

July 17, 2012

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Mr. Alex Riley
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Dear Mr. Riley:

Aurora Project
Acid Rock Drainage and Metal Leaching Characterization - Kinetic Test Results

This draft report is submitted to Guyana Goldfields Inc., to report the results of kinetic tests carried out by Klohn Crippen Berger S.A. (KCB) as part of its scope of work to assist Guyana Goldfields with Acid Rock Drainage and Metal Leaching (ARD/ML) and related matters at their Aurora Project.

Please do not hesitate to contact the undersigned authors at celemine@klohn.com if you have any questions.

Yours truly,
KLOHN CRIPPEN BERGER LTD.



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EXECUTIVE SUMMARY

The Aurora Project is a gold project consisting of several deposits clustered in a 2 km by 2 km area located in a remote area of Guyana, approximately 170 kilometers (km) west of Georgetown, Guyana, South America. The proposed mining development is a conventional open pit and/or underground mining. The mineralization exhibits the features analogous to the mesothermal or “orogenic” gold deposits of the Archean Type deposits of the Abitibi region of Quebec, Canada. The mineralization is hosted by quartz-ankerite-pyrite veining and is strongly associated with large-scale shear zones and mafic-intermediate metavolcanic and plutonic lithologies.

The scope of work reported herein is the kinetic humidity cells test results of Phase 1 of the Acid Rock Drainage and Metal Leaching (ARD/ML) characterization program. The results of the initial static testing were reported previously (KCB, 2012).

Based on the findings of the initial static testing, eighteen (18) humidity cells were constructed and operated between December 21, 2011 and June, 13, 2012, based on the MEND procedure (MEND, 2009). The humidity cells samples were also submitted for X-ray Diffraction with Rietveld Refinement. The results of the 25 weeks (cycles) of the laboratory humidity cell tests are reported herein

The results of the kinetic humidity cell testing indicate a near-neutral to slightly alkaline pH leachate, indicating the abundance of carbonate buffering potential of waste rock materials with a low sulphide content. The single exception is the base case Volcanic/Volcanic Sediment humidity cell, which produced a slightly acidic pH during the entire 25 week test period.

The alkalinity production rates were high and the acidity production rates were very low, often below the detection limit of the analytical methodology. This highlights the presence of significant amount of carbonate buffering confirmed by the X-ray Diffraction results, identifying the common occurrence of calcite and dolomite and the rarity of sulphide minerals. The balance between the alkalinity and acidity production rates indicates that the Aurora Project waste rock material is generally not Potentially Acid Generating, and supports the Acid-base Accounting result previously reported.

Sulphate, calcium and magnesium production rate trends indicate a first flush followed by a gradual decrease of production rates, then followed by stabilization. The sulphate production rate trend can be explained by an initial leaching of soluble sulphates previously stored in the samples followed by a low sulphide oxidation rate during the remainder of the test. On the other hand, calcium and magnesium production trends increased in several humidity cells after the first flush. The high calcium and magnesium production rates are associated primarily with the weathering and dissolution of calcite and dolomite.

The production rates of metals (loids) and especially the parameters considered “abundant” in the geology such as arsenic, cadmium, selenium, nickel, and copper, also show a first flush effect followed by a decrease of production rates, then stabilization. The production rates of these elements are generally similar and low, with the exception of arsenic in the Metavolcanic (HC7) and nickel and zinc in the Volcanic/Volcanic Sediment (HC11). It is expected that the concentrations of

near-neutral pH soluble elements will remain low or decrease further. The concentration of acid-soluble elements will also remain low, as it is expected that the pH will remain neutral or increase to an alkaline pH. However, the concentration of elements such as zinc may increase further if the pH becomes alkaline.

The comparison of the leachate pH and the concentrations of arsenic, cadmium, iron, mercury, chromium, and copper against the IFC EHS guidelines show that the concentrations are below the guidelines, except arsenic in the Metavolcanic (HC7) and the pH of the first flushes of the following humidity cells: HC3, HC5, HC7, HC10 and HC14. It is predicted that the leaching of these waste rock lithology and alteration types under site-specific conditions will have a negligible impact on the receiving environment. The humidity cell first flush concentrations are considered the highest possible leachable concentrations (worse case). However, the spatial variability of the geochemistry of several of the waste rock lithologies and alteration types, as indicated by the static results, may result in higher concentrations of leachate. This is illustrated by the behaviour of the Metavolcanic and Volcanic/Volcanic Sediment materials used in HC7 and HC11, respectively.

As in the case of the leachate pH, the Acidic Volcanic (HC11) behaves different from other cells. The volcanic material in this cell produced the lowest alkalinity, calcium and magnesium productions rates and the highest nickel, iron and zinc loadings.

Finally, the kinetic humidity cell results support the ABA, SFE and NAG test findings that the Aurora Project waste rock lithologies and alterations are overwhelmingly not Potentially Acid Generating. Based on the calculated sulphide-sulphur and calcium and magnesium depletion rates and times, only the Diorite, Sapolite, Chlorite Schist and Felsic Tuff lithology and alteration types are predicted to become acid generating in the future. The on-set of ARD for the Diorite and Sapolite is predicted to occur in 0.1 and 4.6 laboratory-based years, respectively. The Chlorite Schist and Felsic Tuff lithologies and alteration units are predicted to become acid generating in 62.5 and 183 laboratory-based years, respectively.

Given the low sulphide-sulphur and high calcite and dolomite content of these waste rock lithologies and alteration types, coupled with the majority (1 of 18 humidity cells) of lithologies and alteration types predicted to never become acid generating, no special waste management strategies are recommended, with the exception of the sapolite. For the sapolite, which is expected to be stripped as waste in the early stages of open pit mining, it is recommended that it be submerged subaqueously with tailings in the Tailings Storage Facility. A Waste and Water Management Plan should be developed and implemented prior to commencement of mine construction to provide ongoing assessment of and confirm the geochemical variability of each lithology and alteration unit.

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1 INTRODUCTION

The Aurora Project is located in a remote area of Guyana, approximately 170 km west of the capital Georgetown, Guyana, South America. The project is composed of several satellite gold deposits scheduled for open pit and/or underground mining development. The majority of deposits currently identified for inclusion in the feasibility study are clustered in 2 km by 2 km area.

During active mining, the waste rock material is expected to be placed in a waste rock dump (WRD). The exposure of waste rock material to atmospheric conditions (air and water) causes the oxidation of sulphide minerals contained within it, which may lead to the generation of metal-rich acidic or neutral drainages generally known as Acid Rock Drainage and Metal Leaching (ARD/ML). Without appropriate prevention and mitigation, proactive measures incorporated into the Aurora Project mine plan and schedule, ARD/ML could result in adverse impacts on the receiving environment.

This report outlines the results and findings of the laboratory kinetic (humidity cell) tests carried out by Klohn Crippen Berger S.A. (KCB) on Aurora waste rocks samples. Based on the results of an initial static testing program, eighteen (18) laboratory humidity cells (HC) were constructed and operated. At the writing of this report, the HCs have operated for twenty-five weeks.

The results of the initial static testing program were reported in a memo submitted to Guyana Goldfields on February 3, 2012. That memo describes the major and specific geochemical characteristics of the lithologies investigated (KBC, 2012). This report provides a brief summary of those findings relevant to the understanding of the HC results, provides an in-depth discussion of the HC results and provides recommendations with regard to the continued operation of the HCs and appropriate waste rock management.

1.1 Scope

Guyana Goldfields retained KCB to complete an ARD/ML geochemical characterization program of the waste rock material at the Aurora Project and assess the aqueous concentrations that may leach from the waste rock under site-specific weathering conditions. A phased ARD/ML geochemical characterization program was initiated in consultation with Guyana Goldfields to support an Environmental Impact Assessment (EIA) for the Aurora Project. This geochemical characterization of the waste rock builds on previous work done by an external consultant (SRK, 2011) and supports the construction of a water balance and water quality modeling (WB/WQ) to predict expected aqueous concentration under site-specific conditions, as required by International Finance Corporation (IFC) and the Guyanese Law.

This report addresses the findings of the kinetic testing program done on a subset of waste rock samples selected from available diamond drill holes (DDH) for the initial static testing.

1.2 Objectives

The objectives of the static and kinetic HC testing are to:

- understand the ARD/ML characteristics of the waste rock material by rock type;

- identify the potential environmental effects of the ARD/ML on the receiving environment; and
- support the development of an appropriate waste management plan to prevent or minimize ARD/ML.

2 BACKGROUND

This section describes the geology and the mineralization of the Aurora Project. The information is sourced from SRK, 2011, and references therein.

2.1 Geology

2.1.1 Regional Geology

The Aurora Gold Project is located in the Archean-Proterozoic Guiana Shield in northeast South America. The Guiana Shield is a palaeo-Proterozoic granite-greenstone terrane and is considered to be the extension of the West-African palaeo-Proterozoic Birimian Supergroup terrane. The Guiana Shield is largely composed of the Barama-Mazaruni Supergroup, a metasedimentary/greenstone terrane intercalated with Archean-Proterozoic gneisses that are intruded by Trans-Amazonian granites, as well as mafic and ultramafic rocks.

The Barama-Mazaruni Supergroup formed within a geosynclinal basin locally bordered by an Archean continental foreland. The Trans-Amazonian Orogeny, approximately 2,000 million years ago, resulted in block faulting, crustal shortening, folding, metamorphism and anatexis of the Barama-Mazaruni Supergroup. The regional metamorphic grade of the Barama-Mazaruni Supergroup is generally lower to middle greenschist facies. Near the contact of some of the larger granitic complexes the Barama-Mazaruni Supergroup is metamorphosed to upper greenschist to amphibolite facies. Syn- to late-tectonic calc-alkaline to intermediate intrusive rocks, collectively known as the Trans-Amazonian Granitoids, were emplaced during the Trans-Amazonian Orogeny, between 2,250 and 1,960 million years ago. They range in composition from granite to granodiorite, diorite, and adamellite. Intrusive rocks proximal to the Aurora Gold Project area include the Proterozoic-age Iroma-Ranka, Aurora, and Katruni medium-grained granodiorite and diorite intrusions, and late-stage basic sills and dikes. Figure 2.1 shows the regional geology of Guyana and the Guiana Shield of northeast South America.

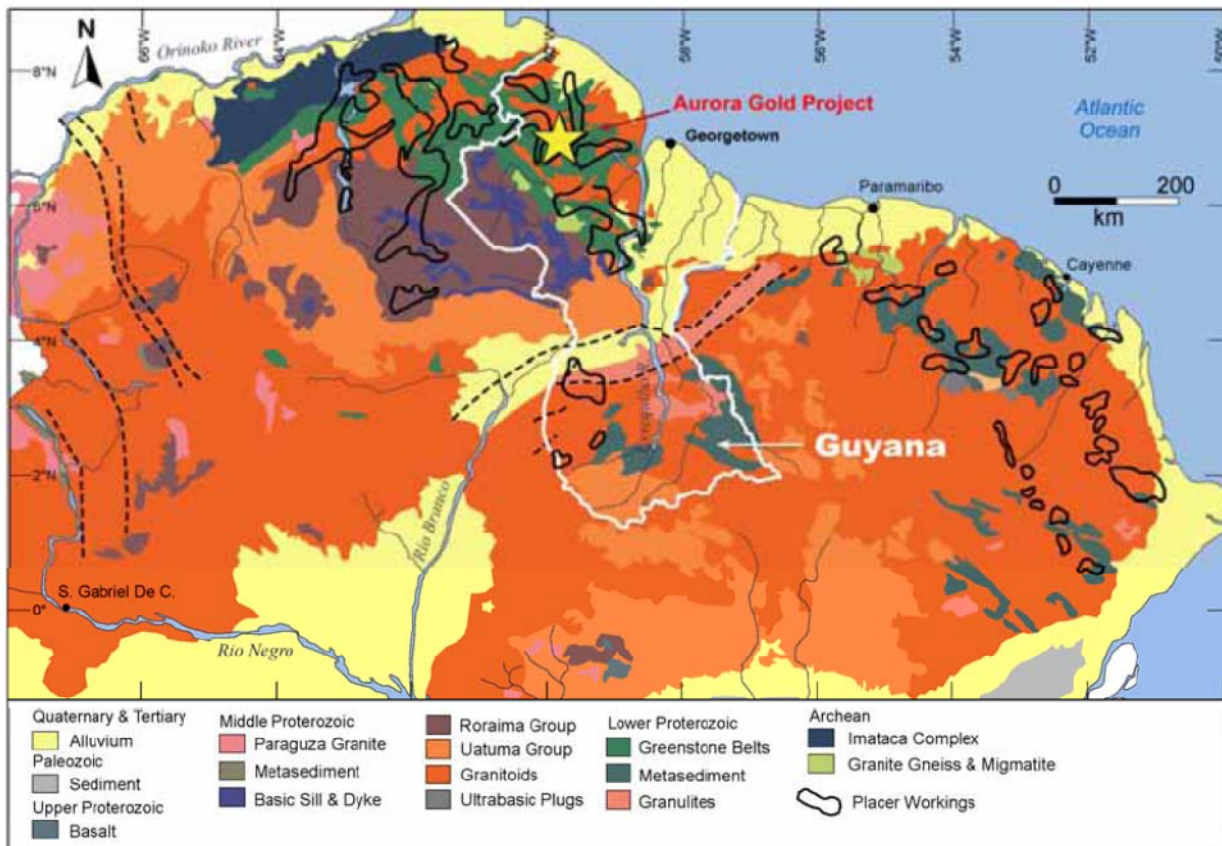


Figure 2.1 Regional Geology (Source: SRK, 2011)

2.1.2 Local Geology

Lithological units in the area include thinly bedded argillite and greywacke, mafic volcanic rock, strongly magnetic mafic volcanic rock, quartz phyrlic felsic volcanoclastic rock, diorite and gabbro; quartz phyrlic felsic intrusive rocks, and altered schists. The distribution of lithological units is not well understood largely because of poor outcrop exposures and a well-developed saprolitic profile.

Hydrothermal alteration in the area is spatially related to strain intensity, with the highest strained rocks usually displaying the strongest hydrothermal alteration (Figure 2.2).

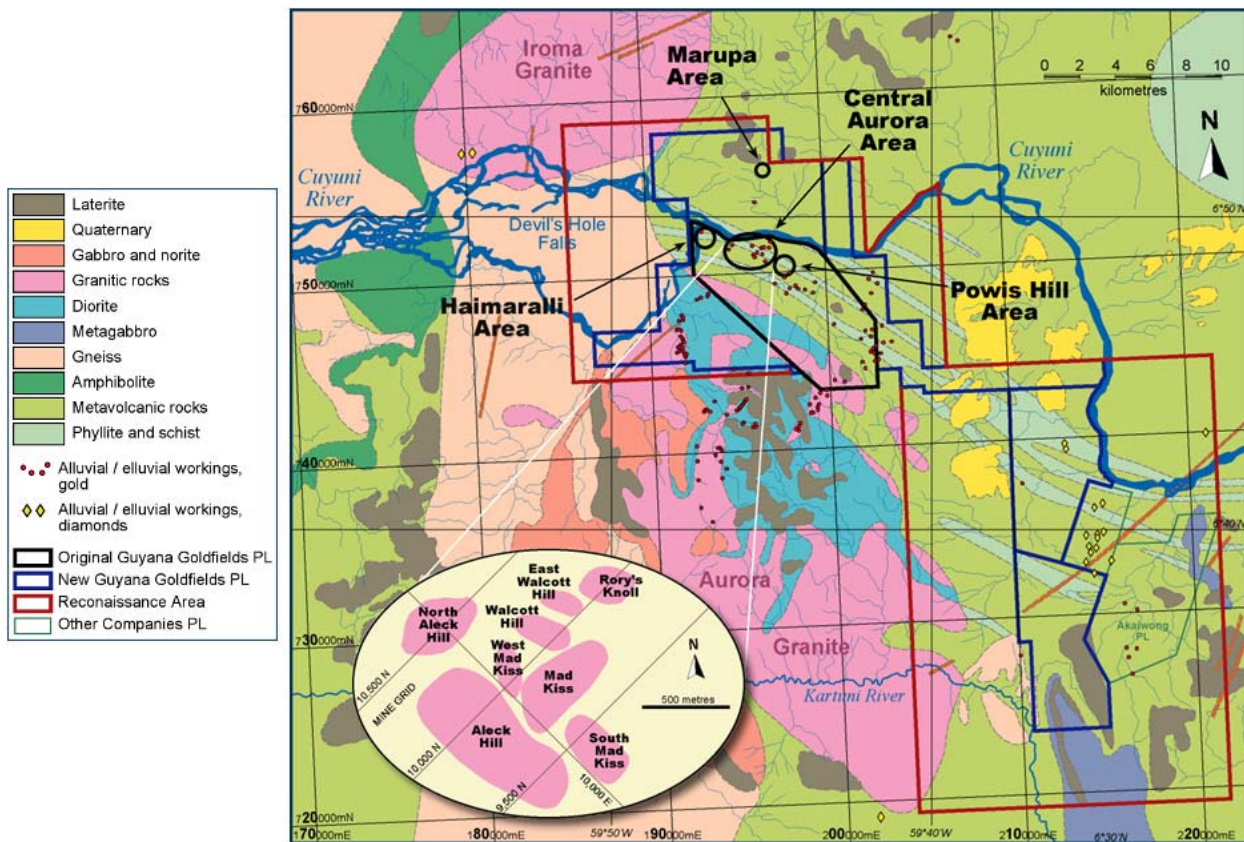


Figure 2.2 Aurora local geology (Source: Guyana Goldfields)

2.1.3 Mineralization

The gold mineralization at the Aurora Gold Project exhibits features analogous to mesothermal or “orogenic” gold deposits typified by Archean deposits of the Abitibi region, Canada. Features characteristic of the gold mineralization at the Aurora Gold Project include:

- a strong spatial association to large-scale shear zones;
- relative late timing during active compressional deformation;
- a strong spatial association with mafic-intermediate metavolcanic and plutonic lithologies;
- formed during greenschist metamorphic conditions;
- association with a propylitic-phyllitic alteration assemblages; and
- is principally hosted in quartz-ankerite-pyrite veining.

3 ARD/ML PROGRAM BACKGROUND

Field investigations, core examination and sample selection for the Aurora Project was completed in June 2010. At the time of the field investigation, site geologists provided waste cut-off grades for the open pit and underground at 0.45 and 2.0 gpt, respectively. The initial geochemical sample selection was constrained by using the Whittle pit shell at the time of the field investigation (04A with slope set #3) to select DDH intervals for sampling in-pit, at pit walls, pit floors and satellite pit samples. At the time of the field investigation, underground development details were not available. Therefore underground samples were selected in conjunction with the site geologists and generally guided by DDH intervals adjacent to the deeper high-grade DDH intervals, assume to represent the expected underground ore zone. A total of 349 samples were shipped and form the initial static test dataset for the Aurora Project.

The rationale for the selection of the materials for humidity cells was based on evaluation of the static test results for the eleven (11) most abundant lithologies/alterations, based on their proportion of the total length of drill core available from the Aurora DDH database being greater than 2%. These lithologies/alterations account for 93 of all logged rock types. The lithologies/alterations are indicated in Table 4.1 below.

For each lithology, the average and 95th percentile of the sulphide-sulphur content was primarily considered with additional consideration given to sample that also contained elevated concentrations of silver (Ag), arsenic (As), cobalt (Co), chromium (Cr), copper (Cu), nickel (Ni) and selenium (Se). These elements were found to be in excess, in the solid-phase, of three times average crustal abundance for high calcium granite, chosen to have the closest composition from available rock types. Additional explanation and comparison of the selected humidity cell materials to the static test population for each lithology/alteration is provided below.

4 METHODOLOGY

Based on the results of the initial static tests, eighteen (18) HC's were constructed and operated at the Maxxam Analytics laboratory in Burnaby, British Columbia, between December 21, 2011 and June, 13, 2012, in accordance with MEND procedures (MEND, 2009). At the time of this report, the HCs have operated for 25 weeks with HC leachate analyzed on a weekly basis.

4.1.1 Kinetic (Humidity Cell) Testing

Kinetic HC tests are recommended to supplement static test results. They are an ARD/ML prediction tool used to:

- simulate the leaching rates of material under well-aerated laboratory conditions;
- determine the rate of sulphide oxidation and the associated Neutralization Potential (NP) depletion; and
- estimate the NP and Acid Potential (AP) depletion times, and calculate the lag times to the onset of acidic conditions.

Humidity cell testing simulates the weathering of minerals by exposing 1 kg of sample to weekly drying/wetting cycles, combined with flushing and subsequent leachate analyses. The duration of HC testing depend on the nature of the material tested. Typically the HC operation should continue until weekly leaching rates become relatively stable for at least 5 consecutive weeks. One disadvantage of the HC tests is that they do not simulate the precipitation and dissolution of secondary minerals and phases, which influence the drainage chemistry under site-specific field conditions.

For the Aurora Project, the HCs were operated for 25 weeks and leachate samples were collected and analyzed weekly for pH, conductivity, alkalinity, acidity, and for a suite of forty (40) major and trace elements.

The HCs were paired and two HC constructed for each of the major lithologies/alterations, with the exception of the Ash Tuff and Quartz Veins lithologies, which had one HC each, because they represent small proportions of the overall waste rock mass. The selection of the two HCs for the major lithologies was based on the sulphide-sulphur content, the Modified Sobek-NP (MS-NP), the solid-phase elemental content and the variability of these parameters in each lithology/alteration.

During sample selection, one sample representing the base case (median) and one sample representing the upper case (95th percentile) sulphide-sulphur and/or Modified Sobek-NP (MS-NP) were selected from each lithology, except the Ash Tuff and Quartz Veins lithologies. Only the upper case was selected from these lithologies. The solid-phase elemental concentrations of elements considered "abundant" (KCB, 2012) were also considered as secondary criteria during selection to characterize potential metal leaching rates. The samples submitted for HC testing are reported in Table 4.1 and their static test (Acid-base Accounting and solid-phase elemental) results are compiled in Table 4.2 and Table 4.3.

