.0100	0.0001	0.0036	0.0150	0.2050	0.0002	0.7700	0.0000	1.2100	0.0014	0.0001	0.0000	0.0001	0.0005	0.0008	0.0001	0.0008	0.0008	0.0010
12-Jun-06	26	0.093	0.0023	0.0018	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.11	< 0.0002	< 0.0002	0.0013	0.08	0.0004	0.0004	0.6	0.0033	< 0.02	< 0.0001	< 0.0002	< 0.03	0.22	0.0005	0.83	< 0.00005	1.17	0.0014	< 0.0002	< 0.00002	< 0.0001	0.0005	0.001	< 0.0001	0.0008	0.002	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
19-Jun-06	27	0.0710	0.0028	0.0014	0.0002	0.0001	0.0001	0.0050	0.0000	1.2300	0.0001	0.0001	0.0011	0.0600	0.0002	0.0005	0.5850	0.0030	0.0100	0.0001	0.0001	0.0150	0.2350	0.0002	0.8650	0.0000	1.2350	0.0014	0.0001	0.0000	0.0001	0.0007	0.0006	0.0001	0.0008	0.0020	0.0010
26-Jun-06	28	0.049	0.0033	0.001	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.35	< 0.0002	< 0.0002	0.0008	0.04	< 0.0002	0.0005	0.57	0.0027	< 0.02	< 0.0001	< 0.0002	< 0.03	0.25	< 0.0002	0.9	< 0.00005	1.3	0.0014	< 0.0002	< 0.00002	< 0.0001	0.0009	0.0002	< 0.0001	0.0008	0.002	< 0.002
3-Jul-06	29	0.0510	0.0037	0.0008	0.0001	0.0001	0.0001	0.0050	0.0000	1.3800	0.0001	0.0001	0.0015	0.0400	0.0001	0.0005	0.5900	0.0027	0.0100	0.0001	0.0001	0.0150	0.2550	0.0001	0.8150	0.0000	1.2100	0.0014	0.0001	0.0000	0.0001	0.0007	0.0003	0.0001	0.0008	0.0020	0.0010
10-Jul-06	30	0.053	0.004	0.0005	0.0003	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.41	< 0.0002	< 0.0002	0.0022	0.04	0.0002	0.0005	0.61	0.0026	< 0.02	< 0.0001	< 0.0002	< 0.03	0.26	< 0.0002	0.73	< 0.00005	1.12	0.0013	< 0.0002	< 0.00002	< 0.0001	0.0005	0.0004	< 0.0001	0.0008	0.002	< 0.002
17-Jul-06	31	0.0390	0.0035	0.0005	0.0003	0.0001	0.0001	0.0050	0.0000	1.4150	0.0001	0.0001	0.0018	0.0300	0.0001	0.0004	0.6000	0.0026	0.0100	0.0001	0.0001	0.0150	0.2450	0.0001	0.6800	0.0000	1.0450	0.0013	0.0001	0.0000	0.0001	0.0005	0.0003	0.0001	0.0007	0.0015	0.0010
24-Jul-06	32	0.025	0.0029	0.0005	0.0002	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.42	< 0.0002	< 0.0002	0.0014	0.02	< 0.0002	0.0003	0.59	0.0025	< 0.02	< 0.0001	< 0.0002	< 0.03	0.23	< 0.0002	0.63	< 0.00005	0.97	0.0013	< 0.0002	< 0.00002	< 0.0001	0.0005	0.0002	< 0.0001	0.0006	0.001	< 0.002
31-Jul-06	33	0.0300	0.0028	0.0005	0.0003	0.0001	0.0001	0.0050	0.0000	1.5150	0.0002	0.0001	0.0013	0.0200	0.0001	0.0003	0.6200	0.0027	0.0100	0.0001	0.0001	0.0150	0.2200	0.0001	0.6800	0.0000	0.9700	0.0014	0.0001	0.0000	0.0001	0.0005	0.0003	0.0001	0.0006	0.0035	0.0010
7-Aug-06	34	0.035	0.0027	0.0004	0.0003	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.61	0.0004	< 0.0002	0.0011	0.02	< 0.0002	0.0003	0.65	0.0029	< 0.02	< 0.0001	< 0.0002	< 0.03	0.21	< 0.0002	0.73	< 0.00005	0.97	0.0015	< 0.0002	< 0.00002	< 0.0001	0.0005	0.0004	< 0.0001	0.0006	0.006	< 0.002
14-Aug-06	35	0.0325	0.0030	0.0004	0.0001	0.0001	0.0001	0.0050	0.0000	1.5850	0.0002	0.0001	0.0011	0.0200	0.0001	0.0004	0.6650	0.0029	0.0100	0.0001	0.0001	0.0150	0.2150	0.0001	0.7600	0.0000	0.9350	0.0015	0.0001	0.0000	0.0001	0.0005	0.0004	0.0001	0.0007	0.0018	0.0010
21-Aug-06	36	0.03	0.0032	0.0004	< 0.0002	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.56	< 0.0002	< 0.0002	0.001	0.02	< 0.0002	0.0004	0.68	0.0029	< 0.02	< 0.0001	< 0.0002	< 0.03	0.22	< 0.0002	0.79	< 0.00005	0.9	0.0014	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0003	< 0.0001	0.0007	< 0.001	< 0.002
28-Aug-06	37	0.0435	0.0036	0.0005	0.0001	0.0001	0.0001	0.0050	0.0000	1.7050	0.0001	0.0001	0.0015	0.0300	0.0001	0.0004	0.7550	0.0030	0.0100	0.0001	0.0001	0.0150	0.2150	0.0001	0.9000	0.0000	0.8000	0.0017	0.0001	0.0000	0.0001	0.0005	0.0004	0.0001	0.0007	0.0013	0.0010
4-Sep-06	38	0.057	0.0039	0.0005	0.0003	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.85	< 0.0002	< 0.0002	0.0019	0.04	0.0003	0.0004	0.83	0.0031	< 0.02	< 0.0001	< 0.0002	< 0.03	0.21	< 0.0002	1.01	< 0.00005	0.7	0.0019	< 0.0002	< 0.00002	< 0.0001	0.0005	0.0004	< 0.0001	0.0006	0.004	< 0.002
11-Sep-06	39	0.064	0.0027	0.0003	0.0003	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.51	< 0.0002	< 0.0002	0.0009	0.04	0.0003	0.0004	0.66	0.0026	< 0.02	< 0.0001	< 0.0002	< 0.03	0.18	< 0.0002	1	< 0.00005	0.51	0.0015	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0005	< 0.0001	0.0005	< 0.001	< 0.002
18-Sep-06	40	0.077	0.0033	0.0016	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	1.92	< 0.0002	< 0.0002	0.0018	0.06	0.0005	0.0006	0.74	0.0037	< 0.02	< 0.0001	< 0.0002	< 0.03	0.27	< 0.0002	4.85	< 0.00005	0.61	0.0018	< 0.0002	< 0.00002	< 0.0001	0.0006	0.001	< 0.0001	0.0008	0.002	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

Project: High Lake
Sample: HC 3 Low S Granodiorite
Dry Sample Weight: 1.00 Kg

	Original	
S - Total	0.11	%
S - Sulphate	<0.01	%
S - Sulphide	0.1	%
NP	35.0	kg $CaCO_3$/t

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Values shaded in grey are averages

Analytical Results | **Production Rate** | **Molar Ratios** | **NP Consumption**

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Acidity (mg CaCO3/kg/wk)	Alkalinity (mg CaCO3/kg/wk)	Cumulative Alkalinity (mg CaCO3/kg)	Sulphate (mg/kg/wk)	Cumulative Sulphate (mg/kg)	Fraction of Total Sulphur Remaining	Alkalinity / Sulphate Production	Carbonate Molar Ratio [(Ca+Mg+Sr) /SO4]	Calcium / Sulphate Ratio	Ca+Mg/ Alkalinity	Ca/Mg	Theoretical NP Consumption at pH 6	Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)													
21-Nov-05	0	500	375	8.93	103	<1.0	<1.0	28.0	1	0.38	0.19	10.5	10.5	0.38	0.38	0.9998862	28.0	19.9	13.542802	277716.58	2.1285302	0.3906917	0.9993514
28-Nov-05	1	500	410	8.66	74	<1.0	<1.0	23.3	2	0.82	0.21	9.5	20.0	0.82	1.20	0.9996374	11.6	7.7	4.6980339	281506.88	1.5850832	0.8543125	0.9988055
5-Dec-05	2	500	415	8.43	58	<1.0	<1.0	30.3	2	0.83	0.21	12.6	32.6	0.83	2.03	0.9993855	15.1	7.4	4.4343688	210902.18	1.5061655	0.8647309	0.9982733
12-Dec-05	3	500	395	9.02	46	<1.0	<1.0	23.5	3	1.19	0.20	9.3	41.9	1.19	3.21	0.9990259	7.8	4.4	2.5008242	233089.68	1.2914698	1.2345857	0.9978164
19-Dec-05	4	500	400	8.95	38	<1.0	<1.0	22.0	4	1.60	0.20	8.8	50.7	1.60	4.81	0.9985403	5.5	3.3991748	2.0134431	257336.26	1.4556886	1.6669512	0.9973442
26-Dec-05	5	500	415	7.60	32	<1.0	3.8	21.5	<1	0.21	1.56	8.9	59.6	0.21	5.02	0.9984773	43.0	28.120754	17.114266	282522.3	1.5577963	0.2161827	0.9968376
2-Jan-06	6	500	440	8.73	33	<1.0	<1.0	20.5	<1	0.22	0.22	9.0	68.6	0.22	5.24	0.9984106	41.0	29.048109	18.120988	324524.69	1.6613838	0.2292058	0.9962828
9-Jan-06	7	500	435	8.53	33	0.5	0.5	19.3	<1	0.22	0.22	8.4	77.0	0.22	5.46	0.9983446	38.5	27.509378	17.018388	323575.9	1.6250612	0.2266012	0.9957633
16-Jan-06	8	500	410	8.87	25	<1.0	<1.0	18.0	<1	0.21	0.21	7.4	84.4	0.21	5.66	0.9982823	36.0	25.970647	15.915788	307919.72	1.5855926	0.2135781	0.9953011
23-Jan-06	9	500	405	8.78	30	0.5	0.5	19.0	<1	0.20	0.20	7.7	92.1	0.20	5.86	0.9982209	38.0	26.067525	15.340519	289227.9	1.4324119	0.2109735	0.9948428
30-Jan-06	10	500	400	8.55	24	<1.0	<1.0	20.0	2	0.80	0.20	8.0	100.1	0.80	6.66	0.9979781	10.0	6.5411005	3.6913124	272380.11	1.2973151	0.8334756	0.9943885
6-Feb-06	11	500	400	8.83	27	0.5	0.5	19.5	<1	0.20	0.20	7.8	107.9	0.20	6.86	0.9979174	39.0	26.904766	15.26861	287275.81	1.3141633	0.2083689	0.9939213
13-Feb-06	12	500	400	8.40	27	<1.0	<1.0	19.0	1	0.40	0.20	7.6	115.5	0.40	7.26	0.997796	19.0	13.822565	7.8859855	302955.5	1.3303377	0.4167378	0.9934413
20-Feb-06	13	500	395	8.84	30	0.5	0.5	19.5	<1	0.20	0.20	7.7	123.2	0.20	7.46	0.9977361	39.0	27.857711	16.419149	293739.35	1.4376394	0.2057643	0.9929636
27-Feb-06	14	500	395	8.65	27	<1.0	<1.0	20.0	<1	0.20	0.20	7.9	131.1	0.20	7.66	0.9976762	40.0	28.070293	17.066327	288581.61	1.5534327	0.2057643	0.9924823
6-Mar-06	15	500	395	8.84	26	0.5	0.5	18.9	<1	0.20	0.20	7.5	138.5	0.20	7.86	0.9976162	37.8	28.357928	17.353962	308917.15	1.5796142	0.2057643	0.991996
13-Mar-06	16	500	405	8.67	25	<1.0	<1.0	17.8	<1	0.20	0.20	7.2	145.7	0.20	8.06	0.9975548	35.5	28.645562	17.641597	340231.21	1.6057956	0.2109735	0.9914924
20-Mar-06	17	500	400	8.94	25	0.5	0.5	17.8	<1	0.20	0.20	7.1	152.8	0.20	8.26	0.9974941	35.5	27.638658	18.216866	324228.59	1.9368406	0.2083689	0.9910125
27-Mar-06	18	500	410	8.57	23	<1.0	<1.0	17.8	3	1.23	0.21	7.3	160.1	1.23	9.49	0.9971208	5.9	4.4386255	3.1320226	320237.02	2.4016412	1.2814687	0.9905385
3-Apr-06	19	500	410	8.66	25	0.5	0.5	17.9	1.8	0.72	0.21	7.3	167.4	0.72	10.21	0.9969031	10.2	7.8506236	5.5540897	328090.28	2.4231598	0.7475234	0.9900494
10-Apr-06	20	500	420	8.61	24	<1.0	<1.0	18.0	<1	0.21	0.21	7.6	175.0	0.21	10.42	0.9968393	36.0	28.322612	20.086492	344025.56	2.443644	0.2187873	0.9895331
17-Apr-06	21	500	435	8.52	20	0.5	0.5	18.0	<1	0.22	0.22	7.8	182.8	0.22	10.63	0.9967733	36.0	28.255675	20.374127	355455.8	2.5907356	0.2266012	0.9889995
24-Apr-06	22	500	420	8.40	21	<1.0	<1.0	18.0	<1	0.21	0.21	7.6	190.4	0.21	10.84	0.9967096	36.0	28.188738	20.661761	342371.84	2.7517623	0.2187873	0.9884855
1-May-06	23	500	425	7.58	28	0.5	0.3	15.8	<1	0.21	0.13	6.7	197.1	0.21	11.06	0.9966451	31.5	25.496629	18.959923	358028.91	2.9077013	0.221392	0.9880152
8-May-06	24	500	410	7.49	28	<1.0	1.3	13.5	4	1.64	0.52	5.5	202.6	1.64	12.70	0.9961474	3.4	2.8505649	2.1572605	360278.99	3.1193328	1.708625	0.9876093
15-May-06	25	500	415	7.84	31	0.5	1.4	14.8	1	0.42	0.58	6.1	208.7	0.42	13.11	0.9960215	14.8	12.638276	9.5878244	369310.94	3.1508412	0.4323655	0.9871539
22-May-06	26	500	415	7.45	33	<1.0	1.5	16.1	1	0.42	0.64	6.7	215.4	0.42	13.53	0.9958955	16.1	13.874293	10.546607	373212	3.1770982	0.4323655	0.986654
29-May-06	27	500	440	7.67	31	0.5	1.3	15.5	2	0.88	0.57	6.8	222.2	0.88	14.41	0.9956285	7.8	6.5708185	5.0455926	387646.73	3.3162603	0.9168231	0.986152
5-Jun-06	28	500	445	7.59	32	<1.0	1.0	15.0	<1	0.22	0.46	6.7	228.9	0.22	14.63	0.995561	30.0	24.817962	19.271527	383334.86	3.4832549	0.2318104	0.9856726
12-Jun-06	29	500	435	7.79	31	0.5	1.0	15.7	<1	0.22	0.44	6.8	235.7	0.22	14.85	0.995495	31.4	25.47378	19.966644	367144.5	3.634858	0.2266012	0.9851915
19-Jun-06	30	500	430	7.69	32	<1.0	1.0	16.4	<1	0.22	0.42	7.1	242.8	0.22	15.06	0.9954297	32.9	26.129598	20.661761	356086.56	3.7886582	0.2239966	0.9847038
26-Jun-06	31	500	445	7.77	29	0.5	1.4	15.9	<1	0.22	0.64	7.1	249.9	0.22	15.28	0.9953622	31.8	25.553439	20.75764	372473.93	4.3409998	0.2318104	0.9842102
3-Jul-06	32	500	485	7.34	31	<1.0	1.9	15.4	<1	0.24	0.93	7.4	257.3	0.24	15.53	0.9952886	30.7	24.97728	20.853518	410577.09	5.0739147	0.2526473	0.9836843
10-Jul-06	33	500	465	7.83	41	0.5	1.7	20.6	1	0.47	0.77	9.6	266.9	0.47	15.99	0.9951475	20.6	17.124397	14.18998	403023.47	4.8522954	0.4844577	0.982993
17-Jul-06	34	500	500	7.60	50	<1.0	1.4	25.8	1	0.50	0.70	12.9	279.8	0.50	16.49	0.9949957	25.8	21.760155	17.953201	439365.85	4.7322516	0.5209222	0.9820483
24-Jul-06	35	500	455	7.60	34	0.5	1.5	21.3	<1	0.23	0.68	9.7	289.5	0.23	16.72	0.9949267	42.6	37.27961	30.657068	414717.71	4.6452738	0.2370196	0.981312
31-Jul-06	36	500	440	7.16	33	<1.0	1.6	16.8	<1	0.22	0.70	7.4	296.9	0.22	16.94	0.9948599	33.6	31.038909	25.407735	423148.93	4.52767	0.2292058	0.9807191
7-Aug-06	37	500	500	7.53	38	0.5	2.3	18.9	1	0.50	1.16	9.4	306.3	0.50	17.44	0.9947082	18.9	16.55555	13.818452	456030.63	5.06766	0.5209222	0.9800005
14-Aug-06	38	500	510	6.77	39	<1.0	3.0	21.0	2	1.02	1.55	10.7	317.0	1.02	18.46	0.9943987	10.5	8.7958226	7.4665182	444892.24	5.6398881	1.0626814	0.9792215
21-Aug-06	39	500	470	7.58	34	#VALUE!	4.5	20.8	1	0.47	2.10	9.8	326.8	0.47	18.93	0.994256	20.8	15.716378	13.375015	370207.33	5.7364001	0.4896669	0.9785802
28-Aug-06	40	500	510	6.74	39	0.0	5.9	20.6	1	0.51	3.01	10.5	337.3	0.51	19.44	0.9941013	20.6	16.905801	14.405706	436787.83	5.7861697	0.5313407	0.9778317

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21-Nov-05	0	0.12	0.0015	0.0017	0.0023	< 0.0002	< 0.0002	0.03	< 0.00004	5.65	0.0005	< 0.0002	0.0016	0.02	< 0.0002	0.0023	1.61	0.002	< 0.02	0.0015	< 0.0002	< 0.03	4.69	< 0.0002	1.47	< 0.00005	10.1	0.015	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0042	< 0.0001	0.0018	< 0.001	< 0.002
28-Nov-05	1	0.12	0.0093	0.0004	0.0021	< 0.0002	< 0.0002	0.03	< 0.00004	3.92	< 0.0002	< 0.0002	0.0013	0.01	< 0.0002	0.002	1.5	0.0037	< 0.02	0.0024	< 0.0002	0.04	3.81	< 0.0002	0.86	< 0.00005	9.78	0.012	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0034	0.0001	0.0019	< 0.001	< 0.002
5-Dec-05	2	0.13	0.012	0.0004	0.0019	< 0.0002	< 0.0002	0.04	< 0.00004	3.7	< 0.0002	< 0.0002	0.0009	< 0.01	< 0.0002	0.0025	1.49	0.0033	< 0.02	0.0018	< 0.0002	0.04	3.9	< 0.0002	1.01	< 0.00005	8.28	0.011	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0011	0.0002	0.0026	0.002	< 0.002
12-Dec-05	3	0.16	0.0088	0.0004	0.0024	< 0.0002	< 0.0002	0.03	< 0.00004	3.13	< 0.0002	< 0.0002	0.002	0.04	< 0.0002	0.0021	1.47	0.0023	< 0.02	0.0009	< 0.0002	0.05	3.64	< 0.0002	1.01	< 0.00005	5.73	0.01	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0027	0.0002	0.0025	< 0.001	< 0.002
19-Dec-05	4	0.18	0.0066	0.0003	0.0018	< 0.0002	< 0.0002	0.03	< 0.00004	3.36	< 0.0002	< 0.0002	0.0008	0.03	< 0.0002	0.0021	1.4	0.0025	< 0.02	0.0005	< 0.0002	0.04	3.19	< 0.0002	1.13	< 0.00005	3.93	0.0094	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0025	0.0002	0.0027	< 0.001	< 0.002
26-Dec-05	5	0.1500	0.0058	0.0003	0.0017	0.0001	0.0001	0.0250	0.0000	3.5700	0.0001	0.0001	0.0010	0.0250	0.0001	0.0022	1.3900	0.0030	0.0100	0.0005	0.0001	0.0175	2.8350	0.0001	1.0300	0.0000	3.1850	0.0093	0.0001	0.0000	0.0001	0.0003	0.0016	0.0003	0.0024	0.0005	0.0010
2-Jan-06	6	0.12	0.005	0.0003	0.0016	< 0.0002	< 0.0002	0.02	< 0.00004	3.78	< 0.0002	< 0.0002	0.0011	0.02	< 0.0002	0.0022	1.38	0.0034	< 0.02	0.0004	< 0.0002	< 0.03	2.48	< 0.0002	0.93	< 0.00005	2.44	0.0091	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0006	0.0004	0.0021	0.001	< 0.002
9-Jan-06	7	0.1550	0.0042	0.0003	0.0017	0.0001	0.0001	0.0150	0.0000	3.5500	0.0001	0.0001	0.0017	0.0550	0.0001	0.0019	1.3250	0.0036	0.0100	0.0003	0.0001	0.0150	2.2450	0.0001	0.9350	0.0000	2.0100	0.0085	0.0001	0.0000	0.0001	0.0011	0.0019	0.0005	0.0021	0.0015	0.0010
16-Jan-06	8	0.19	0.0033	0.0002	0.0018	< 0.0002	< 0.0002	0.01	< 0.00004	3.32	< 0.0002	< 0.0002	0.0022	0.09	0.0003	0.0015	1.27	0.0037	< 0.02	0.0002	< 0.0002	< 0.03	2.01	< 0.0002	0.94	< 0.00005	1.58	0.0078	< 0.0002	< 0.00002	< 0.0001	0.0017	0.0031	0.0005	0.0021	0.002	< 0.002
23-Jan-06	9	0.1550	0.0030	0.0003	0.0017	0.0001	0.0001	0.0100	0.0000	3.2000	0.0001	0.0001	0.0024	0.0250	0.0001	0.0017	1.3550	0.0030	0.0100	0.0001	0.0001	0.0150	2.0100	0.0001	0.9200	0.0000	1.4200	0.0080	0.0001	0.0000	0.0001	0.0010	0.0019	0.0006	0.0022	0.0008	0.0010
30-Jan-06	10	0.12	0.0026	0.0003	0.0015	< 0.0002	< 0.0002	0.01	< 0.00004	3.08	< 0.0002	< 0.0002	0.0026	< 0.01	< 0.0002	0.0018	1.44	0.0022	< 0.02	< 0.0001	< 0.0002	< 0.03	2.01	< 0.0002	0.9	< 0.00005	1.26	0.0081	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0007	0.0006	0.0022	< 0.001	< 0.002
6-Feb-06	11	0.1250	0.0022	0.0003	0.0015	0.0001	0.0001	0.0100	0.0000	3.1850	0.0001	0.0001	0.0017	0.0050	0.0001	0.0018	1.4700	0.0022	0.0100	0.0001	0.0001	0.0150	2.0600	0.0001	0.9400	0.0000	1.1650	0.0081	0.0001	0.0000	0.0001	0.0002	0.0008	0.0008	0.0022	0.0005	0.0010
13-Feb-06	12	0.13	0.0018	0.0003	0.0014	< 0.0002	< 0.0002	0.01	< 0.00004	3.29	0.0002	< 0.0002	0.0008	< 0.01	< 0.0002	0.0018	1.5	0.0021	< 0.02	< 0.0001	< 0.0002	0.03	2.11	< 0.0002	0.98	< 0.00005	1.07	0.008	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0008	0.0009	0.0022	< 0.001	< 0.002
20-Feb-06	13	0.1400	0.0017	0.0003	0.0014	0.0001	0.0001	0.0050	0.0000	3.4250	0.0001	0.0001	0.0007	0.0050	0.0001	0.0018	1.4450	0.0020	0.0100	0.0001	0.0001	0.0150	2.1200	0.0001	1.0450	0.0000	0.9350	0.0081	0.0001	0.0000	0.0001	0.0001	0.0007	0.0010	0.0024	0.0005	0.0010
27-Feb-06	14	0.15	0.0016	0.0003	0.0014	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.56	< 0.0002	< 0.0002	0.0006	< 0.01	< 0.0002	0.0018	1.39	0.0018	< 0.02	< 0.0001	< 0.0002	< 0.03	2.13	< 0.0002	1.11	< 0.00005	0.8	0.0081	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0005	0.0011	0.0026	< 0.001	< 0.002
6-Mar-06	15	0.1500	0.0017	0.0003	0.0014	0.0001	0.0001	0.0050	0.0000	3.6200	0.0002	0.0001	0.0006	0.0050	0.0001	0.0017	1.3900	0.0023	0.0100	0.0001	0.0001	0.0150	2.0050	0.0001	1.1000	0.0000	0.7700	0.0081	0.0001	0.0000	0.0001	0.0002	0.0004	0.0013	0.0025	0.0005	0.0010
13-Mar-06	16	0.15	0.0018	0.0003	0.0014	< 0.0002	< 0.0002	0.01	< 0.00004	3.68	0.0005	< 0.0002	0.0006	< 0.01	< 0.0002	0.0016	1.39	0.0027	< 0.02	< 0.0001	< 0.0002	< 0.03	1.88	< 0.0002	1.09	< 0.00005	0.74	0.0081	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0003	0.0014	0.0023	< 0.001	< 0.002
20-Mar-06	17	0.1350	0.0018	0.0003	0.0013	0.0001	0.0001	0.0050	0.0000	3.8000	0.0002	0.0001	0.0007	0.0050	0.0001	0.0014	1.1900	0.0036	0.0100	0.0001	0.0001	0.0150	1.8050	0.0001	1.0150	0.0000	0.6600	0.0075	0.0001	0.0000	0.0001	0.0004	0.0003	0.0015	0.0022	0.0005	0.0010
27-Mar-06	18	0.12	0.0018	0.0003	0.0012	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.92	< 0.0002	< 0.0002	0.0008	< 0.01	< 0.0002	0.0012	0.99	0.0044	< 0.02	< 0.0001	< 0.0002	< 0.03	1.73	< 0.0002	0.94	< 0.00005	0.58	0.0068	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0002	0.0015	0.0021	< 0.001	< 0.002
3-Apr-06	19	0.1250	0.0020	0.0004	0.0013	0.0001	0.0001	0.0050	0.0000	4.0550	0.0001	0.0001	0.0007	0.0050	0.0001	0.0014	1.0150	0.0041	0.0100	0.0001	0.0001	0.0150	1.7850	0.0001	0.9650	0.0000	0.5700	0.0071	0.0001	0.0000	0.0001	0.0004	0.0003	0.0017	0.0022	0.0005	0.0010
10-Apr-06	20	0.13	0.0021	0.0004	0.0014	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.19	0.0003	< 0.0002	0.0005	< 0.01	< 0.0002	0.0015	1.04	0.0037	< 0.02	< 0.0001	< 0.0002	< 0.03	1.84	< 0.0002	0.99	< 0.00005	0.56	0.0074	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0004	0.0019	0.0023	< 0.001	< 0.002
17-Apr-06	21	0.1300	0.0021	0.0004	0.0015	0.0001	0.0001	0.0050	0.0000	4.2500	0.0003	0.0001	0.0006	0.0075	0.0001	0.0014	0.9950	0.0040	0.0100	0.0001	0.0001	0.0150	1.7750	0.0001	1.0000	0.0000	0.5450	0.0079	0.0001	0.0000	0.0001	0.0005	0.0004	0.0017	0.0024	0.0033	0.0010
24-Apr-06	22	0.13	0.0021	0.0004	0.0015	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.31	0.0003	< 0.0002	0.0007	0.02	< 0.0002	0.0013	0.95	0.0043	< 0.02	< 0.0001	< 0.0002	< 0.03	1.71	< 0.0002	1.01	< 0.00005	0.53	0.0084	< 0.0002	< 0.00002	< 0.0001	0.0005	0.0004	0.0015	0.0025	0.012	< 0.002
1-May-06	23	0.1350	0.0018	0.0004	0.0015	0.0001	0.0001	0.0050	0.0000	3.9550	0.0003	0.0001	0.0007	0.0075	0.0001	0.0012	0.8250	0.0034	0.0100	0.0001	0.0001	0.0150	1.6750	0.0001	0.9550	0.0000	0.4950	0.0074	0.0001	0.0000	0.0001	0.0005	0.0009	0.0013	0.0023	0.0033	0.0010
8-May-06	24	0.14	0.0014	0.0003	0.0015	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.6	0.0003	< 0.0002	0.0007	< 0.01	< 0.0002	0.0011	0.7	0.0025	< 0.02	< 0.0001	< 0.0002	< 0.03	1.64	< 0.0002	0.9	< 0.00005	0.46	0.0063	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0013	0.0011	0.0021	< 0.001	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15-May-06	25	0.1300	0.0016	0.0004	0.0018	0.0001	0.0001	0.0050	0.0000	4.0000	0.0001	0.0001	0.0008	0.0050	0.0001	0.0012	0.7700	0.0026	0.0100	0.0001	0.0001	0.0150	1.6250	0.0001	0.8950	0.0000	0.4800	0.0069	0.0001	0.0000	0.0001	0.0004	0.0009	0.0016	0.0023	0.0005	0.0010
22-May-06	26	0.12	0.0018	0.0004	0.002	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.4	< 0.0002	< 0.0002	0.0008	< 0.01	< 0.0002	0.0012	0.84	0.0026	< 0.02	< 0.0001	< 0.0002	< 0.03	1.61	< 0.0002	0.89	< 0.00005	0.5	0.0074	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0005	0.002	0.0024	< 0.001	< 0.002
29-May-06	27	0.1100	0.0018	0.0005	0.0015	0.0001	0.0001	0.0050	0.0000	4.2100	0.0001	0.0001	0.0011	0.0050	0.0001	0.0012	0.7700	0.0024	0.0100	0.0001	0.0001	0.0150	1.5050	0.0001	0.8450	0.0000	0.4200	0.0069	0.0001	0.0000	0.0001	0.0007	0.0002	0.0017	0.0021	0.0033	0.0010
5-Jun-06	28	0.1	0.0017	0.0005	0.001	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.02	< 0.0002	< 0.0002	0.0013	< 0.01	< 0.0002	0.0012	0.7	0.0021	< 0.02	< 0.0001	< 0.0002	< 0.03	1.4	< 0.0002	0.8	< 0.00005	0.34	0.0063	< 0.0002	< 0.00002	< 0.0001	0.001	< 0.0002	0.0014	0.0017	0.012	< 0.002
12-Jun-06	29	0.1300	0.0017	0.0007	0.0012	0.0001	0.0001	0.0050	0.0000	4.1650	0.0001	0.0001	0.0011	0.0050	0.0001	0.0012	0.6950	0.0025	0.0100	0.0001	0.0001	0.0150	1.4650	0.0001	0.8950	0.0000	0.3550	0.0064	0.0001	0.0000	0.0001	0.0007	0.0002	0.0013	0.0020	0.0080	0.0010
19-Jun-06	30	0.16	0.0017	0.0009	0.0014	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.31	< 0.0002	< 0.0002	0.0008	< 0.01	< 0.0002	0.0012	0.69	0.0028	< 0.02	< 0.0001	< 0.0002	< 0.03	1.53	< 0.0002	0.99	< 0.00005	0.37	0.0065	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0004	0.0012	0.0022	0.004	< 0.002
26-Jun-06	31	0.1550	0.0014	0.0007	0.0014	0.0001	0.0001	0.0050	0.0000	4.3300	0.0001	0.0001	0.0008	0.0050	0.0001	0.0011	0.6050	0.0029	0.0100	0.0001	0.0001	0.0150	1.3900	0.0001	0.9000	0.0000	0.3100	0.0064	0.0001	0.0000	0.0001	0.0001	0.0005	0.0011	0.0020	0.0013	0.0010
3-Jul-06	32	0.15	0.0011	0.0004	0.0014	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.35	< 0.0002	< 0.0002	0.0007	< 0.01	< 0.0002	0.0009	0.52	0.003	< 0.02	< 0.0001	< 0.0002	< 0.03	1.25	< 0.0002	0.81	< 0.00005	0.25	0.0063	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0005	0.001	0.0018	< 0.001	< 0.002
10-Jul-06	33	0.1650	0.0020	0.0004	0.0020	0.0001	0.0001	0.0050	0.0000	5.9200	0.0001	0.0001	0.0009	0.0050	0.0001	0.0013	0.7400	0.0032	0.0100	0.0001	0.0001	0.0150	1.5450	0.0001	1.0250	0.0000	0.3050	0.0092	0.0001	0.0000	0.0001	0.0001	0.0004	0.0013	0.0019	0.0013	0.0010
17-Jul-06	34	0.18	0.0029	0.0003	0.0025	< 0.0002	< 0.0002	< 0.01	< 0.00004	7.49	< 0.0002	< 0.0002	0.001	< 0.01	< 0.0002	0.0016	0.96	0.0034	< 0.02	< 0.0001	< 0.0002	< 0.03	1.84	< 0.0002	1.24	< 0.00005	0.36	0.012	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0003	0.0016	0.002	0.004	< 0.002
24-Jul-06	35	0.1850	0.0025	0.0011	0.0022	0.0001	0.0001	0.0050	0.0000	6.3950	0.0001	0.0001	0.0012	0.0075	0.0001	0.0013	0.8350	0.0036	0.0100	0.0001	0.0001	0.0150	1.6500	0.0001	1.2000	0.0000	0.3500	0.0105	0.0001	0.0000	0.0001	0.0001	0.0006	0.0014	0.0021	0.0025	0.0010
31-Jul-06	36	0.19	0.002	0.0019	0.0018	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.3	< 0.0002	< 0.0002	0.0014	0.02	< 0.0002	0.001	0.71	0.0037	< 0.02	< 0.0001	< 0.0002	< 0.03	1.46	< 0.0002	1.16	< 0.00005	0.34	0.0089	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0009	0.0011	0.0021	0.001	< 0.002
7-Aug-06	37	0.1650	0.0020	0.0011	0.0021	0.0001	0.0001	0.0050	0.0000	5.7650	0.0001	0.0001	0.0012	0.0075	0.0001	0.0010	0.6900	0.0031	0.0100	0.0001	0.0001	0.0150	1.4850	0.0001	1.1150	0.0000	0.3100	0.0094	0.0001	0.0000	0.0001	0.0001	0.0008	0.0011	0.0019	0.0010	0.0010
14-Aug-06	38	0.14	0.002	0.0003	0.0023	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.23	< 0.0002	< 0.0002	0.0009	< 0.01	< 0.0002	0.001	0.67	0.0025	< 0.02	< 0.0001	< 0.0002	< 0.03	1.51	< 0.0002	1.07	< 0.00005	0.28	0.0099	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0007	0.0011	0.0016	0.001	< 0.002
21-Aug-06	39	0.18	0.0016	0.0002	0.0021	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.58	< 0.0002	< 0.0002	0.0019	0.01	< 0.0002	0.0009	0.59	0.0024	< 0.02	< 0.0001	< 0.0002	< 0.03	1.41	< 0.0002	1.08	< 0.00005	0.29	0.0089	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0008	0.001	0.0018	0.001	< 0.002
28-Aug-06	40	0.13	0.0022	0.0002	0.0027	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.01	< 0.0002	< 0.0002	0.0006	< 0.01	< 0.0002	0.0011	0.63	0.0031	< 0.02	< 0.0001	< 0.0002	< 0.03	1.45	< 0.0002	1.09	< 0.00005	0.28	0.0095	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0006	0.0011	0.0015	< 0.001	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