Table 4.1 Description of Humidity Cell Samples

HC ID	Sample ID	Drill Hole	Interval		Lithology/ Alteration	Lithology/ Alteration
			From (m)	To (m)	Code	Type
HC-1	B 14 35211	SMKD-17	98	100	ATf	Ash Tuff
HC-2	B 11 172822	AHD-155	217	220	CSCT	Chlorite Schist
HC-3	B 10 90355	RKD-161	43	46	DIO	Diorite
HC-4	B 21 8189	MKD-8	112	114	DIO	Diorite
HC-5	B 18 20822	RKD-52	335	336	FTf	Felsic Tuff
HC-6	B 11 112924	AHD-110	141	143	MVOL	Metavolcanics
HC-7	B 14 12876	RKD-24	415	417	MVOL	Metavolcanics
HC-8	B 18 20690	RKD-87B	349	351	QV	Quartz Vein
HC-9	B 24 727941	MKD-85	18	21	SAP	Saprolite
HC-10	B 10 170764	RKD-134B	182	184	TON	Tonalite
HC-11	B 11 170704	RKD-24	191	194	VOL	Volcanic/Volcanic Sediments
HC-12	B 2 109375	NAHD-58	95	97	CSCT	Chlorite Schist
HC-13	B 21 19965	RKD-52	229	231	FTf	Felsic Tuff
HC-14	B 22 18190	SMKD-7	5	6	SAP	Saprolite
HC-15	B 13 163044	EWD-49	169	172	SSCT	Sericite Schist
HC-16	B 19 23390	RKD-101	465	468	SSCT	Sericite Schist
HC-17	B 20 13463	RKD-27	556	558	TON	Tonalite
HC-18	B 22 14234	RKD-28	123	126	VOL	Volcanic/Volcanic Sediments

Table 4.2 Acid-base Accounting Results of Humidity Cells

Sample ID	Client Sample ID	Drillhole/Test Pit	Humidity Cell Number	Interval		Lithology	Paste pH	Inorganic CO ₂	Total-Sulphur	Sulphide-Sulphur	Sulphide-Sulphur + S (del)	Sulphate-Sulphur	SAP	Modified Sobek NP	Available NP	Inorganic CaNP	SNPR
				From (m)	To (m)												
BUCKET 14 35211	35211	SMKD-17	HC-1	98	100	Ash Tuff	9.4	12.6	0.49	0.44	0.48	0.01	15.1	201.3	201.3	286.1	13.3
BUCKET 11 172822	172822	AHD-155	HC-2	217	220	Chlorite Schist	9.0	7.4	0.11	0.06	0.10	0.01	3.1	141.6	141.6	167.8	45.4
BUCKET 2 109375	109375	NAHD-58	HC-12	95	97	Chlorite Schist	9.6	6.5	0.19	0.11	0.18	0.01	5.7	113.2	113.2	146.7	19.7
BUCKET 10 90355	90355	RKD-161	HC-3	43	46	Diorite	9.2	4.5	0.38	0.29	0.37	0.01	11.7	8.3	8.3	102.8	0.7
BUCKET 21 8189	8189	MKD-8	HC-4	112.4	114	Diorite	9.7	15.7	0.01	0.01	0.01	0.01	0.2	210.6	210.6	356.8	1348.0
BUCKET 18 20822	20822	RKD-52	HC-5	335	336	Felsic Tuff	9.5	10.1	0.61	0.44	0.60	0.01	18.7	140.1	140.1	228.6	7.5
BUCKET 21 19965	19965	RKD-52	HC-13	229	231	Felsic Tuff	9.6	12.1	0.18	0.15	0.17	0.01	5.5	149.1	149.1	275.4	27.4
BUCKET 11 112924	112924	AHD-110	HC-6	141	143	Meta-Volcanic	9.0	6.4	0.16	0.09	0.15	0.01	4.8	131.3	131.3	145.3	27.2
BUCKET 14 12876	12876	RKD-24	HC-7	414.98	417	Meta-Volcanic	8.9	13.8	0.34	0.27	0.33	0.01	10.3	235.0	235.0	313.6	22.9
BUCKET 10 112373	112373	AHD-103	HC-8	63.2	66.2	Quartz Vein	9.7	8.1	0.03	0.01	0.02	0.01	0.7	122.5	122.5	185.1	164.9
BUCKET 22 18190	18190	SMKD-7	HC-14	4.5	6	Saprolite	6.1	0.1	0.13	0.06	0.12	0.01	3.7	-1.3	0.1	1.6	0.01
BUCKET 24 727941	727941	MKD-85	HC-9	18	21	Saprolite	9.1	3.0	0.04	0.04	0.04	0.01	1.3	28.8	28.8	67.5	23.0
BUCKET 13 163044	163044	EWD-49	HC-15	169	172	Secicite Schist	9.6	10.3	0.07	0.04	0.06	0.01	2.0	145.0	145.0	233.3	72.3
BUCKET 19 23390	23390	RKD-101	HC-16	465	468	Secicite Schist	9.0	14.1	0.18	0.10	0.12	0.03	3.8	250.0	250.0	320.7	66.6
BUCKET 10 170764	170764	RKD-134B	HC-10	181.5	183.5	Tonalite	9.2	11.0	0.28	0.18	0.25	0.02	7.9	138.3	138.3	249.0	17.5
BUCKET 20 13463	13463	RKD-27	HC-17	556	558	Tonalite	9.1	14.5	0.84	0.55	0.77	0.07	24.0	268.8	268.8	330.2	11.2
BUCKET 11 170704	170704	RKD-24	HC-11	191.1	194.1	Volcanic	9.3	15.2	0.17	0.07	0.11	0.05	3.3	287.5	287.5	346.6	85.9
BUCKET 22 14234	14234	RKD-28	HC-18	123	126	Volcanic	8.5	7.1	0.52	0.34	0.50	0.02	15.6	110.2	110.2	161.2	7.1

Table 4.3 Solid-phase Elemental Concentrations of Elements in Exceedance of the 3x Average Crustal Abundance of Low and High Calcium Granite of Humidity Cells

Humidity Cell Number	Lithology	Silver (ppm)	Arsenic (ppm)	Cobalt (ppm)	Chromium (ppm)	Copper (ppm)	Nickel (ppm)	Selenium (ppm)
HC-1	Ash Tuff	0.10	10.50	28.90	138.50	75.15	60.80	0.40
HC-2	Chlorite Schist	0.06	1.80	43.00	40.90	88.24	38.00	0.30
HC-12	Chlorite Schist	0.08	1.60	18.40	26.30	68.08	24.10	0.20
HC-3	Diorite	0.07	14.60	21.00	39.60	84.71	32.30	0.30
HC-4	Diorite	0.03	0.40	41.30	32.20	85.32	40.20	0.20
HC-5	Felsic Tuff	0.40	2.70	20.30	31.60	79.04	25.30	0.40
HC-13	Felsic Tuff	0.17	35.50	22.40	35.50	42.66	51.40	0.20
HC-6	Meta-Volcanic	0.04	3.60	45.40	36.70	110.92	37.90	0.40
HC-7	Meta-Volcanic	0.09	11.70	44.40	204.00	83.02	117.20	0.20
HC-8	Quartz Vein	0.04	0.30	10.50	54.50	13.72	19.20	0.05
HC-14	Saprolite	3.54	111.90	4.60	73.50	68.25	7.30	0.50
HC-9	Saprolite	0.07	0.60	20.60	29.70	34.25	48.80	0.05
HC-15	Secicite Schist	0.05	2.50	15.70	26.20	98.91	7.10	0.20
HC-16	Secicite Schist	0.13	1.90	12.00	65.60	66.24	6.10	0.20
HC-10	Tonalite	0.04	0.80	20.80	19.70	48.03	25.90	0.50
HC-17	Tonalite	0.40	0.90	28.90	22.00	50.07	79.90	0.40
HC-11	Volcanic	0.05	1.40	32.60	340.80	73.43	120.10	0.20
HC-18	Volcanic	0.18	7.20	16.60	44.90	47.41	38.50	0.40

5 RESULTS AND DISCUSSION

5.1 Pre-Humidity Cell Static Test Results

This section summarizes the geochemical characteristics of the waste rock samples based on the results of the statics tests reported in KCB (2012) and the results of the mineralogical tests on the samples selected for HC testing.

5.1.1 Acid-base Accounting

The results of the Acid base Accounting (ABA) show that the waste rock samples are low in sulphide-sulphur content, with sulphide-sulphur representing the bulk of total-sulphur. On the other hand, the MS-NP and inorganic carbonate NP (Inorg-CaNP) are relatively very high, with the Inorg-CaNP values being higher than the MS-NP. Higher Inorg-CaNP indicates the presence of iron or manganese carbonate minerals characterized by a net neutral NP and confirmed by the The X-ray Diffraction (XRD) test results.

The paste pH results are alkaline, ranging from 6.2 to 10.4 (overall average 8.9), indicating the presence of effective carbonates buffering in all the lithologies, except a few saprolite samples having a paste pH lower than 6.0, thus were or are currently generating minor acidity.

The non site-specific ABA screening classification criteria: the Sulphide Net Potential Ratio (SNPR) indicates that the waste rock samples are generally Not Potentially Acid Generating (N-PAG). The main exceptions are ~25% of the saprolite samples having a slightly acidic paste pH values and classified as AG. Additionally, few diorite samples (2%) are classified as Potentially Acid Generating (PAG). XRD test results confirm the presence of calcite and dolomite, which provide “effective” NP.

5.1.2 Solid-Phase Elemental Analysis

The results of the solid-phase elemental analysis and their comparison to three (3) times average crustal abundance for low and high calcium granite indicate that silver (Ag), arsenic (As), cobalt (Co), chromium (Cr), copper (Cu), nickel (Ni) and selenium (Se) are often in exceedance of the threshold. This indicates that these elements exist in abundance and may be of environmental significance. However, these elemental abundances are not necessarily indicative of environmental availability (i.e., leaching). They only indicate a potential release of elevated solid-phase reservoirs of these elements. In the case of the Aurora project, the major water-rock interactions and geochemical processes are expected to occur under neutral to alkaline pH conditions.

5.1.3 X-Ray Diffraction with Rietveld Refinement

All 18 of the samples selected for HC testing were also submitted for XRD with Rietveld Refinement. The results of the XRD analysis are compiled in Table 5.1 and Table 5.2, and the laboratory results are reported in Appendix I.

The XRD results indicate the predominance of alumino-silicate minerals (i.e., quartz, muscovite, clinocllore and plagioclase). Carbonates are present as calcite, dolomite, ankerite and siderite with a

proportion ranging from 0% to 34 % (22% overall average excluding the Saprolite samples). Calcite and dolomite content varies from 1.5% to 33.8%. But, the Saprolite and Ash Tuff samples and one sample from the Diorite, Sericite Schist, and Chlorite Schist contain no calcite or dolomite. This confirms the ABA results indicating sufficient effective NP in the majority of samples. The Saprolite and Diorite samples have the lowest calcite and dolomite minerals contents corroborating the ABA results indicating AG and PAG, respectively.

The XRD results also indicate that the net neutral carbonates (ankerite and siderite) are common and their percentage is even higher than calcite and dolomite in the Sericite Schist, Ash Tuff and Diorite samples. The widespread abundance of ankerite and siderite supports the higher Inorg-CaNP values compared to the MS-NP values.

On the other hand, sulphide minerals are rare and exist only as pyrite. The highest pyrite content recorded in the samples is 1.7% and agrees well with the ABA results, indicating a low sulphide-sulphur content (KCB, 2012), and with the metallurgical test results (SRK, 2011).

Table 5.1 Results of XRD with Rietveld Refinement on the Humidity Cell Samples

Humidity Cell	HC1	HC2	HC12	HC3	HC4	HC5	HC13	HC6	HC7
Sample ID	Bucket # 11 172822	Bucket # 11 172822	Bucket # 2 109375	Bucket # 10 90355	Bucket # 21 8189	Bucket # 18 20822	Bucket # 21 19965	Bucket # 11 112924	Bucket # 14 12876
Lithology/Alteration	Ash Tuff	Chlorite Schist	Chlorite Schist	Diorite	Diorite	Felsic Tuff	Felsic Tuff	Metavolcanics	Metavolcanics
Quartz	30.1	29.9	23.2	24.5	32.6	24.2	30.5	25.6	26.9
Muscovite	32.3		17.2	9.4		23.8	20.9		11.8
Kaolinite									
Biotite		0.8							
Clinocllore	7.4	27.0	8.2	1.7	4.5			28.4	19.3
Plagioclase	1.6	22.4	36.4	44.8		29.2	10.8	25.2	8.7
Paragonite				5.2	25.3		11.3		1.3
Pyrite	1.0		0.4	0.9		1.1	0.6		0.7
Calcite		16.8					0.1	14.0	0.1
Dolomite				1.5		15.6	19.2		29.9
Ankerite	26.5		13.6		24.7				
Siderite				10.8	9.3	5.3	5.1		
Hematite					1.8				
Magnetite		1.5						1.6	
Geothite									
Rutile	1.0	1.6	1.1	1.2	1.7	0.8	1.4		1.3
Titanite								5.3	
Total	100	100	100	100	100	100	100	100	100

Table 5.2 Results of XRD with Rietveld Refinement on the Humidity Cell Samples

Humidity Cell	HC8	HC9	HC14	HC10	HC17	HC11	HC18	HC15	HC16
Sample ID	Bucket # 18 20690	Bucket # 24 727941	Bucket # 22 18190	Bucket # 10 170764	Bucket # 20 13463	Bucket # 11 170704	Bucket # 22 14234	Bucket # 13 163044	Bucket # 19 23390
Lithology/Alteration	Quartz Vein	Saprolite	Saprolite	Tonalite	Tonalite	Volcanic/volcanic Sediment	Volcanic/volcanic Sediment	Sericite Schist	Sericite Schist
Quartz	24.7	44.2	33.7	23.3	20.0	25.5	39.3	40.5	31.7
Muscovite	25.9	9.1	41.7	23.5	26.4	5.2	24.5	27.0	13.8
Kaolinite			10.2						
Biotite									
Clinocllore		3.0				12.8	4.2	2.1	
Plagioclase	26.5	17.4		29.3	12.6	15.4	11.2	1.0	23.3
Paragonite		14.7	5.8		6.1	4.7	4.4	3.8	
Pyrite	0.4			0.7	1.7		1.0		0.4
Calcite							0.9		7.2
Dolomite	16.4			16.4	30.6	33.8	13.5		
Ankerite		3.6						20.6	22.7
Siderite	5.2	2.9		6.1	1.9	0.5		3.3	0.3
Hematite		0.8	0.4			0.5		0.3	
Magnetite									
Geothite		2.3	6.4						
Rutile	0.8	2.0	1.9	0.8	0.7	1.5	1.0	1.4	0.7
Titanite									
Total	100	100	100	100	100	100	100	100	100

5.2 Pre-Humidity Cell Leach Test Results

This section summarizes the geochemical characteristics of the waste rock samples based on the results of the leach tests reported in KCB (2012).

5.2.1 Shake Flask Extraction Results

The Shake Flask Extraction (SFE) test identifies elements released from the samples by water extraction. It provides an indication of the solubility and leaching potential under short-term conditions (i.e., days), but does not specifically relate to site-specific field conditions.

Forty-three (43) samples selected based on their average and 95th percentile sulphide-sulphur content were submitted for SFE testing. The results show that the leachate pHs are alkaline, with the exception of saprolite samples, which were consistent with paste pH from the ABA. The results also indicate low salinity as reflected in the low Electric Conductivity (EC) values and very low sulphate concentrations. The very low sulphate release could be interpreted as an indication of minimal sulphide oxidation from samples containing a low sulphide-sulphur content. The total contribution of the elements reported as having high solid-phase concentrations (Section 5.1.2) also indicate low metals (loids) release rates. A screening-level comparison of the SFE results with the International Finance Corporation Environmental Health and Safety Effluent Guidelines (IFC EHS, 2007) show that that only pH exceeds the guideline in the majority of samples.

5.2.2 Net Acid Generation Test Results

The Net Acid Generation (NAG) test assesses the sample's capability to neutralize the acid produced by sulphide oxidation or its net acid producing nature. It also helps determine the final pH if all the NP has been consumed by sulphide oxidation.

Forty three (43) samples selected based on their average and 95th percentile sulphide-sulphur content and solid-phase elemental concentration were submitted for NAG testing. The sample ARD classification based on the final NAG pH indicates that all the samples are N-PAG (pH are predominantly alkaline). The main exception is one saprolite sample classified as PAG. This is in agreement with the ABA results. Consistent with the result of the SFE, the NAG test results indicate low EC and low sulphate and metals (loids) release rates. As with the SFE test, the NAG test does not provide the release rates at which elements and parameters would be released under site-specific field conditions.

A screening level comparison of the NAG results with the IFC EHS guidelines shows that pH exceeds the guideline in the majority of samples and one saprolite sample marginally exceed the guideline for mercury (Hg). Note that the IFC EHS guidelines are mainly for total rather than dissolved concentrations. This comparison is used as screening tool for the concentration of dissolved metals (loids) only and should not be used or considered as measure of any compliance.

5.3 Kinetic Test Results

The results of 25 cycles (weeks) of HC testing are reported and discussed below and the full laboratory results are compiled in Appendix I.

The pH, alkalinity and acidity production rates of the HCs are reported in Figure 5.1 through Figure 5.6. The first two figures show that the pHs of all the cells have remained neutral during the HC test period, except the lower case Volcanic/Volcanic Sediment HC (HC11). This cell produced a slightly acidic pH throughout the 25 week test period.

Figure 5.3 through Figure 5.6 show that the production rate of alkalinity has remained much higher than the acidity, maintaining a neutral pH throughout the test period. Thus, the HC tests support the ABA results indicating that these samples are N-PAG. This is due to the abundance of carbonate minerals as calcite and dolomite (Section 5.1.3) neutralizing the very low acidity produced from sulphide oxidation.

The main exception is HC11, characterized by an acidity production higher than alkalinity. Considering its low sulphide-sulphur content (0.11 wt.%), the acidity of HC11 could be explained by the release of acidity, possibly from trace amounts of ferrous and ferric iron oxyhydroxides, previously stored in the sample, coupled with low sulphide oxidation rates and a relatively slow reactivity of its carbonates content.