Project: High Lake
Sample: HC 4 Leached Low S Granodiorite
Dry Sample Weight: 1.00 Kg

	Original	
S - Total	0.11	%
S - Sulphate	na	%
S - Sulphide	na	%
NP	23.0	kg $CaCO_3$/t

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Values shaded in grey are averages

Analytical Results

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Production Rate: Acidity (mg CaCO3/kg/wk)	Production Rate: Alkalinity (mg CaCO3/kg/wk)	Cumulative Alkalinity (mg CaCO3/kg)	Sulphate (mg/kg/wk)	Cumulative Sulphate (mg/kg)	Fraction of Total Sulphur Remaining	Molar Ratios: Alkalinity / Sulphate Production	Molar Ratios: Carbonate Molar Ratio [(Ca+Mg+Sr) /SO4]	Molar Ratios: Calcium / Sulphate Ratio	Molar Ratios: Ca+Mg/ Alkalinity	Molar Ratios: Ca/Mg	NP Consumption: Theoretical NP Consumption at pH 6	NP Consumption: Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)													
12-Dec-05	0	500	370	6.58	12	<1.0	3.5	6.5	1	0.37	1.30	2.4	2.4	0.37	0.37	0.99988772	6.5	0.75236656	0.1198478	44601.6327	0.18954279	0.38548	0.99990333
19-Dec-05	1	500	425	6.64	16	<1.0	5.3	6.8	5	2.13	2.23	2.9	5.3	2.13	2.50	0.99924284	1.4	0.36698421	0.01917565	120340.038	0.05513972	2.21392	0.9996325
26-Dec-05	2	500	410	6.56	11	<1.0	3.5	5.0	3	1.23	1.44	2.1	7.3	1.23	3.73	0.99886957	1.7	1.82455496	0.11185795	467519.105	0.06531936	1.28147	0.99885313
2-Jan-06	3	500	425	6.38	10	<1.0	3.0	4.8	7	2.98	1.28	2.0	9.3	2.98	6.70	0.99796674	0.7	0.52324477	0.03766645	341354.596	0.0775803	3.09949	0.99831253
9-Jan-06	4	500	450	6.61	7	<1.0	3.3	5.0	1	0.45	1.46	2.3	11.6	0.45	7.15	0.99783018	5.0	1.67835714	0.21572605	157315.999	0.14753601	0.46883	0.99805025
16-Jan-06	5	500	405	6.69	7	0.5	4.6	5.1	2	0.81	1.87	2.1	13.7	0.81	7.96	0.99758436	2.6	1.07480418	0.15580215	176930.402	0.16956946	0.84389	0.99774791
23-Jan-06	6	500	410	6.89	8	<1.0	6.0	5.3	1	0.41	2.46	2.2	15.8	0.41	8.37	0.99745994	5.3	2.6208596	0.40748253	213193.179	0.18412728	0.42716	0.99737473
30-Jan-06	7	500	405	7.26	6	0.5	4.5	4.9	5	2.03	1.82	2.0	17.8	2.03	10.40	0.99684541	1.0	0.58251168	0.06471781	252023.463	0.12501143	2.10974	0.99696508
6-Feb-06	8	500	400	6.75	6	<1.0	3.0	4.5	3	1.20	1.20	1.8	19.6	1.20	11.60	0.99648124	1.5	1.06808574	0.07989854	296650.566	0.08087159	1.25021	0.99651997
13-Feb-06	9	500	405	6.31	6	0.5	2.8	5.4	3	1.22	1.11	2.2	21.8	1.22	12.81	0.99611252	1.8	0.95586422	0.0599239	225045.578	0.06689746	1.26584	0.99611665
20-Feb-06	10	500	405	6.93	7	<1.0	2.5	6.3	3	1.22	1.01	2.5	24.3	1.22	14.03	0.99574381	2.1	0.8436427	0.03994927	170820.132	0.04971614	1.26584	0.99576068
27-Feb-06	11	500	395	7.08	6	0.5	2.3	6.5	2	0.79	0.89	2.6	26.9	0.79	14.82	0.99550406	3.3	1.75596586	0.09587824	222287.34	0.05776542	0.82306	0.99527892
6-Mar-06	12	500	400	7.21	6	<1.0	2.0	6.8	3	1.20	0.80	2.7	29.6	1.20	16.02	0.9951399	2.3	1.49764512	0.08788839	277313.939	0.06235426	1.25021	0.9946548
13-Mar-06	13	500	410	7.50	6	0.5	2.3	6.3	3	1.23	0.92	2.6	32.1	1.23	17.25	0.99476663	2.1	1.24849322	0.07590361	255918.014	0.06474271	1.28147	0.9941215
20-Mar-06	14	500	405	6.95	7	<1.0	2.5	5.8	<1	0.20	1.01	2.3	34.5	0.20	17.45	0.99470517	11.5	5.99604788	0.38351297	219947.102	0.06834219	0.21097	0.99369983
27-Mar-06	15	500	410	7.50	5	0.5	2.6	6.4	8	3.28	1.08	2.6	37.1	3.28	20.73	0.99370979	0.8	0.35747041	0.02396956	191565.951	0.07188586	3.41725	0.99329264
3-Apr-06	16	500	415	6.93	6	<1.0	2.8	7.0	2	0.83	1.14	2.9	40.0	0.83	21.56	0.9934579	3.5	1.36075128	0.09587824	168047.021	0.07581712	0.86473	0.99290041
10-Apr-06	17	500	420	6.95	5	0.5	2.3	6.4	2	0.84	0.95	2.7	42.7	0.84	22.40	0.99320299	3.2	1.59400371	0.10187063	218758.92	0.06828561	0.87515	0.99243541
17-Apr-06	18	500	440	6.91	4	<1.0	1.8	5.8	3	1.32	0.77	2.5	45.2	1.32	23.72	0.99280241	1.9	1.21817075	0.07190868	291269.878	0.0627452	1.37523	0.99187699
24-Apr-06	19	500	410	7.21	5	0.5	1.7	5.7	3	1.23	0.69	2.3	47.5	1.23	24.95	0.99242913	1.9	1.04146983	0.0599239	234866.408	0.06106076	1.28147	0.99143212
1-May-06	20	500	415	6.84	9	<1.0	1.6	5.6	2	0.83	0.67	2.3	49.8	0.83	25.78	0.99217725	2.8	1.29715336	0.07190868	199830.7	0.05869712	0.86473	0.99105822
8-May-06	21	500	415	6.86	10	0.5	1.8	5.1	3	1.25	0.73	2.1	52.0	1.25	27.02	0.99179943	1.7	0.57868068	0.03195941	146576.999	0.05846139	1.2971	0.99080802
15-May-06	22	500	415	6.77	10	<1.0	1.9	4.6	3	1.25	0.79	1.9	53.9	1.25	28.27	0.99142161	1.5	0.29264727	0.01597971	82001.8015	0.05776542	1.2971	0.99068149
22-May-06	23	500	420	6.88	9	0.5	1.8	5.1	5	2.10	0.76	2.2	56.1	2.10	30.37	0.99078432	1.0	0.20121095	0.00359543	85582.2516	0.01819611	2.18787	0.99053475
29-May-06	24	500	440	6.76	9	<1.0	1.7	5.7	4	1.76	0.76	2.5	58.5	1.76	32.13	0.99025021	1.4	0.2895343	0.0029962	93821.2599	0.01045753	1.83365	0.99035778
5-Jun-06	25	500	445	6.93	9	0.5	1.9	5.5	<1	0.22	0.83	2.5	61.0	0.22	32.35	0.99018268	11.1	4.13564632	0.14381737	173383.968	0.0360319	0.23181	0.99003822
12-Jun-06	26	500	430	6.84	10	<1.0	2.0	5.4	<1	0.22	0.86	2.3	63.3	0.22	32.57	0.99011744	10.8	6.21934125	0.52733034	257966.097	0.09266536	0.224	0.98957385
19-Jun-06	27	500	425	7.23	9	0.5	1.8	6.0	1	0.43	0.78	2.6	65.9	0.43	32.99	0.98998846	6.0	2.60715662	0.21572605	191543.496	0.09022863	0.44278	0.98918905
26-Jun-06	28	500	445	7.04	9	<1.0	1.7	6.7	3	1.34	0.75	3.0	68.8	1.34	34.33	0.98958333	2.2	0.70154754	0.05592898	146656.106	0.08664813	1.39086	0.9888638
3-Jul-06	29	500	485	6.93	12	0.5	1.7	6.2	2	0.97	0.80	3.0	71.8	0.97	35.30	0.98928896	3.1	1.05477673	0.12584019	171950.443	0.13550293	1.01059	0.98850848
10-Jul-06	30	500	450	6.91	13	<1.0	1.6	5.7	2	0.90	0.73	2.6	74.4	0.90	36.20	0.98901583	2.9	1.05723216	0.16778693	172557.077	0.18870038	0.93766	0.98817804
17-Jul-06	31	500	445	7.11	10	0.5	1.7	5.1	1	0.45	0.75	2.3	76.7	0.45	36.64	0.98888079	5.1	1.65835108	0.21572605	151425.744	0.14955705	0.46362	0.98792176
24-Jul-06	32	500	450	6.64	10	<1.0	1.8	4.4	1	0.45	0.79	2.0	78.7	0.45	37.09	0.98874423	4.4	1.20251195	0.09587824	127823.324	0.08664813	0.46883	0.98773383
31-Jul-06	33	500	450	6.96	9	0.5	1.9	4.3	3	1.35	0.87	1.9	80.6	1.35	38.44	0.98833454	1.4	0.39047121	0.04793912	126869.383	0.13997006	1.40649	0.98755077
7-Aug-06	34	500	460	6.29	11	<1.0	2.1	4.2	1	0.46	0.97	2.0	82.6	0.46	38.90	0.98819494	4.2	1.14042497	0.19175649	128676.014	0.20217898	0.47925	0.98736859
14-Aug-06	35	500	460	6.89	10	0.5	2.1	5.6	<1	0.23	0.99	2.6	85.1	0.23	39.13	0.98812514	11.1	2.06619626	0.28763473	89183.6788	0.16174318	0.23962	0.98720355
21-Aug-06	36	500	475	6.71	12	<1.0	2.2	6.9	1	0.48	1.03	3.3	88.4	0.48	39.61	0.987981	6.9	0.92588094	0.09587824	66829.9515	0.11553084	0.49488	0.98705082
28-Aug-06	37	500	445	6.98	8	#VALUE!	2.2	5.5	5	2.23	0.97	2.4	90.8	2.23	41.83	0.98730577	1.1	0.18518167	0.01917565	78127.5659	0.11553084	2.3181	0.98690773
4-Sep-06	38	500	460	6.28	11	0.0	2.2	4.1	<1	0.23	1.00	1.9	92.7	0.23	42.06	0.98723597	8.3	1.85220045	0.19175649	107375.424	0.11553084	0.23962	0.98675978
11-Sep-06	39	500	460	6.69	9	0.0	2.2	4.5	<1	0.23	1.03	2.1	94.8	0.23	42.29	0.98716617	8.9	1.48767302	0.14381737	79915.1462	0.10703593	0.23962	0.98664095
18-Sep-06	40	500	370	6.50	9	0.0	1.9	3.4	3	1.11	0.71	1.3	96.0	1.11	43.40	0.98682932	1.1	0.35959219	0.09587824	122378.296	0.36392216	1.15645	0.98650234

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12-Dec-05	0	0.16	0.0007	0.0004	0.0004	< 0.0002	< 0.0002	0.02	< 0.00004	0.05	0.0003	< 0.0002	0.0012	0.21	< 0.0002	0.0015	0.16	0.0021	< 0.02	0.0009	0.0003	0.06	0.15	< 0.0002	1.51	< 0.00005	5.6	0.0002	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0074	< 0.0001	0.0022	< 0.001	< 0.002
19-Dec-05	1	0.4	0.0029	0.0007	0.0009	< 0.0002	< 0.0002	0.03	< 0.00004	0.04	0.0004	< 0.0002	0.0012	0.56	0.0002	0.0013	0.44	0.005	< 0.02	0.0023	< 0.0002	0.06	0.18	< 0.0002	2.65	< 0.00005	5.69	0.0002	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.013	< 0.0001	0.0059	0.002	< 0.002
26-Dec-05	2	1.09	0.0024	0.0008	0.0025	< 0.0002	< 0.0002	0.02	< 0.00004	0.14	0.0011	0.0005	0.0015	1.58	0.0007	0.0026	1.3	0.016	< 0.02	0.0015	0.0012	0.1	0.19	< 0.0002	3.56	< 0.00005	3.82	0.0006	< 0.0002	< 0.00002	0.0002	0.0004	0.041	< 0.0001	0.0081	0.005	< 0.002
2-Jan-06	3	0.78	0.0037	0.001	0.0023	< 0.0002	< 0.0002	0.01	< 0.00004	0.11	0.0009	0.0004	0.0043	1.24	0.0007	0.0018	0.86	0.012	< 0.02	0.0012	0.0005	0.1	0.18	< 0.0002	2.95	< 0.00005	3.79	0.0004	< 0.0002	< 0.00002	< 0.0001	0.0004	0.032	< 0.0001	0.0075	0.004	< 0.002
9-Jan-06	4	0.34	0.0032	0.0007	0.0009	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.09	0.0005	< 0.0002	0.0003	0.47	< 0.0002	0.0008	0.37	0.0044	< 0.02	0.0006	< 0.0002	0.05	0.12	< 0.0002	1.79	< 0.00005	2.63	0.0004	< 0.0002	< 0.00002	< 0.0001	0.0002	0.013	< 0.0001	0.0047	0.001	< 0.002
16-Jan-06	5	0.3950	0.0026	0.0008	0.0010	0.0001	0.0001	0.0050	0.0000	0.1300	0.0005	0.0001	0.0008	0.5800	0.0001	0.0010	0.4650	0.0053	0.0100	0.0005	0.0001	0.0750	0.1100	0.0001	1.8200	0.0000	2.8600	0.0004	0.0001	0.0000	0.0001	0.0002	0.0130	0.0001	0.0054	0.0025	0.0010
23-Jan-06	6	0.45	0.0019	0.0008	0.0011	< 0.0002	< 0.0002	0.01	< 0.00004	0.17	0.0004	0.0002	0.0013	0.69	0.0003	0.0011	0.56	0.0061	< 0.02	0.0004	< 0.0002	0.1	0.1	< 0.0002	1.85	< 0.00005	3.09	0.0003	< 0.0002	< 0.00002	< 0.0001	0.0002	0.013	< 0.0001	0.006	0.004	< 0.002
30-Jan-06	7	0.5300	0.0019	0.0008	0.0012	0.0001	0.0001	0.0050	0.0000	0.1350	0.0006	0.0003	0.0015	0.7500	0.0003	0.0013	0.6550	0.0067	0.0100	0.0004	0.0002	0.1050	0.1100	0.0001	2.1550	0.0000	3.0100	0.0005	0.0001	0.0000	0.0001	0.0003	0.0150	0.0001	0.0064	0.0030	0.0010
6-Feb-06	8	0.61	0.0018	0.0007	0.0013	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.1	0.0008	0.0003	0.0016	0.81	0.0003	0.0015	0.75	0.0073	< 0.02	0.0003	0.0005	0.11	0.12	< 0.0002	2.46	< 0.00005	2.93	0.0006	< 0.0002	< 0.00002	< 0.0001	0.0003	0.017	< 0.0001	0.0067	0.002	< 0.002
13-Feb-06	9	0.5400	0.0017	0.0007	0.0012	0.0001	0.0001	0.0050	0.0000	0.0750	0.0006	0.0003	0.0010	0.7350	0.0003	0.0014	0.6800	0.0067	0.0100	0.0001	0.0005	0.1050	0.1100	0.0001	2.2400	0.0000	2.9450	0.0005	0.0001	0.0000	0.0001	0.0001	0.0145	0.0001	0.0063	0.0015	0.0010
20-Feb-06	10	0.47	0.0016	0.0007	0.0011	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.05	0.0003	0.0002	0.0003	0.66	0.0002	0.0012	0.61	0.006	< 0.02	< 0.0001	0.0004	0.1	0.1	< 0.0002	2.02	< 0.00005	2.96	0.0004	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.012	< 0.0001	0.0058	0.001	< 0.002
27-Feb-06	11	0.6650	0.0015	0.0007	0.0015	0.0001	0.0001	0.0050	0.0000	0.0800	0.0011	0.0003	0.0007	1.0050	0.0003	0.0017	0.8400	0.0085	0.0100	0.0001	0.0007	0.0950	0.1150	0.0001	2.5000	0.0000	2.9200	0.0006	0.0001	0.0000	0.0001	0.0002	0.0170	0.0001	0.0063	0.0030	0.0010
6-Mar-06	12	0.86	0.0013	0.0006	0.0019	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.11	0.0018	0.0004	0.0011	1.35	0.0004	0.0021	1.07	0.011	< 0.02	< 0.0001	0.001	0.09	0.13	< 0.0002	2.98	< 0.00005	2.88	0.0007	< 0.0002	< 0.00002	< 0.0001	0.0005	0.022	< 0.0001	0.0067	0.005	< 0.002
13-Mar-06	13	0.7500	0.0012	0.0006	0.0021	0.0001	0.0001	0.0050	0.0000	0.0950	0.0012	0.0004	0.0009	1.1800	0.0005	0.0017	0.8900	0.0102	0.0100	0.0001	0.0009	0.0750	0.1300	0.0001	2.4450	0.0000	2.7850	0.0006	0.0001	0.0000	0.0001	0.0004	0.0205	0.0001	0.0064	0.0040	0.0010
20-Mar-06	14	0.64	0.0011	0.0005	0.0022	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.08	0.0006	0.0004	0.0007	1.01	0.0005	0.0013	0.71	0.0093	< 0.02	< 0.0001	0.0007	0.06	0.13	< 0.0002	1.91	< 0.00005	2.69	0.0004	< 0.0002	< 0.00002	< 0.0001	0.0002	0.019	< 0.0001	0.006	0.003	< 0.002
27-Mar-06	15	0.6200	0.0012	0.0006	0.0020	0.0001	0.0001	0.0050	0.0000	0.0800	0.0007	0.0004	0.0016	0.9400	0.0004	0.0013	0.6750	0.0086	0.0100	0.0001	0.0007	0.0550	0.1200	0.0001	2.1100	0.0000	2.5400	0.0005	0.0001	0.0000	0.0001	0.0003	0.0175	0.0001	0.0060	0.0035	0.0010
3-Apr-06	16	0.6	0.0012	0.0007	0.0017	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.08	0.0007	0.0003	0.0025	0.87	0.0003	0.0012	0.64	0.0078	< 0.02	< 0.0001	0.0006	0.05	0.11	< 0.0002	2.31	< 0.00005	2.39	0.0005	< 0.0002	< 0.00002	< 0.0001	0.0003	0.016	< 0.0001	0.006	0.004	< 0.002
10-Apr-06	17	0.7050	0.0015	0.0005	0.0022	0.0001	0.0001	0.0050	0.0000	0.0850	0.0007	0.0004	0.0020	1.0600	0.0004	0.0014	0.7550	0.0099	0.0100	0.0001	0.0008	0.0450	0.1300	0.0001	2.3700	0.0000	2.5150	0.0006	0.0001	0.0000	0.0001	0.0004	0.0195	0.0001	0.0056	0.0040	0.0010
17-Apr-06	18	0.81	0.0017	0.0003	0.0027	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.09	0.0007	0.0004	0.0015	1.25	0.0005	0.0015	0.87	0.012	< 0.02	< 0.0001	0.0009	0.04	0.15	< 0.0002	2.43	< 0.00005	2.64	0.0006	< 0.0002	< 0.00002	< 0.0001	0.0004	0.023	< 0.0001	0.0052	0.004	< 0.002
24-Apr-06	19	0.7100	0.0015	0.0004	0.0025	0.0001	0.0001	0.0050	0.0000	0.0750	0.0007	0.0004	0.0022	1.1100	0.0005	0.0013	0.7450	0.0106	0.0100	0.0001	0.0008	0.0175	0.1400	0.0001	2.0750	0.0000	2.7400	0.0005	0.0001	0.0000	0.0001	0.0004	0.0215	0.0001	0.0058	0.0035	0.0010
1-May-06	20	0.61	0.0013	0.0005	0.0022	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.06	0.0006	0.0004	0.0028	0.97	0.0005	0.0011	0.62	0.0092	< 0.02	< 0.0001	0.0006	< 0.03	0.13	< 0.0002	1.72	< 0.00005	2.84	0.0003	< 0.0002	< 0.00002	< 0.0001	0.0004	0.02	< 0.0001	0.0064	0.003	< 0.002
8-May-06	21	0.4300	0.0013	0.0005	0.0016	0.0001	0.0001	0.0050	0.0000	0.0400	0.0002	0.0002	0.0019	0.6250	0.0002	0.0008	0.4150	0.0059	0.0100	0.0001	0.0004	0.0225	0.1100	0.0001	1.4800	0.0000	2.8000	0.0001	0.0001	0.0000	0.0001	0.0003	0.0135	0.0001	0.0054	0.0020	0.0010
15-May-06	22	0.25	0.0012	0.0005	0.0009	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.02	< 0.0002	< 0.0002	0.0009	0.28	< 0.0002	0.0004	0.21	0.0026	< 0.02	< 0.0001	0.0002	0.06	0.09	< 0.0002	1.24	< 0.00005	2.76	< 0.0002	< 0.0002	< 0.00002	< 0.0001	0.0002	0.007	< 0.0001	0.0044	0.001	< 0.002
22-May-06	23	0.2800	0.0015	0.0005	0.0010	0.0001	0.0001	0.0050	0.0000	0.0075	0.0002	0.0001	0.0017	0.3550	0.0001	0.0005	0.2500	0.0033	0.0100	0.0001	0.0003	0.0225	0.0900	0.0001	1.3400	0.0000	2.7200	0.0001	0.0001	0.0000	0.0001	0.0002	0.0076	0.0001	0.0042	0.0005	0.0010
29-May-06	24	0.31	0.0018	0.0004	0.0011	< 0.0002	< 0.0002	< 0.01	< 0.00004	< 0.01	0.0005	< 0.0002	0.0025	0.43	0.0002	0.0005	0.29	0.004	< 0.02	< 0.0001	0.0003	< 0.03	0.09	< 0.0002	1.44	< 0.00005	2.68	< 0.0002	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0082	< 0.0001	0.004	< 0.001	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
5-Jun-06	25	0.5500	0.0017	0.0010	0.0017	0.0001	0.0001	0.0050	0.0000	0.0300	0.0006	0.0001	0.0018	0.7050	0.0004	0.0009	0.5050	0.0068	0.0100	0.0001	0.0005	0.0175	0.1150	0.0002	1.7750	0.0000	2.8150	0.0002	0.0001	0.0000	0.0001	0.0003	0.0126	0.0001	0.0048	0.0015	0.0010
12-Jun-06	26	0.79	0.0015	0.0015	0.0023	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.11	0.0007	0.0003	0.001	0.98	0.0005	0.0013	0.72	0.0095	< 0.02	< 0.0001	0.0006	0.04	0.14	0.0005	2.11	< 0.00005	2.95	0.0006	< 0.0002	< 0.00002	< 0.0001	0.0004	0.017	< 0.0001	0.0056	0.005	< 0.002
19-Jun-06	27	0.6550	0.0020	0.0011	0.0019	0.0001	0.0001	0.0050	0.0000	0.0900	0.0006	0.0003	0.0010	0.8200	0.0004	0.0012	0.6050	0.0079	0.0100	0.0001	0.0006	0.0350	0.1350	0.0002	2.0800	0.0000	2.9550	0.0005	0.0001	0.0000	0.0001	0.0004	0.0150	0.0001	0.0048	0.0040	0.0010
26-Jun-06	28	0.52	0.0024	0.0007	0.0015	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.07	0.0005	0.0002	0.0009	0.66	0.0003	0.0011	0.49	0.0063	< 0.02	< 0.0001	0.0005	0.03	0.13	< 0.0002	2.05	< 0.00005	2.96	0.0004	< 0.0002	< 0.00002	< 0.0001	0.0004	0.013	< 0.0001	0.0039	0.003	< 0.002
3-Jul-06	29	0.5200	0.0023	0.0006	0.0017	0.0001	0.0001	0.0050	0.0000	0.1050	0.0006	0.0003	0.0021	0.6950	0.0004	0.0010	0.4700	0.0068	0.0100	0.0001	0.0006	0.0300	0.1500	0.0001	1.8300	0.0000	3.0700	0.0005	0.0001	0.0000	0.0001	0.0004	0.0150	0.0001	0.0039	0.0040	0.0010
10-Jul-06	30	0.52	0.0022	0.0004	0.0018	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.14	0.0006	0.0003	0.0032	0.73	0.0004	0.0009	0.45	0.0072	< 0.02	< 0.0001	0.0006	0.03	0.17	< 0.0002	1.61	< 0.00005	3.18	0.0005	< 0.0002	< 0.00002	< 0.0001	0.0004	0.017	< 0.0001	0.0039	0.005	< 0.002
17-Jul-06	31	0.4100	0.0021	0.0004	0.0015	0.0001	0.0001	0.0050	0.0000	0.0900	0.0005	0.0001	0.0022	0.5850	0.0003	0.0007	0.3650	0.0057	0.0100	0.0001	0.0004	0.0150	0.1400	0.0001	1.4650	0.0000	2.9150	0.0002	0.0001	0.0000	0.0001	0.0004	0.0126	0.0001	0.0033	0.0040	0.0010
24-Jul-06	32	0.3	0.002	0.0003	0.0011	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.04	0.0003	< 0.0002	0.0012	0.44	0.0002	0.0005	0.28	0.0042	< 0.02	< 0.0001	0.0002	< 0.03	0.11	< 0.0002	1.32	< 0.00005	2.65	< 0.0002	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0081	< 0.0001	0.0026	0.003	< 0.002
31-Jul-06	33	0.2800	0.0020	0.0003	0.0011	0.0001	0.0001	0.0050	0.0000	0.0600	0.0003	0.0001	0.0014	0.3950	0.0001	0.0005	0.2600	0.0038	0.0100	0.0001	0.0003	0.0150	0.1150	0.0001	1.4050	0.0000	2.7900	0.0001	0.0001	0.0000	0.0001	0.0004	0.0074	0.0001	0.0026	0.0030	0.0010
7-Aug-06	34	0.26	0.0019	0.0003	0.001	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.08	0.0003	< 0.0002	0.0016	0.35	< 0.0002	0.0004	0.24	0.0033	< 0.02	< 0.0001	0.0003	< 0.03	0.12	< 0.0002	1.49	< 0.00005	2.93	0.0002	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0066	< 0.0001	0.0025	0.003	< 0.002
14-Aug-06	35	0.2550	0.0019	0.0003	0.0009	0.0001	0.0001	0.0050	0.0000	0.0600	0.0004	0.0001	0.0016	0.3300	0.0001	0.0004	0.2250	0.0032	0.0100	0.0001	0.0003	0.0150	0.1200	0.0001	1.4650	0.0000	2.9250	0.0001	0.0001	0.0000	0.0001	0.0003	0.0067	0.0001	0.0026	0.0025	0.0010
21-Aug-06	36	0.25	0.0019	0.0003	0.0008	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.04	0.0004	< 0.0002	0.0015	0.31	< 0.0002	0.0004	0.21	0.003	< 0.02	< 0.0001	0.0002	< 0.03	0.12	< 0.0002	1.44	< 0.00005	2.92	< 0.0002	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0068	< 0.0001	0.0027	0.002	< 0.002
28-Aug-06	37	0.2400	0.0018	0.0004	0.0008	0.0001	0.0001	0.0050	0.0000	0.0400	0.0002	0.0001	0.0013	0.3100	0.0001	0.0004	0.2100	0.0030	0.0100	0.0001	0.0001	0.0150	0.1150	0.0001	1.3350	0.0000	2.7850	0.0001	0.0001	0.0000	0.0001	0.0003	0.0066	0.0001	0.0025	0.0025	0.0010
4-Sep-06	38	0.23	0.0016	0.0005	0.0008	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.04	< 0.0002	< 0.0002	0.0011	0.31	< 0.0002	0.0004	0.21	0.003	< 0.02	< 0.0001	< 0.0002	< 0.03	0.11	< 0.0002	1.23	< 0.00005	2.65	0.0003	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0064	< 0.0001	0.0023	0.003	< 0.002
11-Sep-06	39	0.2	0.0011	0.0002	0.0007	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.03	< 0.0002	< 0.0002	0.0008	0.25	< 0.0002	0.0004	0.17	0.0024	< 0.02	< 0.0001	< 0.0002	< 0.03	0.09	< 0.0002	1.32	< 0.00005	2.32	< 0.0002	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0059	< 0.0001	0.0016	< 0.001	< 0.002
18-Sep-06	40	0.22	0.0012	0.0009	0.0013	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.12	< 0.0002	< 0.0002	0.0008	0.3	< 0.0002	0.0005	0.2	0.0027	< 0.02	< 0.0001	0.0002	< 0.03	0.14	< 0.0002	5.86	< 0.00005	2.25	0.0007	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0072	< 0.0001	0.0019	0.002	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

Project: High Lake
Sample: HC 5 Mafic Subvolcanic
Dry Sample Weight: 1.00 Kg

	Original	
S - Total	0.06	%
S - Sulphate	<0.01	%
S - Sulphide	0.1	%
NP	39.0	kg $CaCO_3$/t

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Values shaded in grey are averages

Analytical Results

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Production Rate: Acidity (mg CaCO3/kg/wk)	Production Rate: Alkalinity (mg CaCO3/kg/wk)	Production Rate: Cumulative Alkalinity (mg CaCO3/kg)	Production Rate: Sulphate (mg/kg/wk)	Production Rate: Cumulative Sulphate (mg/kg)	Molar Ratios: Fraction of Total Sulphur Remaining	Molar Ratios: Alkalinity / Sulphate Production	Molar Ratios: Carbonate Molar Ratio [(Ca+Mg+Sr)/SO4]	Molar Ratios: Calcium / Sulphate Ratio	Molar Ratios: Ca+Mg/ Alkalinity	Molar Ratios: Ca/Mg	NP Consumption: Theoretical NP Consumption at pH 6	NP Consumption: Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)														
21-Nov-05	0	500	375	9.16	49	<1.0	<1.0	24.5	<1	0.19	0.19	9.2	9.2	0.19	0.19	0.9998957	49	30.3	22.147874	241476.99	2.7205831	0.1953458	0.9996884
28-Nov-05	1	500	420	9.26	65	<1.0	<1.0	24.8	2	0.84	0.21	10.4	19.6	0.84	1.03	0.9994283	12.375	6.7	3.8351297	236195.21	1.3478598	0.8751494	0.9993804
5-Dec-05	2	500	410	9.15	50	<1.0	<1.0	24.5	3	1.23	0.21	10.0	29.6	1.23	2.26	0.998744	8.1666667	3.8	2.1173112	197540.75	1.2756531	1.2814687	0.9991255
12-Dec-05	3	500	395	9.24	45	<1.0	<1.0	22.5	3	1.19	0.20	8.9	38.5	1.19	3.44	0.9980847	7.5	3.6	1.8616359	196816.45	1.0788023	1.2345857	0.9988922
19-Dec-05	4	500	395	9.14	39	<1.0	<1.0	24.0	5	1.98	0.20	9.5	48.0	1.98	5.42	0.9969859	4.8	2.6182291	1.5100823	224312.65	1.3647081	2.0576429	0.9986087
26-Dec-05	5	500	410	7.43	31	<1.0	5.3	20.0	<1	0.21	2.15	8.2	56.2	0.21	5.62	0.9968718	40	25.831364	14.909067	275661.58	1.3669057	0.2135781	0.9983183
2-Jan-06	6	500	440	8.84	30	<1.0	<1.0	18.8	<1	0.22	0.22	8.3	64.4	0.22	5.84	0.9967494	37.5	25.480436	14.71731	311278.05	1.3691679	0.2292058	0.9980109
9-Jan-06	7	500	440	8.20	29	0.5	0.5	18.1	<1	0.22	0.22	8.0	72.4	0.22	6.06	0.996627	36.25	24.862004	13.11135	314197.52	1.1170899	0.2292058	0.997711
16-Jan-06	8	500	410	9.09	28	<1.0	<1.0	17.5	<1	0.21	0.21	7.2	79.6	0.21	6.27	0.996513	35	24.243573	11.505389	295689.69	0.9041544	0.2135781	0.9974385
23-Jan-06	9	500	405	9.02	30	0.5	0.5	17.3	<1	0.20	0.20	7.0	86.6	0.20	6.47	0.9964003	34.5	24.658185	11.840963	301387.15	0.9247816	0.2109735	0.9971647
30-Jan-06	10	500	405	8.62	29	<1.0	<1.0	17.0	<1	0.20	0.20	6.9	93.5	0.20	6.67	0.9962877	34	25.072796	12.176537	310964.22	0.9451557	0.2109735	0.9968863
6-Feb-06	11	500	400	9.10	29	0.5	0.5	17.1	<1	0.20	0.20	6.9	100.3	0.20	6.87	0.9961764	34.25	25.961412	12.512111	315697.22	0.9312126	0.2083689	0.9966016
13-Feb-06	12	500	405	8.78	26	<1.0	<1.0	17.3	<1	0.20	0.20	7.0	107.3	0.20	7.08	0.9960637	34.5	26.850029	12.847685	328196.86	0.9183723	0.2109735	0.9963034
20-Feb-06	13	500	400	9.23	24	0.5	0.5	18.5	<1	0.20	0.20	7.4	114.7	0.20	7.28	0.9959524	37	27.572138	13.806467	310370.85	1.0039232	0.2083689	0.996001
27-Feb-06	14	500	395	9.08	27	<1.0	<1.0	19.8	<1	0.20	0.20	7.8	122.5	0.20	7.47	0.9958426	39.5	28.294246	14.76525	294610.96	1.0924759	0.2057643	0.9956946
6-Mar-06	15	500	400	9.27	28	0.5	0.5	19.3	<1	0.20	0.20	7.7	130.2	0.20	7.67	0.9957313	38.5	28.782168	15.29258	311369.03	1.134811	0.2083689	0.995379
13-Mar-06	16	500	410	8.40	28	<1.0	<1.0	18.8	<1	0.21	0.21	7.7	137.9	0.21	7.88	0.9956172	37.5	29.270089	15.81991	333220.04	1.1773952	0.2135781	0.99505
20-Mar-06	17	500	405	9.31	30	0.5	0.5	17.5	<1	0.20	0.20	7.1	145.0	0.20	8.08	0.9955046	35	27.074528	15.364489	326217.18	1.3134803	0.2109735	0.9947493
27-Mar-06	18	500	420	8.94	23	<1.0	<1.0	16.3	2	0.84	0.21	6.8	151.8	0.84	8.92	0.9950372	8.125	6.2197418	3.7272667	334782.32	1.4970872	0.8751494	0.9944628
3-Apr-06	19	500	405	8.87	24	0.5	0.5	16.4	<1	0.20	0.20	6.6	158.4	0.20	9.12	0.9949246	32.75	25.091549	15.556245	323098.68	1.6333712	0.2109735	0.9941842
10-Apr-06	20	500	420	8.71	22	<1.0	<1.0	16.5	<1	0.21	0.21	6.9	165.4	0.21	9.33	0.9948077	33	25.304131	16.203423	335343.99	1.7826911	0.2187873	0.9938928
17-Apr-06	21	500	435	9.07	19	0.5	0.5	17.3	<1	0.22	0.22	7.5	172.9	0.22	9.55	0.9946867	34.5	26.4045	16.94648	346651.41	1.7942327	0.2266012	0.9935779
24-Apr-06	22	500	420	8.61	21	<1.0	<1.0	18.0	<1	0.21	0.21	7.6	180.4	0.21	9.76	0.9945699	36	27.50487	17.689536	334105.67	1.8049365	0.2187873	0.9932612
1-May-06	23	500	415	7.94	30	<1.0	0.6	15.8	<1	0.21	0.25	6.5	187.0	0.21	9.97	0.9944544	31.509451	24.463149	15.795941	335471.18	1.8251499	0.2161827	0.9929829
8-May-06	24	500	420	7.84	30	<1.0	0.3	13.6	<1	0.21	0.12	5.7	192.7	0.21	10.18	0.9943376	27.276003	21.421427	13.902345	343449.61	1.8515338	0.2187873	0.9927362
15-May-06	25	500	415	8.04	31	0.5	0.8	14.2	4	1.66	0.33	5.9	198.6	1.66	11.84	0.993414	3.5476998	2.9950618	2.0254279	364804.17	2.0919335	1.7294619	0.9924636
22-May-06	26	500	410	7.57	32	<1.0	1.3	14.7	2	0.82	0.52	6.0	204.6	0.82	12.66	0.9929578	7.3717985	6.6248905	4.6261252	383660.69	2.318052	0.8543125	0.9921657
29-May-06	27	500	435	7.74	29	0.5	0.7	15.4	<1	0.22	0.30	6.7	211.3	0.22	12.88	0.9928368	30.776697	26.983376	19.343436	397115.21	2.5361414	0.2266012	0.9918439
5-Jun-06	28	500	440	7.91	34	<1.0	0.1	16.0	<1	0.22	0.05	7.1	218.4	0.22	13.10	0.9927144	32.0662	27.467191	20.18237	392434.67	2.7755657	0.2292058	0.9915125
12-Jun-06	29	500	435	8.08	32	0.5	0.3	16.2	<1	0.22	0.12	7.0	225.4	0.22	13.31	0.9925934	32.319019	27.887639	20.326188	390835.47	2.6928969	0.2266012	0.9911799
19-Jun-06	30	500	430	7.81	33	<1.0	<1.0	16.3	<1	0.22	0.22	7.0	232.4	0.22	13.53	0.9924738	32.571838	28.308087	20.470005	389126.63	2.6160734	0.2239966	0.9908462
26-Jun-06	31	500	435	7.86	29	0.5	0.5	15.5	<1	0.22	0.22	6.8	239.2	0.22	13.75	0.9923528	31.037569	26.373755	19.247557	384876.8	2.7058286	0.2266012	0.9905317
3-Jul-06	32	500	440	7.37	32	<1.0	2.0	14.8	<1	0.22	0.87	6.5	245.7	0.22	13.97	0.9922304	29.5033	24.439422	18.02511	379502.15	2.8155294	0.2292058	0.9902368
10-Jul-06	33	500	440	8.26	41	0.5	0.5	16.1	<1	0.22	0.22	7.1	252.8	0.22	14.19	0.992108	32.283241	27.083227	20.470005	384341.59	3.1016918	0.2292058	0.9899101
17-Jul-06	34	500	445	7.74	38	<1.0	<1.0	17.5	<1	0.22	0.22	7.8	260.6	0.22	14.41	0.9919842	35.063183	29.727031	22.9149	392827.44	3.3712169	0.2318104	0.9895474
24-Jul-06	35	500	445	7.71	34	0.5	0.5	16.3	<1	0.22	0.22	7.3	267.8	0.22	14.63	0.9918604	32.611133	29.821313	22.771083	423690.57	3.2371353	0.2318104	0.9891836
31-Jul-06	36	500	440	7.25	33	<1.0	1.0	15.1	3	1.32	0.44	6.6	274.4	1.32	15.95	0.991126	5.0265137	4.9859324	3.7712109	454408.56	3.1117981	1.3752347	0.9888227
7-Aug-06	37	500	460	7.51	32	0.5	1.9	16.2	<1	0.23	0.87	7.4	281.9	0.23	16.18	0.990998	32.350944	31.292754	24.281165	463277.58	3.4713102	0.2396242	0.9884281
14-Aug-06	38	500	455	6.81	38	<1.0	2.8	17.3	6	2.73	1.27	7.9	289.7	2.73	18.91	0.9894791	2.8785671	2.7224927	2.1612554	448063.61	3.8604291	2.8442355	0.9880205
21-Aug-06	39	500	465	7.70	36	0.5	3.8	16.8	1	0.47	1.76	7.8	297.5	0.47	19.38	0.9892204	16.771338	16.494871	13.08738	476167.52	3.8508042	0.4844577	0.9875999
28-Aug-06	40	500	435	6.74	34	<1.0	4.8	16.3	2	0.87	2.07	7.1	304.6	0.87	20.25	0.9887364	8.1356373	7.0760345	5.728725	393932.34	4.2635978	0.9064047	0.9872624

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21-Nov-05	0	0.15	0.0015	0.0007	0.001	< 0.0002	< 0.0002	0.02	< 0.00004	4.62	0.0003	< 0.0002	0.001	0.01	< 0.0002	0.0009	1.03	0.0009	< 0.02	0.0006	0.0003	< 0.03	3.4	< 0.0002	0.77	< 0.00005	4.65	0.0097	< 0.0002	0.00002	< 0.0001	0.0004	0.0015	< 0.0001	0.0014	< 0.001	< 0.002
28-Nov-05	1	0.12	0.0094	0.0009	0.001	< 0.0002	< 0.0002	0.04	< 0.00004	3.2	< 0.0002	< 0.0002	0.001	0.01	< 0.0002	0.0009	1.44	0.002	< 0.02	0.0012	< 0.0002	< 0.03	3.93	< 0.0002	0.66	< 0.00005	8.7	0.0091	< 0.0002	0.00002	< 0.0001	0.0004	0.0011	< 0.0001	0.0014	< 0.001	< 0.002
5-Dec-05	2	0.14	0.0093	0.001	0.0012	< 0.0002	< 0.0002	0.04	< 0.00004	2.65	< 0.0002	< 0.0002	0.0008	0.02	< 0.0002	0.001	1.26	0.0019	< 0.02	0.0009	0.0005	0.03	4.13	< 0.0002	0.79	< 0.00005	8.09	0.008	< 0.0002	0.00003	< 0.0001	0.0003	0.0009	< 0.0001	0.0018	0.006	< 0.002
12-Dec-05	3	0.15	0.0074	0.0008	0.0013	< 0.0002	< 0.0002	0.03	< 0.00004	2.33	0.0002	< 0.0002	0.001	0.04	< 0.0002	0.001	1.31	0.0019	< 0.02	0.0006	0.0005	0.04	3.9	< 0.0002	0.76	< 0.00005	6.21	0.0071	< 0.0002	0.00002	< 0.0001	0.0003	0.002	< 0.0001	0.0016	< 0.001	< 0.002
19-Dec-05	4	0.17	0.0062	0.0008	0.0011	< 0.0002	< 0.0002	0.03	< 0.00004	3.15	< 0.0002	< 0.0002	0.0007	0.03	< 0.0002	0.001	1.4	0.0024	< 0.02	0.0003	< 0.0002	< 0.03	3.6	< 0.0002	0.82	< 0.00005	5.21	0.0074	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0017	< 0.0001	0.0018	< 0.001	< 0.002
26-Dec-05	5	0.1345	0.00535	0.0008	0.00095	0.0001	0.0001	0.025	0.00002	3.11	0.0001	0.0001	0.001	0.025	0.0001	0.001	1.38	0.0025	0.01	0.0001	0.0001	0.015	3.065	0.0001	0.785	0.000025	3.955	0.0069	0.0001	0.00001	0.00005	0.00035	0.00105	0.00005	0.0016	0.0005	0.001
2-Jan-06	6	0.099	0.0045	0.0008	0.0008	< 0.0002	< 0.0002	0.02	< 0.00004	3.07	< 0.0002	< 0.0002	0.0013	0.02	< 0.0002	0.001	1.36	0.0026	< 0.02	< 0.0001	< 0.0002	< 0.03	2.53	< 0.0002	0.75	< 0.00005	2.7	0.0064	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0004	< 0.0001	0.0014	< 0.001	< 0.002
9-Jan-06	7	0.1245	0.00405	0.00075	0.0009	0.0001	0.0001	0.02	0.00002	2.735	0.0001	0.0001	0.001	0.025	0.0001	0.0009	1.485	0.00225	0.01	0.00005	0.00015	0.015	2.37	0.0001	0.75	0.000025	2.375	0.0062	0.0001	0.00001	0.00005	0.0003	0.00105	0.00005	0.00135	0.0005	0.001
16-Jan-06	8	0.15	0.0036	0.0007	0.001	< 0.0002	< 0.0002	0.02	< 0.00004	2.4	< 0.0002	< 0.0002	0.0007	0.03	< 0.0002	0.0008	1.61	0.0019	< 0.02	< 0.0001	0.0004	< 0.03	2.21	< 0.0002	0.75	< 0.00005	2.05	0.006	< 0.0002	0.00002	< 0.0001	0.0003	0.0017	< 0.0001	0.0013	< 0.001	< 0.002
23-Jan-06	9	0.125	0.00325	0.00075	0.0008	0.0001	0.0001	0.02	0.00002	2.47	0.0001	0.0001	0.00065	0.01	0.0001	0.00085	1.62	0.00185	0.01	0.00005	0.0003	0.015	2.14	0.0001	0.775	0.000025	1.84	0.006	0.0001	0.00002	0.00005	0.0003	0.00115	0.00005	0.00135	0.0005	0.001
30-Jan-06	10	0.1	0.0029	0.0008	0.0006	< 0.0002	< 0.0002	0.02	< 0.00004	2.54	< 0.0002	< 0.0002	0.0006	< 0.01	< 0.0002	0.0009	1.63	0.0018	< 0.02	< 0.0001	0.0002	< 0.03	2.07	< 0.0002	0.8	< 0.00005	1.63	0.006	< 0.0002	0.00002	< 0.0001	0.0003	0.0006	< 0.0001	0.0014	< 0.001	< 0.002
6-Feb-06	11	0.0975	0.0025	0.0008	0.00065	0.0001	0.0001	0.015	0.00002	2.61	0.0001	0.0001	0.00055	0.005	0.0001	0.0009	1.7	0.0018	0.01	0.00005	0.00025	0.015	2.06	0.0001	0.81	0.000025	1.48	0.0059	0.0001	0.000025	0.00005	0.0003	0.00065	0.00005	0.00135	0.0005	0.001
13-Feb-06	12	0.095	0.0021	0.0008	0.0007	< 0.0002	< 0.0002	0.01	< 0.00004	2.68	< 0.0002	< 0.0002	0.0005	< 0.01	< 0.0002	0.0009	1.77	0.0018	< 0.02	< 0.0001	0.0003	< 0.03	2.05	< 0.0002	0.82	< 0.00005	1.33	0.0058	< 0.0002	0.00003	< 0.0001	0.0003	0.0007	< 0.0001	0.0013	0.001	< 0.002
20-Feb-06	13	0.1125	0.002	0.00085	0.00075	0.0001	0.0001	0.01	0.00002	2.88	0.0001	0.0001	0.0006	0.005	0.0001	0.00095	1.74	0.002	0.01	0.00005	0.0003	0.015	2.045	0.0001	0.89	0.000025	1.21	0.006	0.0001	0.00003	0.00005	0.00025	0.0007	0.00005	0.00145	0.0005	0.001
27-Feb-06	14	0.13	0.0019	0.0009	0.0008	< 0.0002	< 0.0002	0.01	< 0.00004	3.08	< 0.0002	< 0.0002	0.0007	< 0.01	< 0.0002	0.001	1.71	0.0022	< 0.02	< 0.0001	0.0003	< 0.03	2.04	< 0.0002	0.96	< 0.00005	1.09	0.0062	< 0.0002	0.00003	< 0.0001	0.0002	0.0007	< 0.0001	0.0016	< 0.001	< 0.002
6-Mar-06	15	0.12	0.00185	0.00095	0.00075	0.0001	0.0001	0.01	0.00002	3.19	0.000175	0.0001	0.00075	0.005	0.0001	0.00095	1.705	0.00235	0.01	0.00005	0.00025	0.015	1.96	0.0001	0.955	0.000025	1.01	0.00625	0.0001	0.000025	0.00005	0.00035	0.0005	0.00005	0.00155	0.0005	0.001
13-Mar-06	16	0.11	0.0018	0.001	0.0007	< 0.0002	< 0.0002	0.01	< 0.00004	3.3	0.0005	< 0.0002	0.0008	< 0.01	< 0.0002	0.0009	1.7	0.0025	< 0.02	< 0.0001	0.0002	< 0.03	1.88	< 0.0002	0.95	< 0.00005	0.93	0.0063	< 0.0002	0.00002	< 0.0001	0.0005	0.0003	< 0.0001	0.0015	< 0.001	< 0.002
20-Mar-06	17	0.1	0.0018	0.001	0.00065	0.0001	0.0001	0.005	0.00002	3.205	0.00035	0.0001	0.0007	0.01	0.0001	0.0008	1.48	0.0025	0.01	0.00005	0.0001	0.015	1.805	0.0001	0.895	0.000025	0.805	0.0057	0.0001	0.00002	0.00005	0.00045	0.00035	0.00005	0.00145	0.0005	0.001
27-Mar-06	18	0.09	0.0018	0.001	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.11	0.0002	< 0.0002	0.0006	0.03	< 0.0002	0.0007	1.26	0.0025	< 0.02	< 0.0001	< 0.0002	< 0.03	1.73	< 0.0002	0.84	< 0.00005	0.68	0.0051	< 0.0002	0.00002	< 0.0001	0.0004	0.0004	< 0.0001	0.0014	< 0.001	< 0.002
3-Apr-06	19	0.0905	0.00185	0.00105	0.00065	0.0001	0.0001	0.005	0.00002	3.245	0.0001	0.0001	0.0006	0.02	0.0001	0.00075	1.205	0.00265	0.01	0.00005	0.0001	0.015	1.73	0.0001	0.82	0.000025	0.63	0.00515	0.0001	0.00002	0.00005	0.00045	0.00035	0.00005	0.0014	0.0005	0.001
10-Apr-06	20	0.091	0.0019	0.0011	0.0007	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.38	< 0.0002	< 0.0002	0.0006	0.01	< 0.0002	0.0008	1.15	0.0028	< 0.02	< 0.0001	< 0.0002	< 0.03	1.73	< 0.0002	0.8	< 0.00005	0.58	0.0052	< 0.0002	0.00002	< 0.0001	0.0005	0.0003	< 0.0001	0.0014	< 0.001	< 0.002
17-Apr-06	21	0.1155	0.00195	0.0012	0.00075	0.0001	0.0001	0.005	0.00002	3.535	0.0001	0.0001	0.0007	0.02	0.0001	0.0008	1.195	0.0028	0.01	0.00005	0.0001	0.015	1.74	0.0001	0.89	0.000025	0.625	0.00595	0.0001	0.000025	0.00005	0.0005	0.0006	0.00005	0.0016	0.00125	0.001
24-Apr-06	22	0.14	0.002	0.0013	0.0008	< 0.0002	< 0.0002	0.01	< 0.00004	3.69	< 0.0002	< 0.0002	0.0008	0.03	< 0.0002	0.0008	1.24	0.0028	< 0.02	< 0.0001	0.0002	< 0.03	1.75	< 0.0002	0.98	< 0.00005	0.67	0.0067	< 0.0002	0.00003	< 0.0001	0.0005	0.0009	< 0.0001	0.0018	0.004	< 0.002
1-May-06	23	0.111	0.0017	0.0012	0.00075	0.0001	0.0001	0.005	0.00002	3.295	0.000125	0.0001	0.00125	0.01	0.0001	0.00075	1.095	0.00205	0.01	0.00005	0.0002	0.015	1.685	0.0001	0.855	0.000025	0.59	0.00575	0.0001	0.000025	0.00005	0.00055	0.00065	0.00005	0.0016	0.00125	0.001
8-May-06	24	0.082	0.0014	0.0011	0.0007	< 0.0002	< 0.0002	< 0.01	< 0.00004	2.9	0.0003	< 0.0002	0.0017	< 0.01	< 0.0002	0.0007	0.95	0.0013	< 0.02	< 0.0001	0.0002	< 0.03	1.62	< 0.0002	0.73	< 0.00005	0.51	0.0048	< 0.0002	0.00002	< 0.0001	0.0006	0.0004	< 0.0001	0.0014	< 0.001	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15-May-06	25	0.089	0.00155	0.00115	0.0007	0.0001	0.0001	0.005	0.00002	3.38	0.000125	0.0001	0.00125	0.005	0.0001	0.0007	0.98	0.0018	0.01	0.00005	0.0001	0.015	1.585	0.0001	0.735	0.000025	0.535	0.0052	0.0001	0.000025	0.00005	0.00055	0.0004	0.00005	0.00145	0.0005	0.001
22-May-06	26	0.096	0.0017	0.0012	0.0007	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.86	< 0.0002	< 0.0002	0.0008	< 0.01	< 0.0002	0.0007	1.01	0.0023	< 0.02	< 0.0001	< 0.0002	< 0.03	1.55	< 0.0002	0.74	< 0.00005	0.56	0.0056	< 0.0002	0.00003	< 0.0001	0.0005	0.0004	0.0001	0.0015	< 0.001	< 0.002
29-May-06	27	0.098	0.0017	0.0014	0.0007	0.0001	0.0001	0.005	0.00002	4.035	0.0001	0.0001	0.00135	0.005	0.0001	0.00075	0.965	0.00215	0.01	0.00005	0.0001	0.015	1.515	0.0001	0.745	0.000025	0.48	0.00585	0.0001	0.00003	0.00005	0.00035	0.00035	0.00005	0.0014	0.0005	0.001
5-Jun-06	28	0.1	0.0017	0.0016	0.0007	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.21	< 0.0002	< 0.0002	0.0019	< 0.01	< 0.0002	0.0008	0.92	0.002	< 0.02	< 0.0001	< 0.0002	< 0.03	1.48	< 0.0002	0.75	< 0.00005	0.4	0.0061	< 0.0002	0.00003	< 0.0001	0.0002	0.0003	< 0.0001	0.0013	< 0.001	< 0.002
12-Jun-06	29	0.13	0.0018	0.00165	0.0008	0.0001	0.0001	0.005	0.00002	4.24	0.0001	0.0001	0.0014	0.0075	0.0001	0.00085	0.955	0.0022	0.01	0.00005	0.0001	0.015	1.585	0.0001	0.93	0.000025	0.44	0.0061	0.0001	0.000035	0.00005	0.0003	0.00035	0.00005	0.00155	0.0005	0.001
19-Jun-06	30	0.16	0.0019	0.0017	0.0009	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.27	< 0.0002	< 0.0002	0.0009	0.02	< 0.0002	0.0009	0.99	0.0024	< 0.02	< 0.0001	< 0.0002	< 0.03	1.69	< 0.0002	1.11	< 0.00005	0.48	0.0061	< 0.0002	0.00004	< 0.0001	0.0004	0.0004	< 0.0001	0.0018	< 0.001	< 0.002
26-Jun-06	31	0.135	0.002	0.00145	0.0008	0.0001	0.0001	0.005	0.00002	4.015	0.0001	0.0001	0.0008	0.0075	0.0001	0.00085	0.9	0.00205	0.01	0.00005	0.0001	0.015	1.565	0.0001	0.985	0.000025	0.435	0.00585	0.0001	0.000035	0.00005	0.0003	0.00045	0.00005	0.0016	0.0005	0.001
3-Jul-06	32	0.11	0.0021	0.0012	0.0007	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.76	< 0.0002	< 0.0002	0.0007	< 0.01	< 0.0002	0.0008	0.81	0.0017	< 0.02	< 0.0001	< 0.0002	< 0.03	1.44	< 0.0002	0.86	< 0.00005	0.39	0.0056	< 0.0002	0.00003	< 0.0001	0.0002	0.0005	< 0.0001	0.0014	< 0.001	< 0.002
10-Jul-06	33	0.15	0.0019	0.0013	0.0008	0.0001	0.0001	0.005	0.00002	4.27	0.0001	0.0001	0.00095	0.0075	0.0001	0.00075	0.835	0.00195	0.01	0.00005	0.0001	0.015	1.525	0.0001	0.935	0.000025	0.38	0.0062	0.0001	0.000035	0.00005	0.0002	0.00065	0.00005	0.0015	0.00075	0.001
17-Jul-06	34	0.19	0.0017	0.0014	0.0009	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.78	0.0002	< 0.0002	0.0012	0.02	< 0.0002	0.0007	0.86	0.0022	< 0.02	< 0.0001	0.0002	< 0.03	1.61	< 0.0002	1.01	< 0.00005	0.37	0.0068	< 0.0002	0.00004	< 0.0001	0.0002	0.0008	< 0.0001	0.0016	0.002	< 0.002
24-Jul-06	35	0.185	0.00195	0.00205	0.0009	0.0001	0.0001	0.005	0.00002	4.75	0.00025	0.0001	0.00085	0.025	0.0001	0.00075	0.89	0.0022	0.01	0.00005	0.0001	0.015	1.57	0.0001	1.095	0.000025	0.38	0.00725	0.0001	0.00004	0.00005	0.0001	0.0008	0.00005	0.00165	0.00075	0.001
31-Jul-06	36	0.18	0.0022	0.0027	0.0009	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.72	0.0003	< 0.0002	0.0005	0.03	< 0.0002	0.0008	0.92	0.0022	< 0.02	< 0.0001	< 0.0002	< 0.03	1.53	< 0.0002	1.18	< 0.00005	0.39	0.0077	< 0.0002	0.00004	< 0.0001	< 0.0002	0.0008	< 0.0001	0.0017	< 0.001	< 0.002
7-Aug-06	37	0.185	0.002	0.00205	0.00105	0.0001	0.0001	0.005	0.00002	5.065	0.0003	0.0001	0.00065	0.035	0.0001	0.00075	0.885	0.0022	0.01	0.00005	0.00015	0.015	1.585	0.0001	1.14	0.000025	0.365	0.00765	0.0001	0.00004	0.00005	0.0001	0.0012	0.00005	0.00155	0.00075	0.001
14-Aug-06	38	0.19	0.0018	0.0014	0.0012	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.41	0.0003	< 0.0002	0.0008	0.04	< 0.0002	0.0007	0.85	0.0022	< 0.02	< 0.0001	0.0004	< 0.03	1.64	< 0.0002	1.1	< 0.00005	0.34	0.0076	< 0.0002	0.00004	< 0.0001	< 0.0002	0.0016	< 0.0001	0.0014	0.002	< 0.002
21-Aug-06	39	0.18	0.0019	0.0013	0.001	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.46	0.0002	< 0.0002	0.0023	0.01	< 0.0002	0.0008	0.86	0.0018	< 0.02	< 0.0001	< 0.0002	< 0.03	1.67	< 0.0002	1.15	< 0.00005	0.36	0.0081	< 0.0002	0.00004	< 0.0001	< 0.0002	0.0006	< 0.0001	0.0015	0.004	< 0.002
28-Aug-06	40	0.15	0.0014	0.0012	0.0009	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.78	< 0.0002	< 0.0002	0.001	< 0.01	< 0.0002	0.0006	0.68	0.0021	< 0.02	< 0.0001	< 0.0002	< 0.03	1.38	< 0.0002	0.8	< 0.00005	0.29	0.0067	< 0.0002	0.00003	< 0.0001	< 0.0002	0.0008	< 0.0001	0.0011	< 0.001	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

Project:	High Lake		Original		
Sample:	HC 6 Felsic Volcanic	S - Total	0.74	%	
Dry Sample Weight:	1.00 Kg	S - Sulphate	<0.01	%	
		S - Sulphide	0.7	%	
		NP	18.0	kg $CaCO_3$/t	

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L

Values shaded in grey are averages

Analytical Results | **Production Rate** | **Molar Ratios** | **NP Consumption**

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Acidity (mg CaCO3/kg/wk)	Alkalinity (mg CaCO3/kg/wk)	Cumulative Alkalinity (mg CaCO3/kg)	Sulphate (mg/kg/wk)	Cumulative Sulphate (mg/kg)	Fraction of Total Sulphur Remaining	Alkalinity / Sulphate Production	Carbonate Molar Ratio [(Ca+Mg+Sr)/SO4]	Calcium / Sulphate Ratio	Ca+Mg/ Alkalinity	Ca/Mg	Theoretical NP Consumption at pH 6	Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)													
21-Nov-05	0	500	370	7.65	75	<1.0	2.0	17.8	8	2.96	0.74	6.5675	6.5675	3.0	3.0	0.9998665	2.21875	2.4631453	1.2074666	427733.92	0.9623401	3.0838597	0.9984808
28-Nov-05	1	500	415	7.24	86	<1.0	2.3	12.0	21	8.715	0.93375	4.98	11.5475	8.7	11.675	0.9994733	0.5714286	1.147517	0.4074825	867814.49	0.5509763	9.0796747	0.996397
5-Dec-05	2	500	420	7.36	93	<1.0	2.3	13.0	26	10.92	0.945	5.46	17.0075	10.9	22.595	0.9989807	0.5	1.0986053	0.4111702	960982.38	0.5984856	11.376942	0.9938972
12-Dec-05	3	500	390	7.54	70	<1.0	1.5	12.5	21	8.19	0.585	4.875	21.8825	8.2	30.785	0.9986113	0.5952381	1.2036311	0.4485732	821237.01	0.5944364	8.5327064	0.9918432
19-Dec-05	4	500	405	7.15	35	<1.0	5.3	11.8	11	4.455	2.12625	4.75875	26.64125	4.5	35.24	0.9984103	1.0681818	1.6080512	0.684222	634930.99	0.7410607	4.6414172	0.9903505
26-Dec-05	5	500	410	7.04	41	<1.0	4.5	9.0	10	4.1	1.845	3.69	30.33125	4.1	39.34	0.9982253	0.9	1.759536	0.8065757	834758.72	0.8468866	4.2715624	0.9888473
2-Jan-06	6	500	495	7.15	32	<1.0	2.8	11.5	5	2.475	1.36125	5.6925	36.02375	2.5	41.815	0.9981137	2.3	3.5004312	1.7210145	784558.05	0.9677634	2.5785651	0.987042
9-Jan-06	7	500	455	6.59	40	0.5	2.5	9.9	8	3.64	1.1375	4.493125	40.516875	3.6	45.455	0.9979495	1.234375	2.1124793	1.0127139	810928.16	0.9213909	3.7923139	0.9854398
16-Jan-06	8	500	420	6.97	31	<1.0	2.3	8.3	10	4.2	0.945	3.465	43.981875	4.2	49.655	0.99776	0.825	1.6297512	0.7598351	864055.69	0.8739646	4.3757469	0.9840135
23-Jan-06	9	500	430	7.27	33	0.5	2.8	8.3	10	4.3	1.1825	3.5475	47.529375	4.3	53.955	0.9975661	0.825	1.6000531	0.7538427	868500.34	0.8913825	4.4799313	0.9825799
30-Jan-06	10	500	430	6.75	32	<1.0	3.3	8.3	8	3.44	1.3975	3.5475	51.076875	3.4	57.395	0.9974109	1.03125	1.9629437	0.9348129	852372.23	0.9098054	3.583945	0.9811729
6-Feb-06	11	500	440	7.03	31	0.5	3.9	8.4	8	3.52	1.705	3.685	54.761875	3.5	60.915	0.9972521	1.046875	2.108707	1.0261968	922980.29	0.9485794	3.6672926	0.9796262
13-Feb-06	12	500	455	6.84	33	<1.0	4.5	8.5	12	5.46	2.0475	3.8675	58.629375	5.5	66.375	0.9970058	0.7083333	1.5029802	0.7450539	1005417.7	0.9836447	5.6884709	0.9779163
20-Feb-06	13	500	485	7.12	31	0.5	4.0	8.6	10	4.85	1.94	4.183125	62.8125	4.9	71.225	0.996787	0.8625	1.9963301	0.9899429	1169058.2	0.9842819	5.0529458	0.9758988
27-Feb-06	14	500	460	6.94	48	<1.0	3.5	8.8	18	8.28	1.61	4.025	66.8375	8.3	79.505	0.9964135	0.4861111	1.2161578	0.6032339	1198490.7	0.9848073	8.6264724	0.9738006
6-Mar-06	15	500	400	7.41	46	0.5	3.0	8.5	16	6.4	1.2	3.4	70.2375	6.4	85.905	0.9961248	0.53125	1.3370617	0.6351934	1048427.6	0.905534	6.6678047	0.9720176
13-Mar-06	16	500	410	7.18	42	<1.0	2.5	8.3	12	4.92	1.025	3.3825	73.62	4.9	90.825	0.9959028	0.6875	1.7412613	0.788998	1081445.6	0.8290038	5.1258749	0.9702325
20-Mar-06	17	500	415	7.42	39	0.5	2.5	8.3	13	5.395	1.0375	3.42375	77.04375	5.4	96.22	0.9956594	0.6346154	1.4223238	0.7181649	968649.57	1.0205017	5.620751	0.9686336
27-Mar-06	18	500	460	7.10	31	<1.0	2.5	8.3	13	5.98	1.15	3.795	80.83875	6.0	102.2	0.9953897	0.6346154	1.2373294	0.708024	934038.5	1.3385643	6.23023	0.9670918
3-Apr-06	19	500	465	7.28	40	0.5	2.5	8.9	15.5	7.2075	1.1625	4.126875	84.965625	7.2	109.4075	0.9950646	0.5725806	1.2559906	0.7291386	1062276.2	1.3849015	7.5090942	0.9652055
10-Apr-06	20	500	480	7.14	48	<1.0	2.5	9.5	18	8.64	1.2	4.56	89.525625	8.6	118.0475	0.9946748	0.5277778	1.2694682	0.744388	1202398.7	1.4186366	9.0015364	0.9629201
17-Apr-06	21	500	520	7.66	39	0.5	2.5	8.8	14	7.28	1.3	4.55	94.075625	7.3	125.3275	0.9943464	0.625	1.5319909	0.8808814	1327418.9	1.3538536	7.5846279	0.9605962
24-Apr-06	22	500	415	7.11	37	<1.0	2.5	8.0	19	7.885	1.0375	3.32	97.395625	7.9	133.2125	0.9939907	0.4210526	1.0550167	0.5929312	1082905.1	1.2841097	8.2149438	0.9588628
1-May-06	23	500	410	7.03	57	<1.0	1.6	7.6	21	8.61	0.6719784	3.1231822	100.51881	8.6	141.8225	0.9936023	0.3627389	0.9342187	0.5387444	1099674.8	1.3632639	8.970281	0.9571867
8-May-06	24	500	405	6.83	52	<1.0	1.6	5.4	18	7.29	0.6451604	2.183099	102.70191	7.3	149.1125	0.9932734	0.2994649	1.066215	0.6311984	1501712.7	1.4520126	7.5950463	0.9555672
15-May-06	25	500	420	7.12	53	0.5	1.7	5.7	19	7.98	0.7155312	2.4089221	105.11083	8.0	157.0925	0.9929134	0.3018699	1.0766296	0.633301	1560030.3	1.4294908	8.313919	0.953777
22-May-06	26	500	415	6.88	57	<1.0	1.8	6.1	17	7.055	0.7529357	2.5234861	107.63431	7.1	164.1475	0.9925952	0.3576876	1.2776503	0.7472863	1543822.3	1.4099323	7.3502129	0.9518988
29-May-06	27	500	455	7.00	46	0.5	1.9	6.1	12	5.46	0.8639057	2.7626683	110.39698	5.5	169.6075	0.9923489	0.5059832	1.6189537	0.95279	1515720.6	1.4322679	5.6884709	0.9500569
5-Jun-06	28	500	445	6.97	44	<1.0	2.0	6.1	12	5.34	0.8824727	2.6979939	113.09498	5.3	174.9475	0.992108	0.5052423	1.4279029	0.8469245	1308884.8	1.4612026	5.5634496	0.9484681
12-Jun-06	29	500	440	7.06	47	0.5	1.9	5.9	13	5.72	0.8208655	2.6069442	115.70192	5.7	180.6675	0.99185	0.4557595	1.40096	0.8149651	1408152.9	1.3926718	5.9593505	0.9467983
19-Jun-06	30	500	445	7.00	50	<1.0	1.7	5.8	17	7.565	0.7779143	2.5751431	118.27706	7.6	188.2325	0.9915087	0.3404023	1.1347132	0.6485881	1544923.7	1.3349617	7.8815536	0.9450096
26-Jun-06	31	500	445	7.20	42	0.5	1.4	6.9	15	6.675	0.6331197	3.0546275	121.33169	6.7	194.9075	0.9912076	0.4576221	1.320937	0.7726188	1337789.2	1.4099067	6.954312	0.9431724
3-Jul-06	32	500	480	7.64	54	<1.0	1.10	7.9	16	7.68	0.5267327	3.8120757	125.14377	7.7	202.5875	0.9908611	0.496364	1.2711241	0.7595355	1280208.4	1.4855759	8.0013657	0.9411383
10-Jul-06	33	500	520	7.30	45	0.5	1.5	7.7	12	6.24	0.7969143	4.0048041	129.14857	6.2	208.8275	0.9905796	0.6417955	1.5275681	0.9278218	1289017.9	1.5480022	6.5011096	0.9391521
17-Jul-06	34	500	515	6.92	42	<1.0	2.0	7.5	13	6.695	1.013363	3.8425532	132.99112	6.7	215.5225	0.9902776	0.5739437	1.2556654	0.7780888	1173446.8	1.6303094	6.9751488	0.9374004
24-Jul-06	35	500	490	6.95	44	0.5	2.0	7.1	14	6.86	0.9681412	3.4817484	136.47287	6.9	222.3825	0.9899682	0.5075435	1.3485155	0.813253	1355894.9	1.5203432	7.1470532	0.9354728
31-Jul-06	36	500	520	6.60	48	<1.0	2.0	6.7	18	9.36	1.0316288	3.5099737	139.98285	9.4	231.7425	0.9895459	0.3749972	1.1908214	0.7031071	1719752.4	1.4425743	9.7516644	0.9331503
7-Aug-06	37	500	535	7.10	52	0.5	2.7	7.1	17	9.095	1.4338173	3.7942968	143.77714	9.1	240.8375	0.9891357	0.4171849	1.1641918	0.707102	1554881.7	1.547981	9.4755756	0.930944
14-Aug-06	38	500	515	6.30	43	<1.0	3.4	7.4	12	6.18	1.7387239	3.8286839	147.60583	6.2	247.0175	0.9888569	0.6195281	1.5123114	0.9487951	1309300.5	1.6848248	6.4385989	0.9289966
21-Aug-06	39	500	520	7.11	41	0.5	4.3	7.7	15	7.8	2.2448841	4.0217989	151.62763	7.8	254.8175	0.988505	0.5156152	1.1345057	0.7126949	1191619	1.6907217	8.126387	0.9271527
28-Aug-06	40	500	510	6.20	46	<1.0	5.3	8.0	16	8.16	2.6815834	4.097401	155.72503	8.2	262.9775	0.9881369	0.5021325	1.1465832	0.7115963	1212859.5	1.6369605	8.501451	0.9252032