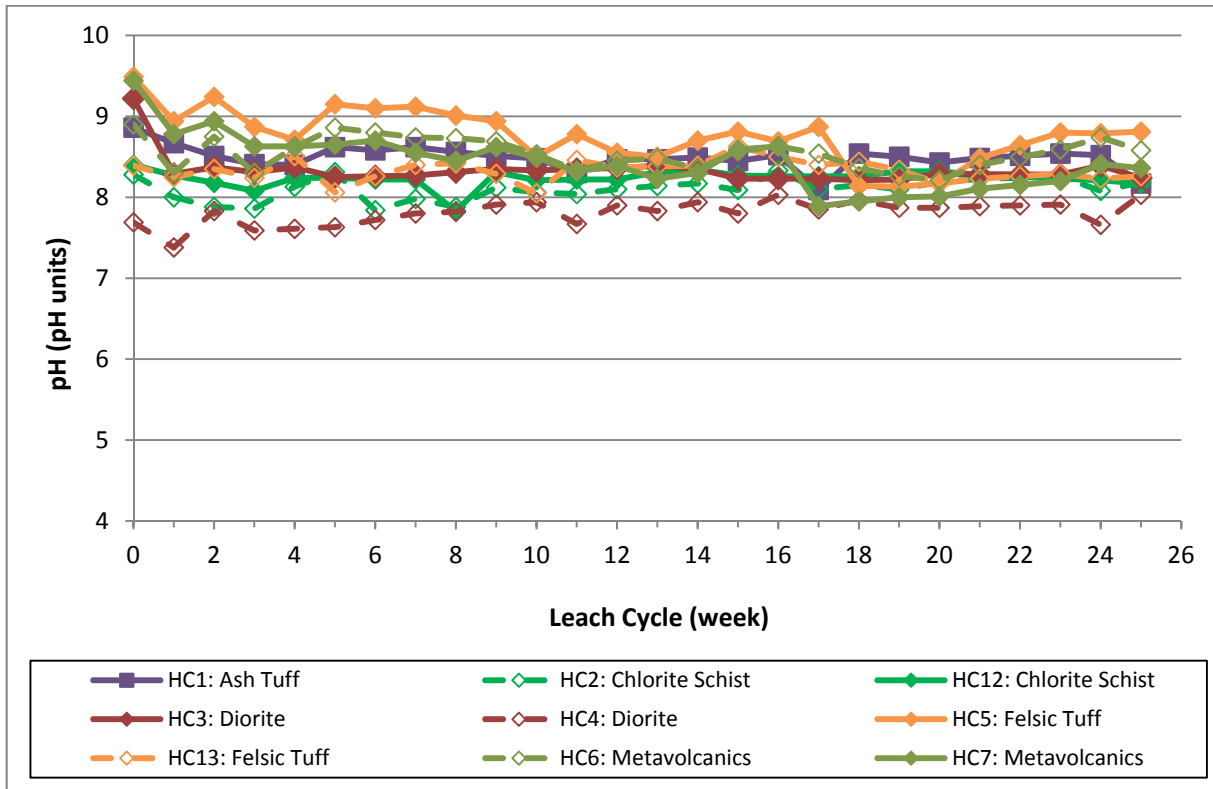


Figure 5.1 pH Trend of Humidity Cells 1, 2, 3, 4, 5, 6, 7, 12 and 13

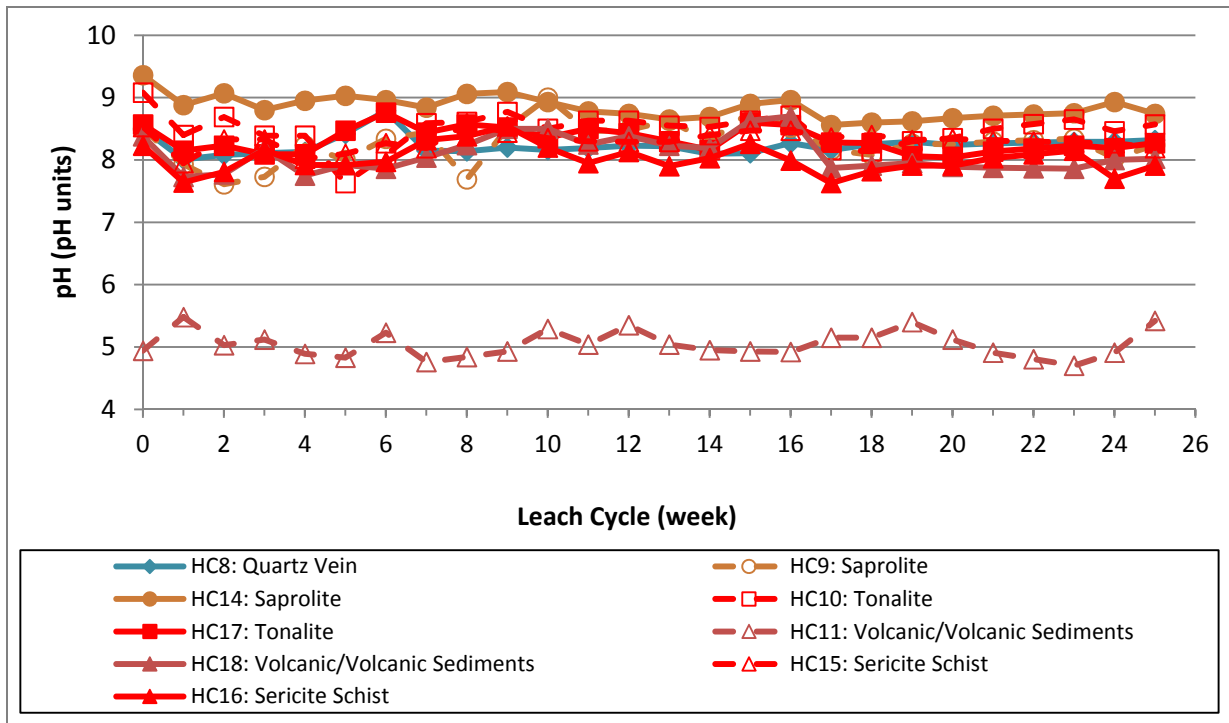


Figure 5.2 pH Trend of Humidity Cells 8, 9, 10, 11, 14, 15, 16, 17 and 18

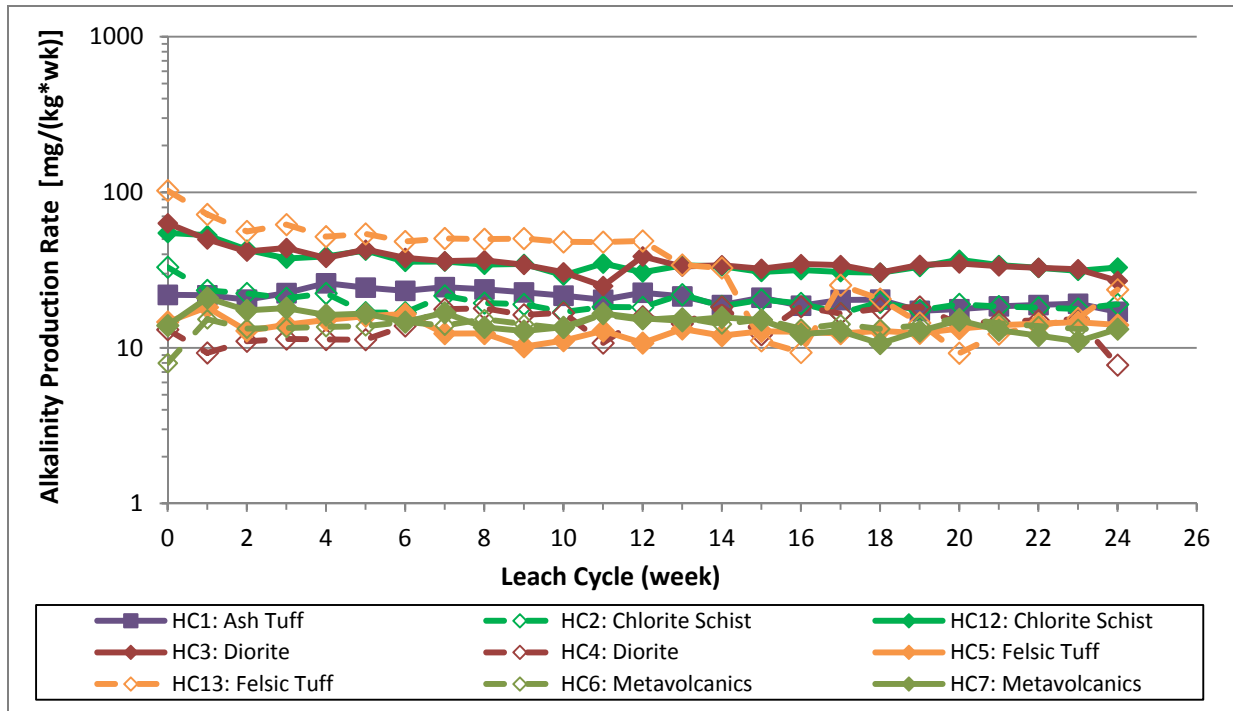


Figure 5.3 Alkalinity Production Rate of the Humidity Cells

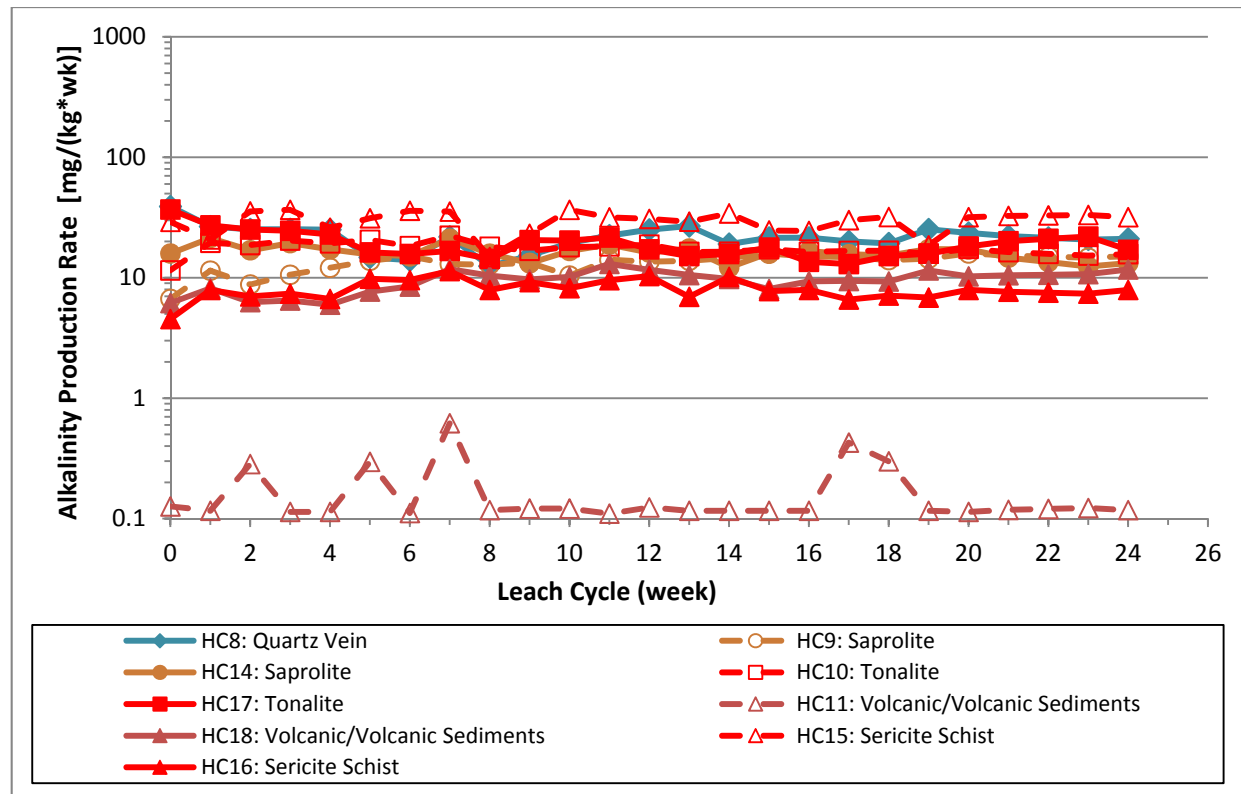


Figure 5.4 Alkalinity Production Rate of the Humidity Cells

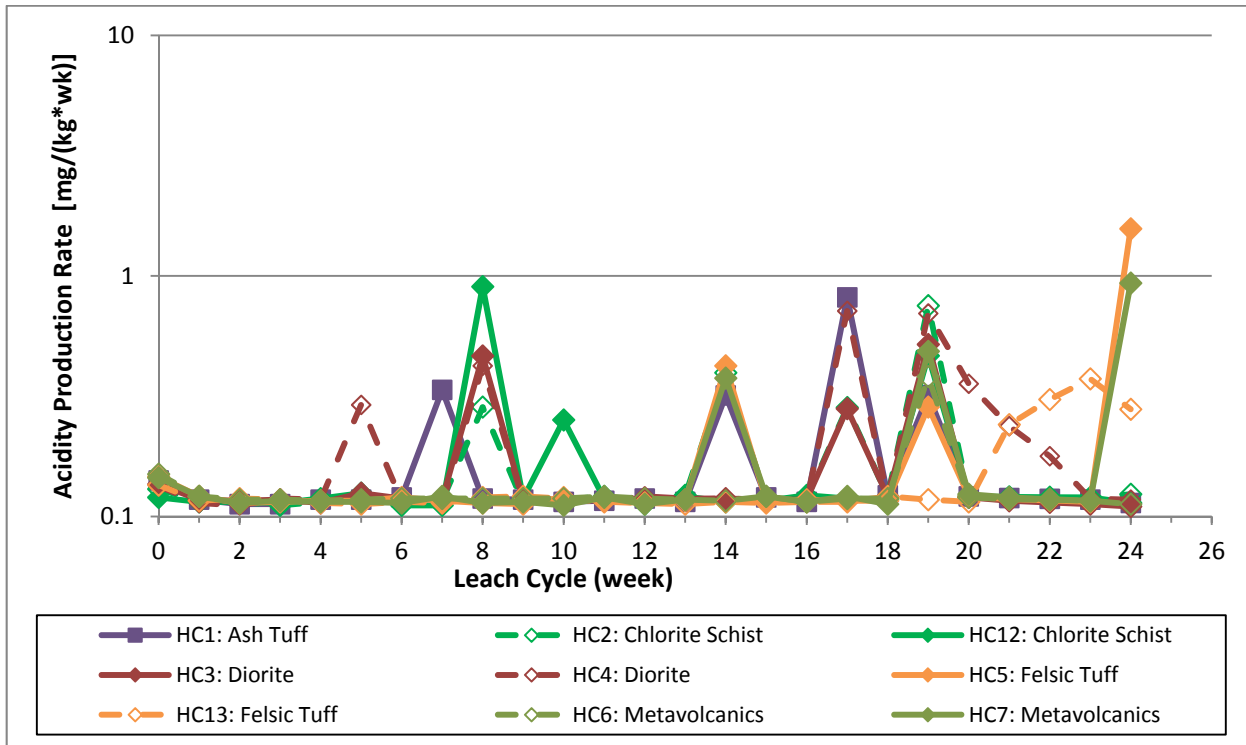


Figure 5.5 Acidity Production Rate of the Humidity Cells

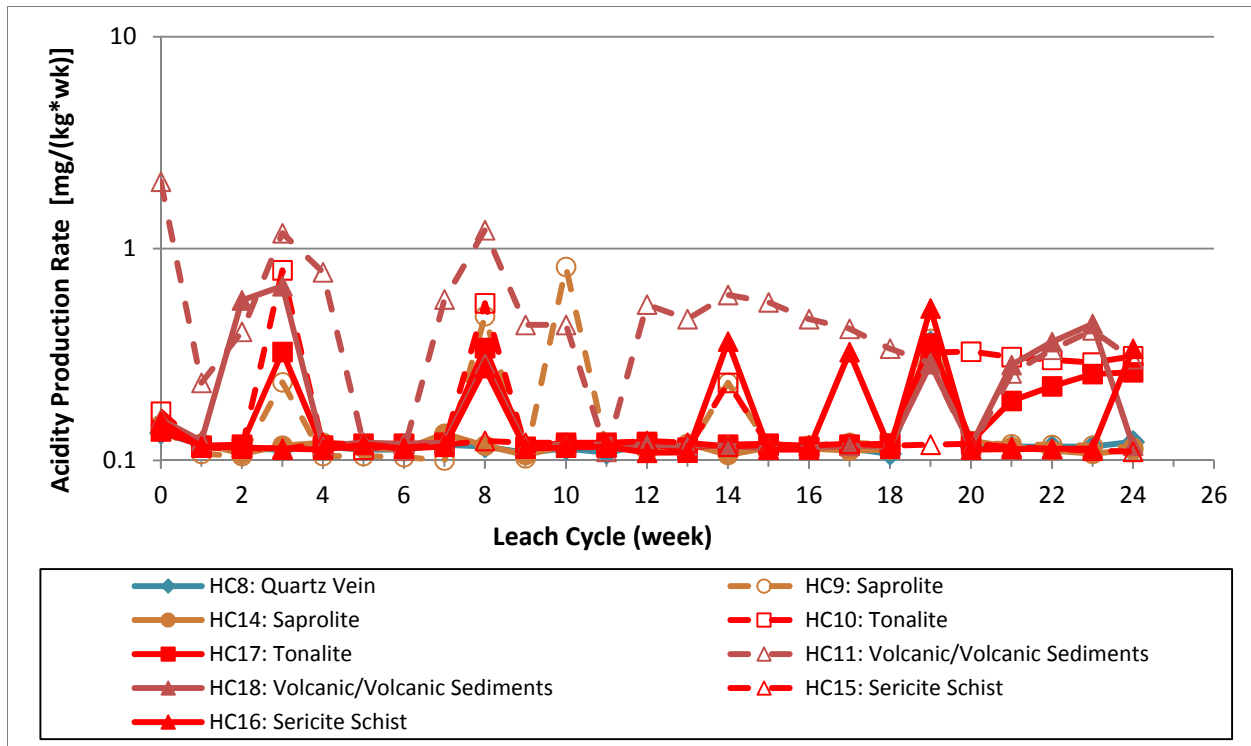


Figure 5.6 Acidity Production Rate of the Humidity Cells

Sulphate (SO₄), calcium (Ca) and magnesium (Mg) production rates are reported in Figure 5.7 to Figure 5.12.

The SO₄ production rate is often used as an indication of sulphide oxidation. The SO₄ production rate indicates a first flush followed by a steady decrease, then gradual stabilization. The SO₄ production rate declined significantly after the first flush indicating that the first flush load may be associated with the release of soluble SO₄ previously stored in the sample, while SO₄ release during subsequent weeks is indicative of low sulphide oxidation rate.

The Ca and Mg production rates are often used as an indication of the production of effective NP from reactive carbonates. A first flush pattern is observed for Ca and Mg production rates, with the exception of a few HC's. The Ca and Mg production rates of the exception HC's (Felsic Tuff, Diorite, Chlorite Schist and Metavolcanics rock types) increase after the first flush before gradually stabilizing. Mineralogical data confirms reservoirs of effective NP in the lithologies and alteration types in the form of calcite and dolomite minerals.

As Figure 5.10 and Figure 5.12 show, HC11 has the lowest alkaline earth elements production rate, explaining its low alkalinity production, but is inconsistent with its XRD results (Table 5.2).

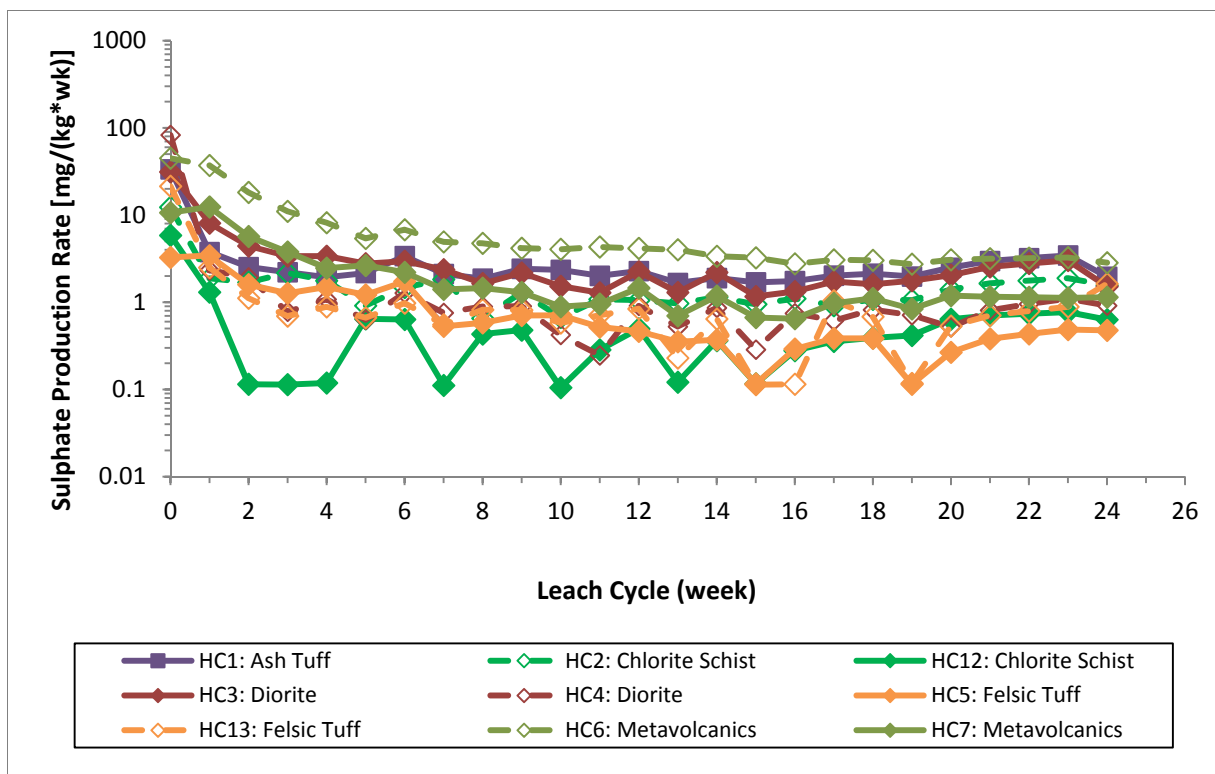


Figure 5.7 Sulphate Production Rate of the Humidity Cells

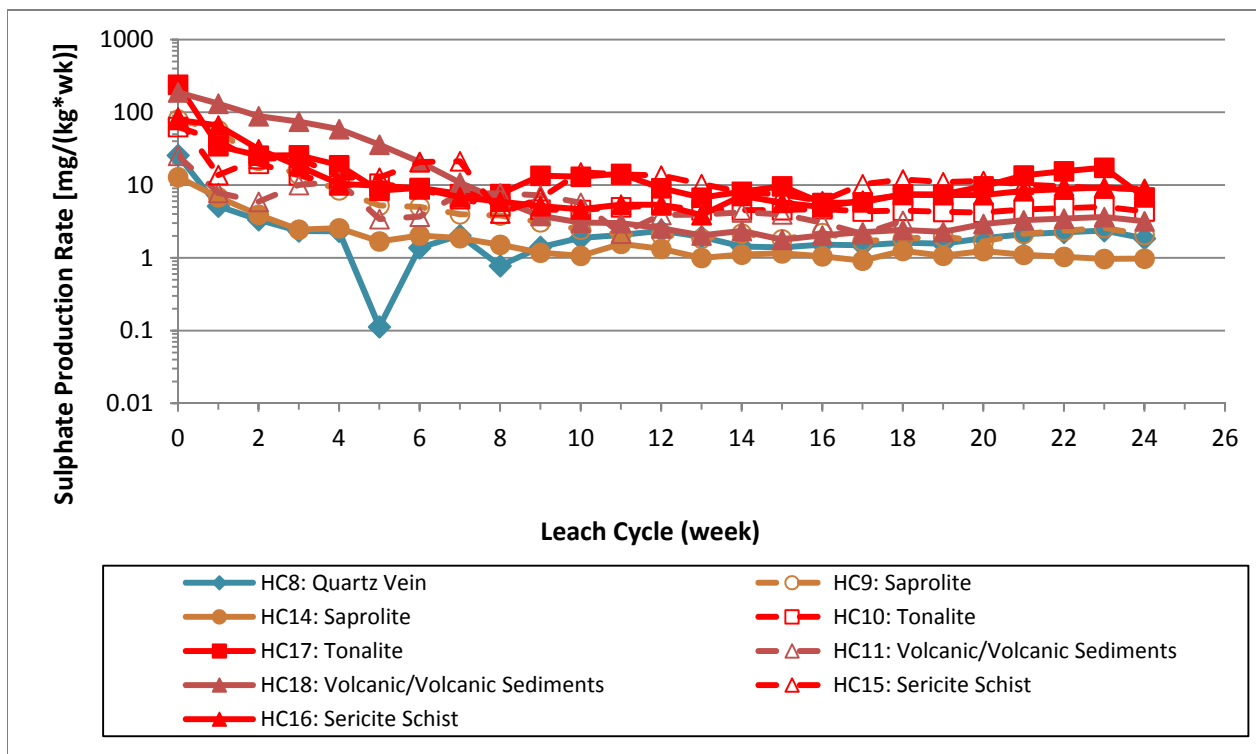


Figure 5.8 Sulphate Production Rate of the Humidity Cells

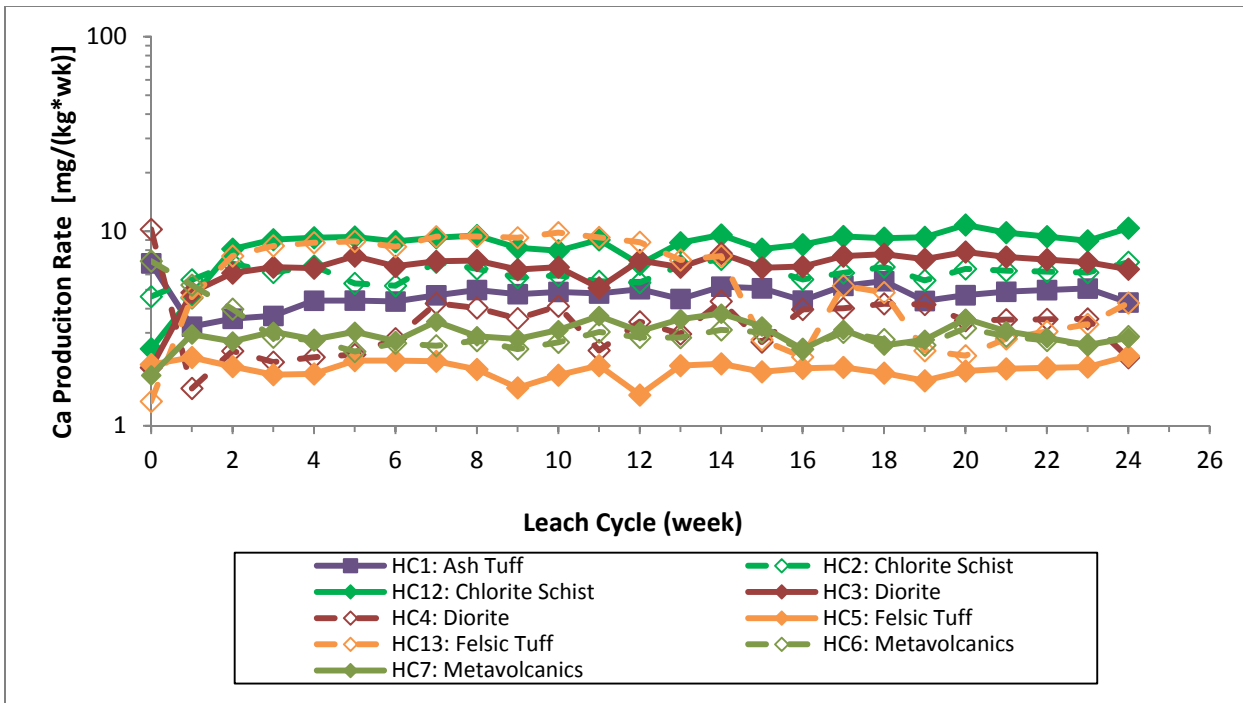


Figure 5.9 Calcium Production Rate of the Humidity Cells

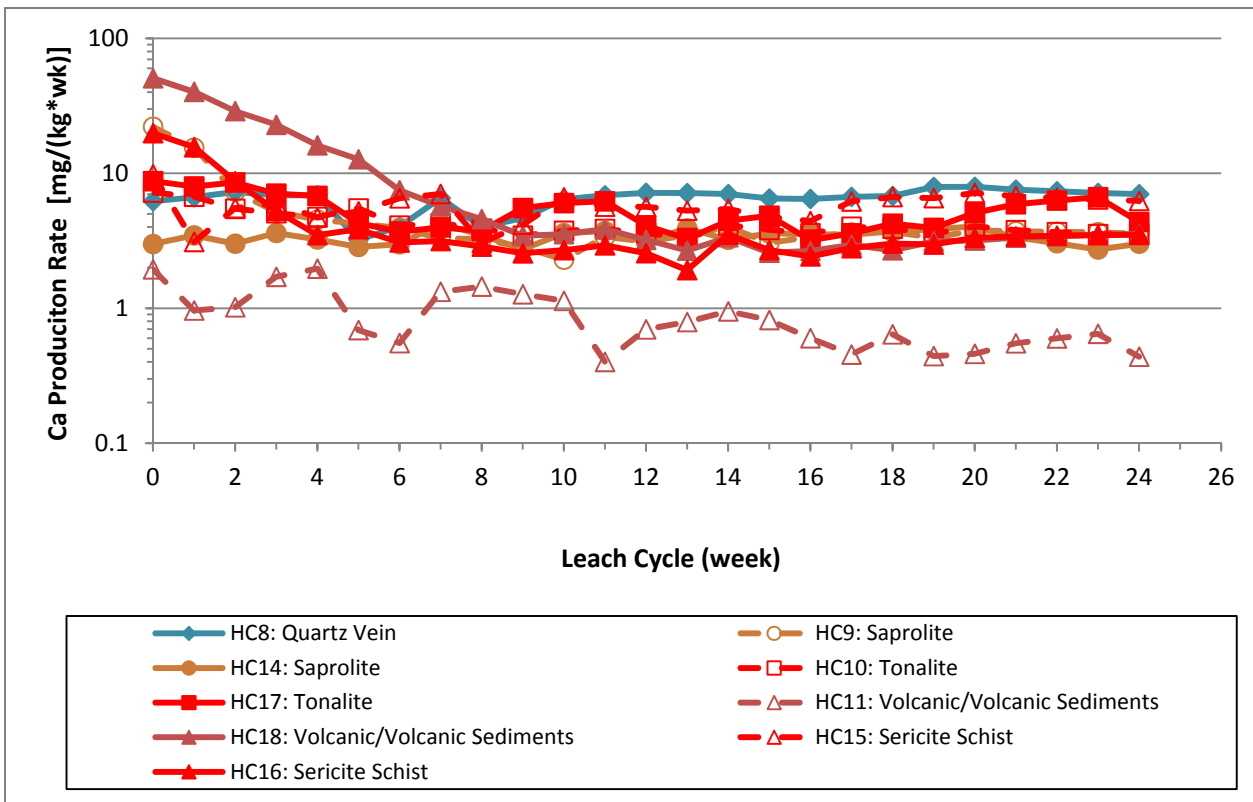


Figure 5.10 Calcium Production Rate of the Humidity Cells

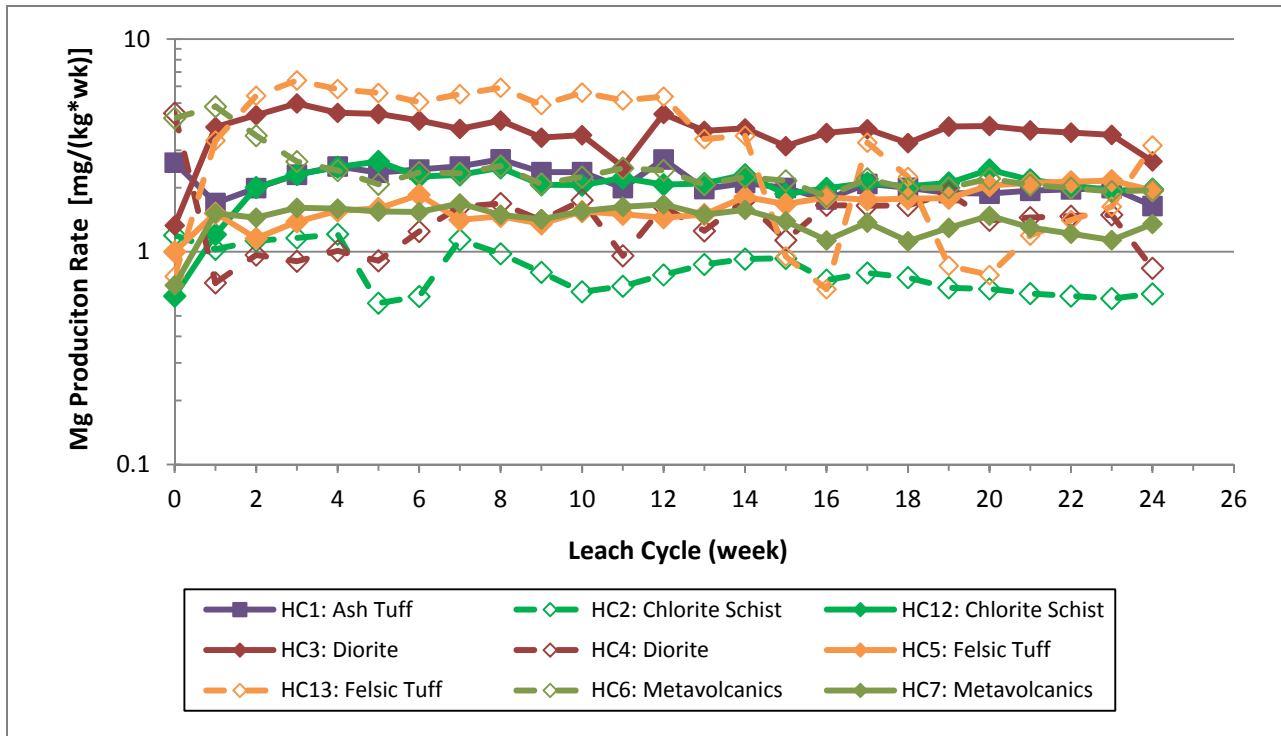


Figure 5.11 Magnesium Production Rate of the Humidity Cells

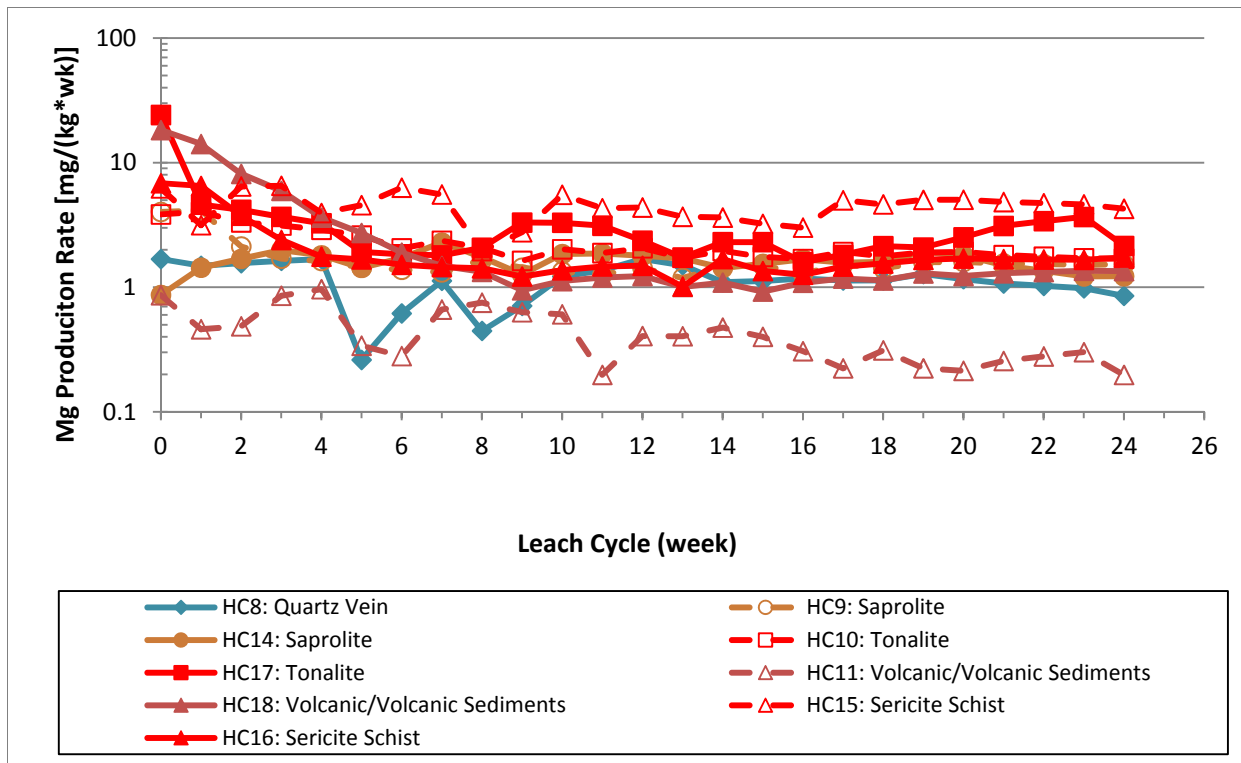


Figure 5.12 Magnesium Production Rate of the Humidity Cells

The production rates of the selected elements (As, Cu, Ni and Se) with solid-phase elemental concentrations exceeding the 3 times average crustal abundance for low and high calcium granite, and the production of molybdenum (Mo) and zinc (Zn) are shown in Figure 5.13 to Figure 5.24.

These figures show a general trend characterized by a first flush followed by a gradual decrease, then stabilization, with minimal change in the leachate pH. This indicates that these elements have reached stable production rates at neutral to slightly alkaline pH conditions. Zinc is the only element showing a slightly increasing production over time. For neutral pH environment soluble elements, it is expected that the concentration will remain at its current level or decrease further as the test progresses. However, if the leachate pH becomes acidic, acid soluble elements like Ni, Cu and Zn may be mobilized. Additionally, Zn concentration may increase further if the pH becomes alkaline.

Unlike the other cells, the weakly acidic HC11 shows the highest Ni, Zn and iron (Fe) concentrations, indicating the mobility of these elements under weakly acidic pH conditions.

The solubility of the above metals is likely controlled by the oxidation and dissolution of sulphide minerals, often rich in trace elements. Other parameters controlling the solubility of these elements are surface complexation processes involving the sorption/desorption of elements onto clays and aluminum and iron oxyhydroxides. For example, Se and As occur as oxyanions and are less sorbed onto to surface of solids at near-neutral pH conditions. Therefore, these elements may exist at elevated concentrations in leachate under near-neutral to alkaline conditions. As a result, their potential mobility will be less limited in the receiving environment under these conditions. On the other hand, positively charged elements like Zn, and Cu are preferentially sorbed onto the surface of solids at near-neutral to alkaline pH conditions when the surface of solids are negatively charged. Therefore, these elements are less mobile under these conditions.

A screening- level comparison of the HC leachate pH and aqueous concentrations against the IFC EHS guidelines shows that the concentrations of the selected elements listed above, are below the guidelines. The main exception is the pH of the early leachate of a few cells (HC3, HC5, HC7, HC10 and HC14), the pH of the acidic cell (HC11), and the As leachate concentration in HC7. The As concentration in HC7 exceeds the 0.1 mg/L IFC EHS guideline in 24 cycles, indicating a potential environmental concern of part of the Metavolcanic lithology material.

As mentioned previously, this comparison is used as a screening tool for the level of the concentration of dissolved metal (loids) only and should not be used as measure any compliance.