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21-Nov-05	0	0.05	0.0057	0.044	0.0009	< 0.0002	< 0.0002	0.01	< 0.00004	4.03	0.0003	0.0005	0.0045	0.02	0.0002	0.001	2.54	0.0037	< 0.02	0.011	0.0063	< 0.03	8.15	0.0042	1.22	< 0.00005	2.68	0.007	< 0.0002	0.00003	< 0.0001	< 0.0002	0.0003	< 0.0001	< 0.0002	< 0.001	< 0.002
28-Nov-05	1	0.065	0.027	0.069	0.001	< 0.0002	0.0002	0.02	< 0.00004	3.57	< 0.0002	0.0007	0.0025	< 0.01	< 0.0002	0.0009	3.93	0.0027	< 0.02	0.024	< 0.0002	< 0.03	8	0.012	0.6	< 0.00005	3.36	0.009	< 0.0002	0.00002	< 0.0001	< 0.0002	0.0003	< 0.0001	< 0.0002	< 0.001	< 0.002
5-Dec-05	2	0.084	0.034	0.096	0.0012	< 0.0002	< 0.0002	0.02	< 0.00004	4.46	< 0.0002	0.0005	0.0021	< 0.01	< 0.0002	0.0012	4.52	0.0028	< 0.02	0.019	0.0024	0.03	7.84	0.017	0.74	< 0.00005	2.58	0.0099	< 0.0002	0.00003	< 0.0001	0.0004	< 0.0002	< 0.0001	< 0.0002	< 0.001	< 0.002
12-Dec-05	3	0.11	0.031	0.097	0.0011	< 0.0002	< 0.0002	0.02	< 0.00004	3.93	< 0.0002	0.0005	0.0026	0.03	< 0.0002	0.0011	4.01	0.0022	< 0.02	0.013	0.0023	0.04	6.49	0.019	0.83	< 0.00005	1.41	0.0084	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0007	< 0.0001	< 0.0002	< 0.001	< 0.002
19-Dec-05	4	0.096	0.027	0.089	0.0007	< 0.0002	< 0.0002	0.01	< 0.00004	3.14	< 0.0002	0.0004	0.0013	0.01	< 0.0002	0.0009	2.57	0.0019	< 0.02	0.0065	0.0005	< 0.03	3.76	0.017	0.67	< 0.00005	0.6	0.0053	< 0.0002	< 0.00002	< 0.0001	0.0006	0.0002	< 0.0001	< 0.0002	0.001	< 0.002
26-Dec-05	5	0.0805	0.025	0.0815	0.00065	0.0001	0.0001	0.005	0.00002	3.365	0.0001	0.00035	0.00115	0.01	0.0001	0.00095	2.41	0.0024	0.01	0.00525	0.0004	0.015	2.98	0.019	0.71	0.000025	0.405	0.0051	0.0001	0.00001	0.00005	0.00045	0.0001	0.00005	0.0001	0.0015	0.001
2-Jan-06	6	0.065	0.023	0.074	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.59	< 0.0002	0.0003	0.001	0.01	< 0.0002	0.001	2.25	0.0029	< 0.02	0.004	0.0003	< 0.03	2.2	0.021	0.75	< 0.00005	0.21	0.0049	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	< 0.0001	< 0.0002	0.002	< 0.002
9-Jan-06	7	0.0695	0.0195	0.068	0.00055	0.0001	0.0001	0.005	0.00002	3.38	0.0001	0.00035	0.0013	0.005	0.0001	0.00085	2.225	0.0028	0.01	0.0037	0.0007	0.015	2.035	0.0225	0.69	0.000025	0.21	0.00475	0.0001	0.00001	0.00005	0.00025	0.0002	0.00005	0.0001	0.00075	0.001
16-Jan-06	8	0.074	0.016	0.062	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.17	< 0.0002	0.0004	0.0016	< 0.01	< 0.0002	0.0007	2.2	0.0027	< 0.02	0.0034	0.0011	< 0.03	1.87	0.024	0.63	< 0.00005	0.21	0.0046	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0006	< 0.0001	< 0.0002	< 0.001	< 0.002
23-Jan-06	9	0.07	0.0155	0.062	0.0005	0.0001	0.0001	0.005	0.00002	3.145	0.0001	0.0004	0.00205	0.005	0.0001	0.0008	2.14	0.0032	0.01	0.00295	0.00095	0.015	1.75	0.0195	0.66	0.000025	0.17	0.00465	0.0001	0.00001	0.00005	0.00025	0.0002	0.00005	0.0001	0.00075	0.001
30-Jan-06	10	0.066	0.015	0.062	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.12	< 0.0002	0.0004	0.0025	< 0.01	< 0.0002	0.0009	2.08	0.0037	< 0.02	0.0025	0.0008	< 0.03	1.63	0.015	0.69	< 0.00005	0.13	0.0047	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	< 0.0001	< 0.0002	0.002	< 0.002
6-Feb-06	11	0.0555	0.0135	0.055	0.0005	0.0001	0.0001	0.005	0.00002	3.425	0.0001	0.0004	0.0019	0.005	0.0001	0.0009	2.19	0.0041	0.01	0.00245	0.0008	0.015	1.555	0.02	0.69	0.000025	0.115	0.005	0.0001	0.00001	0.00005	0.0003	0.0001	0.00005	0.0001	0.00075	0.001
13-Feb-06	12	0.045	0.012	0.048	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.73	< 0.0002	0.0004	0.0013	< 0.01	< 0.0002	0.0009	2.3	0.0045	< 0.02	0.0024	0.0008	< 0.03	1.48	0.025	0.69	< 0.00005	0.1	0.0053	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	< 0.0001	< 0.0002	< 0.001	< 0.002
20-Feb-06	13	0.0585	0.0115	0.046	0.00055	0.0001	0.0001	0.005	0.00002	4.13	0.0001	0.0004	0.00145	0.005	0.0001	0.00095	2.545	0.0048	0.01	0.00255	0.0008	0.015	1.62	0.0285	0.725	0.000025	0.1	0.0058	0.0001	0.0000125	0.00005	0.0003	0.0001	0.00005	0.0001	0.0005	0.001
27-Feb-06	14	0.072	0.011	0.044	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.53	< 0.0002	0.0004	0.0016	< 0.01	< 0.0002	0.001	2.79	0.0051	< 0.02	0.0027	0.0008	< 0.03	1.76	0.032	0.76	< 0.00005	0.1	0.0063	< 0.0002	0.00003	< 0.0001	0.0003	< 0.0002	< 0.0001	< 0.0002	< 0.001	< 0.002
6-Mar-06	15	0.067	0.0105	0.04	0.0006	0.0001	0.0001	0.005	0.00002	4.24	0.00015	0.0004	0.0017	0.005	0.0001	0.0011	2.84	0.0051	0.01	0.0025	0.00075	0.015	1.725	0.029	0.77	0.000025	0.095	0.006	0.0001	0.000025	0.00005	0.00035	0.0001	0.00005	0.0001	0.0005	0.001
13-Mar-06	16	0.062	0.01	0.036	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.95	0.0004	0.0004	0.0018	< 0.01	< 0.0002	0.0012	2.89	0.0051	< 0.02	0.0023	0.0007	< 0.03	1.69	0.026	0.78	< 0.00005	0.09	0.0057	< 0.0002	0.00002	< 0.0001	0.0004	< 0.0002	< 0.0001	< 0.0002	0.001	< 0.002
20-Mar-06	17	0.0515	0.01	0.036	0.00055	0.0001	0.0001	0.005	0.00002	3.895	0.00015	0.0004	0.0016	0.005	0.0001	0.001	2.315	0.00495	0.01	0.002	0.0006	0.015	1.48	0.028	0.765	0.000025	0.08	0.005	0.0001	0.00001	0.00005	0.00035	0.0001	0.00005	0.0001	0.0005	0.001
27-Mar-06	18	0.041	0.01	0.036	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.84	< 0.0002	0.0004	0.0014	< 0.01	< 0.0002	0.0008	1.74	0.0048	< 0.02	0.0017	0.0005	< 0.03	1.27	0.03	0.75	< 0.00005	0.07	0.0043	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	< 0.0001	< 0.0002	< 0.001	< 0.002
3-Apr-06	19	0.042	0.0105	0.034	0.00065	0.0001	0.0001	0.005	0.00002	4.715	0.0002	0.00045	0.00155	0.005	0.0001	0.00095	2.065	0.0062	0.01	0.00195	0.0005	0.015	1.4	0.0325	0.815	0.000025	0.075	0.0051	0.0001	0.00001	0.00005	0.0004	0.0001	0.00005	0.0001	0.0005	0.001
10-Apr-06	20	0.043	0.011	0.032	0.0008	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.59	0.0006	0.0005	0.0017	< 0.01	< 0.0002	0.0011	2.39	0.0076	< 0.02	0.0022	0.0005	< 0.03	1.53	0.035	0.88	< 0.00005	0.08	0.0059	< 0.0002	< 0.00002	< 0.0001	0.0005	< 0.0002	0.0001	< 0.0002	< 0.001	< 0.002
17-Apr-06	21	0.0525	0.00945	0.0285	0.0007	0.0001	0.0001	0.005	0.00002	5.145	0.00045	0.00045	0.0019	0.005	0.0001	0.0011	2.305	0.0069	0.01	0.0021	0.0005	0.015	1.475	0.0315	0.84	0.000025	0.07	0.0059	0.0001	0.00001	0.00005	0.0004	0.0001	0.00005	0.0001	0.00075	0.001
24-Apr-06	22	0.062	0.0079	0.025	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.7	0.0003	0.0004	0.0021	0.01	< 0.0002	0.0011	2.22	0.0062	< 0.02	0.002	0.0005	< 0.03	1.42	0.028	0.8	< 0.00005	0.06	0.0059	< 0.0002	0.00002	< 0.0001	0.0003	< 0.0002	< 0.0001	< 0.0002	0.002	< 0.002
1-May-06	23	0.0545	0.0075	0.0245	0.00075	0.0001	0.0001	0.005	0.00002	4.72	0.0003	0.0004	0.0023	0.005	0.0001	0.00105	2.1	0.0058	0.01	0.002	0.0006	0.015	1.455	0.0285	0.74	0.000025	0.065	0.0055	0.0001	0.00001	0.00005	0.0003	0.0001	0.00005	0.0001	0.00075	0.001
8-May-06	24	0.047	0.0071	0.024	0.0009	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.74	0.0003	0.0004	0.0025	< 0.01	< 0.0002	0.001	1.98	0.0054	< 0.02	0.002	0.0007	< 0.03	1.49	0.029	0.68	< 0.00005	0.07	0.0051	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	< 0.0001	< 0.0002	< 0.001	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15-May-06	25	0.0485	0.0071	0.023	0.00095	0.0001	0.0001	0.005	0.00002	5.02	0.000125	0.00035	0.00235	0.005	0.0001	0.0011	2.13	0.0056	0.01	0.002	0.00055	0.015	1.42	0.0295	0.66	0.000025	0.075	0.00525	0.0001	0.00001	0.00005	0.0003	0.0001	0.000075	0.0001	0.0005	0.001
22-May-06	26	0.05	0.0071	0.022	0.001	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.3	< 0.0002	0.0003	0.0022	< 0.01	< 0.0002	0.0012	2.28	0.0058	< 0.02	0.002	0.0004	< 0.03	1.35	0.03	0.64	< 0.00005	0.08	0.0054	< 0.0002	0.00002	< 0.0001	0.0003	< 0.0002	0.0002	< 0.0002	< 0.001	< 0.002
29-May-06	27	0.0475	0.0068	0.02	0.0008	0.0001	0.0001	0.005	0.00002	4.77	0.0001	0.00035	0.00365	0.005	0.0001	0.00115	2.02	0.00625	0.01	0.0017	0.00035	0.015	1.24	0.0285	0.665	0.000025	0.07	0.0102	0.0001	0.00001	0.00005	0.000125	0.0001	0.000075	0.0001	0.00075	0.001
5-Jun-06	28	0.045	0.0065	0.018	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.24	< 0.0002	0.0004	0.0051	0.01	< 0.0002	0.0011	1.76	0.0067	< 0.02	0.0014	0.0003	< 0.03	1.13	0.027	0.69	< 0.00005	0.06	0.015	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.002	< 0.002
12-Jun-06	29	0.055	0.00665	0.018	0.0006	0.0001	0.0001	0.005	0.00002	4.42	0.0001	0.0004	0.0035	0.015	0.0001	0.0012	1.925	0.007	0.01	0.0015	0.0003	0.015	1.205	0.0285	0.77	0.000025	0.06	0.00965	0.0001	0.00001	0.00005	0.000125	0.0001	0.00005	0.0001	0.0035	0.001
19-Jun-06	30	0.065	0.0068	0.018	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.6	< 0.0002	0.0004	0.0019	0.02	< 0.0002	0.0013	2.09	0.0073	< 0.02	0.0016	0.0003	< 0.03	1.28	0.03	0.85	< 0.00005	0.06	0.0043	< 0.0002	0.00002	< 0.0001	0.0003	< 0.0002	< 0.0001	< 0.0002	0.005	< 0.002
26-Jun-06	31	0.0515	0.0069	0.0165	0.00055	0.0001	0.0001	0.005	0.00002	4.835	0.0001	0.0004	0.0019	0.0075	0.0001	0.0012	2.08	0.00835	0.01	0.0016	0.0003	0.015	1.205	0.03	0.82	0.000025	0.055	0.00445	0.0001	0.00002	0.00005	0.000125	0.0001	0.00005	0.0001	0.0015	0.001
3-Jul-06	32	0.038	0.007	0.015	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.07	< 0.0002	0.0004	0.0019	< 0.01	< 0.0002	0.0011	2.07	0.0094	< 0.02	0.0016	0.0003	< 0.03	1.13	0.03	0.79	< 0.00005	0.05	0.0046	< 0.0002	0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	< 0.001	< 0.002
10-Jul-06	33	0.0415	0.00615	0.0135	0.0005	0.0001	0.0001	0.005	0.00002	4.645	0.0001	0.0004	0.00215	0.005	0.0001	0.00105	1.82	0.0095	0.01	0.00135	0.00035	0.015	1.02	0.026	0.755	0.000025	0.045	0.00415	0.0001	0.00002	0.00005	0.0001	0.0001	0.00005	0.0001	0.001	0.001
17-Jul-06	34	0.045	0.0053	0.012	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.22	< 0.0002	0.0004	0.0024	< 0.01	< 0.0002	0.001	1.57	0.0096	< 0.02	0.0011	0.0004	< 0.03	0.91	0.022	0.72	< 0.00005	0.04	0.0037	< 0.0002	0.00002	< 0.0001	0.0002	< 0.0002	< 0.0001	< 0.0002	0.003	< 0.002
24-Jul-06	35	0.048	0.0056	0.0125	0.00055	0.0001	0.0001	0.005	0.00002	4.75	0.0001	0.00045	0.0025	0.005	0.0001	0.001	1.895	0.0118	0.01	0.0012	0.00015	0.015	0.94	0.026	0.82	0.000025	0.045	0.00445	0.0001	0.00002	0.00005	0.0001	0.0001	0.00005	0.0001	0.002	0.001
31-Jul-06	36	0.051	0.0059	0.013	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.28	< 0.0002	0.0005	0.0026	0.01	< 0.0002	0.001	2.22	0.014	< 0.02	0.0013	< 0.0002	< 0.03	0.97	0.03	0.92	< 0.00005	0.05	0.0052	< 0.0002	0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.001	< 0.002
7-Aug-06	37	0.048	0.0053	0.0114	0.0007	0.0001	0.0001	0.005	0.00002	5.015	0.0001	0.0005	0.00265	0.005	0.0001	0.00095	1.965	0.013	0.01	0.00115	0.000125	0.015	0.95	0.026	0.845	0.000025	0.05	0.00465	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.0015	0.001
14-Aug-06	38	0.045	0.0047	0.0098	0.0008	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.75	< 0.0002	0.0005	0.0027	< 0.01	< 0.0002	0.0009	1.71	0.012	< 0.02	0.001	0.0003	< 0.03	0.93	0.022	0.77	< 0.00005	0.05	0.0041	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.002	< 0.002
21-Aug-06	39	0.052	0.0046	0.0087	0.0007	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.46	0.0002	0.0004	0.0042	< 0.01	< 0.0002	0.001	1.6	0.012	< 0.02	0.001	0.0004	< 0.03	0.9	0.018	0.83	< 0.00005	0.07	0.0038	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0002	< 0.0001	< 0.0002	0.003	< 0.002
28-Aug-06	40	0.043	0.0046	0.0092	0.0008	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.75	< 0.0002	0.0005	0.0022	< 0.01	< 0.0002	0.0009	1.76	0.012	< 0.02	0.0011	0.0003	< 0.03	0.84	0.023	0.74	< 0.00005	0.05	0.0041	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.002	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

Project: High Lake
Sample: HC 7 Mafic Volcanic
Dry Sample Weight: 1.00 Kg

	Original	
S - Total	0.49	%
S - Sulphate	<0.01	%
S - Sulphide	0.5	%
NP	48.0	kg $CaCO_3$/t

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Values shaded in grey are averages

Analytical Results

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Acidity (mg CaCO3/kg/wk)	Alkalinity (mg CaCO3/kg/wk)	Cumulative Alkalinity (mg CaCO3/kg)	Sulphate (mg/kg/wk)	Cumulative Sulphate (mg/kg)	Fraction of Total Sulphur Remaining	Alkalinity / Sulphate Production	Carbonate Molar Ratio [(Ca+Mg+Sr) /SO4]	Calcium / Sulphate Ratio	Ca+Mg/ Alkalinity	Ca/Mg	Theoretical NP Consumption at pH 6	Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)														
21-Nov-05	0	500	395	9.23	75	<1.0	<1.0	30.8	2	0.79	0.20	12.1	12.1	0.79	0.79	0.9999462	15.4	5.9505495	4.6620796	159146.97	3.6298902	0.8230571	0.9997774
28-Nov-05	1	500	415	8.81	82	<1.0	<1.0	27.8	8	3.32	0.21	11.5	23.7	3.32	4.11	0.99972	3.5	1.1331176	0.722083	141096.24	1.7611494	3.4589237	0.9995992
5-Dec-05	2	500	425	9.28	74	<1.0	<1.0	27.5	9	3.83	0.21	11.7	35.4	3.83	7.94	0.9994594	3.1	1.0511958	0.655168	152192.91	1.6578676	3.9850552	0.9994088
12-Dec-05	3	500	415	9.29	50	<1.0	<1.0	23.5	6	2.49	0.21	9.8	45.1	2.49	10.43	0.9992898	3.9	1.7266065	1.0666455	190437.85	1.6194536	2.5941928	0.9992052
19-Dec-05	4	500	425	8.51	38	<1.0	<1.0	21.8	4	1.70	0.21	9.2	54.3	1.70	12.13	0.999174	5.4375	3.1462881	2.0673746	256016.27	1.9197728	1.7711356	0.9989519
26-Dec-05	5	500	425	7.75	47	<1.0	2.8	24.0	2	0.85	1.17	10.2	64.5	0.85	12.98	0.9991161	12	6.5872848	4.3504753	242890.04	1.9484328	0.8855678	0.9986868
2-Jan-06	6	500	440	8.71	37	<1.0	<1.0	20.3	2	0.88	0.22	8.9	73.5	0.88	13.86	0.9990561	10.125	6.8819934	4.5662013	311373.93	1.9751331	0.9168231	0.9984
9-Jan-06	7	500	450	9.05	37	0.5	0.5	19.4	<1	0.23	0.23	8.7	82.2	0.23	14.08	0.9990408	38.75	26.846566	17.425871	324595.46	1.8527409	0.234415	0.9981139
16-Jan-06	8	500	425	8.96	32	<1.0	<1.0	18.5	1	0.43	0.21	7.9	90.0	0.43	14.51	0.9990118	18.5	13.082579	8.2934681	312914.82	1.7343948	0.4427839	0.9978506
23-Jan-06	9	500	420	9.11	34	0.5	0.5	19.0	<1	0.21	0.21	8.0	98.0	0.21	14.72	0.9989975	38	26.62911	17.090297	306436.41	1.7944433	0.2187873	0.9975858
30-Jan-06	10	500	415	8.56	31	<1.0	<1.0	19.5	1	0.42	0.21	8.1	106.1	0.42	15.13	0.9989692	19.5	13.546531	8.7968288	300166.33	1.8549921	0.4323655	0.9973195
6-Feb-06	11	500	415	8.94	28	0.5	0.5	18.8	1	0.42	0.21	7.8	113.9	0.42	15.55	0.998941	18.75	13.274981	8.5451485	305914.35	1.8094595	0.4323655	0.9970587
13-Feb-06	12	500	420	7.85	26	<1.0	1.0	18.0	<1	0.21	0.42	7.6	121.5	0.21	15.76	0.9989267	36	26.006864	16.586936	315902.11	1.7635443	0.2187873	0.9968
20-Feb-06	13	500	410	9.28	24	0.5	0.5	18.9	2	0.82	0.21	7.7	129.2	0.82	16.58	0.9988708	9.4375	6.8919493	4.5961633	311741.94	2.005232	0.8543125	0.9965324
27-Feb-06	14	500	410	9.00	31	<1.0	<1.0	19.8	2	0.82	0.21	8.1	137.3	0.82	17.40	0.9988149	9.875	7.2821828	5.0455926	314805.41	2.2597526	0.8543125	0.9962496
6-Mar-06	15	500	410	9.16	29	0.5	0.5	19.0	<1	0.21	0.21	7.8	145.1	0.21	17.60	0.998801	38	28.610674	19.822827	321413.99	2.2594867	0.2135781	0.9959718
13-Mar-06	16	500	415	8.88	28	<1.0	<1.0	18.3	<1	0.21	0.21	7.6	152.7	0.21	17.81	0.9987868	36.5	28.092617	19.463283	332572.65	2.2592109	0.2161827	0.9956958
20-Mar-06	17	500	410	9.09	28	0.5	0.5	17.1	2	0.82	0.21	7.0	159.7	0.82	18.63	0.998731	8.5625	6.4687348	4.6081481	322512.65	2.4809941	0.8543125	0.9954446
27-Mar-06	18	500	435	8.64	24	<1.0	<1.0	16.0	<1	0.22	0.22	7.0	166.6	0.22	18.85	0.9987162	32	23.657261	17.401901	334852.75	2.7869988	0.2266012	0.9952009
3-Apr-06	19	500	415	8.81	24	0.5	0.5	16.1	0.5	0.21	0.21	6.7	173.3	0.21	19.05	0.998702	32.25	23.828594	17.929232	319281.99	3.0448968	0.2161827	0.9949668
10-Apr-06	20	500	425	8.43	23	<1.0	<1.0	16.3	<1	0.21	0.21	6.9	180.2	0.21	19.27	0.9986875	32.5	23.999927	18.456562	326798.85	3.3359531	0.221392	0.9947253
17-Apr-06	21	500	435	9.06	19	0.5	0.5	16.6	1	0.44	0.22	7.2	187.5	0.44	19.70	0.9986579	16.625	12.167543	9.336144	331499.25	3.3041417	0.4532024	0.9944746
24-Apr-06	22	500	425	8.52	21	<1.0	<1.0	17.0	1	0.43	0.21	7.2	194.7	0.43	20.13	0.998629	17	12.335123	9.444007	321087.13	3.2736377	0.4427839	0.9942263
1-May-06	23	500	420	7.70	33	<1.0	1.1	15.8	<1	0.21	0.45	6.6	201.3	0.21	20.34	0.9986147	31.543259	23.484368	18.216866	325587.83	3.4659253	0.2187873	0.9939928
8-May-06	24	500	430	7.49	31	<1.0	1.1	13.6	4	1.72	0.47	5.9	207.2	1.72	22.06	0.9984975	3.4045038	2.7873113	2.1932148	366568.01	3.6998752	1.7919725	0.9937658
15-May-06	25	500	420	7.78	33	0.5	1.3	13.3	3	1.26	0.53	5.6	212.8	1.26	23.32	0.9984116	4.4439665	3.8360476	3.0241596	377505.55	3.7329143	1.3127241	0.9935369
22-May-06	26	500	425	7.41	31	<1.0	1.4	13.0	3	1.28	0.61	5.5	218.3	1.28	24.59	0.9983248	4.3485947	3.9556801	3.1240328	402557.59	3.76438	1.3283517	0.993298
29-May-06	27	500	445	7.56	31	0.5	1.2	13.4	1	0.45	0.52	6.0	224.3	0.45	25.04	0.9982945	13.442635	11.412527	9.0365245	393397.15	3.8110737	0.4636208	0.9930575
5-Jun-06	28	500	450	7.63	30	<1.0	0.9	13.8	<1	0.23	0.40	6.2	230.5	0.23	25.26	0.9982791	27.67897	21.916026	17.401901	371027.15	3.8626825	0.234415	0.992824
12-Jun-06	29	500	440	7.76	32	0.5	0.9	13.9	<1	0.22	0.41	6.1	236.6	0.22	25.48	0.9982641	27.701368	23.13762	18.504501	382694.85	4.0021069	0.2292058	0.9925829
19-Jun-06	30	500	435	7.58	31	<1.0	1.0	13.9	<1	0.22	0.42	6.0	242.6	0.22	25.70	0.9982493	27.723766	24.359215	19.607101	398000.71	4.13456	0.2266012	0.992332
26-Jun-06	31	500	450	7.76	29	0.5	1.4	13.7	<1	0.23	0.65	6.1	248.8	0.23	25.92	0.998234	27.304188	24.105152	19.511223	413691.68	4.256216	0.234415	0.9920752
3-Jul-06	32	500	445	7.27	32	<1.0	1.9	13.4	<1	0.22	0.85	6.0	254.8	0.22	26.15	0.9982188	26.884609	23.851089	19.415344	411100.76	4.3865617	0.2318104	0.9918239
10-Jul-06	33	500	450	8.02	40	0.5	1.3	15.8	<1	0.23	0.59	7.1	261.9	0.23	26.37	0.9982035	31.579489	27.754167	22.842992	411836.88	4.6615298	0.234415	0.9915282
17-Jul-06	34	500	455	7.60	41	<1.0	0.7	18.1	2	0.91	0.32	8.3	270.1	0.91	27.28	0.9981415	9.0685921	7.9143113	6.5676597	413503.01	4.8879741	0.9480785	0.9911871
24-Jul-06	35	500	455	7.65	35	0.5	1.1	14.3	1	0.46	0.51	6.5	276.7	0.46	27.74	0.9981105	14.3438	15.204823	12.452187	502243.37	4.5337544	0.4740392	0.9908595
31-Jul-06	36	500	460	6.39	35	<1.0	1.6	10.6	2	0.92	0.72	4.9	281.5	0.92	28.66	0.9980478	5.2752075	7.2905117	5.8845272	661992.21	4.1945018	0.9584969	0.9905418
7-Aug-06	37	500	465	7.47	34	0.5	2.2	13.5	1	0.47	1.01	6.3	287.8	0.47	29.12	0.9980162	13.532368	14.97052	12.356309	535675.96	4.737421	0.4844577	0.9902122
14-Aug-06	38	500	455	6.81	36	<1.0	2.8	16.5	<1	0.23	1.28	7.5	295.3	0.23	29.35	0.9980007	33.028641	30.720031	25.887126	440694.39	5.3693433	0.2370196	0.9898812
21-Aug-06	39	500	465	7.57	35	#VALUE!	3.7	16.1	4	1.86	1.70	7.5	302.8	1.86	31.21	0.9978739	4.0266582	3.5130912	2.9782179	422462	5.5823862	1.9378307	0.9895718
28-Aug-06	40	500	455	6.74	36	0.0	4.5	15.7	2	0.91	2.05	7.1	309.9	0.91	32.12	0.997812	7.8494725	6.6875255	5.7167403	403671.9	5.9044513	0.9480785	0.9892836

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21-Nov-05	0	0.19	0.0025	0.0013	0.0017	< 0.0002	< 0.0002	0.02	< 0.00004	3.89	0.0002	< 0.0002	0.0029	0.02	0.0003	0.0005	0.65	0.002	< 0.02	0.0005	0.0002	< 0.03	8.01	< 0.0002	0.78	< 0.00005	7.39	0.0075	< 0.0002	0.00018	< 0.0001	0.0002	0.0016	< 0.0001	0.0009	< 0.001	< 0.002
28-Nov-05	1	0.17	0.01	0.0017	0.0019	< 0.0002	< 0.0002	0.02	< 0.00004	2.41	< 0.0002	< 0.0002	0.0022	< 0.01	0.0004	0.0006	0.83	0.0033	< 0.02	0.0014	< 0.0002	0.03	8.38	0.0006	0.55	< 0.00005	11	0.0075	< 0.0002	0.00014	< 0.0001	0.0004	0.0016	< 0.0001	0.0011	< 0.001	< 0.002
5-Dec-05	2	0.17	0.0096	0.0018	0.0019	< 0.0002	< 0.0002	0.03	< 0.00004	2.46	< 0.0002	< 0.0002	0.002	0.01	0.0003	0.0007	0.9	0.0035	< 0.02	0.001	< 0.0002	0.04	9	< 0.0002	0.62	< 0.00005	9.1	0.0069	< 0.0002	0.00016	< 0.0001	0.0004	0.0007	< 0.0001	0.0012	< 0.001	< 0.002
12-Dec-05	3	0.14	0.0058	0.0012	0.0015	< 0.0002	< 0.0002	0.02	< 0.00004	2.67	< 0.0002	< 0.0002	0.001	< 0.01	< 0.0002	0.0006	1	0.003	< 0.02	0.0005	< 0.0002	0.03	7.35	< 0.0002	0.53	< 0.00005	4.93	0.0072	< 0.0002	0.00012	< 0.0001	0.0029	0.0007	< 0.0001	0.0009	< 0.001	< 0.002
19-Dec-05	4	0.17	0.0052	0.0014	0.0017	< 0.0002	< 0.0002	0.02	< 0.00004	3.45	< 0.0002	< 0.0002	0.0005	0.01	0.0002	0.0007	1.09	0.0044	< 0.02	0.0003	< 0.0002	< 0.03	5.94	< 0.0002	0.61	< 0.00005	3.1	0.0074	< 0.0002	0.00012	< 0.0001	0.0003	0.0009	< 0.0001	0.001	< 0.001	< 0.002
26-Dec-05	5	0.165	0.0046	0.0013	0.0017	0.0001	0.0001	0.015	0.00002	3.63	0.0001	0.0001	0.0005	0.015	0.0001	0.00075	1.13	0.0052	0.01	0.0001	0.0001	0.015	5.255	0.0001	0.66	0.000025	2.495	0.0073	0.0001	0.000115	0.00005	0.0003	0.00075	0.00005	0.0009	0.0005	0.001
2-Jan-06	6	0.16	0.004	0.0012	0.0017	< 0.0002	< 0.0002	0.01	< 0.00004	3.81	< 0.0002	< 0.0002	0.0005	0.02	< 0.0002	0.0008	1.17	0.006	< 0.02	< 0.0001	< 0.0002	< 0.03	4.57	< 0.0002	0.71	< 0.00005	1.89	0.0072	< 0.0002	0.00011	< 0.0001	0.0003	0.0006	< 0.0001	0.0008	< 0.001	< 0.002
9-Jan-06	7	0.145	0.0037	0.0011	0.0017	0.0001	0.0001	0.01	0.00002	3.635	0.0001	0.0001	0.00065	0.0075	0.0001	0.0007	1.19	0.00525	0.01	0.00005	0.0001	0.015	4.235	0.0001	0.635	0.000025	1.55	0.00695	0.0001	0.00011	0.00005	0.00025	0.0005	0.00005	0.00075	0.0005	0.001
16-Jan-06	8	0.13	0.0034	0.0009	0.0017	< 0.0002	< 0.0002	0.01	< 0.00004	3.46	< 0.0002	< 0.0002	0.0008	< 0.01	0.0002	0.0006	1.21	0.0045	< 0.02	< 0.0001	< 0.0002	< 0.03	3.9	< 0.0002	0.56	< 0.00005	1.21	0.0067	< 0.0002	0.00011	< 0.0001	0.0002	0.0004	< 0.0001	0.0007	< 0.001	< 0.002
23-Jan-06	9	0.135	0.00305	0.0009	0.0017	0.0001	0.0001	0.01	0.00002	3.565	0.0001	0.0001	0.00135	0.005	0.0002	0.0006	1.205	0.0052	0.01	0.00005	0.0001	0.015	3.74	0.0001	0.605	0.000025	1.035	0.00675	0.0001	0.000115	0.00005	0.0001	0.00035	0.00005	0.0007	0.0005	0.001
30-Jan-06	10	0.14	0.0027	0.0009	0.0017	< 0.0002	< 0.0002	0.01	< 0.00004	3.67	< 0.0002	< 0.0002	0.0019	< 0.01	0.0002	0.0006	1.2	0.0059	< 0.02	< 0.0001	< 0.0002	< 0.03	3.58	< 0.0002	0.65	< 0.00005	0.86	0.0068	< 0.0002	0.00012	< 0.0001	< 0.0002	0.0003	< 0.0001	0.0007	< 0.001	< 0.002
6-Feb-06	11	0.125	0.00245	0.0009	0.0015	0.0001	0.0001	0.01	0.00002	3.565	0.000125	0.0001	0.00115	0.005	0.0001	0.0006	1.195	0.00515	0.01	0.00005	0.0001	0.015	3.465	0.0001	0.64	0.000025	0.745	0.0067	0.0001	0.00012	0.00005	0.0001	0.00035	0.00005	0.00065	0.0005	0.001
13-Feb-06	12	0.11	0.0022	0.0008	0.0013	< 0.0002	< 0.0002	0.01	< 0.00004	3.46	0.0003	< 0.0002	0.0004	< 0.01	< 0.0002	0.0006	1.19	0.0044	< 0.02	< 0.0001	< 0.0002	< 0.03	3.35	< 0.0002	0.63	< 0.00005	0.63	0.0066	< 0.0002	0.00012	< 0.0001	< 0.0002	0.0004	< 0.0001	0.0006	< 0.001	< 0.002
20-Feb-06	13	0.145	0.00215	0.001	0.0017	0.0001	0.0001	0.005	0.00002	3.835	0.000125	0.0001	0.0005	0.005	0.000125	0.00065	1.16	0.00495	0.01	0.00005	0.0001	0.015	3.48	0.0001	0.715	0.000025	0.585	0.00675	0.0001	0.00013	0.00005	0.0001	0.00055	0.00005	0.0008	0.0005	0.001
27-Feb-06	14	0.18	0.0021	0.0011	0.0021	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.21	< 0.0002	< 0.0002	0.0006	< 0.01	0.0003	0.0007	1.13	0.0055	< 0.02	< 0.0001	< 0.0002	< 0.03	3.61	< 0.0002	0.8	< 0.00005	0.54	0.0069	< 0.0002	0.00014	< 0.0001	< 0.0002	0.0007	< 0.0001	0.001	< 0.001	< 0.002
6-Mar-06	15	0.16	0.0019	0.001	0.002	0.0001	0.0001	0.005	0.00002	4.135	0.000175	0.0001	0.0006	0.005	0.00025	0.00065	1.11	0.0059	0.01	0.00005	0.0001	0.015	3.42	0.0001	0.765	0.000025	0.525	0.0067	0.0001	0.000135	0.00005	0.000125	0.00055	0.00005	0.0009	0.0005	0.001
13-Mar-06	16	0.14	0.0017	0.0009	0.0019	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.06	0.0005	< 0.0002	0.0006	< 0.01	0.0002	0.0006	1.09	0.0063	< 0.02	< 0.0001	< 0.0002	< 0.03	3.23	< 0.0002	0.73	< 0.00005	0.51	0.0065	< 0.0002	0.00013	< 0.0001	0.0003	0.0004	< 0.0001	0.0008	< 0.001	< 0.002
20-Mar-06	17	0.125	0.00165	0.0009	0.0017	0.0001	0.0001	0.005	0.00002	3.845	0.000175	0.0001	0.00055	0.005	0.0001	0.00055	0.94	0.0055	0.01	0.00005	0.0001	0.015	3.03	0.0001	0.68	0.000025	0.44	0.00585	0.0001	0.000115	0.00005	0.000125	0.0003	0.00005	0.00075	0.0005	0.001
27-Mar-06	18	0.11	0.0016	0.0009	0.0015	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.63	< 0.0002	< 0.0002	0.0005	< 0.01	< 0.0002	0.0005	0.79	0.0047	< 0.02	< 0.0001	< 0.0002	< 0.03	2.83	< 0.0002	0.63	< 0.00005	0.37	0.0052	< 0.0002	0.0001	< 0.0001	< 0.0002	0.0002	< 0.0001	0.0007	< 0.001	< 0.002
3-Apr-06	19	0.103	0.00165	0.0009	0.00165	0.0001	0.0001	0.005	0.00002	3.74	0.000125	0.0001	0.0006	0.005	0.0001	0.0005	0.745	0.00525	0.01	0.00005	0.0001	0.015	2.77	0.0001	0.59	0.000025	0.36	0.00505	0.0001	0.0001	0.00005	0.000175	0.0001	0.00005	0.00065	0.0005	0.001
10-Apr-06	20	0.096	0.0017	0.0008	0.0018	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.85	0.0003	< 0.0002	0.0007	< 0.01	< 0.0002	0.0005	0.7	0.0058	< 0.02	< 0.0001	< 0.0002	< 0.03	2.71	< 0.0002	0.55	< 0.00005	0.35	0.0049	< 0.0002	0.0001	< 0.0001	0.0005	< 0.0002	< 0.0001	0.0006	< 0.001	< 0.002
17-Apr-06	21	0.108	0.00175	0.0009	0.0017	0.0001	0.0001	0.005	0.00002	3.895	0.0003	0.0001	0.0007	0.0075	0.0001	0.00055	0.715	0.0058	0.01	0.00005	0.0001	0.015	2.7	0.0001	0.595	0.000025	0.36	0.0053	0.0001	0.000115	0.00005	0.0005	0.000125	0.00005	0.00075	0.0005	0.001
24-Apr-06	22	0.12	0.0018	0.001	0.0016	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.94	0.0003	< 0.0002	0.0007	0.02	0.0002	0.0006	0.73	0.0058	< 0.02	< 0.0001	< 0.0002	< 0.03	2.69	< 0.0002	0.64	< 0.00005	0.37	0.0057	< 0.0002	0.00013	< 0.0001	0.0005	0.0003	< 0.0001	0.0009	0.001	< 0.002
1-May-06	23	0.107	0.00165	0.001	0.00165	0.0001	0.0001	0.005	0.00002	3.8	0.0003	0.0001	0.00065	0.0075	0.0001	0.00055	0.665	0.00485	0.01	0.00005	0.0001	0.015	2.64	0.0001	0.58	0.000025	0.33	0.00525	0.0001	0.00012	0.00005	0.0005	0.000125	0.00005	0.00085	0.0005	0.001
8-May-06	24	0.094	0.0015	0.001	0.0017	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.66	0.0003	< 0.0002	0.0006	< 0.01	< 0.0002	0.0005	0.6	0.0039	< 0.02	< 0.0001	< 0.0002	< 0.03	2.59	< 0.0002	0.52	< 0.00005	0.29	0.0048	< 0.0002	0.00011	< 0.0001	0.0005	< 0.0002	< 0.0001	0.0008	< 0.001	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15-May-06	25	0.095	0.0015	0.001	0.0017	0.0001	0.0001	0.005	0.00002	3.785	0.000125	0.0001	0.0007	0.005	0.0001	0.0005	0.615	0.0041	0.01	0.00005	0.0001	0.015	2.495	0.0001	0.505	0.000025	0.315	0.0048	0.0001	0.000125	0.00005	0.0004	0.0001	0.0003	0.0008	0.0005	0.001
22-May-06	26	0.096	0.0015	0.001	0.0017	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.91	< 0.0002	< 0.0002	0.0008	< 0.01	0.0002	0.0005	0.63	0.0043	< 0.02	< 0.0001	< 0.0002	< 0.03	2.4	< 0.0002	0.49	< 0.00005	0.34	0.0048	< 0.0002	0.00014	< 0.0001	0.0003	< 0.0002	0.0011	0.0008	< 0.001	< 0.002
29-May-06	27	0.0945	0.00145	0.001	0.00155	0.0001	0.0001	0.005	0.00002	3.77	0.0001	0.0001	0.0011	0.005	0.0001	0.0005	0.6	0.0046	0.01	0.00005	0.0001	0.015	2.245	0.0001	0.49	0.000025	0.295	0.00445	0.0001	0.000125	0.00005	0.00025	0.0001	0.0003	0.0007	0.0005	0.001
5-Jun-06	28	0.093	0.0014	0.001	0.0014	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.63	< 0.0002	< 0.0002	0.0014	< 0.01	< 0.0002	0.0005	0.57	0.0049	< 0.02	< 0.0001	< 0.0002	< 0.03	2.09	< 0.0002	0.49	< 0.00005	0.25	0.0041	< 0.0002	0.00011	< 0.0001	0.0002	< 0.0002	< 0.0001	0.0006	< 0.001	< 0.002
12-Jun-06	29	0.1215	0.0015	0.0012	0.00165	0.0001	0.0001	0.005	0.00002	3.86	0.0001	0.0001	0.00095	0.005	0.000125	0.00055	0.585	0.0051	0.01	0.00005	0.0001	0.015	2.225	0.0001	0.585	0.000025	0.255	0.0043	0.0001	0.00013	0.00005	0.00035	0.000125	0.00005	0.00075	0.0005	0.001
19-Jun-06	30	0.15	0.0016	0.0014	0.0019	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.09	< 0.0002	< 0.0002	0.0005	< 0.01	0.0003	0.0006	0.6	0.0053	< 0.02	< 0.0001	< 0.0002	< 0.03	2.36	< 0.0002	0.68	< 0.00005	0.26	0.0045	< 0.0002	0.00015	< 0.0001	0.0005	0.0003	< 0.0001	0.0009	< 0.001	< 0.002
26-Jun-06	31	0.13	0.0017	0.0012	0.00175	0.0001	0.0001	0.005	0.00002	4.07	0.0001	0.0001	0.0005	0.005	0.0003	0.00055	0.58	0.0053	0.01	0.00005	0.0001	0.015	2.21	0.0001	0.625	0.000025	0.25	0.00445	0.0001	0.00014	0.00005	0.0004	0.00025	0.00005	0.0008	0.00075	0.001
3-Jul-06	32	0.11	0.0018	0.0009	0.0016	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.05	< 0.0002	< 0.0002	0.0005	< 0.01	0.0003	0.0005	0.56	0.0053	< 0.02	< 0.0001	< 0.0002	< 0.03	2.06	< 0.0002	0.57	< 0.00005	0.24	0.0044	< 0.0002	0.00013	< 0.0001	0.0003	0.0002	< 0.0001	0.0007	0.002	< 0.002
10-Jul-06	33	0.16	0.00185	0.0011	0.00205	0.0001	0.0001	0.005	0.00002	4.765	0.0001	0.0001	0.0009	0.005	0.0004	0.00055	0.62	0.0057	0.01	0.00005	0.0001	0.015	2.32	0.0001	0.665	0.000025	0.24	0.00495	0.0001	0.000155	0.00005	0.0003	0.0003	0.00005	0.00085	0.003	0.001
17-Jul-06	34	0.21	0.0019	0.0013	0.0025	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.48	< 0.0002	< 0.0002	0.0013	< 0.01	0.0005	0.0006	0.68	0.0061	< 0.02	< 0.0001	< 0.0002	< 0.03	2.58	< 0.0002	0.76	< 0.00005	0.24	0.0055	< 0.0002	0.00018	< 0.0001	0.0003	0.0004	< 0.0001	0.001	0.004	< 0.002
24-Jul-06	35	0.19	0.0021	0.0017	0.00235	0.0001	0.0001	0.005	0.00002	5.195	0.0001	0.0001	0.0011	0.0075	0.00045	0.0006	0.695	0.00645	0.01	0.00005	0.0001	0.015	2.415	0.0001	0.78	0.000025	0.25	0.00555	0.0001	0.00017	0.00005	0.0003	0.00055	0.00005	0.00095	0.00125	0.001
31-Jul-06	36	0.17	0.0023	0.002	0.0022	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.91	0.0002	< 0.0002	0.0009	0.02	0.0004	0.0006	0.71	0.0068	< 0.02	< 0.0001	< 0.0002	< 0.03	2.25	< 0.0002	0.8	< 0.00005	0.26	0.0056	< 0.0002	0.00016	< 0.0001	0.0003	0.0007	< 0.0001	0.0009	< 0.001	< 0.002
7-Aug-06	37	0.16	0.00205	0.0016	0.0023	0.0001	0.0001	0.005	0.00002	5.155	0.0001	0.0001	0.00075	0.015	0.0004	0.00055	0.66	0.0066	0.01	0.00005	0.0001	0.015	2.28	0.0001	0.74	0.000025	0.24	0.00545	0.0001	0.00016	0.00005	0.000125	0.0008	0.00005	0.00085	0.0005	0.001
14-Aug-06	38	0.15	0.0018	0.0011	0.0024	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.4	< 0.0002	< 0.0002	0.0006	0.01	0.0004	0.0005	0.61	0.0064	< 0.02	< 0.0001	< 0.0002	< 0.03	2.31	< 0.0002	0.68	< 0.00005	0.22	0.0053	< 0.0002	0.00016	< 0.0001	< 0.0002	0.0009	< 0.0001	0.0008	0.001	< 0.002
21-Aug-06	39	0.15	0.0018	0.0009	0.0023	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.97	< 0.0002	< 0.0002	0.002	0.01	0.0005	0.0005	0.54	0.0059	< 0.02	< 0.0001	< 0.0002	< 0.03	2.11	< 0.0002	0.7	< 0.00005	0.21	0.005	< 0.0002	0.00016	< 0.0001	0.0002	0.0005	< 0.0001	0.0007	0.003	< 0.002
28-Aug-06	40	0.14	0.0018	0.0009	0.002	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.77	< 0.0002	< 0.0002	0.0004	0.01	0.0004	0.0004	0.49	0.0061	< 0.02	< 0.0001	< 0.0002	< 0.03	1.97	< 0.0002	0.57	< 0.00005	0.19	0.0047	< 0.0002	0.00017	< 0.0001	0.0002	0.0005	< 0.0001	0.0007	< 0.001	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

Project: High Lake
Sample: HC 8 Clastic Sediment
Dry Sample Weight: 1.00 Kg

	Original	
S - Total	0.67	%
S - Sulphate	<0.01	%
S - Sulphide	0.7	%
NP	20.0	kg $CaCO_3$/t

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Values shaded in grey are averages

Analytical Results

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Production Rate: Acidity (mg CaCO3/kg/wk)	Production Rate: Alkalinity (mg CaCO3/kg/wk)	Cumulative Alkalinity (mg CaCO3/kg)	Sulphate (mg/kg/wk)	Cumulative Sulphate (mg/kg)	Fraction of Total Sulphur Remaining	Molar Ratios: Alkalinity / Sulphate Production	Molar Ratios: Carbonate Molar Ratio [(Ca+Mg+Sr)/SO4]	Molar Ratios: Calcium / Sulphate Ratio	Molar Ratios: Ca+Mg/ Alkalinity	Molar Ratios: Ca/Mg	NP Consumption: Theoretical NP Consumption at pH 6	NP Consumption: Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)													
21-Nov-05	0	500	415	7.57	103	<1.0	3.0	17.0	17	7.055	1.245	7.055	7.055	7.1	7.1	0.9996485	1	1.6126479	0.926353	696954.93	1.3508297	7.3502129	0.9988147
28-Nov-05	1	500	435	6.99	97	<1.0	3.8	9.8	27	11.745	1.63125	4.24125	11.29625	11.7	18.8	0.9990633	0.3611111	1.1113877	0.6542802	1394115.9	1.4327491	12.236464	0.9974547
5-Dec-05	2	500	430	7.27	88	<1.0	3.0	12.0	26	11.18	1.29	5.16	16.45625	11.2	29.98	0.9985063	0.4615385	1.1156528	0.6425686	1082433.8	1.3593448	11.647821	0.9961552
12-Dec-05	3	500	470	7.15	40	<1.0	3.0	11.5	13	6.11	1.41	5.405	21.86125	6.1	36.09	0.9982019	0.8846154	1.4747032	0.8905614	815954.4	1.5258195	6.3656698	0.9952165
19-Dec-05	4	500	495	7.22	45	<1.0	3.5	12.0	13	6.435	1.7325	5.94	27.80125	6.4	42.525	0.9978812	0.9230769	1.7308319	1.0159406	966612.91	1.4221355	6.7042693	0.9940561
26-Dec-05	5	500	535	7.16	41	<1.0	4.0	12.3	7	3.745	2.14	6.55375	34.355	3.7	46.27	0.9976947	1.75	3.0545403	1.780596	972515.14	1.3986661	3.9017076	0.9928643
2-Jan-06	6	500	530	7.14	39	<1.0	2.5	12.0	7	3.71	1.325	6.36	40.715	3.7	49.98	0.9975098	1.7142857	2.8946786	1.674445	932035.91	1.3731322	3.8652431	0.9917454
9-Jan-06	7	500	510	7.52	38	0.5	2.8	10.5	6	3.06	1.4025	5.355	46.07	3.1	53.04	0.9973573	1.75	3.0149931	1.7298033	915078.11	1.346823	3.1880441	0.9907842
16-Jan-06	8	500	475	7.09	31	<1.0	3.0	9.0	7	3.325	1.425	4.275	50.345	3.3	56.365	0.9971917	1.2857143	2.273881	1.2909321	874896.53	1.3141633	3.4641329	0.9899965
23-Jan-06	9	500	485	7.18	27	0.5	3.4	9.4	6	2.91	1.636875	4.546875	54.891875	2.9	59.275	0.9970467	1.5625	2.5487036	1.4381737	823908.72	1.2958652	3.0317675	0.9892238
30-Jan-06	10	500	490	6.90	29	<1.0	3.8	9.8	6	2.94	1.8375	4.7775	59.669375	2.9	62.215	0.9969002	1.625	2.4445461	1.3702599	767674.42	1.2763323	3.0630228	0.9884751
6-Feb-06	11	500	470	7.18	27	0.5	2.9	10.8	6	2.82	1.35125	5.0525	64.721875	2.8	65.035	0.9967597	1.7916667	2.5902472	1.4401711	707647.96	1.2530462	2.9380015	0.987714
13-Feb-06	12	500	500	7.01	29	<1.0	2.0	11.8	8	4	1	5.875	70.596875	4.0	69.035	0.9965604	1.46875	2.0519612	1.1325618	727488.34	1.2326396	4.167378	0.9868589
20-Feb-06	13	500	530	7.46	30	0.5	1.9	10.4	8	4.24	0.99375	5.49875	76.095625	4.2	73.275	0.9963492	1.296875	1.9868667	1.0996036	845635.39	1.2401061	4.4174206	0.9859812
27-Feb-06	14	500	450	7.15	28	<1.0	1.8	9.0	6	2.7	0.7875	4.05	80.145625	2.7	75.975	0.9962146	1.5	2.562363	1.4221939	800572.37	1.2481338	2.8129801	0.9852604
6-Mar-06	15	500	465	7.41	28	0.5	1.6	8.5	4	1.86	0.755625	3.9525	84.098125	1.9	77.835	0.996122	2.125	4.0645805	2.196211	926297.78	1.1761682	1.9378307	0.9844728
13-Mar-06	16	500	455	7.14	30	<1.0	1.5	8.0	13	5.915	0.6825	3.64	87.738125	5.9	83.75	0.9958273	0.6153846	1.3186513	0.6951173	1015400.9	1.1154362	6.1625101	0.9836602
20-Mar-06	17	500	450	7.56	30	0.5	1.6	8.3	10	4.5	0.73125	3.7125	91.450625	4.5	88.25	0.9956031	0.825	1.5690163	0.8533164	891316	1.1929677	4.6883002	0.9829246
27-Mar-06	18	500	455	7.10	27	<1.0	1.8	8.5	10	4.55	0.79625	3.8675	95.318125	4.6	92.8	0.9953764	0.85	1.423786	0.8029803	793754.69	1.294203	4.7403924	0.9822496
3-Apr-06	19	500	460	7.37	28	0.5	1.8	8.8	7.0	3.22	0.805	4.025	99.343125	3.2	96.02	0.9952159	1.25	2.0848498	1.2036144	799044.82	1.3666521	3.3547393	0.9815502
10-Apr-06	20	500	485	7.17	25	<1.0	1.8	9.0	4	1.94	0.84875	4.365	103.70813	1.9	97.96	0.9951193	2.25	3.7375093	2.2051996	839053.22	1.4400361	2.0211783	0.9807948
17-Apr-06	21	500	500	7.40	26	0.5	2.0	8.5	6	3	1	4.25	107.95813	3.0	100.96	0.9949698	1.4166667	2.4858246	1.474128	913722.2	1.4580595	3.1255335	0.9800179
24-Apr-06	22	500	465	7.24	23	<1.0	2.3	8.0	7	3.255	1.04625	3.72	111.67813	3.3	104.215	0.9948076	1.1428571	2.1256941	1.2669625	900733.78	1.4764386	3.3912038	0.979297
1-May-06	23	500	445	7.05	42	<1.0	1.6	7.5	13	5.785	0.7181782	3.3224882	115.00061	5.8	110	0.9945194	0.5743281	1.0664768	0.6573191	860582.16	1.6076611	6.0270704	0.9786542
8-May-06	24	500	465	7.04	35	<1.0	1.3	7.5	7	3.255	0.5937405	3.5034953	118.50411	3.3	113.255	0.9943572	1.0763427	1.8355055	1.1745085	825859.95	1.7781382	3.3912038	0.9780318
15-May-06	25	500	430	7.10	47	0.5	1.4	6.9	12	5.16	0.6071064	2.9694029	121.47351	5.2	118.415	0.9941001	0.5754657	1.2532535	0.7820069	975299.99	1.6605539	5.3759176	0.977358
22-May-06	26	500	445	6.91	44	<1.0	1.5	6.3	12	5.34	0.6883658	2.7931661	124.26668	5.3	123.755	0.9938341	0.5230648	1.4357955	0.8788839	1272180.7	1.5791494	5.5634496	0.9765592
29-May-06	27	500	460	7.08	37	0.5	1.8	6.4	8	3.68	0.8175052	2.9639679	127.23065	3.7	127.435	0.9936507	0.8054261	1.9781965	1.2194514	1176672.9	1.6082119	3.8339877	0.9758008
5-Jun-06	28	500	460	7.06	35	<1.0	2.0	6.6	6	2.76	0.9234412	3.040618	130.27126	2.8	130.195	0.9935132	1.1016732	2.4035996	1.4941026	1045259.9	1.643803	2.8754908	0.9751096
12-Jun-06	29	500	455	7.16	36	0.5	1.8	6.7	8	3.64	0.8089911	3.0608293	133.33209	3.6	133.835	0.9933318	0.8408872	1.8457477	1.1265694	1040169.1	1.5674081	3.7923139	0.9744097
19-Jun-06	30	500	455	7.10	37	<1.0	1.5	6.8	10	4.55	0.7045785	3.1140907	136.44618	4.6	138.385	0.9931051	0.6844155	1.5110366	0.9060494	1046225.2	1.498503	4.7403924	0.9736934
26-Jun-06	31	500	455	7.27	33	0.5	1.3	7.6	10	4.55	0.5950805	3.4550111	139.90119	4.6	142.935	0.9928784	0.7593431	1.5307034	0.9336144	955262.6	1.5645439	4.7403924	0.9729678
3-Jul-06	32	500	495	7.68	41	<1.0	1.1	8.3	9	4.455	0.528271	4.1296398	144.03083	4.5	147.39	0.9926565	0.9269674	1.7226334	1.0679771	958057.88	1.6323578	4.6414172	0.9721682
10-Jul-06	33	500	490	7.29	40	0.5	1.5	9.7	10	4.9	0.7277502	4.7504333	148.78127	4.9	152.29	0.9924123	0.9694762	1.6832629	1.0426759	886076.8	1.628664	5.105038	0.9713089
17-Jul-06	34	500	530	7.14	45	<1.0	1.9	11.0	11	5.83	1.0086934	5.8548129	154.63608	5.8	158.12	0.9921219	1.0042561	1.6510506	1.0219749	907515.94	1.625519	6.0739534	0.9703061
24-Jul-06	35	500	500	7.15	40	0.5	2.2	9.9	10	5	1.0805069	4.9388454	159.57493	5.0	163.12	0.9918728	0.9877691	1.7419792	1.0618515	918366.18	1.5621852	5.2092224	0.9693986
31-Jul-06	36	500	510	6.75	38	<1.0	2.4	8.7	10	5.1	1.2336046	4.441368	164.01629	5.1	168.22	0.9916186	0.8708565	1.6678027	0.9995307	1017236.9	1.4966029	5.3134069	0.9685125
7-Aug-06	37	500	540	7.21	40	0.5	2.6	9.3	8	4.32	1.4161021	5.0276884	169.04398	4.3	172.54	0.9914034	1.1638168	2.0244692	1.2509115	978314.27	1.6180777	4.5007682	0.9676013
14-Aug-06	38	500	495	6.47	36	<1.0	2.8	9.9	5	2.475	1.398865	4.9066891	173.95067	2.5	175.015	0.9912801	1.9825006	3.142696	2.0038553	817253.45	1.7606419	2.5785651	0.9667909
21-Aug-06	39	500	520	7.25	39	0.5	4.0	9.3	10	5.2	2.0793026	4.8548849	178.80556	5.2	180.215	0.991021	0.9336317	1.6739334	1.0570576	971014.8	1.7146332	5.4175913	0.9658841
28-Aug-06	40	500	480	6.32	35	<1.0	5.2	8.8	8	3.84	2.4822372	4.2048628	183.01042	3.8	184.055	0.9908297	1.0950164	1.6944025	1.0666455	773561.5	1.7002137	4.0006828	0.9652062