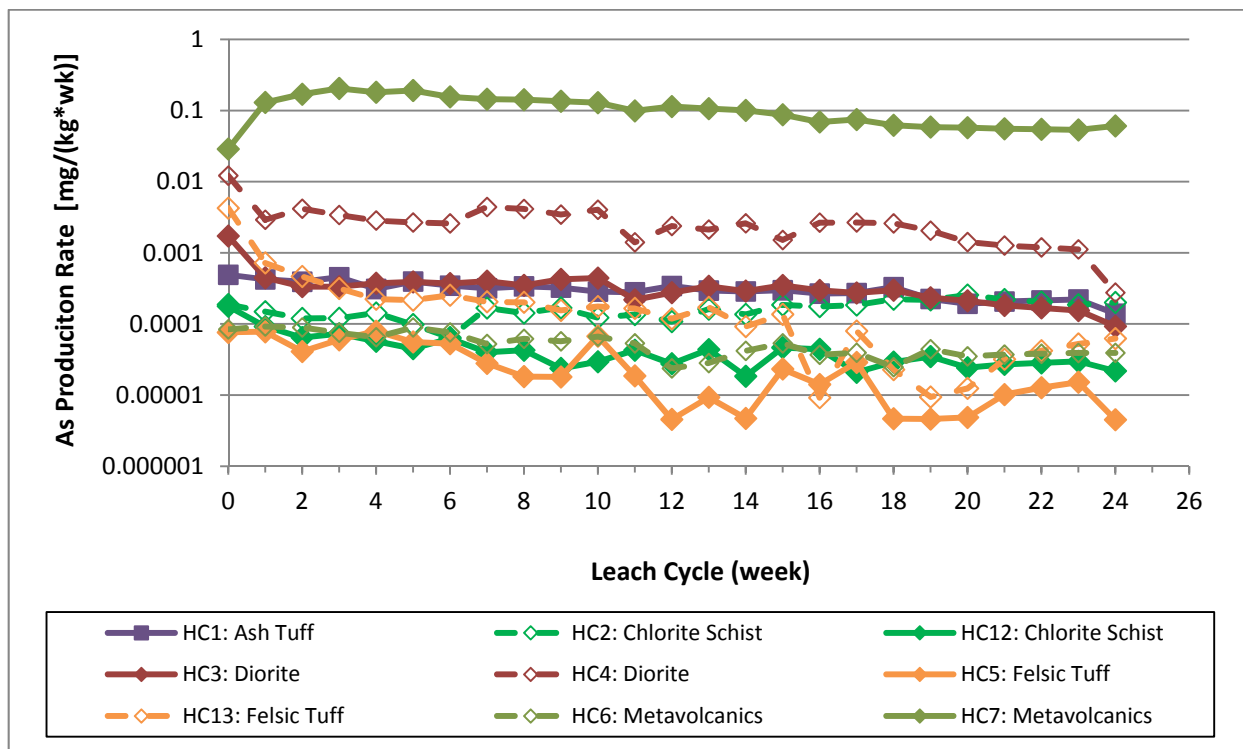


Figure 5.13 Arsenic Production Rate of the Humidity Cells

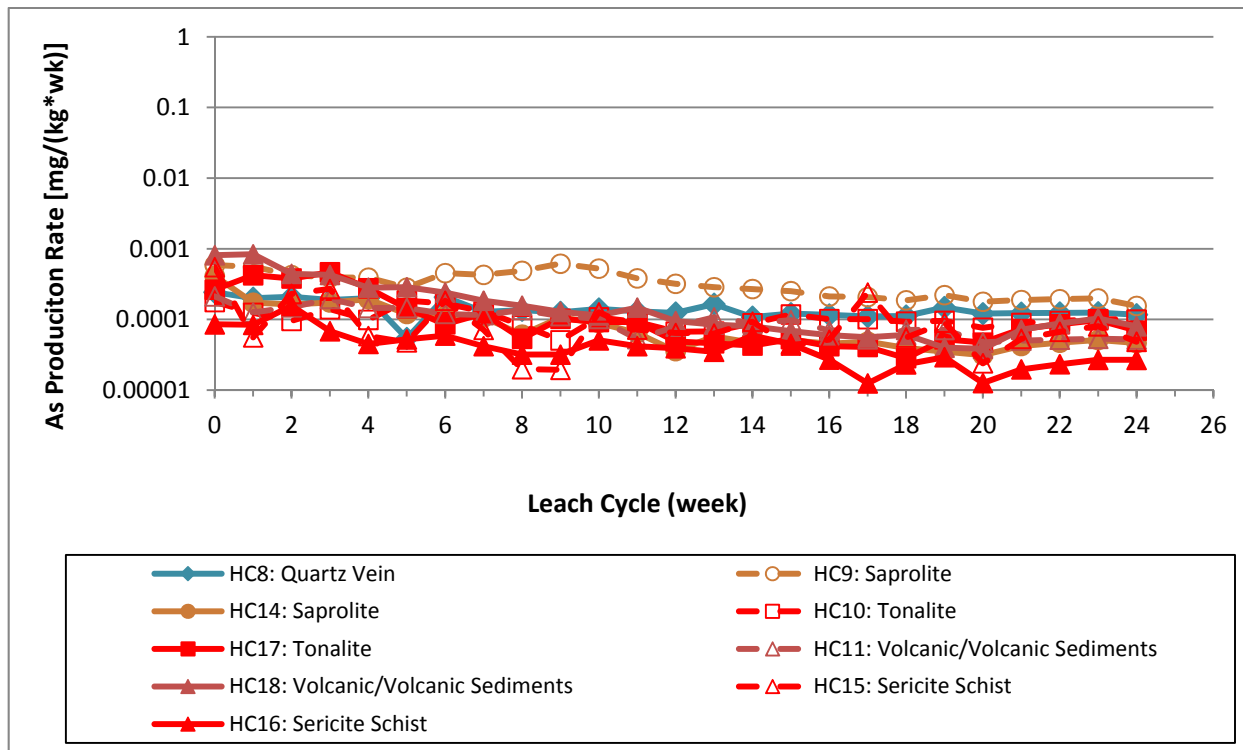


Figure 5.14 Arsenic Production Rate of the Humidity Cells

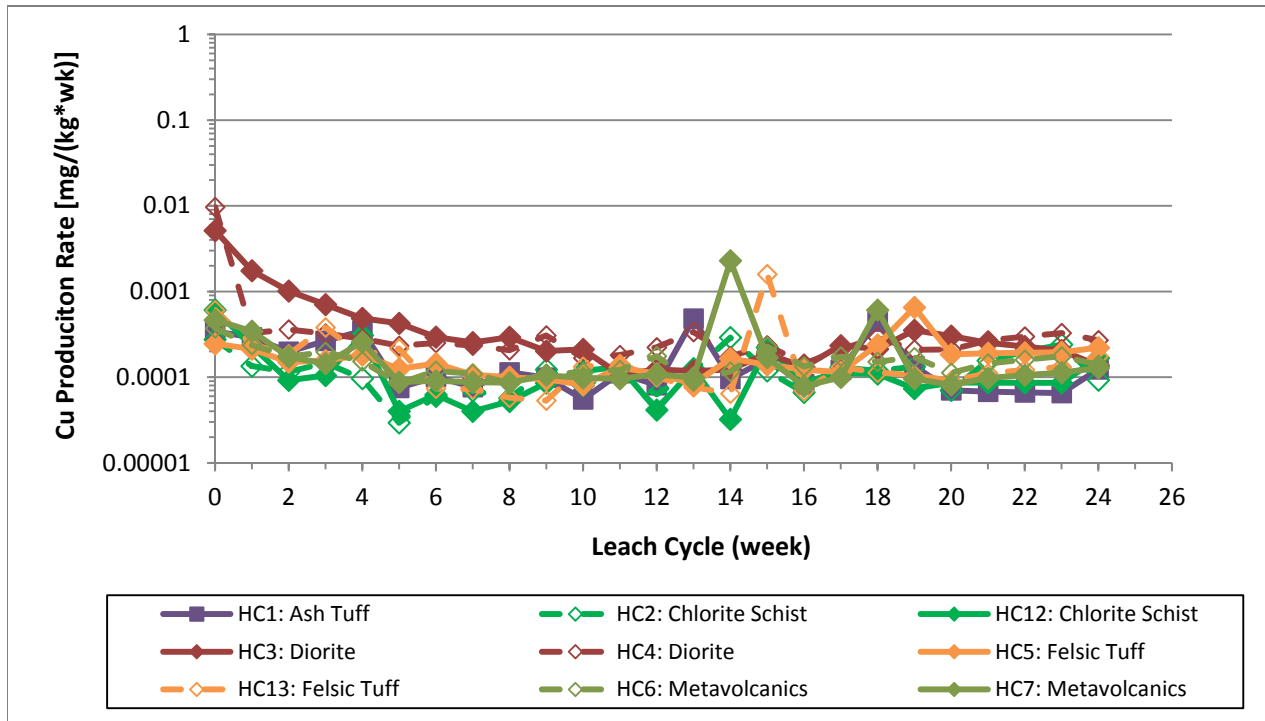


Figure 5.15 Copper Production Rate of the Humidity Cells

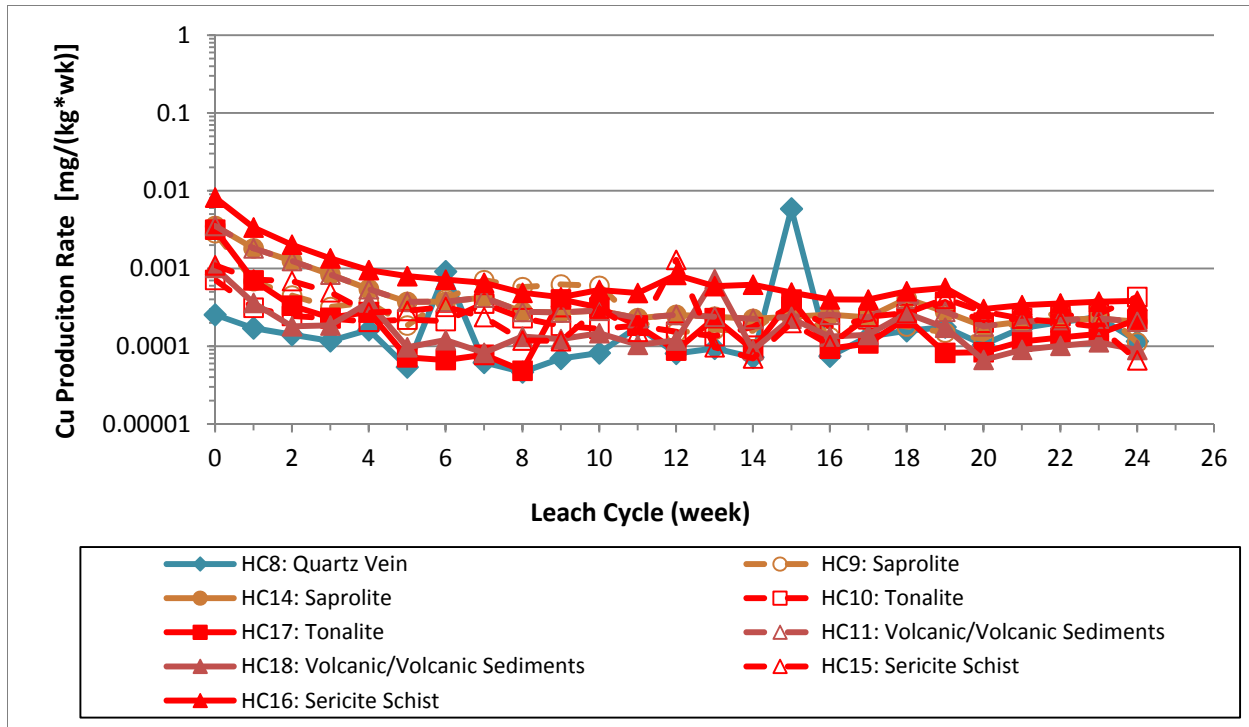


Figure 5.16 Copper Production Rate of the Humidity Cells

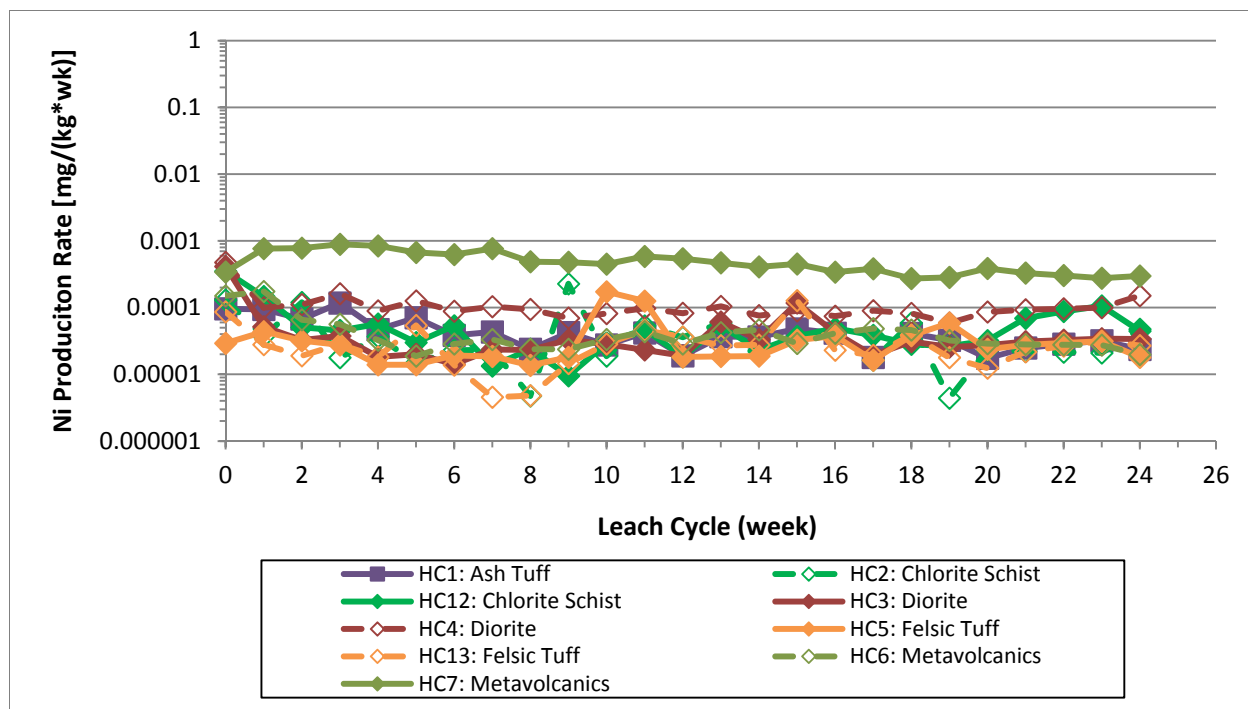


Figure 5.17 Nickel Production Rate of the Humidity Cells

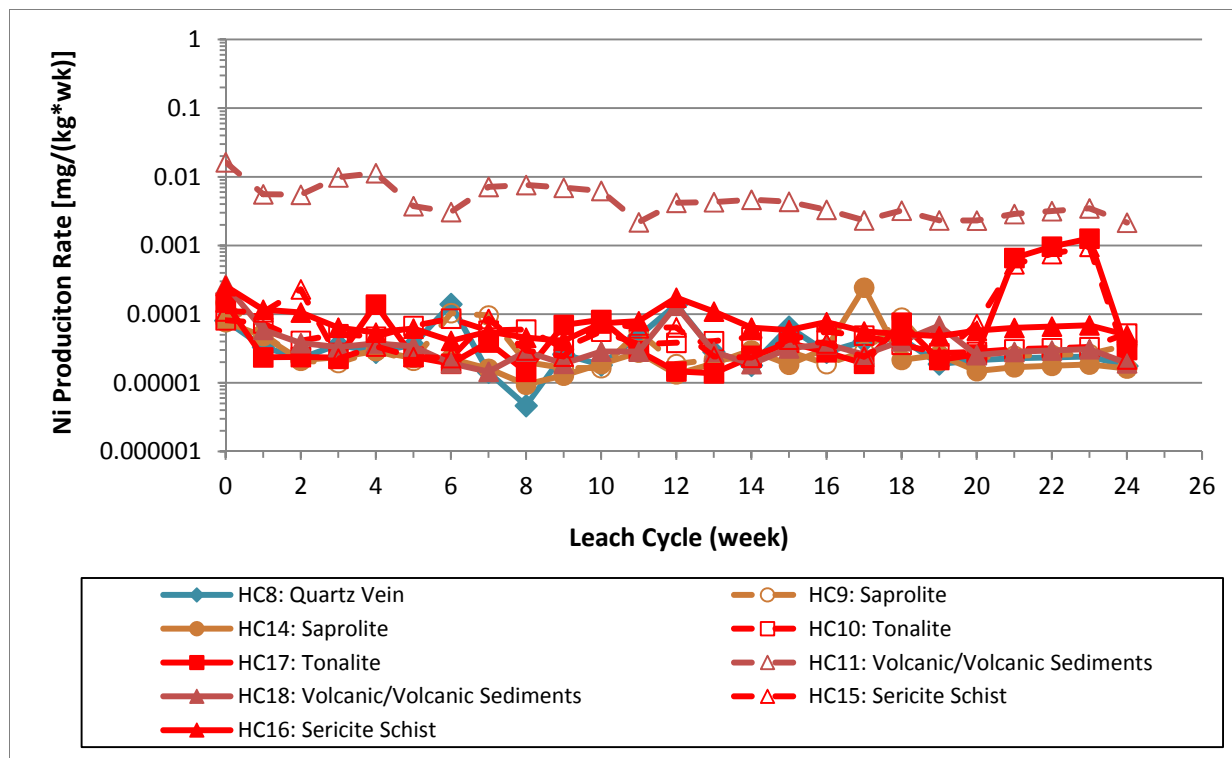


Figure 5.18 Nickel Production Rate of the Humidity Cells

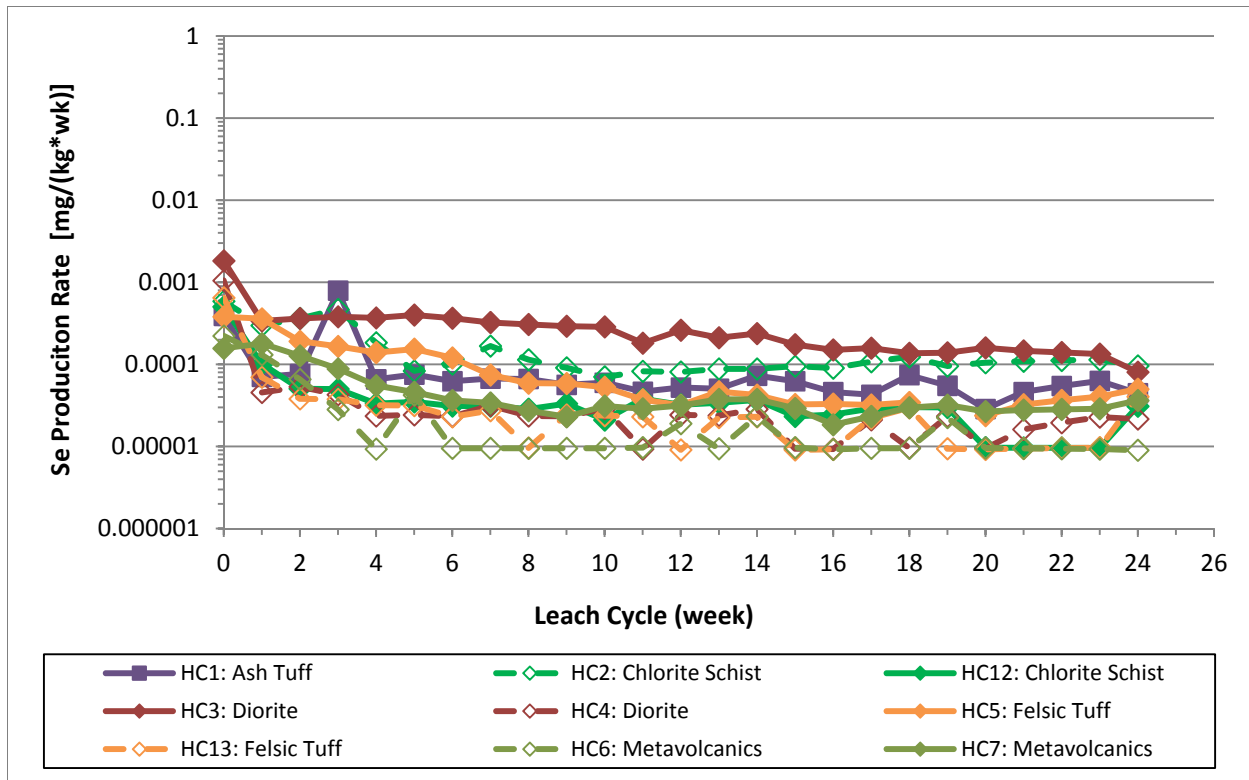


Figure 5.19 Selenium Production Rate of the Humidity Cells

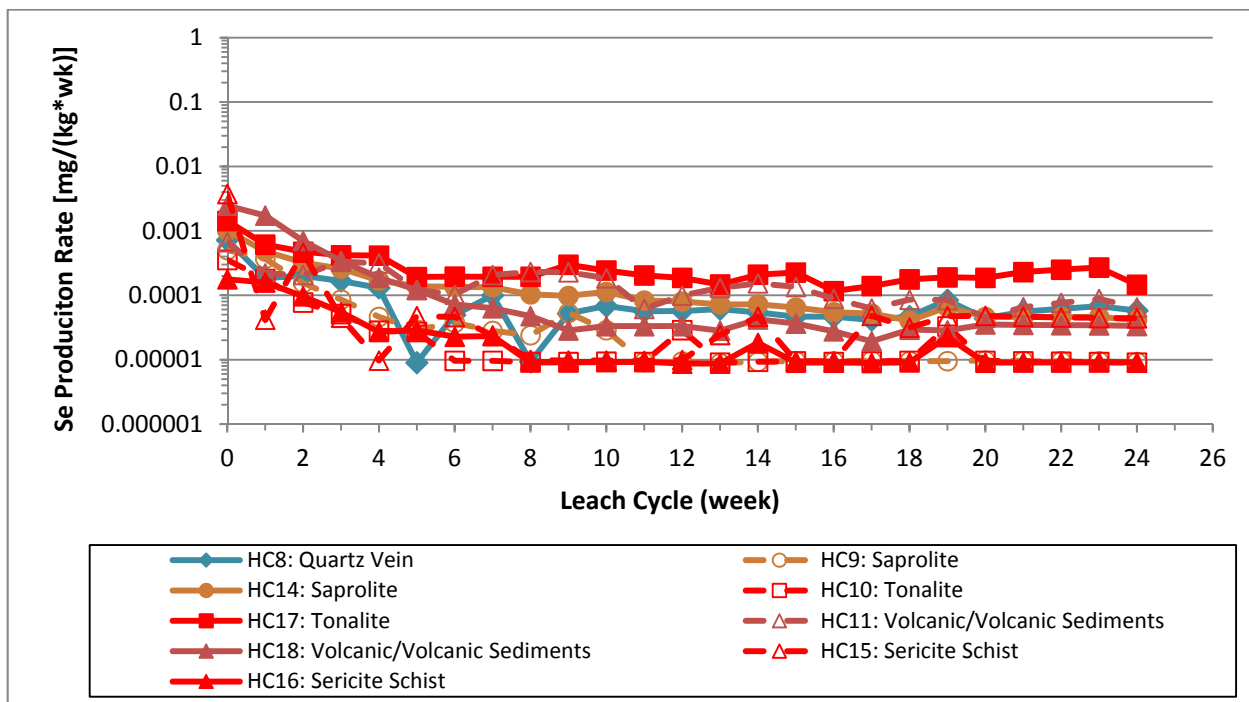


Figure 5.20 Selenium Production Rate of the Humidity Cells

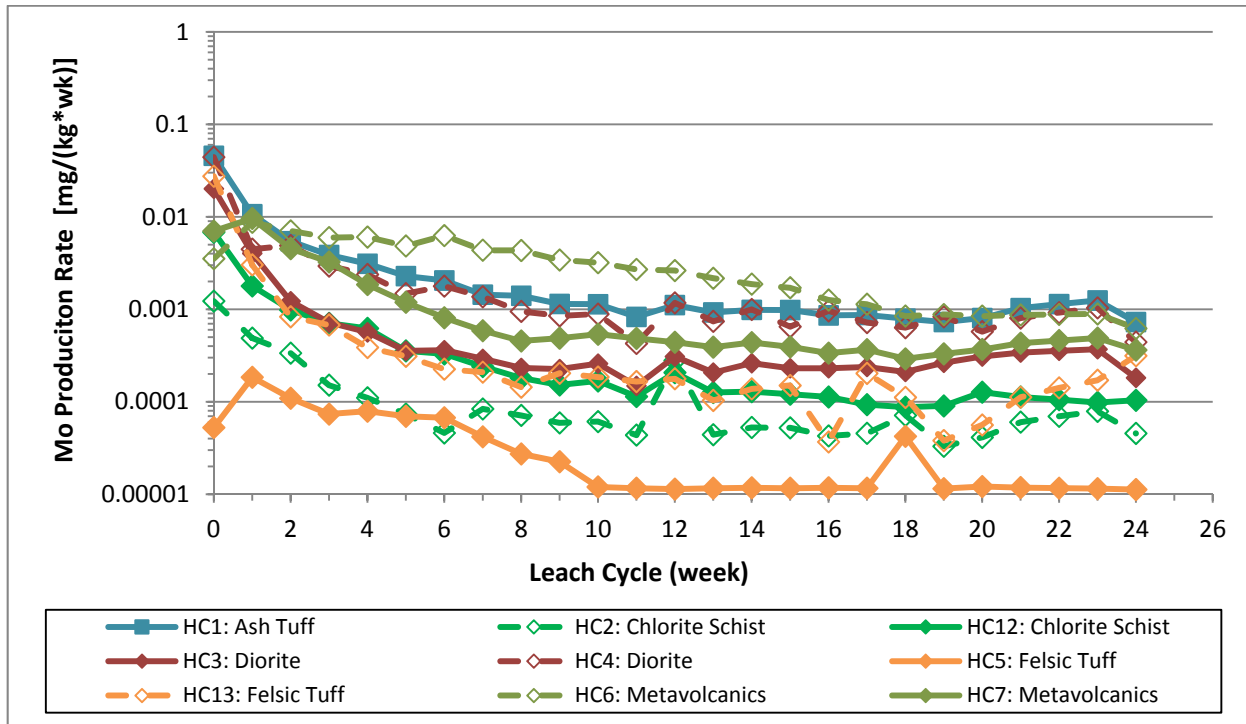


Figure 5.21 Molybdenum Production Rate of the Humidity Cells

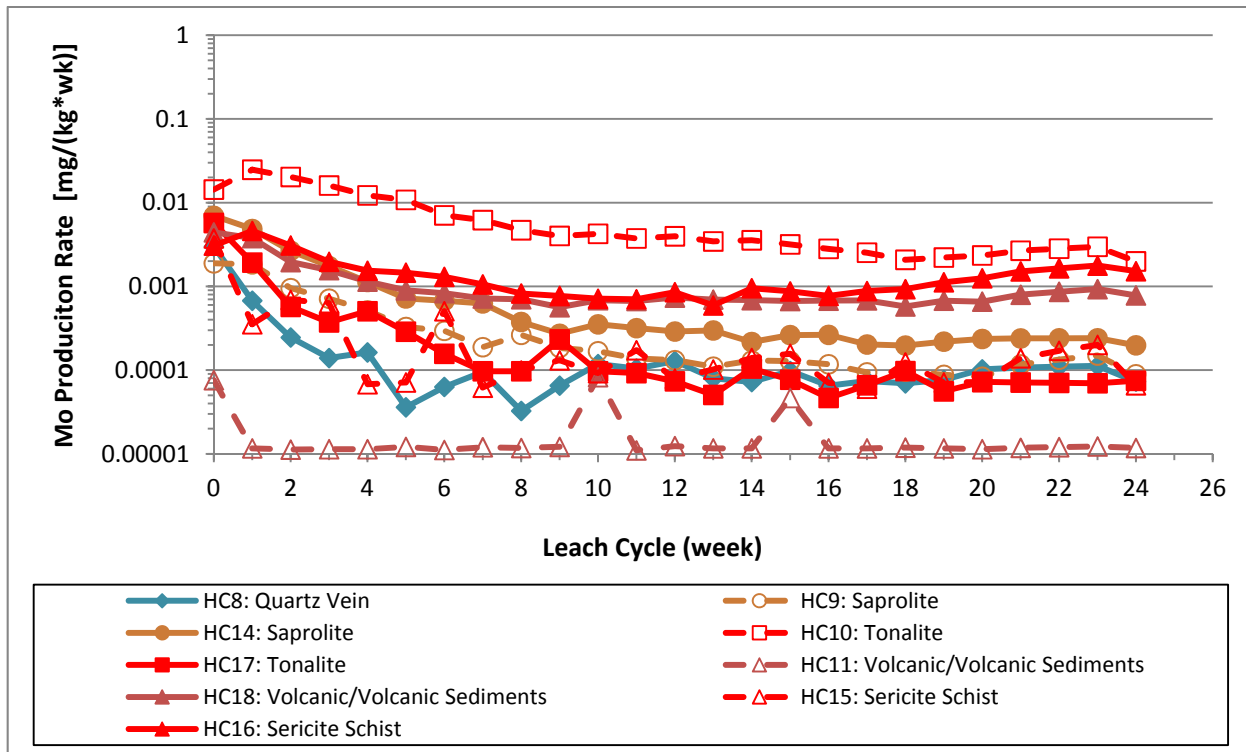


Figure 5.22 Molybdenum Production Rate of the Humidity Cells

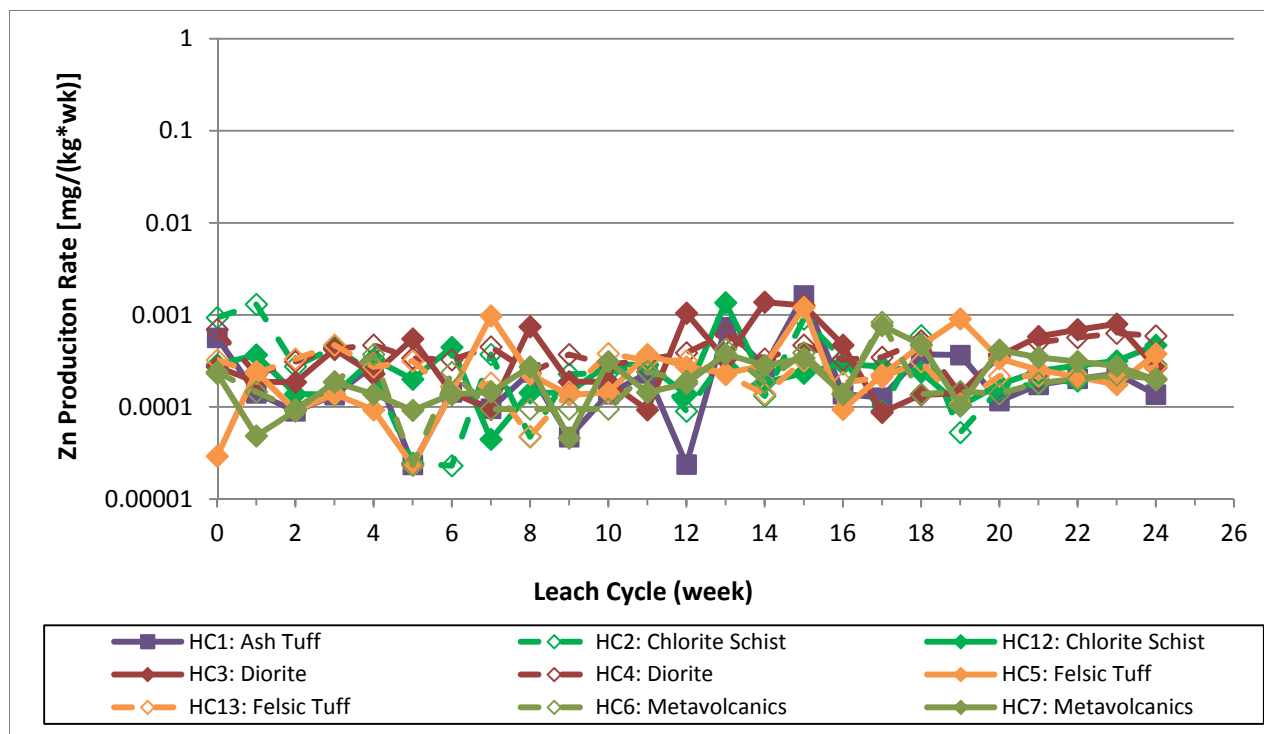


Figure 5.23 Zinc Production Rate of the Humidity Cells

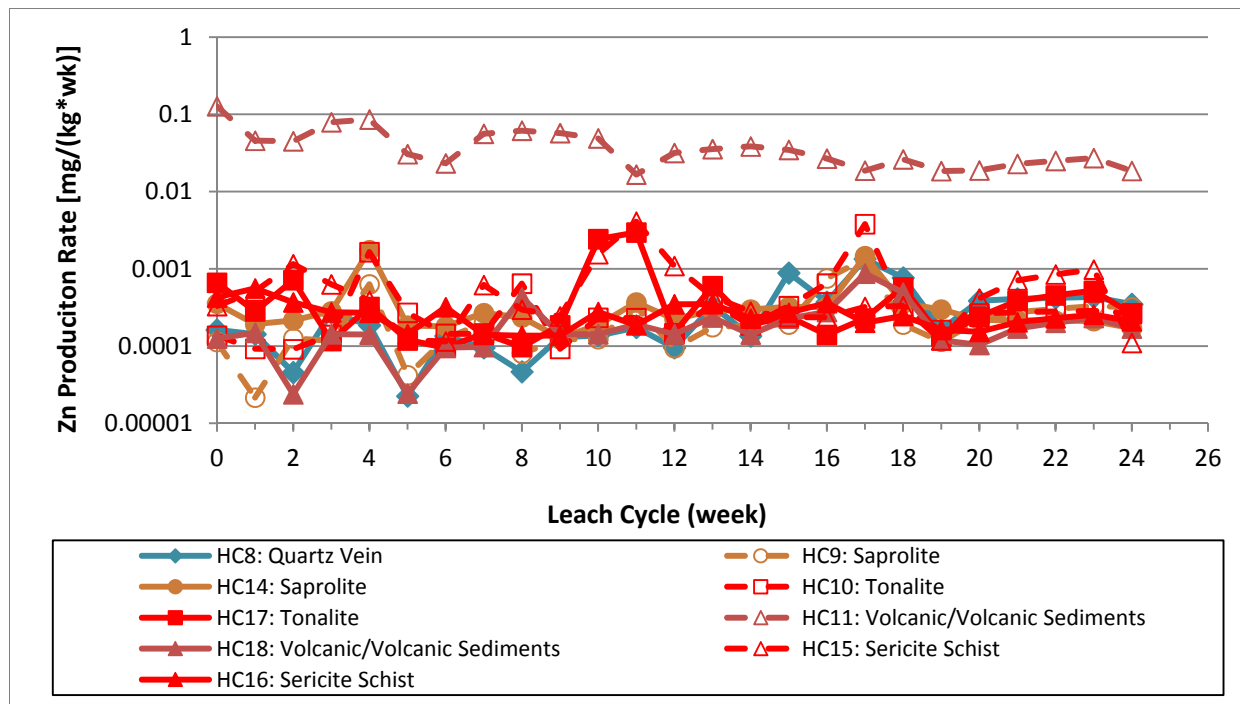


Figure 5.24 Zinc Production Rate of the Humidity Cells

5.3.1 Depletion and Lag Times

The Carbonate Molar Ratio (CMR) is often used as an indication of the balance between sulphide oxidation and NP consumption in HCs. Lower ratios indicate higher sulphate production as an indication of sulphide oxidation, while higher ratios reflect high production of NP from carbonate minerals or a slower sulphide oxidation rate.

The CMRs of the Aurora Project waste rock lithologies and alterations are graphically shown in Figure 5.25 and Figure 5.26. These figures show that the CMRs were low in the initial flush and increased significantly during the test. This indicates the leaching of readily soluble sulphates during the initial flush followed by a low sulphide oxidation rate coupled with an increasing NP production as carbonates minerals dissolve.

Sulphate production rates and the calcium and magnesium production rates of the last 5 weeks of a HC test can be used to calculate a rate of sulphide and NP depletion, providing an estimate of the lag time to the on-set ARD. The estimated time to NP depletion varies between the lithologies (Table 5.3). The lag time to NP depletion varies from as low as 0.1 to 343.5 years (average 178 years excluding low NP saprolite and diorite samples). The lowest NP depletion times are associated with the low NP saprolite and diorite samples. On the other hand, the estimated time to sulphide depletion is 59 years, on-average. Thus, it is expected that large reservoirs of NP will remain after complete depletion of sulphide minerals. The HC test results clearly corroborate the findings from the ABA and NAG tests indicating that the waste rock is predominantly N-PAG.

Table 5.3 Time to NP and Sulphide-sulphur Depletion and Estimated Lag Time to ARD On-set

Humidity Cell ID	Lithology	SNPR	Sulphate Production Rate	Carbonate Molar Ratio	Time to Sulphide-sulphur Depletion	Time to NP Depletion	Lag Time to ARD
		unitless	mg/(kg*wk)	unitless	yrs	yrs	yrs
HC-1	Ash Tuff	13.3	2.8	6.9	98.1	184.8	Never
HC-2	Chlorite Schist	45.4	1.7	10.9	34.8	140.8	Never
HC-3	Diorite	0.7	2.4	13.5	89.3	4.6	4.6
HC-4	Diorite	1348.0	0.9	16.3	6.7	268.4	Never
HC-5	Felsic Tuff	7.5	0.4	33.4	844.5	183.0	183
HC-6	Meta-Volcanic	27.2	3.1	4.8	28.7	157.2	Never
HC-7	Meta-Volcanic	22.9	1.2	10.6	164.9	343.5	Never
HC-8	Quartz Vein	164.9	2.1	10.5	60.8	117.8	Never
HC-9	Saprolite	23.0	2.2	7.1	10.6	33.9	Never
HC-10	Tonalite	17.5	4.6	3.5	31.3	153.5	Never
HC-11	Volcanic	85.9	2.5	0.9	24.3	2258	Already acidic
HC-12	Chlorite Schist	19.7	0.7	46.3	148.5	62.5	62.5
HC-13	Felsic Tuff	27.4	0.9	15.7	107.5	186.1	Never
HC-14	Saprolite	0.01	1.1	12.5	65.0	0.1	0.1
HC-15	Sericite Schist	72.3	9.8	3.5	3.5	74.9	Never
HC-16	Sericite Schist	66.6	8.5	1.8	8.2	298.0	Never
HC-17	Tonalite	11.2	12.6	2.1	35.3	180.1	Never
HC-18	Volcanic	7.1	3.3	4.1	87.4	147.0	Never

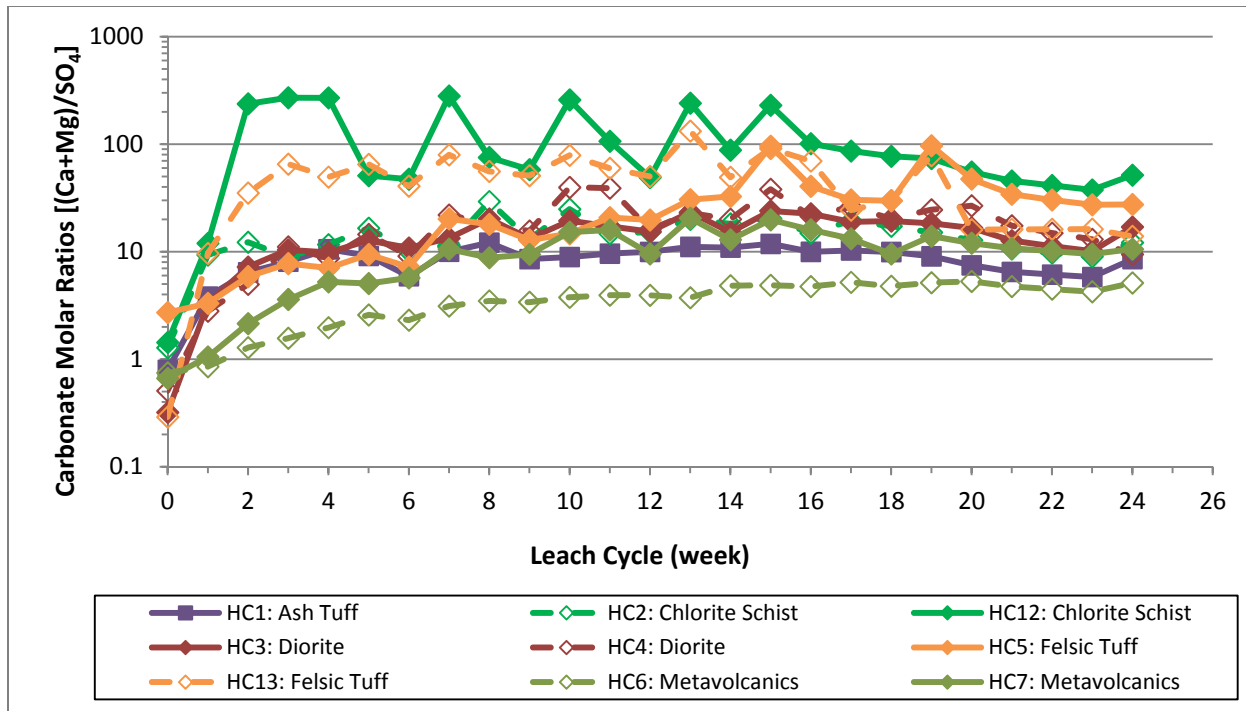


Figure 5.25 Variation of Carbonate Molar Ratio of the Humidity Cells

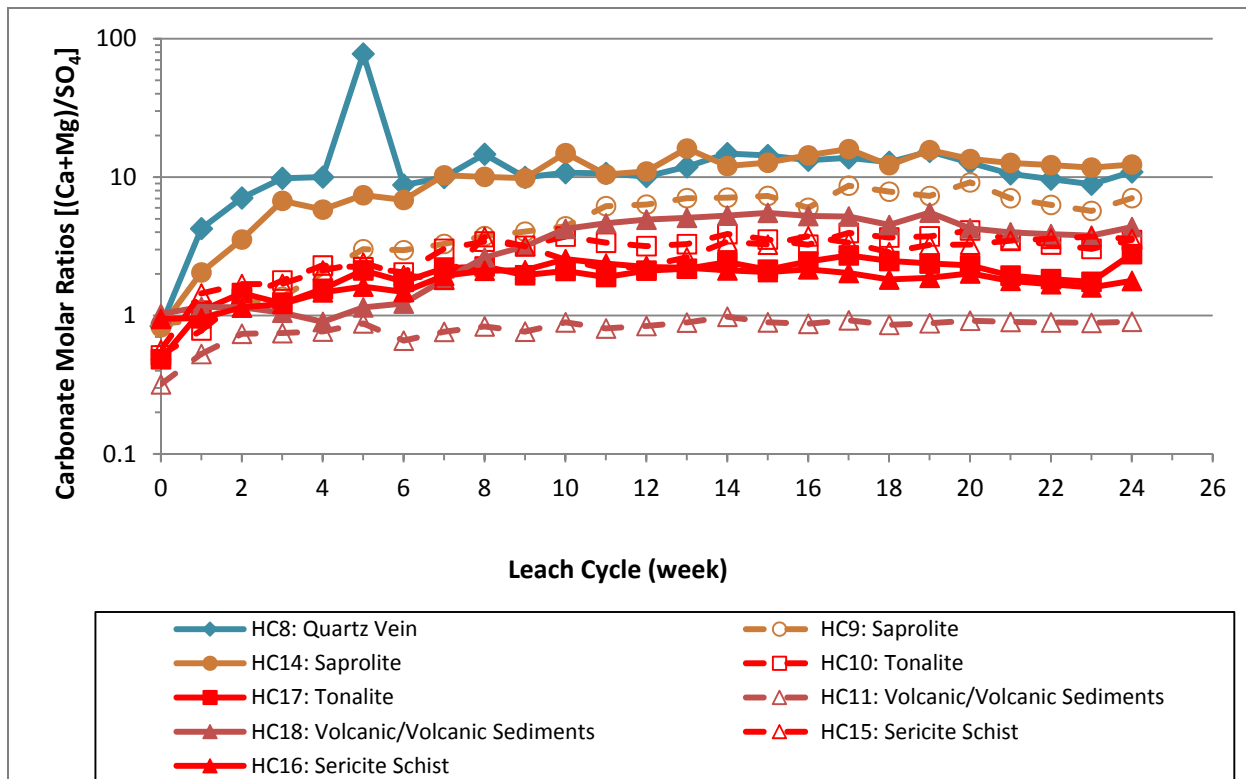


Figure 5.26 Variation of Carbonate Molar Ratio of the Humidity Cells

6 CONCLUSIONS

In summary, the results of the kinetic HC tests indicate:

- A neutral to slightly alkaline pH leachate and a first flush effect followed by a gradual decrease, then stabilization of the loading rates. The pH remained near-neutral to alkaline, the alkalinity production rate was high and the acidity very low. This is explained by the abundance of reactive carbonate minerals in the form of calcite and dolomite.
- Sulphate production rates indicate a first flush followed by a decrease and stabilization. The first flush rates may indicate the leaching of readily soluble sulphates previously stored in the HC lithologies and alterations, and the continued stable and low sulphate production that followed reflects a low sulphide oxidation rate consistent with the low sulphide-sulphur content.
- The production rates of Ca and Mg also indicate a first flush followed by a stabilization in several HCs, while in other HCs Ca and Mg increased significantly after the first flush before stabilizing. The production rates of these two elements remained high, because of the abundance of calcite and dolomite in the waste rock lithologies and alterations, leading to a high effective NP and maintaining a neutral to slightly alkaline leachate pH.
- The production rates of the selected elements, As, Ni, Cu, Se, Zn and Mo, also show a first flush effect followed by a gradual decrease, then stabilization of the production rates. In general, the leached concentration of these elements is very low, with the exception of As in the Upper Metavolcanic HC7 and Ni and Zn in the Acidic Volcanic/Volcanic sediment HC11.
- The comparison of the metals (loids) concentrations with the IFC EHS guidelines shows that the selected elements are below the guidelines in all the HCs, except As in HC7 (Upper Metavolcanic). Thus, these elements are unlikely to be leached at elevated concentrations under site-specific conditions. On the other hand, the pH of the leachates slightly exceeds the guideline in the first cycles of several HCs, and it is below the guideline in HC11 (Acidic Volcanic). This is important, because a further increase of pH to alkaline conditions or decrease to acidic conditions will favour the dissolution and mobility of certain elements.
- The kinetic HC tests indicate a long lag time to the NP depletion. It is expected that a large reservoir of NP will remain after the complete sulphide oxidation of the low sulphide mineral content present in the waste rock lithologies and alterations. The main exceptions are the Saprolite and Diorite HCs with very low NPs.
- The main exception to the above results is HC11 (Acidic Volcanic) characterized by a weakly acidic leachate, elevated acidity, low alkalinity, low Ca and Mg production rates and high Ni, Fe and Zn concentrations.
- Finally, the kinetic HC test results support the ABA, SFE and NAG test findings that the Aurora Project waste rock lithologies and alterations are overwhelmingly N-PAG. If similar to the HC operating conditions, their weathering under site-specific conditions is anticipated to produce low metal (loids) concentrations below the IFC EHS guidelines. However, the static and kinetic

HC test results also show a degree of variability within individual lithologies (i.e., Volcanic, Diorite, Saprolite), which could result in a different geochemical behaviour as is the case of HC11 (Acidic Volcanic). Additionally, the solubility and mobility of several elements are strongly pH dependent, and changes from the current near-neutral conditions can significantly alter the concentration of particular elements.

7 RECOMMENDATIONS

Based on the geochemical characteristics of the Aurora Project waste rock material discussed above, the following is recommended:

- All the humidity cells should be terminated and this should be done in accordance with the MEND (2009) procedure.
- The waste rock material can be stored in a WRD. Co-mingling of Diorite and Volcanic/Volcanic Sediments with other lithologies should be considered to minimize the risk of potential acidic and/or neutral to alkaline pH metal-rich leachates caused by the weathering of these particular rock types. On the other hand, Saprolite should be submerged subaqueously in the Tailing Storage Facility with the tailings.
- Although the sulphide-sulphur content of the waste rock is generally low, visual assessment for sulphide minerals should be carried out on waste rock materials during construction and operations, to assess the presence and distribution of these minerals.
- A LECO total-sulphur analysis should be carried out on site for a quick and inexpensive measurement of total-sulphur in waste rock materials during construction and operations.
- A source drainage monitoring program should be developed to monitor the pH, EC and sulphate content of seepages and run-off from the WRD, and analysis the concentrations of selected metals (loids) such as As, Cr, Cu, Ni and Se.

8 LIMITATIONS

This report is an instrument of service of Klohn Crippen Berger S.A. The report has been prepared for the exclusive use of Guyana Goldfields Limited for the specific application to the Aurora Project. The report's contents may not be relied upon by any other party without the express written permission of Klohn Crippen Berger S.A. In this report, Klohn Crippen Berger, S.A. has endeavoured to comply with generally-accepted professional practice common to the local area. Klohn Crippen Berger makes no warranty, express or implied.

Yours truly,

KLOHN CRIPPEN BERGER LTD.



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APPENDIX I

Lab Data

QUANTITATIVE PHASE ANALYSIS OF 18 POWDER SAMPLES USING THE RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA.

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March 7, 2012

EXPERIMENTAL METHOD

The eighteen samples of **Project Klohn Crippen – Guyana Aurora Gold** were reduced to the optimum grain-size range for quantitative X-ray analysis (<10 µm) by 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 Bruker D8 Focus Bragg-Brentano diffractometer equipped with an Fe monochromator foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye 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

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 of the samples were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1 (separate file, *Maxxam Analytics Results Mar 7 2012 - Proj Klohn Crippen - Guyana Aurora Gold.xls*). These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots are shown in Figure 1 – Figure 18. The ideal formulae of phases present are given in Table 2.

Table 2 **Ideal Formulae of Phases**

Mineral	Ideal Formula
Ankerite-Dolomite	$\text{Ca}(\text{Fe}^{2+}, \text{Mg}, \text{Mn})(\text{CO}_3)_2 / \text{CaMg}(\text{CO}_3)_2$
Biotite	$\text{K}(\text{Mg}, \text{Fe})_3(\text{AlSi}_3\text{O}_{10})(\text{OH})_2$
Calcite	CaCO_3
Clinocllore	$(\text{Mg}, \text{Fe}^{2+})_5\text{Al}(\text{Si}_3\text{Al})\text{O}_{10}(\text{OH})_8$
Goethite	$\alpha\text{-Fe}^{3+}\text{O}(\text{OH})$
Hematite	$\alpha\text{-Fe}_2\text{O}_3$
Kaolinite	$\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$
Magnetite	$\text{Fe}^{2+}\text{Fe}^{3+}_2\text{O}_4$
Muscovite	$\text{KAl}_2(\text{AlSi}_3\text{O}_{10})(\text{OH})_2$
Paragonite	$\text{NaAl}_2(\text{AlSi}_3\text{O}_{10})(\text{OH})_2$
Plagioclase	$\text{NaAlSi}_3\text{O}_8 - \text{CaAl}_2\text{Si}_2\text{O}_8$
Pyrite	FeS_2
Quartz	SiO_2
Rutile	TiO_2
Siderite	$\text{Fe}^{2+}\text{CO}_3$
Titanite	CaTiSiO_5

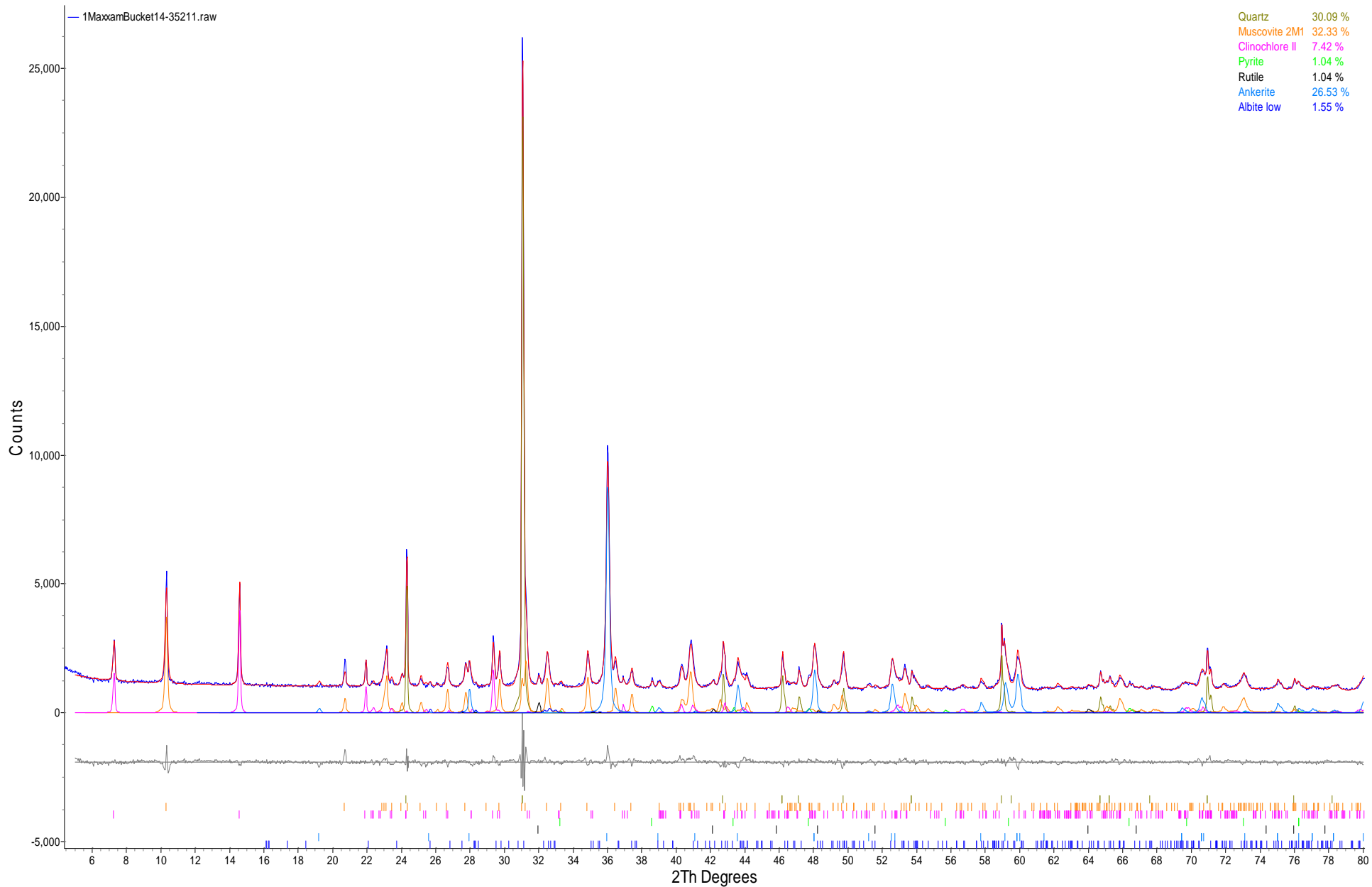


Figure 1 Rietveld refinement plot of sample “Bucket #14 35211” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