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21-Nov-05	0	0.12	0.009	0.208	0.001	< 0.0002	< 0.0002	0.01	< 0.00004	6.57	< 0.0002	0.0003	0.0056	0.01	< 0.0002	0.0024	2.95	0.0063	< 0.02	0.014	0.046	< 0.03	8.44	0.0025	0.88	< 0.00005	2.8	0.0082	< 0.0002	< 0.00002	< 0.0001	0.0002	0.0008	< 0.0001	0.0002	< 0.001	< 0.002
28-Nov-05	1	0.074	0.023	0.225	0.0013	< 0.0002	< 0.0002	0.01	< 0.00004	7.37	< 0.0002	0.0006	0.0021	< 0.01	< 0.0002	0.0017	3.12	0.0053	< 0.02	0.022	0.0091	< 0.03	6.82	0.0033	0.54	< 0.00005	2.65	0.011	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0004	< 0.0001	< 0.0002	< 0.001	< 0.002
5-Dec-05	2	0.097	0.034	0.3	0.0011	< 0.0002	< 0.0002	0.02	< 0.00004	6.97	< 0.0002	0.0004	0.0024	< 0.01	< 0.0002	0.0022	3.11	0.0043	< 0.02	0.024	0.0097	< 0.03	6.98	0.0024	0.69	< 0.00005	2.19	0.009	< 0.0002	< 0.00002	< 0.0001	0.0004	< 0.0002	0.0001	0.0003	< 0.001	< 0.002
12-Dec-05	3	0.079	0.029	0.232	0.0008	< 0.0002	< 0.0002	0.01	< 0.00004	4.83	< 0.0002	0.0004	0.0012	< 0.01	< 0.0002	0.0015	1.92	0.0048	< 0.02	0.014	0.0058	< 0.03	3.69	0.0014	0.59	< 0.00005	0.84	0.0057	< 0.0002	< 0.00002	< 0.0001	0.0004	< 0.0002	< 0.0001	0.0002	< 0.001	< 0.002
19-Dec-05	4	0.078	0.031	0.241	0.0007	< 0.0002	< 0.0002	0.01	< 0.00004	5.51	< 0.0002	0.0003	0.0011	< 0.01	< 0.0002	0.0014	2.35	0.005	< 0.02	0.017	0.0042	< 0.03	3.26	0.0016	0.63	< 0.00005	0.76	0.0061	< 0.0002	< 0.00002	< 0.0001	0.0004	< 0.0002	0.0001	0.0002	< 0.001	< 0.002
26-Dec-05	5	0.0775	0.03	0.2195	0.0007	0.0001	0.0001	0.005	0.00002	5.2	0.0001	0.00025	0.001	0.005	0.0001	0.0014	2.255	0.0048	0.01	0.016	0.00345	0.015	2.925	0.00145	0.725	0.000025	0.605	0.0056	0.0001	0.00001	0.00005	0.00045	0.0001	0.00015	0.0002	0.0005	0.001
2-Jan-06	6	0.077	0.029	0.198	0.0007	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.89	< 0.0002	0.0002	0.0009	0.01	< 0.0002	0.0014	2.16	0.0046	< 0.02	0.015	0.0027	< 0.03	2.59	0.0013	0.82	< 0.00005	0.45	0.0051	< 0.0002	< 0.00002	< 0.0001	0.0005	< 0.0002	0.0002	0.0002	< 0.001	< 0.002
9-Jan-06	7	0.067	0.026	0.1825	0.0006	0.0001	0.0001	0.005	0.00002	4.33	0.0001	0.0002	0.001	0.005	0.0001	0.0012	1.95	0.00425	0.01	0.013	0.00265	0.015	2.245	0.0011	0.73	0.000025	0.375	0.00455	0.0001	0.00001	0.00005	0.00045	0.0001	0.00015	0.0001	0.0005	0.001
16-Jan-06	8	0.057	0.023	0.167	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.77	< 0.0002	0.0002	0.0011	< 0.01	< 0.0002	0.001	1.74	0.0039	< 0.02	0.011	0.0026	< 0.03	1.9	0.0009	0.64	< 0.00005	0.3	0.004	< 0.0002	< 0.00002	< 0.0001	0.0004	< 0.0002	0.0001	< 0.0002	< 0.001	< 0.002
23-Jan-06	9	0.0575	0.0215	0.1655	0.0005	0.0001	0.0001	0.005	0.00002	3.6	0.0001	0.0002	0.0021	0.005	0.0001	0.00105	1.685	0.0039	0.01	0.0094	0.0023	0.015	1.74	0.001	0.695	0.000025	0.225	0.0039	0.0001	0.00001	0.00005	0.0004	0.0001	0.0001	0.0001	0.0005	0.001
30-Jan-06	10	0.058	0.02	0.164	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.43	< 0.0002	0.0002	0.0031	< 0.01	< 0.0002	0.0011	1.63	0.0039	< 0.02	0.0078	0.002	< 0.03	1.58	0.0011	0.75	< 0.00005	0.15	0.0038	< 0.0002	< 0.00002	< 0.0001	0.0004	< 0.0002	0.0001	0.0002	< 0.001	< 0.002
6-Feb-06	11	0.0535	0.0195	0.159	0.0005	0.0001	0.0001	0.005	0.00002	3.605	0.0001	0.0002	0.00205	0.005	0.0001	0.00105	1.745	0.0042	0.01	0.0079	0.0021	0.015	1.52	0.00105	0.765	0.000025	0.14	0.00405	0.0001	0.00001	0.00005	0.0004	0.0001	0.0001	0.0001	0.0005	0.001
13-Feb-06	12	0.049	0.019	0.154	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.78	< 0.0002	0.0002	0.001	< 0.01	< 0.0002	0.001	1.86	0.0045	< 0.02	0.008	0.0022	< 0.03	1.46	0.001	0.78	< 0.00005	0.13	0.0043	< 0.0002	< 0.00002	< 0.0001	0.0004	< 0.0002	0.0001	< 0.0002	< 0.001	< 0.002
20-Feb-06	13	0.0625	0.0195	0.156	0.00045	0.0001	0.0001	0.005	0.00002	3.67	0.0001	0.0001	0.00115	0.005	0.0001	0.00105	1.795	0.0041	0.01	0.00775	0.00195	0.015	1.485	0.0011	0.795	0.000025	0.12	0.0041	0.0001	0.00001	0.00005	0.00045	0.0001	0.0001	0.0001	0.0005	0.001
27-Feb-06	14	0.076	0.02	0.158	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.56	< 0.0002	< 0.0002	0.0013	< 0.01	< 0.0002	0.0011	1.73	0.0037	< 0.02	0.0075	0.0017	< 0.03	1.51	0.0012	0.81	< 0.00005	0.11	0.0039	< 0.0002	< 0.00002	< 0.0001	0.0005	< 0.0002	0.0001	0.0002	< 0.001	< 0.002
6-Mar-06	15	0.063	0.019	0.142	0.0005	0.0001	0.0001	0.005	0.00002	3.665	0.000125	0.0001	0.0014	0.005	0.0001	0.0011	1.89	0.0039	0.01	0.00775	0.0018	0.015	1.47	0.00115	0.81	0.000025	0.1	0.00405	0.0001	0.00001	0.00005	0.00055	0.0001	0.0001	0.0001	0.0005	0.001
13-Mar-06	16	0.05	0.018	0.126	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.77	0.0003	0.0002	0.0015	< 0.01	< 0.0002	0.0011	2.05	0.0041	< 0.02	0.008	0.0019	< 0.03	1.43	0.0011	0.81	< 0.00005	0.09	0.0042	< 0.0002	< 0.00002	< 0.0001	0.0006	< 0.0002	0.0001	< 0.0002	< 0.001	< 0.002
20-Mar-06	17	0.0455	0.017	0.1225	0.0005	0.0001	0.0001	0.005	0.00002	3.56	0.000125	0.0001	0.0013	0.005	0.0001	0.001	1.81	0.0036	0.01	0.0072	0.0018	0.015	1.32	0.00115	0.735	0.000025	0.085	0.00375	0.0001	0.00001	0.00005	0.00045	0.0001	0.0001	0.0001	0.0005	0.001
27-Mar-06	18	0.041	0.016	0.119	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.35	< 0.0002	< 0.0002	0.0011	< 0.01	< 0.0002	0.0009	1.57	0.0031	< 0.02	0.0064	0.0017	< 0.03	1.21	0.0012	0.66	< 0.00005	0.08	0.0033	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	0.0001	< 0.0002	0.001	< 0.002
3-Apr-06	19	0.045	0.016	0.1215	0.0004	0.0001	0.0001	0.005	0.00002	3.515	0.000175	0.0001	0.0013	0.005	0.0001	0.00095	1.56	0.00345	0.01	0.00595	0.00175	0.015	1.205	0.00125	0.705	0.000025	0.07	0.0034	0.0001	0.00001	0.00005	0.0003	0.0001	0.0001	0.0001	0.0015	0.001
10-Apr-06	20	0.049	0.016	0.124	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.68	0.0005	< 0.0002	0.0015	< 0.01	< 0.0002	0.001	1.55	0.0038	< 0.02	0.0055	0.0018	< 0.03	1.2	0.0013	0.75	< 0.00005	0.06	0.0035	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	0.0001	< 0.0002	0.002	< 0.002
17-Apr-06	21	0.055	0.016	0.123	0.00045	0.0001	0.0001	0.005	0.00002	3.69	0.0004	0.0001	0.0015	0.005	0.0001	0.001	1.535	0.0038	0.01	0.0055	0.00165	0.015	1.195	0.0014	0.76	0.000025	0.05	0.0037	0.0001	0.00001	0.00005	0.0003	0.0001	0.0001	0.0001	0.00075	0.001
24-Apr-06	22	0.061	0.016	0.122	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.7	0.0003	< 0.0002	0.0015	< 0.01	< 0.0002	0.001	1.52	0.0038	< 0.02	0.0055	0.0015	< 0.03	1.19	0.0015	0.77	< 0.00005	0.04	0.0039	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0002	0.0001	0.0002	< 0.001	< 0.002
1-May-06	23	0.0505	0.015	0.117	0.00045	0.0001	0.0001	0.005	0.00002	3.565	0.0003	0.0001	0.00125	0.005	0.0001	0.0009	1.345	0.00355	0.01	0.005	0.0013	0.015	1.13	0.0016	0.695	0.000025	0.04	0.00345	0.0001	0.00001	0.00005	0.0004	0.0001	0.00005	0.0001	0.0005	0.001
8-May-06	24	0.04	0.014	0.112	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.43	0.0003	< 0.0002	0.001	< 0.01	< 0.0002	0.0008	1.17	0.0033	< 0.02	0.0045	0.0011	< 0.03	1.07	0.0017	0.62	< 0.00005	0.04	0.003	< 0.0002	< 0.00002	< 0.0001	0.0005	< 0.0002	< 0.0001	< 0.0002	< 0.001	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15-May-06	25	0.0465	0.0145	0.1115	0.0005	0.0001	0.0001	0.005	0.00002	3.915	0.000125	0.0001	0.00125	0.005	0.0001	0.00095	1.43	0.00325	0.01	0.00525	0.0012	0.015	1.095	0.00165	0.615	0.000025	0.055	0.00345	0.0001	0.00001	0.00005	0.00045	0.0001	0.000075	0.0001	0.0005	0.001
22-May-06	26	0.053	0.015	0.111	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.4	< 0.0002	< 0.0002	0.0015	< 0.01	< 0.0002	0.0011	1.69	0.0032	< 0.02	0.006	0.0013	< 0.03	1.12	0.0016	0.61	< 0.00005	0.07	0.0039	< 0.0002	< 0.00002	< 0.0001	0.0004	< 0.0002	0.0002	< 0.0002	0.001	< 0.002
29-May-06	27	0.0535	0.014	0.102	0.0005	0.0001	0.0001	0.005	0.00002	4.07	0.000175	0.0001	0.00285	0.005	0.0001	0.0011	1.535	0.00335	0.01	0.00515	0.00125	0.015	1.075	0.0017	0.6	0.000025	0.06	0.0035	0.0001	0.00001	0.00005	0.00015	0.0001	0.00015	0.0001	0.001	0.001
5-Jun-06	28	0.054	0.013	0.093	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.74	0.0005	< 0.0002	0.0042	< 0.01	< 0.0002	0.0011	1.38	0.0035	< 0.02	0.0043	0.0012	< 0.03	1.03	0.0018	0.59	< 0.00005	0.05	0.0031	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	0.0001	< 0.0002	0.001	< 0.002
12-Jun-06	29	0.064	0.013	0.0945	0.0004	0.0001	0.0001	0.005	0.00002	3.76	0.000175	0.0001	0.0027	0.005	0.0001	0.0012	1.455	0.0036	0.01	0.0045	0.00115	0.015	1.08	0.00195	0.675	0.000025	0.045	0.00315	0.0001	0.00001	0.00005	0.0001	0.0001	0.0001	0.0001	0.0005	0.001
19-Jun-06	30	0.074	0.013	0.096	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.78	< 0.0002	< 0.0002	0.0012	< 0.01	< 0.0002	0.0013	1.53	0.0037	< 0.02	0.0047	0.0011	< 0.03	1.13	0.0021	0.76	< 0.00005	0.04	0.0032	< 0.0002	< 0.00002	< 0.0001	0.0002	< 0.0002	0.0001	< 0.0002	< 0.001	< 0.002
26-Jun-06	31	0.0665	0.013	0.0955	0.0004	0.0001	0.0001	0.005	0.00002	3.895	0.0001	0.0001	0.00135	0.005	0.0001	0.00125	1.51	0.0043	0.01	0.0045	0.0011	0.015	1.085	0.00205	0.735	0.000025	0.035	0.00325	0.0001	0.00001	0.00005	0.0002	0.0001	0.0001	0.0001	0.0005	0.001
3-Jul-06	32	0.059	0.013	0.095	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.01	< 0.0002	< 0.0002	0.0015	< 0.01	< 0.0002	0.0012	1.49	0.0049	< 0.02	0.0043	0.0011	< 0.03	1.04	0.002	0.71	< 0.00005	0.03	0.0033	< 0.0002	< 0.00002	< 0.0001	0.0002	< 0.0002	0.0001	< 0.0002	< 0.001	< 0.002
10-Jul-06	33	0.074	0.013	0.0915	0.00045	0.0001	0.0001	0.005	0.00002	4.35	0.0001	0.0001	0.0019	0.005	0.0001	0.00125	1.62	0.0059	0.01	0.00425	0.00105	0.015	1.085	0.0021	0.825	0.000025	0.035	0.0035	0.0001	0.00001	0.00005	0.00025	0.0001	0.0001	0.0001	0.00075	0.001
17-Jul-06	34	0.089	0.013	0.088	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.69	< 0.0002	< 0.0002	0.0023	< 0.01	< 0.0002	0.0013	1.75	0.0069	< 0.02	0.0042	0.001	< 0.03	1.13	0.0022	0.94	< 0.00005	0.04	0.0037	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	0.0001	< 0.0002	0.002	< 0.002
24-Jul-06	35	0.0945	0.013	0.095	0.00045	0.0001	0.0001	0.005	0.00002	4.43	0.0001	0.0001	0.0021	0.005	0.0001	0.0012	1.72	0.00695	0.01	0.00405	0.0006	0.015	1.07	0.00255	0.965	0.000025	0.04	0.0037	0.0001	0.00001	0.00005	0.0003	0.0001	0.00005	0.0001	0.00075	0.001
31-Jul-06	36	0.1	0.013	0.102	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.17	< 0.0002	< 0.0002	0.0019	< 0.01	< 0.0002	0.0011	1.69	0.007	< 0.02	0.0039	0.0002	< 0.03	1.01	0.0029	0.99	< 0.00005	0.04	0.0037	< 0.0002	< 0.00002	< 0.0001	0.0003	< 0.0002	< 0.0001	< 0.0002	< 0.001	< 0.002
7-Aug-06	37	0.09	0.012	0.0925	0.00045	0.0001	0.0001	0.005	0.00002	4.175	0.0001	0.0001	0.0019	0.005	0.0001	0.00105	1.565	0.0067	0.01	0.00355	0.0006	0.015	1	0.00245	0.925	0.000025	0.04	0.00345	0.0001	0.00001	0.00005	0.000125	0.00005	0.0001	0.00075	0.001
14-Aug-06	38	0.08	0.011	0.083	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.18	< 0.0002	< 0.0002	0.0019	< 0.01	< 0.0002	0.001	1.44	0.0064	< 0.02	0.0032	0.001	< 0.03	0.99	0.002	0.86	< 0.00005	0.04	0.0032	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0003	< 0.0001	< 0.0002	0.002	< 0.002
21-Aug-06	39	0.089	0.011	0.077	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.41	< 0.0002	< 0.0002	0.0035	0.01	< 0.0002	0.0011	1.56	0.0067	< 0.02	0.0036	0.0009	< 0.03	1.03	0.0014	0.95	< 0.00005	0.06	0.0035	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0002	< 0.0001	< 0.0002	0.003	< 0.002
28-Aug-06	40	0.072	0.0097	0.077	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.56	< 0.0002	< 0.0002	0.0018	< 0.01	< 0.0002	0.0008	1.27	0.0052	< 0.02	0.0032	0.0011	< 0.03	0.8	0.0021	0.7	< 0.00005	0.04	0.0029	< 0.0002	< 0.00002	< 0.0001	0.0002	< 0.0002	< 0.0001	< 0.0002	0.002	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

Project: High Lake
Sample: HC 9 Diabase
Dry Sample Weight: 1.00 Kg

	Original	
S - Total	0.25	%
S - Sulphate	0.0	%
S - Sulphide	0.2	%
NP	37.0	kg $CaCO_3$/t

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Values shaded in grey are averages

Analytical Results | **Production Rate** | **Molar Ratios** | **NP Consumption**

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Acidity (mg CaCO3/kg/wk)	Alkalinity (mg CaCO3/kg/wk)	Cumulative Alkalinity (mg CaCO3/kg)	Sulphate (mg/kg/wk)	Cumulative Sulphate (mg/kg)	Fraction of Total Sulphur Remaining	Alkalinity / Sulphate Production	Carbonate Molar Ratio [(Ca+Mg+Sr) /SO4]	Calcium / Sulphate Ratio	Ca+Mg/ Alkalinity	Ca/Mg	Theoretical NP Consumption at pH 6	Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)													
21-Nov-05	0	500	385	9.05	58	<1.0	<1.0	24.5	1	0.385	0.1925	9.4325	9.4325	0.4	0.4	0.9999486	24.5	18.001139	13.327076	294504.67	2.8579198	0.4011101	0.9996861
28-Nov-05	1	500	420	8.82	73	<1.0	<1.0	23.3	7	2.94	0.21	9.765	19.1975	2.9	3.325	0.999556	3.3214286	2.6137631	1.5956879	344062.77	1.5702567	3.0630228	0.999338
5-Dec-05	2	500	415	7.66	64	<1.0	2.8	25.3	8	3.32	1.14125	10.47875	29.67625	3.3	6.645	0.9991127	3.15625	2.300595	1.2913601	314913.79	1.2814579	3.4589237	0.998992
12-Dec-05	3	500	405	8.96	43	<1.0	<1.0	20.3	5	2.025	0.2025	8.20125	37.8775	2.0	8.67	0.9988423	4.05	3.1549694	1.7066327	328462.6	1.1799298	2.1097351	0.9987026
19-Dec-05	4	500	405	8.98	39	<1.0	<1.0	22.0	6	2.43	0.2025	8.91	46.7875	2.4	11.1	0.9985178	3.6666667	2.7924316	1.4341787	321144.93	1.0570231	2.5316821	0.9983952
26-Dec-05	5	500	430	6.64	31	<1.0	4.0	5.5	11	4.73	1.72	2.365	49.1525	4.7	15.83	0.9978863	0.5	1.4908432	0.8236813	1334985.2	1.235962	4.9279244	0.9980758
2-Jan-06	6	500	440	8.99	31	<1.0	<1.0	19.8	1	0.44	0.22	8.69	57.8425	0.4	16.27	0.9978275	19.75	16.04396	9.5159157	372181.5	1.4593646	0.4584116	0.997756
9-Jan-06	7	500	440	9.21	33	0.5	0.5	19.0	<1	0.22	0.22	8.36	66.2025	0.2	16.49	0.9977981	38	30.334571	17.042358	365735.44	1.2834755	0.2292058	0.9974537
16-Jan-06	8	500	415	9.04	31	<1.0	<1.0	18.3	<1	0.2075	0.2075	7.57375	73.77625	0.2	16.6975	0.9977704	36.5	28.581223	15.052884	338375.5	1.1137579	0.2161827	0.9971851
23-Jan-06	9	500	410	9.37	36	0.5	0.5	18.6	<1	0.205	0.205	7.63625	81.4125	0.2	16.9025	0.997743	37.25	28.369372	15.196702	325138.73	1.154788	0.2135781	0.9969217
30-Jan-06	10	500	410	8.78	31	<1.0	<1.0	19.0	1	0.41	0.205	7.79	89.2025	0.4	17.3125	0.9976883	19	14.078761	7.6702595	316340.35	1.1980976	0.4271562	0.9966602
6-Feb-06	11	500	410	9.14	26	0.5	0.5	19.4	1	0.41	0.205	7.94375	97.14625	0.4	17.7225	0.9976336	19.375	13.880357	7.6103356	305847.53	1.2149872	0.4271562	0.9964024
13-Feb-06	12	500	415	8.69	26	<1.0	<1.0	19.8	2	0.83	0.2075	8.19625	105.3425	0.8	18.5525	0.9975227	9.875	6.8409764	3.7752058	299359.92	1.2326396	0.8647309	0.9961452
20-Feb-06	13	500	405	9.05	26	0.5	0.5	20.3	2	0.81	0.2025	8.20125	113.54375	0.8	19.3625	0.9974146	10.125	6.9150176	3.8590993	288017.06	1.2641093	0.843894	0.9958915
27-Feb-06	14	500	400	8.76	26	<1.0	<1.0	20.8	<1	0.2	0.2	8.3	121.84375	0.2	19.5625	0.9973879	41.5	27.956235	15.771971	280579.45	1.2957834	0.2083689	0.9956382
6-Mar-06	15	500	405	9.29	27	0.5	0.5	18.9	<1	0.2025	0.2025	7.644375	129.48813	0.2	19.765	0.9973608	37.75	27.967239	16.059606	312430.21	1.3500988	0.2109735	0.9953817
13-Mar-06	16	500	410	8.97	25	<1.0	<1.0	17.0	<1	0.205	0.205	6.97	136.45813	0.2	19.97	0.9973335	34	27.978243	16.347241	351310.24	1.4070006	0.2135781	0.9951219
20-Mar-06	17	500	405	9.25	26	0.5	0.5	16.6	<1	0.2025	0.2025	6.733125	143.19125	0.2	20.1725	0.9973064	33.25	26.924057	16.874571	341486.94	1.6811102	0.2109735	0.9948749
27-Mar-06	18	500	410	8.77	23	<1.0	<1.0	16.3	<1	0.205	0.205	6.6625	149.85375	0.2	20.3775	0.997279	32.5	25.869871	17.401901	339836.61	2.0576907	0.2135781	0.9946347
3-Apr-06	19	500	410	9.06	24	0.5	0.5	15.9	<1	0.205	0.205	6.50875	156.3625	0.2	20.5825	0.9972517	31.75	24.950899	17.234114	335506.3	2.2364105	0.2135781	0.994403
10-Apr-06	20	500	425	8.75	20	<1.0	<1.0	15.5	0.5	0.2125	0.2125	6.5875	162.95	0.2	20.795	0.9972233	31	24.031928	17.066327	343074.99	2.4537176	0.221392	0.9941717
17-Apr-06	21	500	445	9.14	16	0.5	0.5	16.5	<1	0.2225	0.2225	7.3425	170.2925	0.2	21.0175	0.9971936	33	24.730615	18.00114	347249.9	2.6794661	0.2318104	0.9939224
24-Apr-06	22	500	420	8.83	21	<1.0	<1.0	17.5	1	0.42	0.21	7.35	177.6425	0.4	21.4375	0.9971375	17.5	12.714651	9.4679765	317735.27	2.9217328	0.4375747	0.9936805
1-May-06	23	500	425	7.95	31	<1.0	0.5	16.0	<1	0.2125	0.2318296	6.8085659	184.45107	0.2	21.65	0.9971091	32.04031	27.857796	21.28497	384769.07	3.2446072	0.221392	0.9934123
8-May-06	24	500	400	8.28	39	<1.0	0.0	17.3	<1	0.2	0	6.9199211	191.37099	0.2	21.85	0.9970824	34.599606	30.286289	23.633987	364590.79	3.5597941	0.2083689	0.993138
15-May-06	25	500	425	8.07	35	0.5	0.6	16.7	2	0.85	0.2452353	7.0863356	198.45732	0.9	22.7	0.9969689	8.3368654	7.1909412	5.6268544	381719.43	3.604672	0.8855678	0.9928611
22-May-06	26	500	430	7.64	34	<1.0	1.2	16.0	2	0.86	0.4962408	6.9004933	205.35782	0.9	23.56	0.9968541	8.0238295	6.8103102	5.3452121	380038.71	3.6556144	0.8959863	0.9925958
29-May-06	27	500	440	7.91	32	0.5	0.7	15.4	2	0.88	0.3296424	6.7747305	212.13255	0.9	24.44	0.9967366	7.6985574	6.4761864	5.159448	385423.61	3.9265285	0.9168231	0.9923376
5-Jun-06	28	500	445	7.79	31	<1.0	0.3	14.7	<1	0.2225	0.1532252	6.5622239	218.69477	0.2	24.6625	0.9967069	29.493141	24.568251	19.894736	386002.83	4.2663191	0.2318104	0.99209
12-Jun-06	29	500	440	8.18	33	0.5	0.6	15.3	<1	0.22	0.2769689	6.7320867	225.42686	0.2	24.8825	0.9966775	30.600394	25.930007	20.781609	388243.43	4.0451347	0.2292058	0.9918316
19-Jun-06	30	500	430	7.75	33	<1.0	0.9	15.9	<1	0.215	0.393288	6.8171442	232.244	0.2	25.0975	0.9966488	31.707647	27.291763	21.668483	385398.97	3.8613337	0.2239966	0.9915658
26-Jun-06	31	500	435	7.94	30	0.5	1.3	16.3	<1	0.2175	0.5663469	7.0753596	239.31936	0.2	25.315	0.9966197	32.530389	27.2491	22.099935	379423.87	4.3017465	0.2266012	0.9912974
3-Jul-06	32	500	450	7.39	36	<1.0	1.7	16.7	<1	0.225	0.7601718	7.5044543	246.82382	0.2	25.54	0.9965897	33.35313	27.206437	22.531387	382224.07	4.8317348	0.234415	0.9910201
10-Jul-06	33	500	445	8.22	39	0.5	0.4	18.5	<1	0.2225	0.1879314	8.2125102	255.03633	0.2	25.7625	0.99656	36.910158	30.263781	25.192008	379931.05	4.9802368	0.2318104	0.9907151
17-Jul-06	34	500	435	7.85	42	<1.0	<1.0	20.2	1	0.435	0.2175	8.8016129	263.83794	0.4	26.1975	0.9965019	20.233593	16.660562	13.926315	372967.52	5.1072167	0.4532024	0.9903868
24-Jul-06	35	500	455	7.92	40	0.5	0.3	19.1	1	0.455	0.1281863	8.6828566	272.52079	0.5	26.6525	0.9964412	19.083201	16.955228	14.082117	420938.1	4.9150406	0.4740392	0.9900373
31-Jul-06	36	500	450	7.38	39	<1.0	1.1	17.9	3	1.35	0.5071105	8.0697644	280.59056	1.4	28.0025	0.9962609	5.9776033	5.7499646	4.7459731	450707.45	4.7405649	1.4064901	0.9896857
7-Aug-06	37	500	455	7.66	38	0.5	1.8	19.2	1	0.455	0.7964779	8.7393463	289.32991	0.5	28.4575	0.9962001	19.207355	17.173726	14.417691	423572.71	5.2493807	0.4740392	0.9893317
14-Aug-06	38	500	450	6.86	39	<1.0	2.4	20.5	1	0.45	1.0683404	9.2168547	298.54676	0.5	28.9075	0.99614	20.481899	17.097558	14.597463	391085.05	5.8631903	0.46883	0.9889832
21-Aug-06	39	500	460	7.74	42	0.5	3.5	18.2	2	0.92	1.6237475	8.3747977	306.92156	0.9	29.8275	0.9960172	9.1030409	8.8342449	7.4665182	464822.68	5.4764131	0.9584969	0.9886151
28-Aug-06	40	500	450	6.76	33	<1.0	4.7	15.9	<1	0.225	2.1085568	7.168619	314.09018	0.2	30.0525	0.9959872	31.860529	27.538745	23.969561	405010.25	6.7392992	0.234415	0.9883344

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
21-Nov-05	0	0.13	0.0055	< 0.0002	0.0013	< 0.0002	< 0.0002	0.08	< 0.00004	5.56	< 0.0002	< 0.0002	0.0022	< 0.01	< 0.0002	0.0005	1.18	0.0009	< 0.02	0.0003	0.0003	< 0.03	3.62	< 0.0002	0.66	< 0.00005	4.1	0.0099	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0008	< 0.0001	0.0012	< 0.001	< 0.002
28-Nov-05	1	0.11	0.011	0.0003	0.002	< 0.0002	< 0.0002	0.11	< 0.00004	4.66	< 0.0002	< 0.0002	0.0004	< 0.01	< 0.0002	0.0008	1.8	0.0022	< 0.02	0.0005	< 0.0002	< 0.03	4.18	< 0.0002	0.66	< 0.00005	6.63	0.012	< 0.0002	0.00002	< 0.0001	< 0.0002	0.0013	< 0.0001	0.0011	< 0.001	< 0.002
5-Dec-05	2	0.11	0.011	0.0003	0.0021	< 0.0002	< 0.0002	0.07	< 0.00004	4.31	< 0.0002	< 0.0002	0.0009	0.01	< 0.0002	0.0009	2.04	0.002	< 0.02	0.0004	0.0003	< 0.03	4.75	< 0.0002	0.83	< 0.00005	6.11	0.011	< 0.0002	0.00002	< 0.0001	< 0.0002	0.0005	< 0.0001	0.0014	0.003	< 0.002
12-Dec-05	3	0.09	0.0087	0.0003	0.0016	< 0.0002	< 0.0002	0.04	< 0.00004	3.56	< 0.0002	< 0.0002	0.0005	< 0.01	< 0.0002	0.0008	1.83	0.0019	< 0.02	0.0002	0.0002	< 0.03	3.84	< 0.0002	0.67	< 0.00005	3.54	0.0089	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0003	< 0.0001	0.0011	< 0.001	< 0.002
19-Dec-05	4	0.1	0.0085	0.0003	0.0016	< 0.0002	< 0.0002	0.03	< 0.00004	3.59	< 0.0002	< 0.0002	0.0004	< 0.01	< 0.0002	0.0008	2.06	0.0015	< 0.02	< 0.0001	< 0.0002	< 0.03	3.74	< 0.0002	0.76	< 0.00005	2.88	0.0079	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0003	< 0.0001	0.0012	< 0.001	< 0.002
26-Dec-05	5	0.105	0.0073	0.0003	0.0015	0.0001	0.0001	0.025	0.00002	3.78	0.0001	0.0001	0.0004	0.0125	0.0001	0.00075	1.855	0.00235	0.01	0.00005	0.0001	0.015	3.175	0.0001	0.765	0.000025	2.15	0.00735	0.0001	0.00001	0.00005	0.0001	0.00155	0.00005	0.0012	0.0005	0.001
2-Jan-06	6	0.11	0.0061	0.0003	0.0014	< 0.0002	< 0.0002	0.02	< 0.00004	3.97	< 0.0002	< 0.0002	0.0004	0.04	< 0.0002	0.0007	1.65	0.0032	< 0.02	< 0.0001	< 0.0002	< 0.03	2.61	< 0.0002	0.77	< 0.00005	1.42	0.0068	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0028	< 0.0001	0.0012	< 0.001	< 0.002
9-Jan-06	7	0.098	0.00565	0.00025	0.0013	0.0001	0.0001	0.015	0.00002	3.555	0.0001	0.0001	0.00055	0.0125	0.0001	0.00065	1.68	0.0024	0.01	0.00005	0.000125	0.015	2.485	0.0001	0.685	0.000025	1.255	0.00635	0.0001	0.00001	0.00005	0.0001	0.0015	0.00005	0.00115	0.0005	0.001
16-Jan-06	8	0.086	0.0052	0.0002	0.0012	< 0.0002	< 0.0002	0.01	< 0.00004	3.14	< 0.0002	< 0.0002	0.0007	< 0.01	< 0.0002	0.0006	1.71	0.0016	< 0.02	< 0.0001	0.0003	< 0.03	2.36	< 0.0002	0.6	< 0.00005	1.09	0.0059	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0002	< 0.0001	0.0011	< 0.001	< 0.002
23-Jan-06	9	0.09	0.0047	0.0002	0.00115	0.0001	0.0001	0.01	0.00002	3.17	0.0001	0.0001	0.00105	0.005	0.0001	0.0006	1.665	0.0018	0.01	0.00005	0.000125	0.015	2.315	0.0001	0.665	0.000025	0.955	0.0059	0.0001	0.00001	0.00005	0.0001	0.00025	0.00005	0.0011	0.0005	0.001
30-Jan-06	10	0.094	0.0042	0.0002	0.0011	< 0.0002	< 0.0002	0.01	< 0.00004	3.2	< 0.0002	< 0.0002	0.0014	< 0.01	< 0.0002	0.0006	1.62	0.002	< 0.02	< 0.0001	< 0.0002	< 0.03	2.27	< 0.0002	0.73	< 0.00005	0.82	0.0059	< 0.0002	0.00002	< 0.0001	< 0.0002	0.0003	< 0.0001	0.0011	< 0.001	< 0.002
6-Feb-06	11	0.093	0.0038	0.0001	0.00115	0.0001	0.0001	0.01	0.00002	3.175	0.0001	0.0001	0.0009	0.005	0.0001	0.0006	1.585	0.00185	0.01	0.00005	0.0001	0.015	2.23	0.0001	0.73	0.000025	0.745	0.00575	0.0001	0.00001	0.00005	0.0001	0.00035	0.00005	0.0011	0.0005	0.001
13-Feb-06	12	0.092	0.0034	< 0.0002	0.0012	< 0.0002	< 0.0002	0.01	< 0.00004	3.15	< 0.0002	< 0.0002	0.0004	< 0.01	< 0.0002	0.0006	1.55	0.0017	< 0.02	< 0.0001	< 0.0002	< 0.03	2.19	< 0.0002	0.73	< 0.00005	0.67	0.0056	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0004	< 0.0001	0.0011	< 0.001	< 0.002
20-Feb-06	13	0.094	0.00385	0.000125	0.0012	0.0001	0.0001	0.005	0.00002	3.22	0.0001	0.0001	0.00035	0.005	0.0001	0.00065	1.545	0.00155	0.01	0.00005	0.0001	0.015	2.24	0.0001	0.81	0.000025	0.63	0.00565	0.0001	0.00001	0.00005	0.0001	0.00015	0.00005	0.00115	0.0005	0.001
27-Feb-06	14	0.096	0.0043	0.0003	0.0012	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.29	< 0.0002	< 0.0002	0.0003	< 0.01	< 0.0002	0.0007	1.54	0.0014	< 0.02	< 0.0001	< 0.0002	< 0.03	2.29	< 0.0002	0.89	< 0.00005	0.59	0.0057	< 0.0002	0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	0.0012	< 0.001	< 0.002
6-Mar-06	15	0.108	0.00375	0.0003	0.00135	0.0001	0.0001	0.005	0.00002	3.35	0.000175	0.0001	0.00035	0.005	0.0001	0.00065	1.505	0.0017	0.01	0.00005	0.000125	0.015	2.175	0.0001	0.885	0.000025	0.555	0.0057	0.0001	0.00002	0.00005	0.0001	0.000175	0.00005	0.00125	0.0005	0.001
13-Mar-06	16	0.12	0.0032	0.0003	0.0015	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.41	0.0005	< 0.0002	0.0004	< 0.01	< 0.0002	0.0006	1.47	0.002	< 0.02	< 0.0001	0.0003	< 0.03	2.06	< 0.0002	0.88	< 0.00005	0.52	0.0057	< 0.0002	0.00002	< 0.0001	0.0002	0.0005	< 0.0001	0.0013	< 0.001	< 0.002
20-Mar-06	17	0.11	0.00315	0.000125	0.00155	0.0001	0.0001	0.005	0.00002	3.52	0.00035	0.0001	0.0005	0.01	0.0001	0.00055	1.27	0.00215	0.01	0.00005	0.00025	0.015	2.01	0.0001	0.815	0.000025	0.465	0.00535	0.0001	0.00001	0.00005	0.0001	0.0006	0.00005	0.0012	0.0005	0.001
27-Mar-06	18	0.1	0.0031	< 0.0002	0.0016	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.63	0.0002	< 0.0002	0.0006	0.03	< 0.0002	0.0005	1.07	0.0023	< 0.02	< 0.0001	0.0002	< 0.03	1.96	< 0.0002	0.75	< 0.00005	0.41	0.005	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0007	< 0.0001	0.0011	0.001	< 0.002
3-Apr-06	19	0.0975	0.0037	0.0001	0.00155	0.0001	0.0001	0.005	0.00002	3.595	0.0003	0.0001	0.00045	0.01	0.0001	0.0005	0.975	0.0022	0.01	0.00005	0.0001	0.015	1.86	0.0001	0.745	0.000025	0.38	0.00485	0.0001	0.00001	0.00005	0.0001	0.00045	0.00005	0.00115	0.0005	0.001
10-Apr-06	20	0.095	0.0043	< 0.0002	0.0015	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.56	0.0004	< 0.0002	0.0003	< 0.01	< 0.0002	0.0005	0.88	0.0021	< 0.02	< 0.0001	< 0.0002	< 0.03	1.76	< 0.0002	0.74	< 0.00005	0.35	0.0047	< 0.0002	0.00002	< 0.0001	< 0.0002	0.0002	< 0.0001	0.0012	< 0.001	< 0.002
17-Apr-06	21	0.1075	0.0043	0.000125	0.0017	0.0001	0.0001	0.005	0.00002	3.755	0.0004	0.0001	0.00125	0.0075	0.0001	0.0005	0.85	0.0023	0.01	0.00005	0.0001	0.015	1.81	0.0001	0.77	0.000025	0.36	0.00515	0.0001	0.000025	0.00005	0.0001	0.00035	0.00005	0.00135	0.0005	0.001
24-Apr-06	22	0.12	0.0043	0.0003	0.0019	< 0.0002	< 0.0002	< 0.01	< 0.00004	3.95	0.0004	< 0.0002	0.0022	0.02	< 0.0002	0.0005	0.82	0.0025	< 0.02	< 0.0001	0.0002	< 0.03	1.86	< 0.0002	0.8	< 0.00005	0.37	0.0056	< 0.0002	0.00003	< 0.0001	< 0.0002	0.0005	< 0.0001	0.0015	< 0.001	< 0.002
1-May-06	23	0.135	0.00445	0.00025	0.00215	0.0001	0.0001	0.005	0.00002	4.44	0.00035	0.0001	0.0014	0.015	0.0001	0.0005	0.83	0.0026	0.01	0.00005	0.0002	0.015	2.04	0.0001	0.855	0.000025	0.365	0.0058	0.0001	0.00003	0.00005	0.0001	0.0007	0.00005	0.0016	0.0005	0.001
8-May-06	24	0.15	0.0046	0.0002	0.0024	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.93	0.0003	< 0.0002	0.0006	0.01	< 0.0002	0.0005	0.84	0.0027	< 0.02	< 0.0001	0.0002	< 0.03	2.22	< 0.0002	0.91	< 0.00005	0.36	0.006	< 0.0002	0.00003	< 0.0001	< 0.0002	0.0009	< 0.0001	0.0017	< 0.001	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
15-May-06	25	0.13	0.00455	0.0001	0.00215	0.0001	0.0001	0.005	0.00002	4.695	0.000125	0.0001	0.00055	0.005	0.0001	0.0005	0.79	0.0025	0.01	0.00005	0.0001	0.015	2.015	0.0001	0.795	0.000025	0.365	0.00565	0.0001	0.00003	0.00005	0.0001	0.0007	0.00005	0.00155	0.00075	0.001
22-May-06	26	0.11	0.0045	< 0.0002	0.0019	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.46	< 0.0002	< 0.0002	0.0005	< 0.01	< 0.0002	0.0005	0.74	0.0023	< 0.02	< 0.0001	< 0.0002	< 0.03	1.81	< 0.0002	0.68	< 0.00005	0.37	0.0053	< 0.0002	0.00003	< 0.0001	< 0.0002	0.0005	0.0001	0.0014	0.002	< 0.002
29-May-06	27	0.115	0.00445	0.0001	0.0018	0.0001	0.0001	0.005	0.00002	4.305	0.0002	0.0001	0.0011	0.005	0.0001	0.0005	0.665	0.00235	0.01	0.00005	0.000125	0.015	1.71	0.0001	0.655	0.000025	0.32	0.005	0.0001	0.00003	0.00005	0.0001	0.000175	0.00005	0.00125	0.0015	0.001
5-Jun-06	28	0.12	0.0044	< 0.0002	0.0017	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.15	0.0006	< 0.0002	0.0017	< 0.01	< 0.0002	0.0005	0.59	0.0024	< 0.02	< 0.0001	0.0003	< 0.03	1.61	< 0.0002	0.63	< 0.00005	0.27	0.0047	< 0.0002	0.00003	< 0.0001	< 0.0002	< 0.0002	< 0.0001	0.0011	0.001	< 0.002
12-Jun-06	29	0.145	0.00475	0.000125	0.00205	0.0001	0.0001	0.005	0.00002	4.335	0.0002	0.0001	0.00105	0.005	0.0001	0.0005	0.65	0.0022	0.01	0.00005	0.000125	0.015	1.745	0.0001	0.775	0.000025	0.285	0.005	0.0001	0.00003	0.00005	0.0001	0.000175	0.00005	0.0013	0.0005	0.001
19-Jun-06	30	0.17	0.0051	0.0003	0.0024	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.52	< 0.0002	< 0.0002	0.0004	0.01	< 0.0002	0.0005	0.71	0.002	< 0.02	< 0.0001	< 0.0002	< 0.03	1.88	< 0.0002	0.92	< 0.00005	0.3	0.0053	< 0.0002	0.00003	< 0.0001	< 0.0002	0.0005	< 0.0001	0.0015	< 0.001	< 0.002
26-Jun-06	31	0.155	0.0053	0.000125	0.00235	0.0001	0.0001	0.005	0.00002	4.61	0.0001	0.0001	0.00045	0.005	0.0001	0.0005	0.65	0.002	0.01	0.00005	0.0001	0.015	1.83	0.0001	0.85	0.000025	0.28	0.00535	0.0001	0.00003	0.00005	0.0001	0.0004	0.00005	0.0014	0.0005	0.001
3-Jul-06	32	0.14	0.0055	< 0.0002	0.0023	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.7	< 0.0002	< 0.0002	0.0005	< 0.01	< 0.0002	0.0005	0.59	0.002	< 0.02	< 0.0001	< 0.0002	< 0.03	1.78	< 0.0002	0.78	< 0.00005	0.26	0.0054	< 0.0002	0.00003	< 0.0001	< 0.0002	0.0003	< 0.0001	0.0013	< 0.001	< 0.002
10-Jul-06	33	0.2	0.00505	0.0001	0.00245	0.0001	0.0001	0.005	0.00002	5.255	0.0001	0.0001	0.0006	0.005	0.0001	0.00055	0.64	0.0019	0.01	0.00005	0.0001	0.015	2.01	0.0001	0.92	0.000025	0.275	0.0061	0.0001	0.000035	0.00005	0.0001	0.0005	0.00005	0.00155	0.00125	0.001
17-Jul-06	34	0.26	0.0046	< 0.0002	0.0026	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.81	< 0.0002	< 0.0002	0.0007	0.01	< 0.0002	0.0006	0.69	0.0018	< 0.02	< 0.0001	< 0.0002	< 0.03	2.24	< 0.0002	1.06	< 0.00005	0.29	0.0068	< 0.0002	0.00004	< 0.0001	< 0.0002	0.0007	< 0.0001	0.0018	0.004	< 0.002
24-Jul-06	35	0.245	0.00505	0.00025	0.0028	0.0001	0.0001	0.005	0.00002	5.875	0.0001	0.0001	0.0008	0.02	0.0001	0.00055	0.725	0.0023	0.01	0.00005	0.0001	0.015	2.165	0.0001	1.105	0.000025	0.305	0.0073	0.0001	0.00004	0.00005	0.0001	0.0008	0.00005	0.00175	0.00125	0.001
31-Jul-06	36	0.23	0.0055	0.0008	0.003	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.94	< 0.0002	< 0.0002	0.0009	0.03	< 0.0002	0.0005	0.76	0.0028	< 0.02	< 0.0001	< 0.0002	< 0.03	2.09	< 0.0002	1.15	< 0.00005	0.32	0.0078	< 0.0002	0.00004	< 0.0001	< 0.0002	0.0009	< 0.0001	0.0017	< 0.001	< 0.002
7-Aug-06	37	0.205	0.00485	0.00025	0.00585	0.0001	0.0001	0.005	0.00002	6.015	0.0001	0.0001	0.0008	0.025	0.0001	0.00055	0.695	0.0025	0.01	0.00005	0.000125	0.015	2.1	0.0001	1.025	0.000025	0.3	0.00865	0.0001	0.00004	0.00005	0.0001	0.0011	0.00005	0.00145	0.0005	0.001
14-Aug-06	38	0.18	0.0042	< 0.0002	0.0087	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.09	< 0.0002	< 0.0002	0.0007	0.02	< 0.0002	0.0006	0.63	0.0022	< 0.02	< 0.0001	0.0003	< 0.03	2.11	< 0.0002	0.9	< 0.00005	0.28	0.0095	< 0.0002	0.00004	< 0.0001	< 0.0002	0.0013	< 0.0001	0.0012	0.001	< 0.002
21-Aug-06	39	0.21	0.0056	< 0.0002	0.0033	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.23	< 0.0002	< 0.0002	0.0017	0.03	0.0002	0.0006	0.69	0.0016	< 0.02	< 0.0001	< 0.0002	< 0.03	2.3	< 0.0002	1.21	< 0.00005	0.29	0.0079	< 0.0002	0.00005	< 0.0001	< 0.0002	0.0007	< 0.0001	0.0016	0.006	< 0.002
28-Aug-06	40	0.14	0.0035	< 0.0002	0.0024	< 0.0002	< 0.0002	< 0.01	< 0.00004	5	< 0.0002	< 0.0002	0.0003	0.02	< 0.0002	0.0003	0.45	0.0024	< 0.02	< 0.0001	< 0.0002	< 0.03	1.5	< 0.0002	0.65	< 0.00005	0.19	0.0057	< 0.0002	0.00003	< 0.0001	< 0.0002	0.0011	< 0.0001	0.0008	< 0.001	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