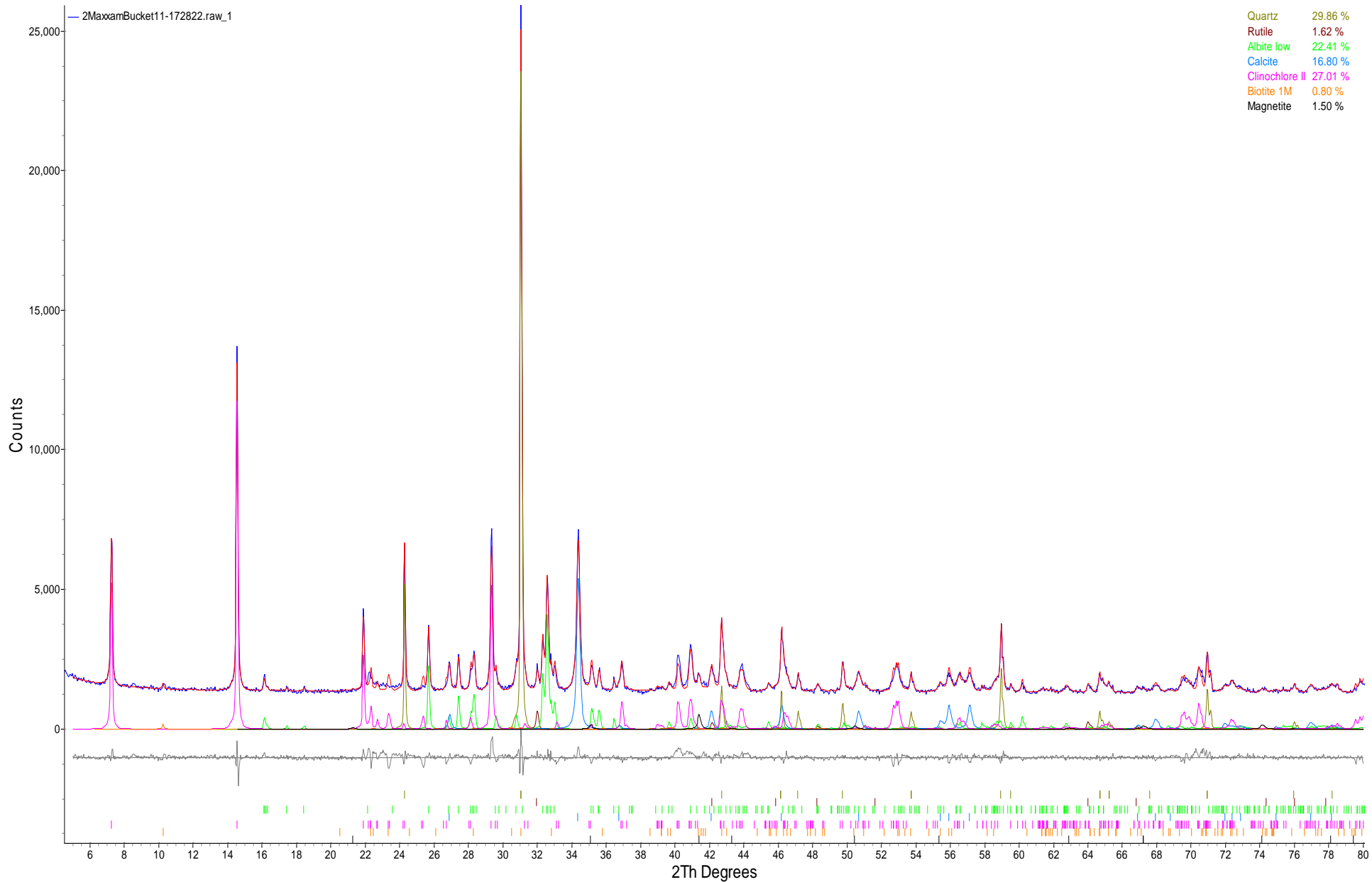


Figure 2 Rietveld refinement plot of sample “Bucket #11 172822” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

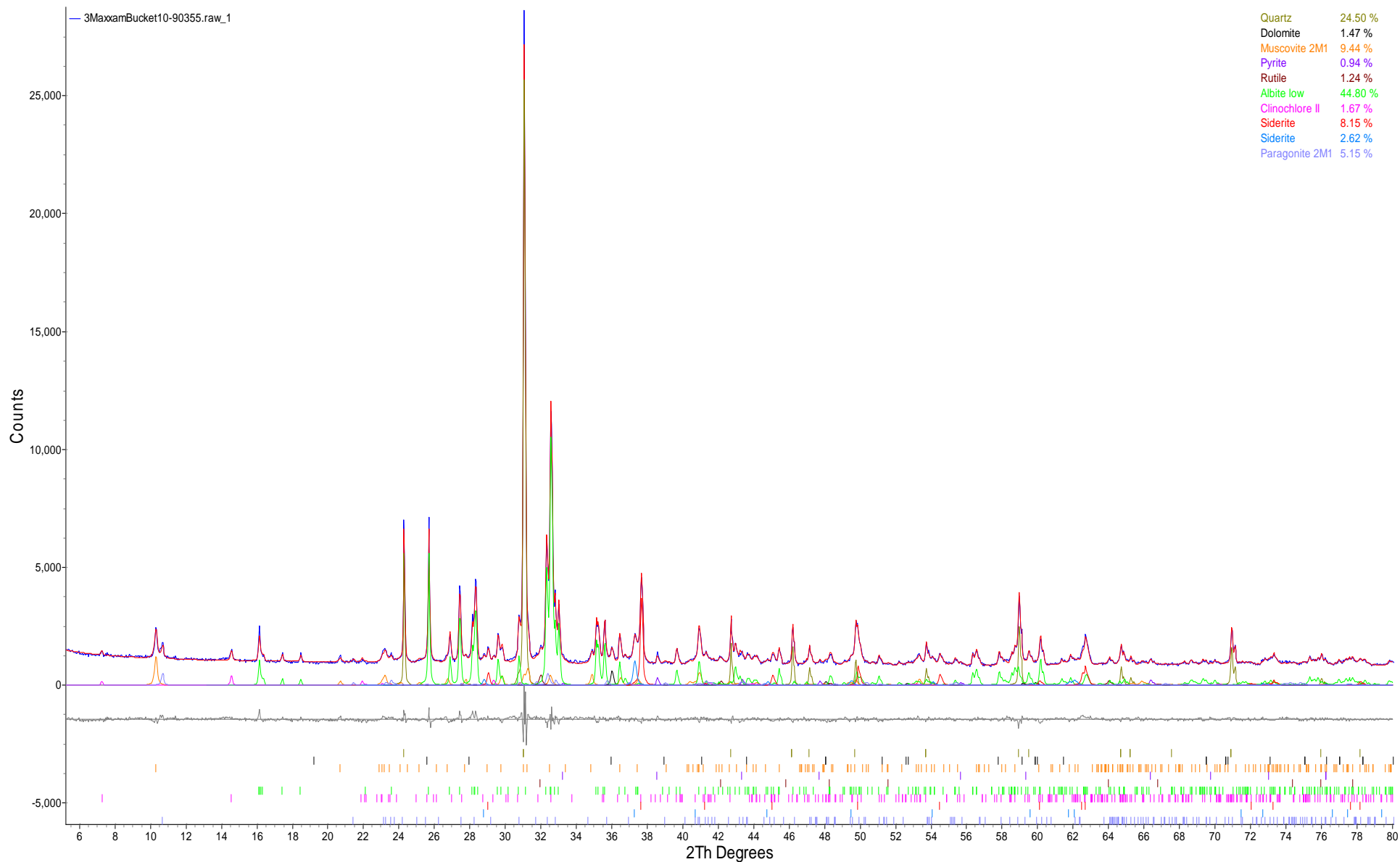


Figure 3 Rietveld refinement plot of sample “Bucket #10 90355” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

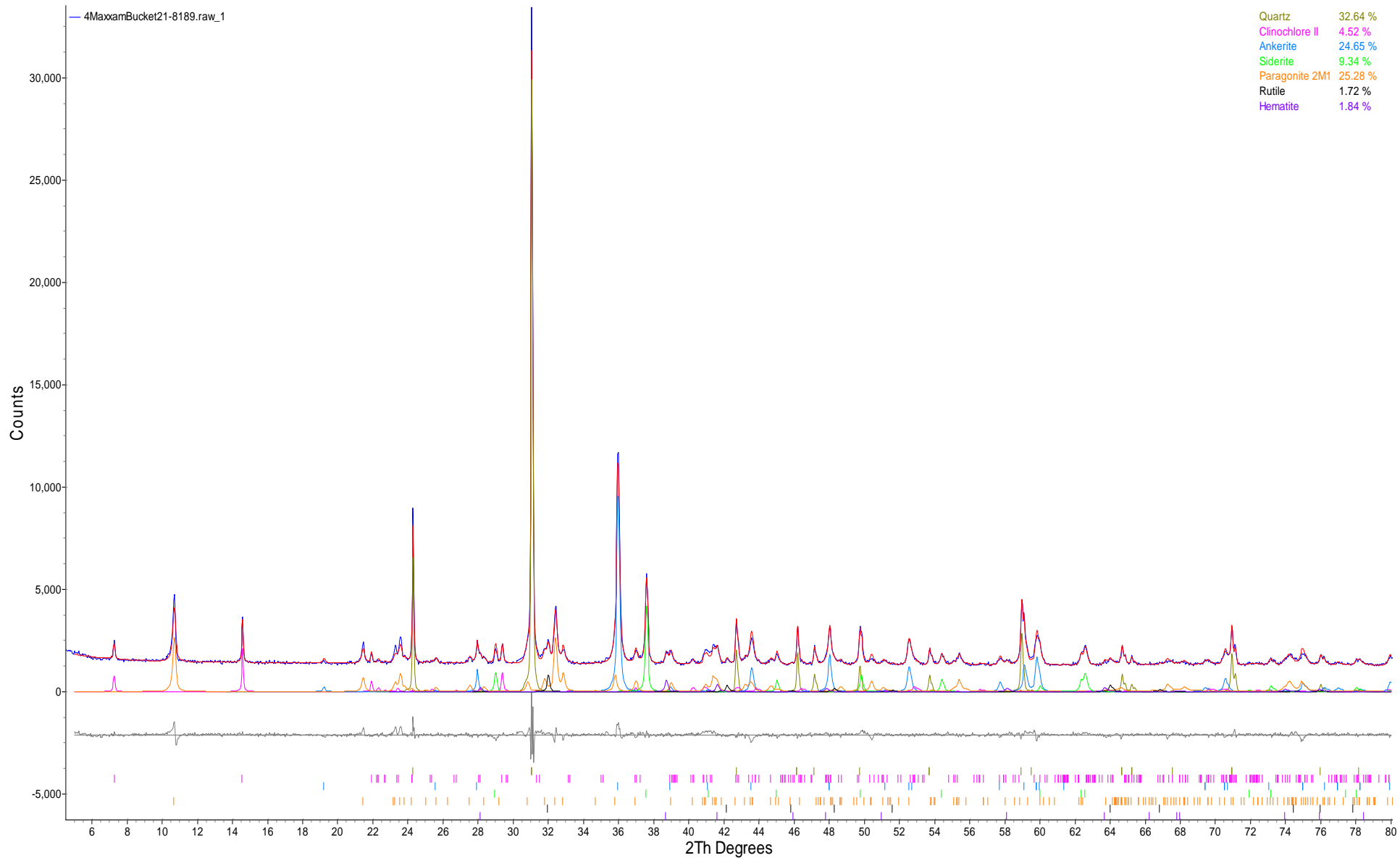


Figure 4 Rietveld refinement plot of sample “Bucket #21 8189” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

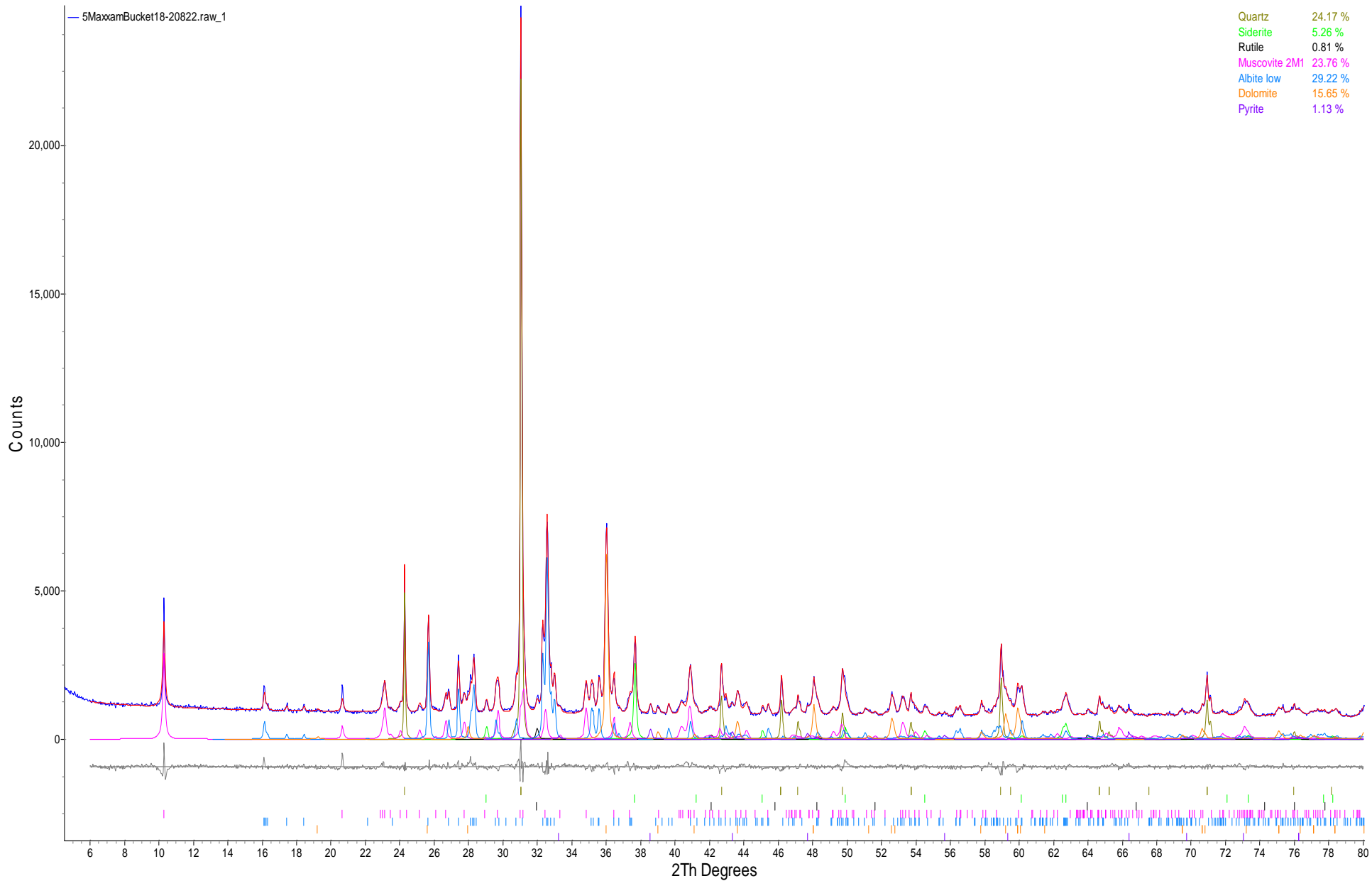


Figure 5 Rietveld refinement plot of sample “Bucket #18 20822” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

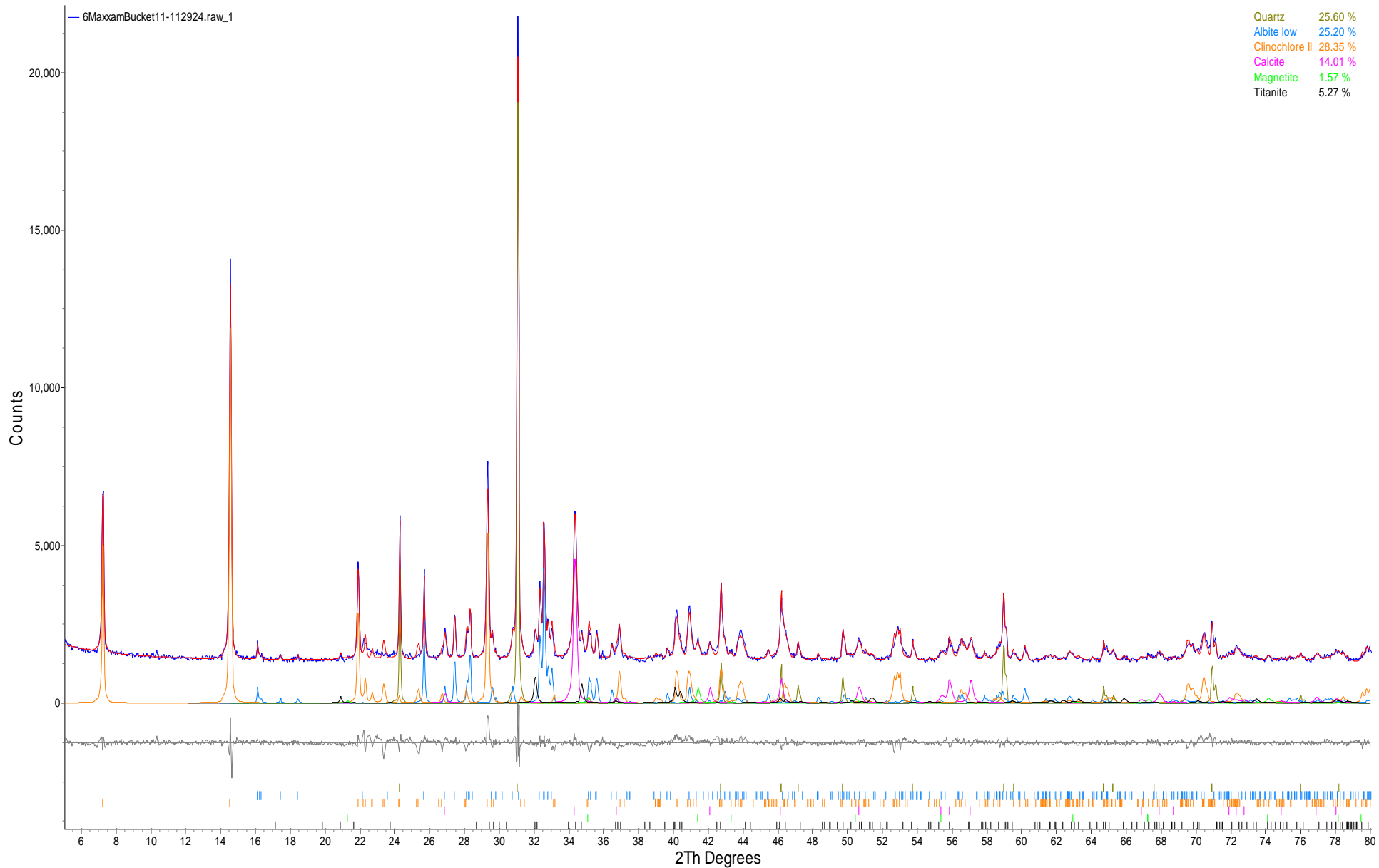


Figure 6 Rietveld refinement plot of sample “Bucket #11 112924” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

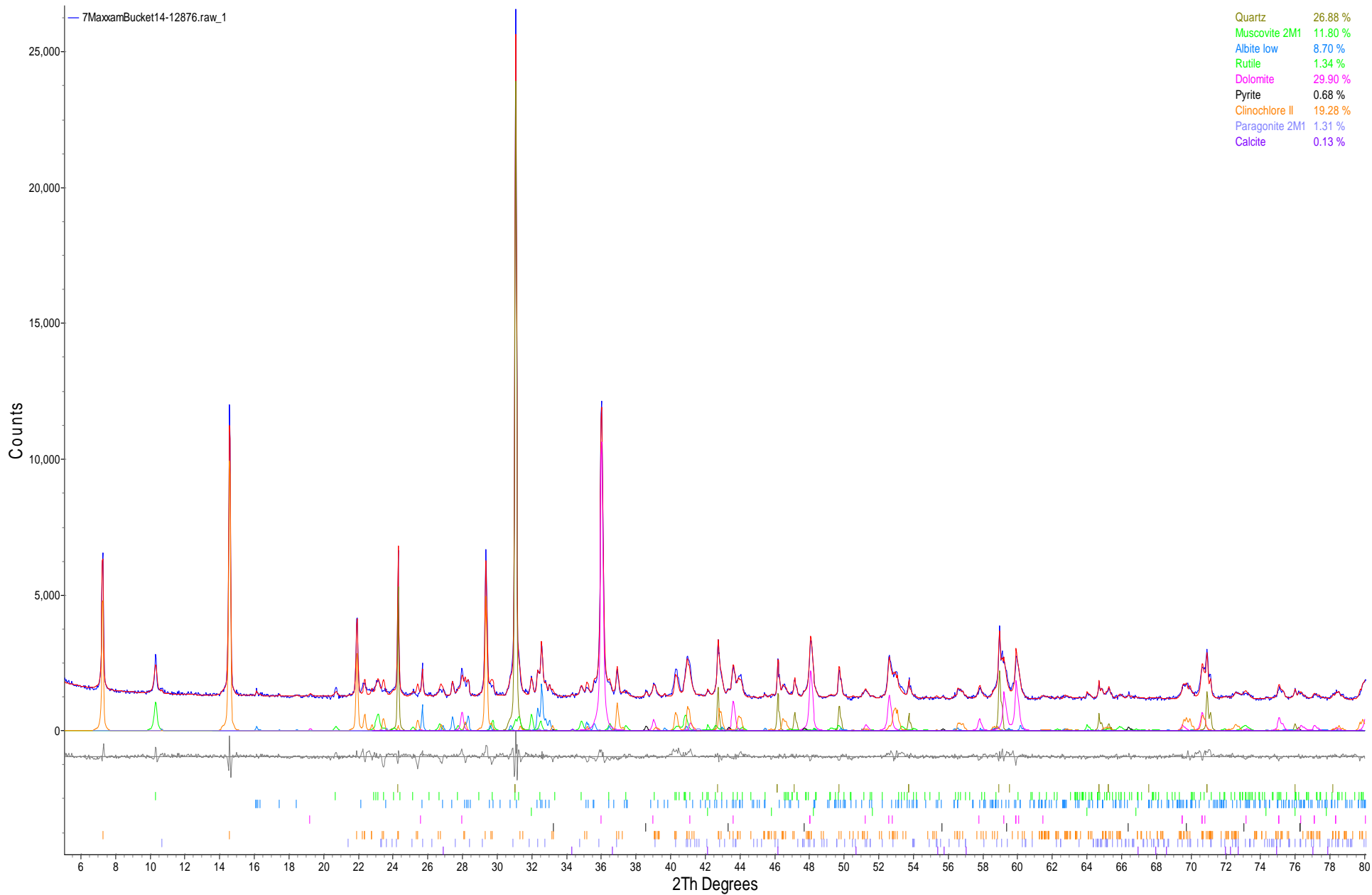


Figure 7 Rietveld refinement plot of sample “Bucket #14 12876” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