			Original		
Project:	High Lake	S - Total	0.25	%	*Note:* Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Sample:	HC 10 Leached Diabase	S - Sulphate	na	%	Values shaded in grey are averages
Dry Sample Weight:	1.00 Kg	S - Sulphide	na	%	
		NP	24.0	kg $CaCO_3$/t	

Analytical Results — **Production Rate** — **Molar Ratios** — **NP Consumption**

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Acidity (mg CaCO3/kg/wk)	Alkalinity (mg CaCO3/kg/wk)	Cumulative Alkalinity (mg CaCO3/kg)	Sulphate (mg/kg/wk)	Cumulative Sulphate (mg/kg)	Fraction of Total Sulphur Remaining	Alkalinity / Sulphate Production	Carbonate Molar Ratio [(Ca+Mg+Sr)/SO4]	Calcium / Sulphate Ratio	Ca+Mg/ Alkalinity	Ca/Mg	Theoretical NP Consumption at pH 6	Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)														
12-Dec-05	0	500	385	6.51	14	<1.0	3.0	6.3	2	0.77	1.16	2.4	2.4	0.77	0.77	0.9998972	3.125	0.4594857	0.0838935	58950.402	0.223461	0.8022203	0.9999263
19-Dec-05	1	500	425	6.63	30	<1.0	3.8	6.5	9	3.83	1.59	2.8	5.2	3.83	4.60	0.9993864	0.7222222	0.1855242	0.018643	113715.86	0.1117305	3.9850552	0.9997784
26-Dec-05	2	500	420	7.58	37	<1.0	4.8	21.5	1	0.42	2.00	9.0	14.2	0.42	5.02	0.9993304	21.5	17.513999	10.90615	356247.4	1.6525407	0.4375747	0.9982457
2-Jan-06	3	500	440	6.30	26	<1.0	4.5	4.5	11	4.84	1.98	2.0	16.2	4.84	9.86	0.9986841	0.4090909	0.3978758	0.0457601	445755.11	0.1299722	5.0425273	0.9978444
9-Jan-06	4	500	445	6.60	17	<1.0	3.3	2.8	5	2.23	1.45	1.2	17.4	2.23	12.08	0.998387	0.55	0.606363	0.0767026	510988.37	0.1448446	2.318104	0.9975633
16-Jan-06	5	500	420	6.71	13	0.5	2.9	4.4	4	1.68	1.21	1.8	19.2	1.68	13.76	0.9981627	1.09375	0.6233092	0.2277108	249176.83	0.5762101	1.7502987	0.9973451
23-Jan-06	6	500	420	6.84	18	<1.0	2.5	6.0	4	1.68	1.05	2.5	21.8	1.68	15.44	0.9979383	1.5	0.4886645	0.3595434	142337.35	2.7994012	1.7502987	0.997174
30-Jan-06	7	500	420	7.33	13	0.5	3.3	5.1	6	2.52	1.37	2.2	23.9	2.52	17.96	0.9976018	0.8541667	0.4543565	0.1478123	232595.22	0.4826208	2.6254481	0.9969355
6-Feb-06	8	500	425	6.72	7	<1.0	4.0	4.3	2	0.85	1.70	1.8	25.7	0.85	18.81	0.9974883	2.125	1.7488097	0.1677869	364304.03	0.106144	0.8855678	0.9966257
13-Feb-06	9	500	430	7.09	7	0.5	4.0	5.4	3	1.29	1.72	2.3	28.0	1.29	20.10	0.9973161	1.7916667	1.2517123	0.1318326	312904.53	0.1177395	1.3439794	0.9962893
20-Feb-06	10	500	425	6.98	11	<1.0	4.0	6.5	3	1.28	1.70	2.8	30.8	1.28	21.38	0.9971458	2.1666667	1.3375515	0.1518072	273279.78	0.1280467	1.3283517	0.9959339
27-Feb-06	11	500	415	6.91	8	0.5	2.9	6.4	2	0.83	1.19	2.6	33.4	0.83	22.21	0.997035	3.1875	1.9332547	0.2337032	262174.87	0.1375287	0.8647309	0.9955996
6-Mar-06	12	500	420	7.04	6	<1.0	1.8	6.3	<1	0.21	0.74	2.6	36.1	0.21	22.42	0.997007	12.5	7.4407291	0.9587824	260413.25	0.1479358	0.2187873	0.995274
13-Mar-06	13	500	420	7.87	10	0.5	1.9	6.0	<1	0.21	0.79	2.5	38.6	0.21	22.63	0.9969789	12	5.6751334	0.6951173	206896.56	0.1395998	0.2187873	0.9950257
20-Mar-06	14	500	420	6.90	6	<1.0	2.0	5.8	4	1.68	0.84	2.4	41.0	1.68	24.31	0.9967546	1.4375	0.4886922	0.0539315	148726.26	0.1240644	1.7502987	0.9948546
27-Mar-06	15	500	430	7.05	5	0.5	2.0	5.8	4	1.72	0.86	2.5	43.5	1.72	26.03	0.9965249	1.4375	0.3403082	0.0389505	106037.01	0.129262	1.7919725	0.9947326
3-Apr-06	16	500	425	7.04	4	<1.0	2.0	5.8	2	0.85	0.85	2.4	45.9	0.85	26.88	0.9964114	2.875	0.383903	0.0479391	59111.245	0.1427146	0.8855678	0.9946646
10-Apr-06	17	500	420	6.80	5	0.5	1.5	6.3	2	0.84	0.63	2.6	48.5	0.84	27.72	0.9962993	3.125	0.4812406	0.0958782	67370.771	0.2488357	0.8751494	0.9945804
17-Apr-06	18	500	445	7.37	4	<1.0	1.0	6.8	2	0.89	0.45	3.0	51.5	0.89	28.61	0.9961804	3.375	0.5786329	0.1438174	79463.292	0.3308383	0.9272416	0.9944731
24-Apr-06	19	500	430	7.01	6	0.5	1.2	5.7	3	1.29	0.52	2.5	54.0	1.29	29.90	0.9960082	1.9098016	0.6042598	0.0838935	141721.95	0.1612313	1.3439794	0.9943107
1-May-06	20	500	425	6.71	6	<1.0	1.4	4.7	2	0.85	0.60	2.0	56.0	0.85	30.75	0.9958947	2.3544049	1.2342013	0.107863	232078	0.095769	0.8855678	0.9940921
8-May-06	21	500	420	6.76	8	0.5	1.5	4.2	3	1.26	0.62	1.8	57.8	1.26	32.01	0.9957264	1.4151081	0.5633377	0.0759036	174164.56	0.1557325	1.3127241	0.9939442
15-May-06	22	500	430	6.67	8	<1.0	1.5	3.8	4	1.72	0.66	1.6	59.4	1.72	33.73	0.9954968	0.9454597	0.2279059	0.0599239	107966.3	0.3567864	1.7919725	0.9938625
22-May-06	23	500	420	6.89	10	0.5	1.9	4.1	3	1.26	0.78	1.7	61.2	1.26	34.99	0.9953285	1.3752317	0.5224247	0.0679138	166195.26	0.1494366	1.3127241	0.9937253
29-May-06	24	500	445	6.61	7	<1.0	2.2	4.5	2	0.89	0.96	2.0	63.1	0.89	35.88	0.9952097	2.2347758	1.1115446	0.0838935	230541	0.0816492	0.9272416	0.9935192
5-Jun-06	25	500	440	6.74	5	0.5	1.9	4.1	<1	0.22	0.85	1.8	64.9	0.22	36.10	0.9951803	8.1413672	4.9230958	0.5752695	277131.19	0.1323353	0.2292058	0.9932935
12-Jun-06	26	500	430	6.54	6	<1.0	1.7	3.7	<1	0.22	0.73	1.6	66.5	0.22	36.31	0.9951516	7.3436313	5.4000133	0.8149651	329337.65	0.1777781	0.2239966	0.9930516
19-Jun-06	27	500	430	7.02	7	0.5	1.6	3.4	<1	0.22	0.70	1.5	68.0	0.22	36.53	0.9951229	6.7790086	4.9257887	0.8149651	325431.97	0.1982909	0.2239966	0.9928309
26-Jun-06	28	500	445	6.66	5	<1.0	1.6	3.1	2	0.89	0.70	1.4	69.3	0.89	37.42	0.9950041	1.5535965	1.112891	0.2037413	332007.84	0.224155	0.9272416	0.9926245
3-Jul-06	29	500	445	6.70	8	0.5	1.7	3.3	<1	0.22	0.74	1.5	70.8	0.22	37.64	0.9949744	6.5243587	5.341911	1.2703867	379480.25	0.3121015	0.2318104	0.9923769
10-Jul-06	30	500	450	6.53	9	<1.0	1.8	3.4	<1	0.23	0.79	1.5	72.3	0.23	37.86	0.9949443	6.8343315	6.2322578	1.7258084	427395.25	0.383076	0.234415	0.9920847
17-Jul-06	31	500	445	6.83	6	0.5	1.8	3.4	<1	0.22	0.82	1.5	73.8	0.22	38.09	0.9949146	6.7038727	4.417212	1.2943563	305390.67	0.4145949	0.2318104	0.9918799
24-Jul-06	32	500	450	6.18	6	<1.0	1.9	3.3	1	0.45	0.86	1.5	75.3	0.45	38.54	0.9948545	3.2867069	1.3010831	0.4314521	185542.28	0.4962575	0.46883	0.9917579
31-Jul-06	33	500	455	6.67	5	0.5	2.1	3.4	2	0.91	0.94	1.6	76.9	0.91	39.45	0.994733	1.7036107	0.6448995	0.2396956	179390.85	0.5917433	0.9480785	0.9916356
7-Aug-06	34	500	460	5.85	6	<1.0	2.2	3.5	1	0.46	1.01	1.6	78.5	0.46	39.91	0.9946716	3.5277357	1.2785149	0.5273303	173626.23	0.7023059	0.4792485	0.9915131
14-Aug-06	35	500	460	6.59	6	0.5	2.5	3.7	2	0.92	1.15	1.7	80.2	0.92	40.83	0.9945487	1.8531742	0.6611219	0.27565	170912.8	0.7154025	0.9584969	0.9913863
21-Aug-06	36	500	465	6.23	7	<1.0	2.8	3.9	<1	0.23	1.31	1.8	82.0	0.23	41.06	0.9945177	7.7699223	2.7319454	1.1505389	170279.83	0.7278443	0.2422288	0.991254
28-Aug-06	37	500	450	6.69	5	0.5	2.9	4.6	1	0.45	1.29	2.1	84.1	0.45	41.51	0.9944576	4.5885067	2.1802555	0.9348129	222683.43	0.7509505	0.46883	0.9910496
4-Sep-06	38	500	510	6.42	16	<1.0	2.9	5.3	<1	0.26	1.49	2.7	86.8	0.26	41.76	0.9944236	10.584105	5.9890765	2.5887126	300544.09	0.7616975	0.2656703	0.9907313
11-Sep-06	39	500	520	6.77	12	<1.0	1.9	5.4	2	1.04	0.96	2.8	89.6	1.04	42.80	0.9942847	2.7209895	1.1635779	0.491376	231573.15	0.7314122	1.0835183	0.9904792
18-Sep-06	40	500	480	6.58	11	<1.0	2.0	3.8	3	1.44	0.98	1.8	91.4	1.44	44.24	0.9940924	1.257662	0.7761492	0.3675333	308488.4	0.9000225	1.5002561	0.9902463

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12-Dec-05	0	0.21	0.0019	0.0007	0.0005	< 0.0002	< 0.0002	0.05	< 0.00004	0.07	0.0004	< 0.0002	0.0009	0.21	0.0005	0.0009	0.19	0.0022	< 0.02	0.0007	0.0017	0.08	0.22	< 0.0002	1.46	< 0.00005	6.06	0.0003	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0059	< 0.0001	0.0018	< 0.001	< 0.002
19-Dec-05	1	0.38	0.0062	0.0017	0.0006	< 0.0002	< 0.0002	0.07	< 0.00004	0.07	0.0006	0.0003	0.0023	0.42	0.0006	0.0009	0.38	0.0044	< 0.02	0.0019	0.003	0.11	0.51	< 0.0002	2.81	< 0.00005	9.01	0.0002	< 0.0002	< 0.00002	< 0.0001	0.0003	0.0079	< 0.0001	0.0045	0.002	< 0.002
26-Dec-05	2	0.14	0.0057	< 0.0002	0.0019	< 0.0002	< 0.0002	0.02	< 0.00004	4.55	< 0.0002	< 0.0002	0.0006	0.02	< 0.0002	0.0007	1.67	0.0031	< 0.02	< 0.0001	0.0002	< 0.03	2.95	< 0.0002	0.71	< 0.00005	1.81	0.0075	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0008	< 0.0001	0.0011	< 0.001	< 0.002
2-Jan-06	3	0.94	0.0072	0.0013	0.0021	< 0.0002	< 0.0002	0.03	< 0.00004	0.21	0.0016	0.0008	0.0013	1.1	0.0022	0.0015	0.98	0.011	< 0.02	0.0007	0.0098	0.12	0.62	< 0.0002	3.4	< 0.00005	7.57	0.0004	< 0.0002	< 0.00002	< 0.0001	0.0003	0.024	< 0.0001	0.005	0.004	< 0.002
9-Jan-06	4	0.63	0.005	0.0008	0.0013	< 0.0002	< 0.0002	0.01	< 0.00004	0.16	0.001	0.0005	0.002	0.7	0.001	0.0009	0.67	0.0072	< 0.02	0.0003	0.0056	0.05	0.42	< 0.0002	2.34	< 0.00005	4.84	0.0005	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.015	< 0.0001	0.0032	0.003	< 0.002
16-Jan-06	5	0.47	0.0061	0.00095	0.00125	0.0001	0.0001	0.05	0.00002	0.38	0.0006	0.000175	0.00175	0.39	0.0012	0.0007	0.4	0.0041	0.0125	0.00025	0.00145	0.065	0.385	0.0001	1.94	0.000025	5.1	0.0015	0.0001	0.00001	0.00005	0.0001	0.0087	0.00005	0.003	0.0055	0.001
23-Jan-06	6	0.31	0.0071	0.0011	0.0012	< 0.0002	< 0.0002	0.09	< 0.00004	0.6	0.0002	< 0.0002	0.0015	0.08	0.0014	0.0005	0.13	0.001	0.03	0.0002	< 0.0002	0.08	0.35	< 0.0002	1.54	< 0.00005	5.36	0.0025	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0024	< 0.0001	0.0028	0.008	< 0.002
30-Jan-06	7	0.49	0.005	0.0008	0.0013	0.0001	0.0001	0.025	0.00002	0.37	0.00085	0.000175	0.00135	0.425	0.0011	0.0007	0.465	0.0047	0.0125	0.000075	0.00155	0.06	0.29	0.0001	1.89	0.000025	4.18	0.0015	0.0001	0.00001	0.00005	0.0001	0.0082	0.00005	0.00295	0.005	0.001
6-Feb-06	8	0.67	0.0028	0.0005	0.0014	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.14	0.0015	0.0005	0.0012	0.77	0.0008	0.0009	0.8	0.0084	< 0.02	< 0.0001	0.006	0.04	0.23	< 0.0002	2.24	< 0.00005	3	0.0005	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.014	< 0.0001	0.0031	0.002	< 0.002
13-Feb-06	9	0.715	0.0035	0.00065	0.0014	0.0001	0.0001	0.005	0.00002	0.165	0.0012	0.00055	0.00115	0.835	0.0009	0.001	0.85	0.0089	0.01	0.00005	0.00655	0.06	0.265	0.0001	2.395	0.000025	3.515	0.0005	0.0001	0.00001	0.00005	0.0001	0.0135	0.00005	0.0034	0.0025	0.001
20-Feb-06	10	0.76	0.0041	0.0008	0.0014	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.19	0.0009	0.0006	0.0011	0.9	0.001	0.0011	0.9	0.0094	< 0.02	< 0.0001	0.0071	0.08	0.3	< 0.0002	2.55	< 0.00005	4.03	0.0005	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.013	< 0.0001	0.0037	0.003	< 0.002
27-Feb-06	11	0.735	0.0035	0.00065	0.0014	0.0001	0.0001	0.005	0.00002	0.195	0.0012	0.0006	0.0013	0.86	0.001	0.001	0.86	0.0089	0.01	0.00005	0.00685	0.065	0.27	0.0001	2.37	0.000025	3.325	0.00045	0.0001	0.00001	0.00005	0.000125	0.0125	0.00005	0.0033	0.004	0.001
6-Mar-06	12	0.71	0.0029	0.0005	0.0014	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.2	0.0015	0.0006	0.0015	0.82	0.001	0.0009	0.82	0.0084	< 0.02	< 0.0001	0.0066	0.05	0.24	< 0.0002	2.19	< 0.00005	2.62	0.0004	< 0.0002	< 0.00002	< 0.0001	0.0003	0.012	< 0.0001	0.0029	0.005	< 0.002
13-Mar-06	13	0.565	0.003	0.0005	0.00125	0.0001	0.0001	0.005	0.00002	0.145	0.001	0.0005	0.0013	0.655	0.0009	0.00075	0.63	0.0067	0.01	0.00005	0.00555	0.04	0.24	0.0001	1.845	0.000025	2.485	0.0003	0.0001	0.00001	0.00005	0.000125	0.01005	0.00005	0.0027	0.004	0.001
20-Mar-06	14	0.42	0.003	0.0005	0.0011	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.09	0.0005	0.0004	0.0011	0.49	0.0008	0.0006	0.44	0.005	< 0.02	< 0.0001	0.0045	0.03	0.24	< 0.0002	1.5	< 0.00005	2.35	0.0002	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0081	< 0.0001	0.0025	0.003	< 0.002
27-Mar-06	15	0.295	0.0026	0.00045	0.00075	0.0001	0.0001	0.005	0.00002	0.065	0.0004	0.00015	0.00195	0.34	0.00055	0.00045	0.305	0.0035	0.01	0.00005	0.0031	0.015	0.22	0.0001	1.245	0.000025	2.05	0.0001	0.0001	0.00001	0.00005	0.0001	0.0054	0.00005	0.002	0.0045	0.001
3-Apr-06	16	0.17	0.0021	0.0004	0.0004	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.04	0.0003	< 0.0002	0.0028	0.19	0.0003	0.0003	0.17	0.002	< 0.02	< 0.0001	0.0017	< 0.03	0.2	< 0.0002	0.99	< 0.00005	1.75	< 0.0002	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0027	< 0.0001	0.0015	0.006	< 0.002
10-Apr-06	17	0.19	0.0026	0.00035	0.0005	0.0001	0.0001	0.005	0.00002	0.08	0.0003	0.0001	0.00175	0.19	0.0003	0.00035	0.195	0.00215	0.01	0.00005	0.00175	0.015	0.27	0.0001	1.14	0.000025	2.09	0.0001	0.0001	0.00001	0.00005	0.0001	0.00325	0.00005	0.00185	0.0035	0.001
17-Apr-06	18	0.21	0.0031	0.0003	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.12	0.0003	< 0.0002	0.0007	0.19	0.0003	0.0004	0.22	0.0023	< 0.02	< 0.0001	0.0018	< 0.03	0.34	< 0.0002	1.29	< 0.00005	2.43	0.0002	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0038	< 0.0001	0.0022	0.001	< 0.002
24-Apr-06	19	0.355	0.0032	0.0003	0.0009	0.0001	0.0001	0.005	0.00002	0.105	0.00055	0.000175	0.0011	0.41	0.00075	0.0006	0.395	0.00435	0.01	0.00005	0.0038	0.015	0.325	0.0001	1.375	0.000025	2.185	0.0001	0.0001	0.00001	0.00005	0.0001	0.0069	0.00005	0.0024	0.002	0.001
1-May-06	20	0.5	0.0033	0.0003	0.0012	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.09	0.0008	0.0005	0.0015	0.63	0.0012	0.0008	0.57	0.0064	< 0.02	< 0.0001	0.0058	< 0.03	0.31	< 0.0002	1.46	< 0.00005	1.94	< 0.0002	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.01	< 0.0001	0.0026	0.003	< 0.002
8-May-06	21	0.34	0.0033	0.0004	0.0009	0.0001	0.0001	0.005	0.00002	0.095	0.00055	0.000175	0.00125	0.4	0.00075	0.00065	0.37	0.00415	0.01	0.00005	0.0038	0.015	0.36	0.0001	1.26	0.000025	1.97	0.0001	0.0001	0.00001	0.00005	0.0001	0.00675	0.00005	0.0022	0.003	0.001
15-May-06	22	0.18	0.0032	0.0005	0.0006	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.1	0.0003	< 0.0002	0.001	0.17	0.0003	0.0005	0.17	0.0019	< 0.02	< 0.0001	0.0018	< 0.03	0.41	< 0.0002	1.06	< 0.00005	2	< 0.0002	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0035	< 0.0001	0.0018	0.003	< 0.002
22-May-06	23	0.31	0.003	0.0004	0.0009	0.0001	0.0001	0.005	0.00002	0.085	0.0005	0.00015	0.00155	0.34	0.00055	0.0006	0.345	0.0036	0.01	0.00005	0.0033	0.015	0.405	0.0001	1.31	0.000025	1.855	0.000125	0.0001	0.00001	0.00005	0.0001	0.006	0.00005	0.0021	0.0025	0.001
29-May-06	24	0.44	0.0027	0.0003	0.0012	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.07	0.0007	0.0004	0.0021	0.51	0.0008	0.0007	0.52	0.0053	< 0.02	< 0.0001	0.0048	< 0.03	0.4	< 0.0002	1.56	< 0.00005	1.71	0.0003	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0085	< 0.0001	0.0024	0.002	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
5-Jun-06	25	0.51	0.0026	0.00065	0.0013	0.0001	0.0001	0.005	0.00002	0.12	0.0007	0.0004	0.00155	0.55	0.0009	0.0008	0.55	0.0057	0.01	0.00005	0.0049	0.015	0.43	0.0001	1.595	0.000025	1.735	0.00035	0.0001	0.00001	0.00005	0.0001	0.00875	0.00005	0.00235	0.0025	0.001
12-Jun-06	26	0.58	0.0024	0.001	0.0014	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.17	0.0007	0.0004	0.001	0.59	0.001	0.0009	0.58	0.0061	< 0.02	< 0.0001	0.005	< 0.03	0.46	< 0.0002	1.63	< 0.00005	1.76	0.0004	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.009	< 0.0001	0.0023	0.003	< 0.002
19-Jun-06	27	0.515	0.003	0.00075	0.00135	0.0001	0.0001	0.005	0.00002	0.17	0.0006	0.00035	0.0009	0.52	0.00085	0.00085	0.52	0.00545	0.01	0.00005	0.00455	0.015	0.51	0.0001	1.71	0.000025	1.615	0.0004	0.0001	0.00001	0.00005	0.0001	0.00845	0.00005	0.00215	0.0045	0.001
26-Jun-06	28	0.45	0.0036	0.0005	0.0013	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.17	0.0005	0.0003	0.0008	0.45	0.0007	0.0008	0.46	0.0048	< 0.02	< 0.0001	0.0041	< 0.03	0.56	< 0.0002	1.79	< 0.00005	1.47	0.0004	< 0.0002	0.00002	< 0.0001	< 0.0002	0.0079	< 0.0001	0.002	0.006	< 0.002
3-Jul-06	29	0.495	0.0039	0.0004	0.00165	0.0001	0.0001	0.005	0.00002	0.265	0.0006	0.0004	0.0027	0.525	0.00095	0.0008	0.515	0.0055	0.01	0.00005	0.00485	0.015	0.58	0.0001	1.645	0.000025	1.43	0.0005	0.0001	0.00001	0.00005	0.0001	0.00945	0.00005	0.0021	0.0055	0.001
10-Jul-06	30	0.54	0.0041	0.0003	0.002	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.36	0.0007	0.0005	0.0046	0.6	0.0012	0.0008	0.57	0.0062	< 0.02	< 0.0001	0.0056	< 0.03	0.6	< 0.0002	1.5	< 0.00005	1.39	0.0006	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.011	< 0.0001	0.0022	0.005	< 0.002
17-Jul-06	31	0.365	0.0035	0.00013	0.0014	0.0001	0.0001	0.005	0.00002	0.27	0.00045	0.000175	0.00315	0.395	0.00085	0.0006	0.395	0.0042	0.01	0.00005	0.0037	0.015	0.59	0.0001	1.21	0.000025	1.21	0.0004	0.0001	0.00001	0.00005	0.0001	0.0079	0.00005	0.00165	0.0035	0.001
24-Jul-06	32	0.19	0.0028	< 0.0002	0.0008	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.18	0.0002	< 0.0002	0.0017	0.19	0.0005	0.0004	0.22	0.0022	< 0.02	< 0.0001	0.0018	< 0.03	0.58	< 0.0002	0.92	< 0.00005	1.03	0.0002	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0048	< 0.0001	0.0011	0.002	< 0.002
31-Jul-06	33	0.16	0.0032	0.0001	0.00065	0.0001	0.0001	0.005	0.00002	0.2	0.0003	0.0001	0.0013	0.15	0.00035	0.0004	0.205	0.0018	0.01	0.00005	0.00155	0.015	0.58	0.0001	0.955	0.000025	1.065	0.00025	0.0001	0.00001	0.00005	0.0001	0.0038	0.00005	0.0011	0.0025	0.001
7-Aug-06	34	0.13	0.0036	< 0.0002	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.22	0.0004	< 0.0002	0.0009	0.11	0.0002	0.0004	0.19	0.0014	< 0.02	< 0.0001	0.0013	< 0.03	0.58	< 0.0002	0.99	< 0.00005	1.1	0.0003	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0028	< 0.0001	0.0011	0.003	< 0.002
14-Aug-06	35	0.125	0.0042	0.0001	0.0005	0.0001	0.0001	0.005	0.00002	0.23	0.00035	0.0001	0.0009	0.1	0.0002	0.0004	0.195	0.0013	0.01	0.00005	0.0011	0.015	0.675	0.0001	1.06	0.000025	1.125	0.0003	0.0001	0.00001	0.00005	0.0001	0.0032	0.00005	0.00125	0.001	0.001
21-Aug-06	36	0.12	0.0047	0.0002	0.0005	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.24	0.0003	< 0.0002	0.0009	0.09	0.0002	0.0004	0.2	0.0012	< 0.02	< 0.0001	0.0009	< 0.03	0.77	< 0.0002	1.13	< 0.00005	1.15	0.0003	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0036	< 0.0001	0.0014	< 0.001	< 0.002
28-Aug-06	37	0.16	0.0071	0.0003	0.0008	0.0001	0.0001	0.005	0.00002	0.39	0.00025	0.0001	0.0019	0.14	0.0003	0.00055	0.315	0.00175	0.01	0.00005	0.0014	0.015	0.8	0.0001	1.385	0.000025	1.65	0.00055	0.0001	0.00001	0.00005	0.0001	0.0038	0.00005	0.0014	0.0015	0.001
4-Sep-06	38	0.2	0.0094	0.0004	0.0011	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.54	0.0002	< 0.0002	0.0029	0.19	0.0004	0.0007	0.43	0.0023	< 0.02	< 0.0001	0.0019	< 0.03	0.83	< 0.0002	1.64	< 0.00005	2.15	0.0008	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.004	< 0.0001	0.0014	0.005	< 0.002
11-Sep-06	39	0.19	0.0068	0.0009	0.0009	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.41	< 0.0002	< 0.0002	0.0008	0.17	0.0005	0.0007	0.34	0.002	< 0.02	< 0.0001	0.0017	< 0.03	0.76	< 0.0002	1.78	< 0.00005	1.53	0.0007	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0041	< 0.0001	0.0011	< 0.001	< 0.002
18-Sep-06	40	0.15	0.0067	0.0007	0.0009	< 0.0002	< 0.0002	< 0.01	< 0.00004	0.46	< 0.0002	< 0.0002	0.0008	0.13	0.0004	0.0006	0.31	0.0017	< 0.02	< 0.0001	0.0015	< 0.03	0.79	< 0.0002	5.77	< 0.00005	1.26	0.0007	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0037	< 0.0001	0.0011	0.001	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk

Project: High Lake
Sample: HC 11 Leached Granodiorite -2mm
Dry Sample Weight: 1.00 Kg

	Original	
S - Total	1.1	%
S - Sulphate	na	%
S - Sulphide	na	%
NP	27.0	kg $CaCO_3$/t

Note: Mercury concentrations were measured during all cycles and were below the detection limit, 0.02 µg/L
Values shaded in grey are averages

Analytical Results | **Production Rate** | **Molar Ratios** | **NP Consumption**

Date	Cycle	Volume mL		pH	Cond.	Acidity	Acidity	Alkalinity	Sulphate	Sulphate	Acidity (mg CaCO3/kg/wk)	Alkalinity (mg CaCO3/kg/wk)	Cumulative Alkalinity (mg CaCO3/kg)	Sulphate (mg/kg/wk)	Cumulative Sulphate (mg/kg)	Fraction of Total Sulphur Remaining	Alkalinity / Sulphate Production	Carbonate Molar Ratio [(Ca+Mg+Sr)/SO4]	Calcium / Sulphate Ratio	Ca+Mg/ Alkalinity	Ca/Mg	Theoretical NP Consumption at pH 6	Remaining Carbonate NP
Reporting Units		Input	Output		umhos/cm	mgCaCO3/L (pH 4.5)	mgCaCO3/L (pH 8.3)	mgCaCO3/L	(mg/L)	(mg/kg)													
21-Dec-05	0	750	570	6.46	93	<1.0	3.5	20.3	9	5.13	1.995	11.5425	11.5425	5.1	5.1	0.99984432	2.25	0.35544903	0.13582751	93786.3991	0.61866766	5.34466223	0.999620049
28-Dec-05	1	500	505	7.10	73	<1.0	4.5	16.3	13	6.565	2.2725	8.20625	19.74875	6.6	11.695	0.99964509	1.25	0.31868808	0.11800399	134102.763	0.58815702	6.83970907	0.999184102
4-Jan-06	2	500	490	6.62	132	<1.0	3.8	6.8	42	20.58	1.8375	3.3075	23.05625	20.6	32.275	0.99902054	0.16071429	0.22998004	0.1198478	730310.306	1.08865602	21.4411596	0.998197895
11-Jan-06	3	500	495	6.37	147	<1.0	35.0	4.0	52	25.74	17.325	1.98	25.03625	25.7	58.015	0.99823941	0.07692308	0.37074389	0.20650699	2484767.27	1.25800251	26.8170771	0.996209441
18-Jan-06	4	500	485	6.20	130	<1.0	4.0	2.5	48	23.28	1.94	1.2125	26.24875	23.3	81.295	0.99753293	0.05208333	0.56434365	0.29912015	5473368.61	1.12830938	24.2541397	0.993471907
25-Jan-06	5	500	470	6.14	112	0.5	3.3	2.6	48	22.56	1.5275	1.23375	27.4825	22.6	103.855	0.99684829	0.0546875	0.64293933	0.33282734	5755018.15	1.0737234	23.5040117	0.990449576
1-Feb-06	6	500	475	6.26	110	<1.0	2.5	2.8	44	20.9	1.1875	1.30625	28.78875	20.9	124.755	0.99621404	0.0625	0.7871291	0.39985586	6230538.19	1.03294224	21.7745498	0.9870217
8-Feb-06	7	500	485	6.23	106	0.5	2.3	2.8	40	19.4	1.09125	1.33375	30.1225	19.4	144.155	0.9956253	0.06875	0.90606153	0.44733193	6656354.23	0.97581857	20.2117831	0.983359076
15-Feb-06	8	500	485	6.13	96	<1.0	2.0	2.8	45	21.825	0.97	1.33375	31.45625	21.8	165.98	0.99496297	0.06111111	0.84113871	0.40428659	6951001.04	0.92628074	22.738256	0.979533871
22-Feb-06	9	500	485	6.19	91	0.5	2.5	2.4	41	19.885	1.2125	1.151875	32.608125	19.9	185.865	0.99435952	0.05792683	0.84580471	0.41128259	7374599.77	0.94716699	20.7170777	0.97602935
1-Mar-06	10	500	490	6.03	92	<1.0	3.0	2.0	36	17.64	1.47	0.98	33.588125	17.6	203.505	0.9938242	0.05555556	0.87513179	0.4314521	8039079.45	0.97286121	18.3781368	0.972812692
8-Mar-06	11	500	495	5.70	84	0.5	2.6	2.8	34	16.83	1.299375	1.36125	34.949375	16.8	220.335	0.99331345	0.08088235	0.92030987	0.44414186	5866116.02	0.93313373	17.5342427	0.969585305
15-Mar-06	12	500	470	6.11	81	<1.0	2.3	3.5	35	16.45	1.0575	1.645	36.594375	16.5	236.785	0.99281424	0.1	0.88789505	0.41912489	4346358.26	0.89445927	17.1383418	0.966541895
22-Mar-06	13	500	460	5.80	91	0.5	2.4	3.1	33	15.18	1.0925	1.4375	38.031875	15.2	251.965	0.99235357	0.09469697	0.89076929	0.43072575	4506653.27	0.93665728	15.8151993	0.963724356
29-Mar-06	14	500	450	5.93	72	<1.0	2.5	2.8	35	15.75	1.125	1.2375	39.269375	15.8	267.715	0.9918756	0.07857143	0.79184131	0.3931008	4723397.07	0.98626684	16.4090507	0.961125683
5-Apr-06	15	500	435	5.79	86	0.5	2.5	2.5	35	15.225	1.0875	1.0875	40.356875	15.2	282.94	0.99141357	0.07142857	0.85669649	0.41672794	5433900.34	0.94756796	15.8620823	0.958407885
12-Apr-06	16	500	445	5.85	87	<1.0	2.5	2.3	41	18.245	1.1125	1.00125	41.358125	18.2	301.185	0.99085988	0.05487805	0.78669045	0.37591287	6644032	0.91550057	19.0084527	0.955417132
19-Apr-06	17	500	470	5.79	71	0.5	2.1	1.8	33	15.51	0.99875	0.8225	42.180625	15.5	316.695	0.9903892	0.0530303	0.93784784	0.44125783	8657010.12	0.8889534	16.159008	0.952386193
26-Apr-06	18	500	445	5.63	72	<1.0	1.8	1.3	35	15.575	0.77875	0.55625	42.736875	15.6	332.27	0.98991654	0.03571429	0.84696139	0.39173111	10991028.8	0.86089112	16.2267279	0.949637511
3-May-06	19	500	435	5.66	88	0.5	2.0	1.1	35	15.225	0.8779516	0.4766277	43.2135027	15.2	347.495	0.9894545	0.0313056	0.93718977	0.4345339	13563131.1	0.86482625	15.8620823	0.946664355
10-May-06	20	500	445	5.02	92	<1.0	2.3	0.9	37	16.465	1.0175188	0.41891931	43.632422	16.5	363.96	0.98895484	0.02544302	0.97188204	0.4515347	17704229.2	0.86808262	17.1539695	0.943330028
17-May-06	21	500	455	5.54	97	0.5	2.3	1.1	38	17.29	1.0644232	0.52171643	44.1541384	17.3	381.25	0.98843013	0.03017446	0.89330272	0.41473648	14029482.7	0.86695224	18.0134912	0.940111728
24-May-06	22	500	460	4.99	86	<1.0	2.4	1.4	31	14.26	1.1004231	0.62185897	44.7759974	14.3	395.51	0.98799738	0.04360862	1.03004424	0.47784479	11316479.9	0.86568088	14.8567024	0.937051115
31-May-06	23	500	440	5.64	85	0.5	2.8	1.0	36	15.84	1.2159044	0.42357041	45.1995678	15.8	411.35	0.98751668	0.02674056	0.85947654	0.39549775	14729344.8	0.85274067	16.5028167	0.934214359
7-Jun-06	24	500	450	4.79	82	<1.0	3.1	0.6	32	14.4	1.4105764	0.25805372	45.4576215	14.4	425.75	0.98707968	0.0179204	0.93596686	0.4269578	24478762.5	0.83914089	15.0025606	0.931405979
14-Jun-06	25	500	495	5.71	85	0.5	3.0	0.8	35	17.325	1.4773196	0.37629127	45.8339128	17.3	443.075	0.98655392	0.02171955	0.89770571	0.40748253	21308620.8	0.83154256	18.0499558	0.928165269
21-Jun-06	26	500	445	4.87	81	<1.0	2.8	0.9	31	13.795	1.2612875	0.42137764	46.2552904	13.8	456.87	0.98613528	0.03054568	1.06091808	0.47939122	16097625.1	0.8246774	14.3722447	0.925115714
28-Jun-06	27	500	455	5.73	84	0.5	2.9	1.3	34	15.47	1.3389858	0.58833898	46.8436294	15.5	472.34	0.98566581	0.03803096	0.92946146	0.4201723	11581739.9	0.82533335	16.1173342	0.922119626
5-Jul-06	28	500	455	5.05	81	<1.0	3.1	1.6	35	15.925	1.3883407	0.74583116	47.5894606	15.9	488.265	0.98518253	0.04683398	0.86614054	0.39173111	8764063.17	0.82604553	16.5913735	0.919245534
12-Jul-06	29	500	465	5.72	83	0.5	2.8	0.9	35	16.275	1.3084983	0.43333284	48.0227934	16.3	504.54	0.98468863	0.02662567	0.87993039	0.3931008	16005488.9	0.80777772	16.956019	0.916261511
19-Jul-06	30	500	465	4.78	80	<1.0	2.6	0.2	36	16.74	1.1981429	0.10444262	48.127236	16.7	521.28	0.98418062	0.00623911	0.86889469	0.38351297	67447752.2	0.79041916	17.4404767	0.913230723
26-Jul-06	31	500	480	6.77	82	0.5	3.3	0.2	34	16.32	1.6010215	0.08736126	48.2145973	16.3	537.6	0.98368535	0.00535302	0.94135683	0.40184264	87915212.5	0.74509924	17.0029021	0.910029563
2-Aug-06	32	500	480	4.71	74	<1.0	4.1	0.1	34	16.32	1.9652504	0.06691079	48.2815081	16.3	553.92	0.98319008	0.00409993	0.96270751	0.39761272	117388230	0.70388236	17.0029021	0.906755799
9-Aug-06	33	500	470	6.53	74	0.5	4.3	0.3	26	12.22	2.0145798	0.1338792	48.4153873	12.2	566.14	0.98281924	0.01095574	1.15185448	0.48814933	51465955.7	0.73576472	12.7313396	0.903822869
16-Aug-06	34	500	470	4.93	68	<1.0	4.5	<1	30	14.1	2.1048519	0.235	48.6503873	14.1	580.24	0.98239135	0.01666667	0.90547925	0.39549775	26594752.5	0.77580305	14.6900073	0.90116257
23-Aug-06	35	500	470	6.21	42	0.5	5.8	0.3	19	8.93	2.7064182	0.15512804	48.8055153	8.9	589.17	0.98212035	0.01737156	1.39490225	0.61879314	39307066.9	0.79760419	9.30367128	0.898567027
30-Aug-06	36	500	470	4.74	62	<1.0	7.0	0.3	27	12.69	3.3079844	0.15051218	48.9560275	12.7	601.86	0.98173524	0.01186069	0.9571077	0.4314521	39501720.5	0.8211057	13.2210066	0.896036242
6-Sep-06	37	500	455	4.9	64	0.5	5.0	0.3	30	13.65	2.292384	0.11810858	49.0741361	13.7	615.51	0.981321	0.00865264	0.824132	0.3655358	45136149.4	0.79738691	14.2211773	0.893692216
13-Sep-06	38	500	460	4.99	63	<1.0	3.0	0.2	25	11.5	1.3975484	0.09150316	49.1656392	11.5	627.01	0.98097201	0.0079568	0.94424048	0.41131766	56854504.3	0.77211971	11.9812116	0.891429587
20-Sep-06	39	500	455	4.86	69	<1.0	3.1	<1	30	13.65	1.4157099	0.2275	49.3931392	13.7	640.66	0.98055777	0.01666667	0.84010702	0.41707036	23886933.5	0.98633108	14.2211773	0.889040125
27-Sep-06	40	500	450	5.08	68	<1.0	2.5	0.2	27	12.15	1.1141246	0.092649	49.4857882	12.2	652.81	0.98018905	0.00762543	1.01569815	0.45630942	62424611.9	0.8161256	12.6584105	0.8864687
4-Oct-06	41	500	465	7.27	64	0.5	2.4	0.3	29	13.485	1.133631	0.14086865	49.6266569	13.5	666.295	0.97977982	0.01044632	0.91138719	0.39673756	42251755.7	0.77122576	14.0492729	0.883907835
11-Oct-06	42	500	465	5.53	61	<1.0	2.4	0.4	24	11.16	1.116	0.186	49.8126569	11.2	677.455	0.97944114	0.01666667	1.05985862	0.44543434	30797416.8	0.72524254	11.6269845	0.881443243
18-Oct-06	43	500	465	5.93	61	0.5	2.6	0.4	26	12.09	1.2054224	0.19322005	50.0058769	12.1	689.545	0.97907425	0.01598181	0.97060403	0.42776447	29412467.6	0.78832811	12.5958999	0.878998117
25-Oct-06	44	500	470	5.17	62	<1.0	2.8	0.4	23	10.81	1.3087678	0.20259538	50.2084723	10.8	700.355	0.97874619	0.01874148	1.08846968	0.50231862	28429737	0.85733372	11.2623389	0.876546374

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
12-Dec-05	0	0.19	0.011	0.0009	0.0006	< 0.0002	< 0.0002	0.05	< 0.00004	0.51	0.0005	< 0.0002	0.0011	0.24	< 0.0002	0.0019	0.5	0.014	< 0.02	0.003	< 0.0002	< 0.03	0.52	< 0.0002	2.16	< 0.00005	21.6	0.0006	< 0.0002	< 0.00002	< 0.0001	0.0009	0.0021	< 0.0001	0.0012	0.001	< 0.002
19-Dec-05	1	0.23	0.042	0.0015	0.0004	< 0.0002	< 0.0002	0.05	< 0.00004	0.64	0.0004	< 0.0002	0.0009	0.3	0.0002	0.0012	0.66	0.014	< 0.02	0.0073	0.0004	0.04	0.38	< 0.0002	4.05	< 0.00005	16.4	0.0006	< 0.0002	< 0.00002	< 0.0001	0.0012	0.0021	< 0.0001	0.0021	0.001	< 0.002
26-Dec-05	2	0.098	0.019	0.0006	0.0007	< 0.0002	< 0.0002	0.03	< 0.00004	2.1	0.0002	0.0003	0.0007	0.12	< 0.0002	0.0016	1.17	0.03	< 0.02	0.0021	< 0.0002	< 0.03	0.67	0.0004	3.69	< 0.00005	20.9	0.0017	< 0.0002	< 0.00002	< 0.0001	0.0004	0.0008	< 0.0001	0.0008	< 0.001	< 0.002
2-Jan-06	3	0.009	0.012	0.0003	0.0017	< 0.0002	< 0.0002	0.02	< 0.00004	4.48	< 0.0002	0.0006	0.0008	0.01	< 0.0002	0.0021	2.16	0.062	< 0.02	0.0007	< 0.0002	< 0.03	0.86	< 0.0002	3.66	< 0.00005	15.4	0.0039	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0002	< 0.0001	0.0003	0.001	< 0.002
9-Jan-06	4	0.003	0.0079	0.0003	0.0021	< 0.0002	< 0.0002	0.01	< 0.00004	5.99	< 0.0002	0.0012	0.0016	0.01	< 0.0002	0.0024	3.22	0.092	< 0.02	0.0004	0.0003	< 0.03	0.91	0.0004	3.54	< 0.00005	11.4	0.0052	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0004	< 0.0001	0.0002	0.003	< 0.002
16-Jan-06	5	0.006	0.00625	0.0003	0.00235	0.0001	0.0001	0.01	0.00002	6.665	0.0001	0.00195	0.00115	0.005	0.0001	0.00265	3.765	0.1075	0.01	0.000125	0.00065	0.015	0.9	0.00045	3.55	0.000025	7.81	0.006	0.0001	0.00001	0.00005	0.0001	0.00015	0.00005	0.0001	0.0045	0.001
23-Jan-06	6	0.009	0.0046	0.0003	0.0026	< 0.0002	< 0.0002	0.01	< 0.00004	7.34	< 0.0002	0.0027	0.0007	< 0.01	< 0.0002	0.0029	4.31	0.123	< 0.02	< 0.0001	0.001	< 0.03	0.89	0.0005	3.56	< 0.00005	4.22	0.0068	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.006	< 0.002
30-Jan-06	7	0.0085	0.00395	0.00075	0.00275	0.0001	0.0001	0.02	0.00002	7.465	0.0001	0.0033	0.0008	0.005	0.0001	0.0027	4.64	0.134	0.01	0.00005	0.00125	0.015	0.815	0.0005	3.425	0.000025	3.285	0.0114	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.006	0.001
6-Feb-06	8	0.008	0.0033	0.0012	0.0029	< 0.0002	< 0.0002	0.03	< 0.00004	7.59	< 0.0002	0.0039	0.0009	< 0.01	< 0.0002	0.0025	4.97	0.145	< 0.02	< 0.0001	0.0015	< 0.03	0.74	0.0005	3.29	< 0.00005	2.35	0.016	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.006	< 0.002
13-Feb-06	9	0.0065	0.00305	0.0007	0.0031	0.0001	0.0001	0.01	0.00002	7.035	0.0001	0.00425	0.0024	0.005	0.0001	0.0026	4.505	0.133	0.01	0.00005	0.0014	0.015	0.725	0.0005	3.295	0.000025	1.78	0.01115	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.006	0.001
20-Feb-06	10	0.005	0.0028	0.0002	0.0033	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.48	< 0.0002	0.0046	0.0039	< 0.01	< 0.0002	0.0027	4.04	0.121	< 0.02	< 0.0001	0.0013	< 0.03	0.71	0.0005	3.3	< 0.00005	1.21	0.0063	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.006	< 0.002
27-Feb-06	11	0.0065	0.0027	0.0001	0.00295	0.0001	0.0001	0.005	0.00002	6.3	0.000125	0.00495	0.00295	0.005	0.001	0.00255	4.095	0.1185	0.01	0.00005	0.00135	0.015	0.68	0.000175	3.165	0.000025	1.04	0.0062	0.0001	0.00001	0.00005	0.00015	0.0001	0.00005	0.0001	0.0065	0.001
6-Mar-06	12	0.008	0.0026	< 0.0002	0.0026	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.12	0.0003	0.0053	0.002	< 0.01	0.0038	0.0024	4.15	0.116	< 0.02	< 0.0001	0.0014	< 0.03	0.65	< 0.0002	3.03	< 0.00005	0.87	0.0061	< 0.0002	< 0.00002	< 0.0001	0.0004	< 0.0002	< 0.0001	< 0.0002	0.007	< 0.002
13-Mar-06	13	0.0065	0.0024	0.0001	0.003	0.0001	0.0001	0.005	0.00002	5.93	0.000125	0.00525	0.0022	0.005	0.0027	0.00215	3.84	0.112	0.01	0.00005	0.0013	0.015	0.61	0.0002	2.815	0.000025	0.745	0.0057	0.0001	0.00001	0.00005	0.00015	0.0001	0.00005	0.0001	0.0075	0.001
20-Mar-06	14	0.005	0.0022	< 0.0002	0.0034	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.74	< 0.0002	0.0052	0.0024	0.01	0.0016	0.0019	3.53	0.108	< 0.02	< 0.0001	0.0012	< 0.03	0.57	0.0006	2.6	< 0.00005	0.62	0.0053	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.008	< 0.002
27-Mar-06	15	0.006	0.00215	0.0001	0.00345	0.0001	0.0001	0.005	0.00002	6.085	0.0001	0.00595	0.0024	0.01	0.00045	0.0021	3.895	0.1185	0.01	0.00005	0.00135	0.015	0.615	0.0006	2.64	0.000025	0.63	0.0058	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.0085	0.001
3-Apr-06	16	0.007	0.0021	< 0.0002	0.0035	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.43	< 0.0002	0.0067	0.0024	0.01	< 0.0002	0.0023	4.26	0.129	< 0.02	< 0.0001	0.0015	< 0.03	0.66	0.0006	2.68	< 0.00005	0.64	0.0063	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.009	< 0.002
10-Apr-06	17	0.008	0.00195	0.000125	0.00335	0.0001	0.0001	0.005	0.00002	6.075	0.0001	0.0066	0.0062	0.01	0.0001	0.0022	4.145	0.1195	0.01	0.00005	0.00165	0.015	0.61	0.0005	2.56	0.000025	0.58	0.00635	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.0095	0.001
17-Apr-06	18	0.009	0.0018	0.0003	0.0032	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.72	< 0.0002	0.0065	0.01	0.01	< 0.0002	0.0021	4.03	0.11	< 0.02	< 0.0001	0.0018	< 0.03	0.56	0.0004	2.44	< 0.00005	0.52	0.0064	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.01	< 0.002
24-Apr-06	19	0.006	0.00175	0.000125	0.0041	0.0001	0.0001	0.005	0.00002	6.345	0.000125	0.00725	0.0057	0.005	0.0001	0.00215	4.45	0.122	0.01	0.00005	0.0018	0.015	0.575	0.00045	2.45	0.000025	0.54	0.0065	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.011	0.001
1-May-06	20	0.003	0.0017	< 0.0002	0.005	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.97	0.0003	0.008	0.0014	< 0.01	< 0.0002	0.0022	4.87	0.134	< 0.02	< 0.0001	0.0018	< 0.03	0.59	0.0005	2.46	< 0.00005	0.56	0.0066	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.012	< 0.002

Leachate Analysis by ICP-MS

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
8-May-06	21	0.007	0.00155	0.0001	0.0042	0.0001	0.0001	0.005	0.00002	6.575	0.000125	0.00795	0.0117	0.005	0.000175	0.00215	4.6	0.127	0.01	0.00005	0.00165	0.015	0.555	0.0005	2.4	0.000025	0.525	0.0063	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.018	0.001
15-May-06	22	0.011	0.0014	< 0.0002	0.0034	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.18	< 0.0002	0.0079	0.022	< 0.01	0.0005	0.0021	4.33	0.12	< 0.02	< 0.0001	0.0015	< 0.03	0.52	0.0005	2.34	< 0.00005	0.49	0.006	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.024	< 0.002
22-May-06	23	0.0085	0.0014	0.0001	0.0034	0.0001	0.0001	0.005	0.00002	5.94	0.0001	0.00805	0.01255	0.005	0.000175	0.00205	4.225	0.1165	0.01	0.00005	0.0016	0.015	0.51	0.000175	2.34	0.000025	0.45	0.006	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.0165	0.001
29-May-06	24	0.006	0.0014	< 0.0002	0.0034	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.7	< 0.0002	0.0082	0.0031	< 0.01	< 0.0002	0.002	4.12	0.113	< 0.02	< 0.0001	0.0017	< 0.03	0.5	< 0.0002	2.34	< 0.00005	0.41	0.006	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.009	< 0.002
5-Jun-06	25	0.0125	0.0013	0.0001	0.00355	0.0001	0.0001	0.005	0.00002	5.95	0.0001	0.00855	0.0042	0.005	0.000175	0.002	4.34	0.1155	0.01	0.00005	0.00165	0.015	0.505	0.0001	2.32	0.000025	0.41	0.0061	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.0135	0.001
12-Jun-06	26	0.019	0.0012	< 0.0002	0.0037	< 0.0002	< 0.0002	< 0.01	< 0.00004	6.2	< 0.0002	0.0089	0.0053	0.01	0.0005	0.002	4.56	0.118	< 0.02	< 0.0001	0.0016	< 0.03	0.51	< 0.0002	2.3	< 0.00005	0.41	0.0062	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.018	< 0.002
19-Jun-06	27	0.0115	0.0012	0.0001	0.00375	0.0001	0.0001	0.005	0.00002	5.96	0.0001	0.00865	0.00395	0.005	0.0028	0.002	4.38	0.1115	0.01	0.00005	0.0015	0.015	0.495	0.0001	2.215	0.000025	0.385	0.00605	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.0135	0.001
26-Jun-06	28	0.004	0.0012	< 0.0002	0.0038	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.72	< 0.0002	0.0084	0.0026	< 0.01	0.0051	0.002	4.2	0.105	< 0.02	< 0.0001	0.0014	< 0.03	0.48	< 0.0002	2.13	< 0.00005	0.36	0.0059	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.009	< 0.002
3-Jul-06	29	0.00125	0.00115	0.0001	0.0039	0.0001	0.0001	0.005	0.00002	5.74	0.0001	0.0092	0.00285	0.005	0.00265	0.00205	4.31	0.111	0.01	0.00005	0.00155	0.015	0.485	0.0001	2.265	0.000025	0.36	0.0059	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.008	0.001
10-Jul-06	30	< 0.001	0.0011	< 0.0002	0.004	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.76	0.0002	0.01	0.0031	< 0.01	0.0002	0.0021	4.42	0.117	< 0.02	< 0.0001	0.0017	< 0.03	0.49	< 0.0002	2.4	< 0.00005	0.36	0.0059	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.007	< 0.002
17-Jul-06	31	0.00225	0.00105	0.000225	0.0041	0.0001	0.0001	0.005	0.00002	5.7	0.0001	0.0105	0.00295	0.005	0.0002	0.00195	4.64	0.122	0.01	0.00005	0.0014	0.015	0.46	0.0002	2.505	0.0000275	0.365	0.0062	0.0001	0.00001	0.00005	0.0001	0.000125	0.00005	0.0001	0.008	0.001
24-Jul-06	32	0.008	0.001	0.0007	0.0042	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.64	< 0.0002	0.011	0.0028	0.01	0.0002	0.0018	4.86	0.127	< 0.02	< 0.0001	0.0011	< 0.03	0.43	0.0006	2.61	0.00006	0.37	0.0065	< 0.0002	< 0.00002	< 0.0001	< 0.0002	0.0003	< 0.0001	< 0.0002	0.009	< 0.002
31-Jul-06	33	0.0065	0.0009	0.000225	0.00385	0.0001	0.0001	0.005	0.00002	5.295	0.0001	0.01005	0.0034	0.005	0.0001	0.0016	4.365	0.112	0.01	0.00005	0.0013	0.015	0.4	0.0002	2.395	0.0000275	0.33	0.00585	0.0001	0.00001	0.00005	0.0001	0.000125	0.00005	0.0001	0.0075	0.001
7-Aug-06	34	0.005	0.0008	< 0.0002	0.0035	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.95	< 0.0002	0.0091	0.004	< 0.01	< 0.0002	0.0014	3.87	0.097	< 0.02	< 0.0001	0.0015	< 0.03	0.37	< 0.0002	2.18	< 0.00005	0.29	0.0052	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.006	< 0.002
14-Aug-06	35	0.004	0.00085	0.0001	0.00375	0.0001	0.0001	0.005	0.00002	4.905	0.0001	0.00915	0.0043	0.005	0.0001	0.00155	3.73	0.093	0.01	0.00005	0.0015	0.015	0.375	0.0001	2.12	0.000025	0.29	0.0051	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.006	0.001
21-Aug-06	36	0.003	0.0009	< 0.0002	0.004	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.86	< 0.0002	0.0092	0.0046	< 0.01	< 0.0002	0.0017	3.59	0.089	< 0.02	< 0.0001	0.0015	< 0.03	0.38	< 0.0002	2.06	< 0.00005	0.29	0.005	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.006	< 0.002
28-Aug-06	37	0.0045	0.0008	0.0001	0.0038	0.0001	0.0001	0.005	0.0000225	4.575	0.0001	0.0084	0.0053	0.005	0.0001	0.00175	3.48	0.083	0.01	0.00005	0.00135	0.015	0.355	0.0001	2.15	0.000025	0.26	0.0049	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.0075	0.001
4-Sep-06	38	0.006	0.0007	< 0.0002	0.0036	< 0.0002	< 0.0002	< 0.01	0.00005	4.29	< 0.0002	0.0076	0.006	< 0.01	0.0002	0.0018	3.37	0.077	< 0.02	< 0.0001	0.0012	< 0.03	0.33	< 0.0002	2.24	< 0.00005	0.23	0.0048	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.009	< 0.002
11-Sep-06	39	0.003	0.0008	< 0.0002	0.0043	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.22	< 0.0002	0.0092	0.0084	< 0.01	0.0004	0.0018	3.21	0.084	< 0.02	< 0.0001	0.0017	< 0.03	0.41	< 0.0002	1.82	< 0.00005	0.29	0.0051	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.007	< 0.002
18-Sep-06	40	0.002	0.0008	< 0.0002	0.0051	< 0.0002	< 0.0002	< 0.01	< 0.00004	5.14	< 0.0002	0.0094	0.01	< 0.01	0.0003	0.0015	3.82	0.089	< 0.02	< 0.0001	0.0017	< 0.03	0.35	< 0.0002	1.85	< 0.00005	0.38	0.0067	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.01	< 0.002
25-Sep-06	41	0.0045	0.00075	0.0001	0.00455	0.0001	0.0001	0.005	0.00002	4.8	0.0001	0.0088	0.0061	0.005	0.000125	0.00135	3.775	0.0845	0.01	0.00005	0.0015	0.015	0.315	0.0001	1.815	0.000025	0.325	0.00595	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.008	0.001
2-Oct-06	42	0.007	0.0007	< 0.0002	0.004	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.46	< 0.0002	0.0082	0.0022	< 0.01	< 0.0002	0.0012	3.73	0.08	< 0.02	< 0.0001	0.0013	< 0.03	0.28	< 0.0002	1.78	< 0.00005	0.27	0.0052	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.006	< 0.002
9-Oct-06	43	0.0065	0.0007	0.0001	0.00415	0.0001	0.0001	0.005	0.00002	4.64	0.0001	0.0085	0.00345	0.005	0.00015	0.00135	3.57	0.0795	0.01	0.00005	0.00105	0.015	0.31	0.0001	1.825	0.000025	0.27	0.00515	0.0001	0.00001	0.00005	0.0001	0.0001	0.00005	0.0001	0.0065	0.001
16-Oct-06	44	0.006	0.0007	< 0.0002	0.0043	< 0.0002	< 0.0002	< 0.01	< 0.00004	4.82	< 0.0002	0.0088	0.0047	< 0.01	0.0004	0.0015	3.41	0.079	< 0.02	< 0.0001	0.0008	< 0.03	0.34	< 0.0002	1.87	< 0.00005	0.27	0.0051	< 0.0002	< 0.00002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0002	0.007	< 0.002

Metal Leach Rates

Date	Cycle	Al	Sb	As	Ba	Be	Bi	B	Cd	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	PO4	K	Se	SiO2	Ag	Na	Sr	Te	Tl	Th	Sn	Ti	U	V	Zn	Zr
Reporting Units		mg/kg/wk	mg/kg/wk	mg/kg/wk