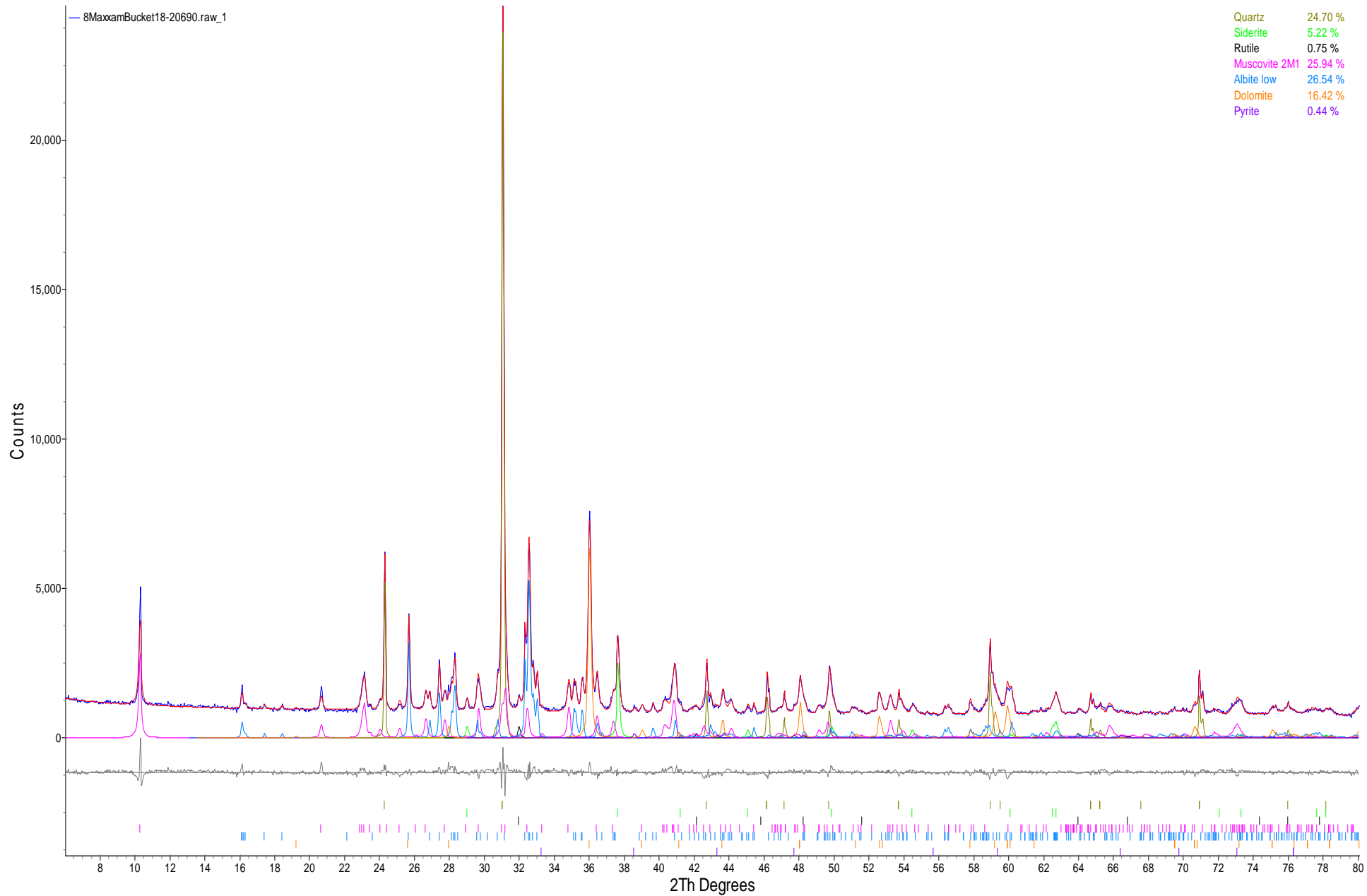


Figure 8 Rietveld refinement plot of sample “Bucket #18 20690” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

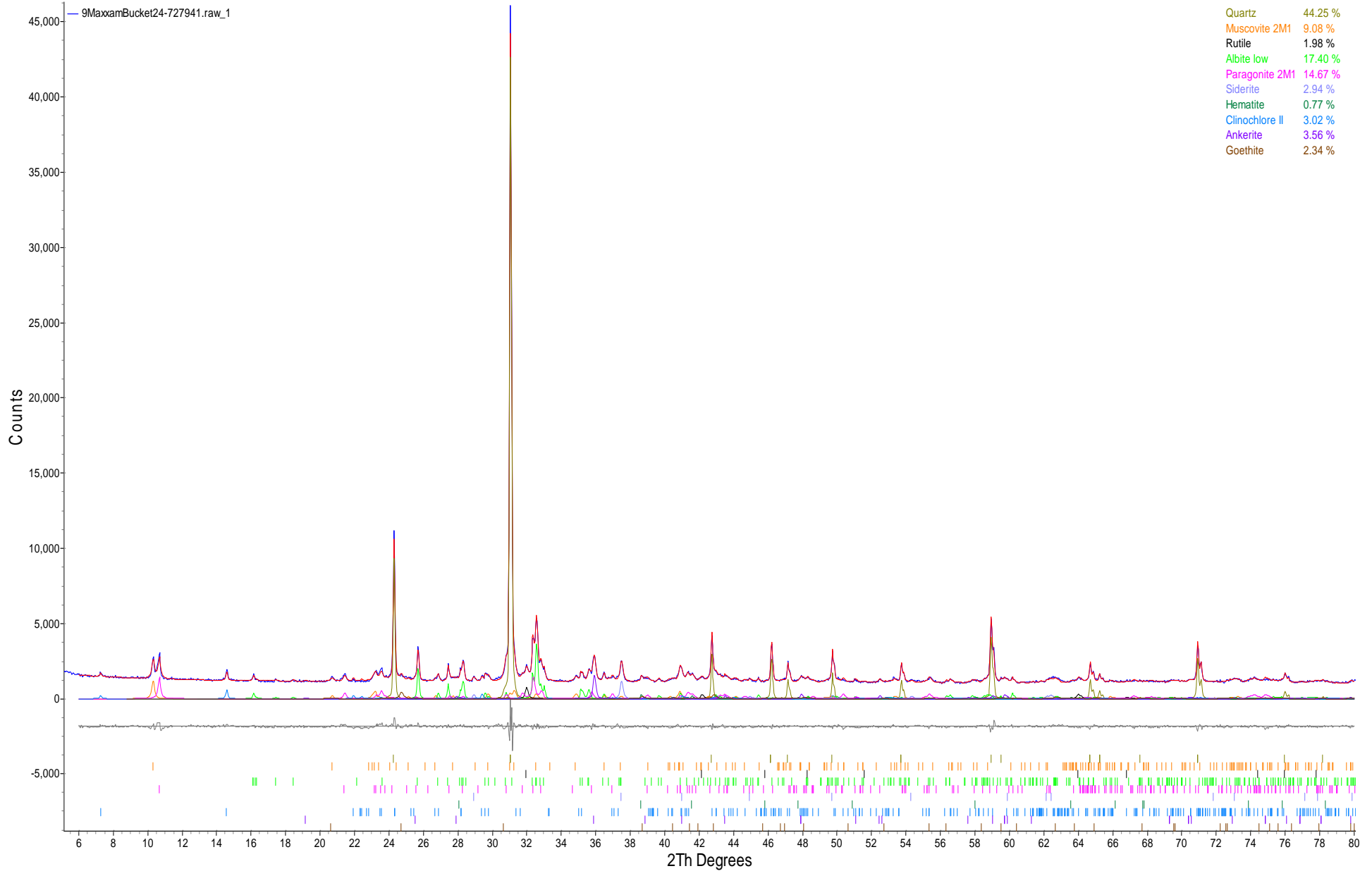


Figure 9 Rietveld refinement plot of sample “Bucket #24 727941” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

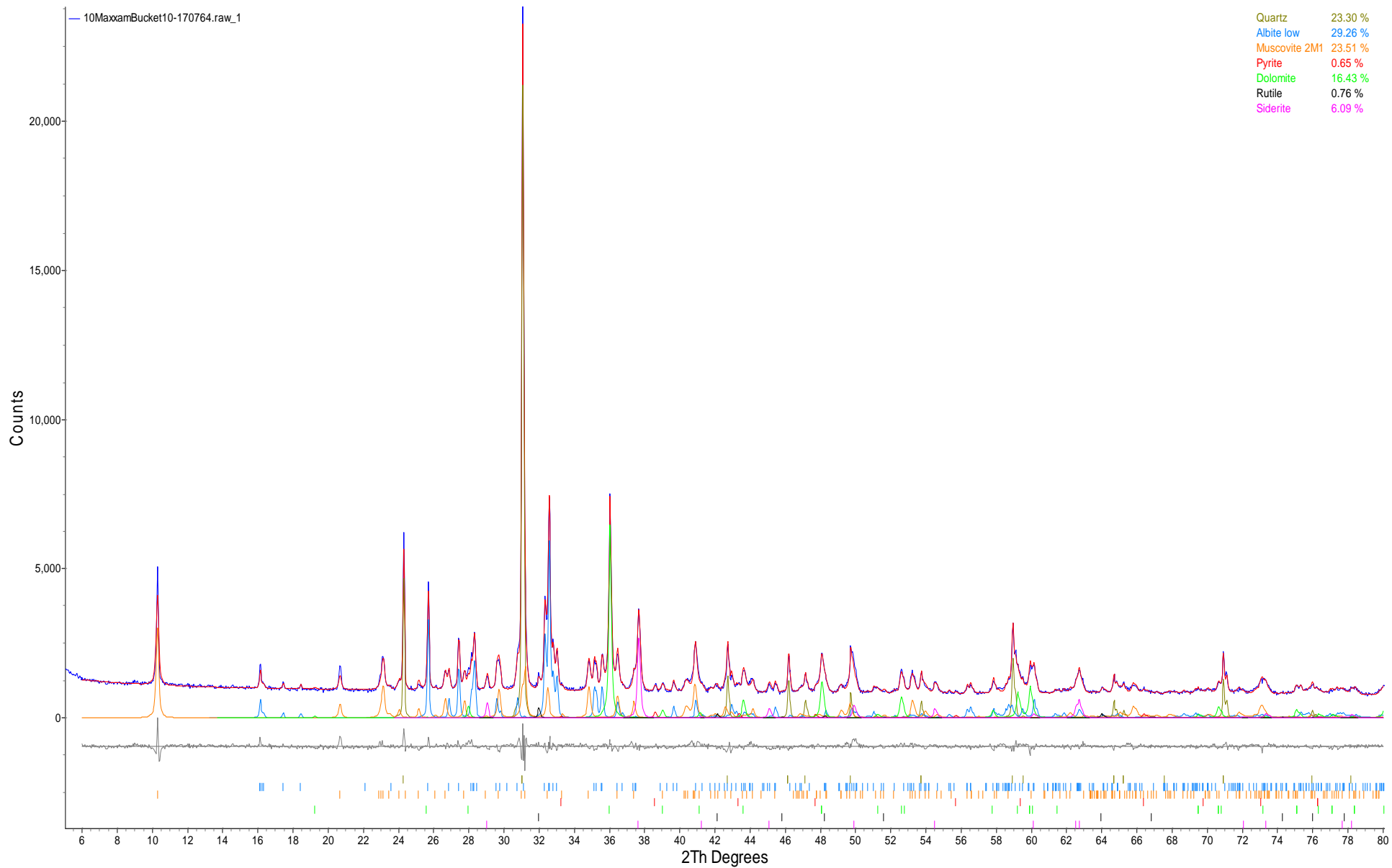


Figure 10 Rietveld refinement plot of sample “Bucket #10 170764” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

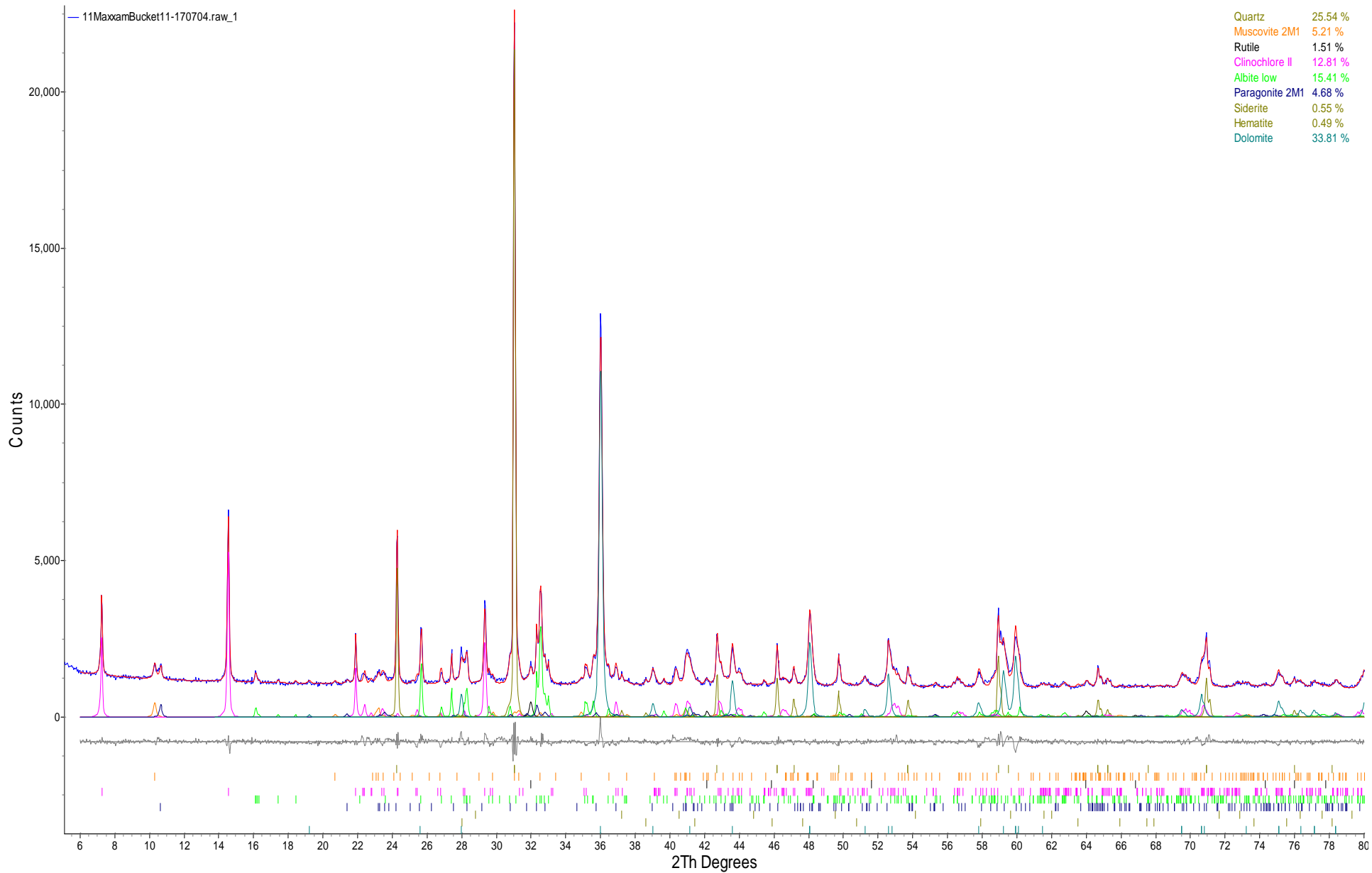


Figure 11 Rietveld refinement plot of sample “Bucket #11 170704” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

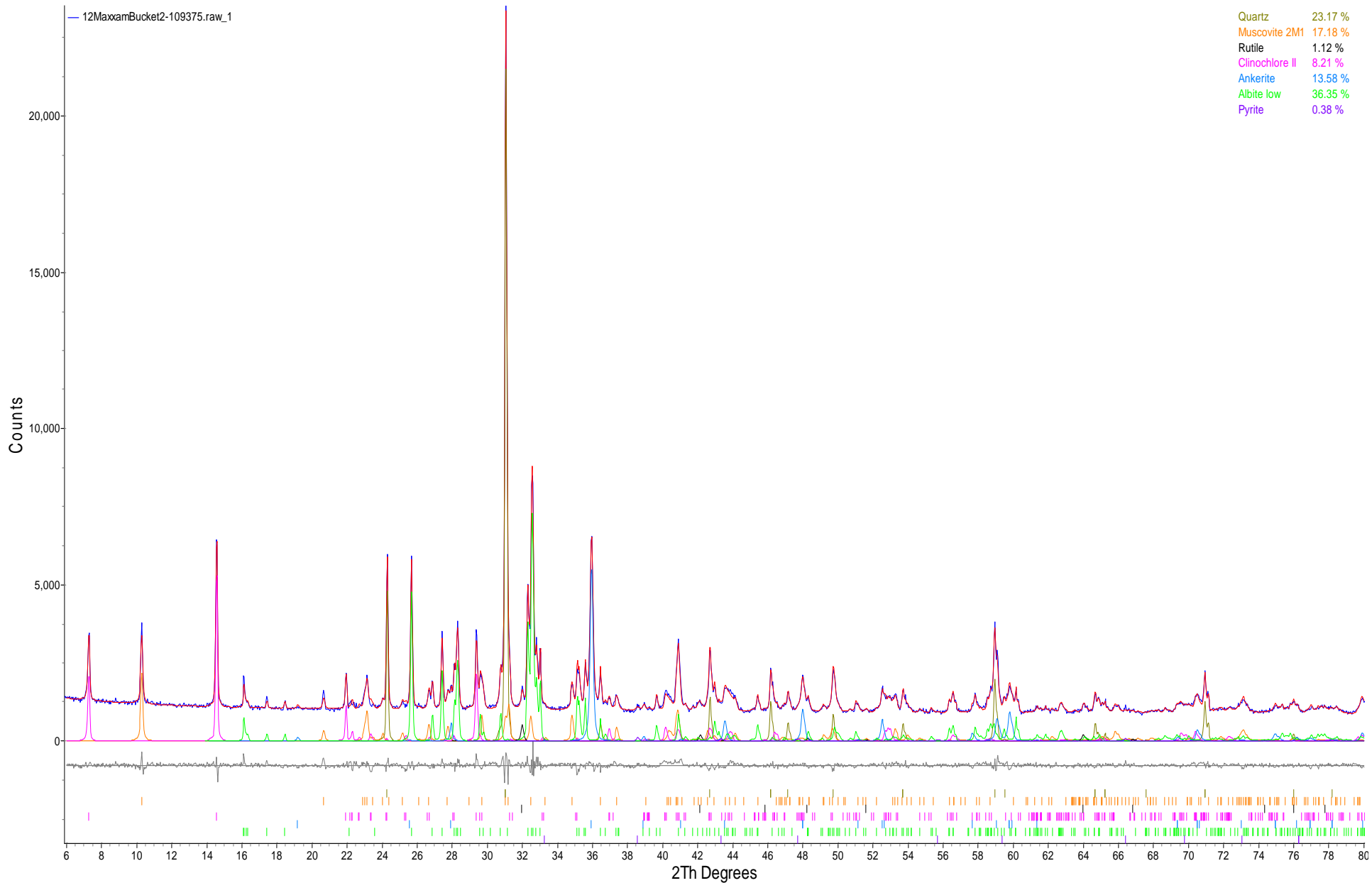


Figure 12 Rietveld refinement plot of sample “Bucket #2 109375” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

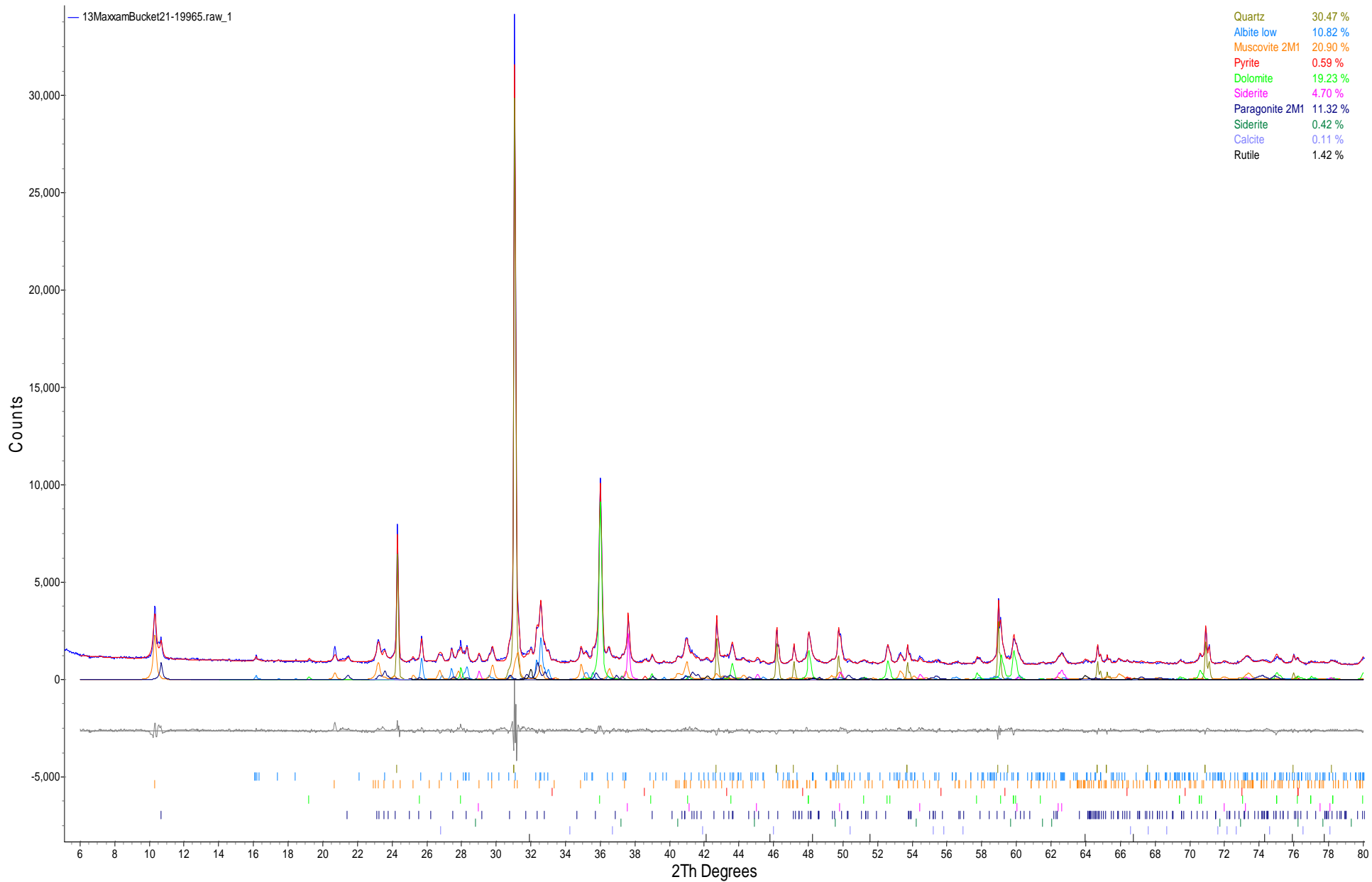


Figure 13 Rietveld refinement plot of sample “Bucket #21 19965” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

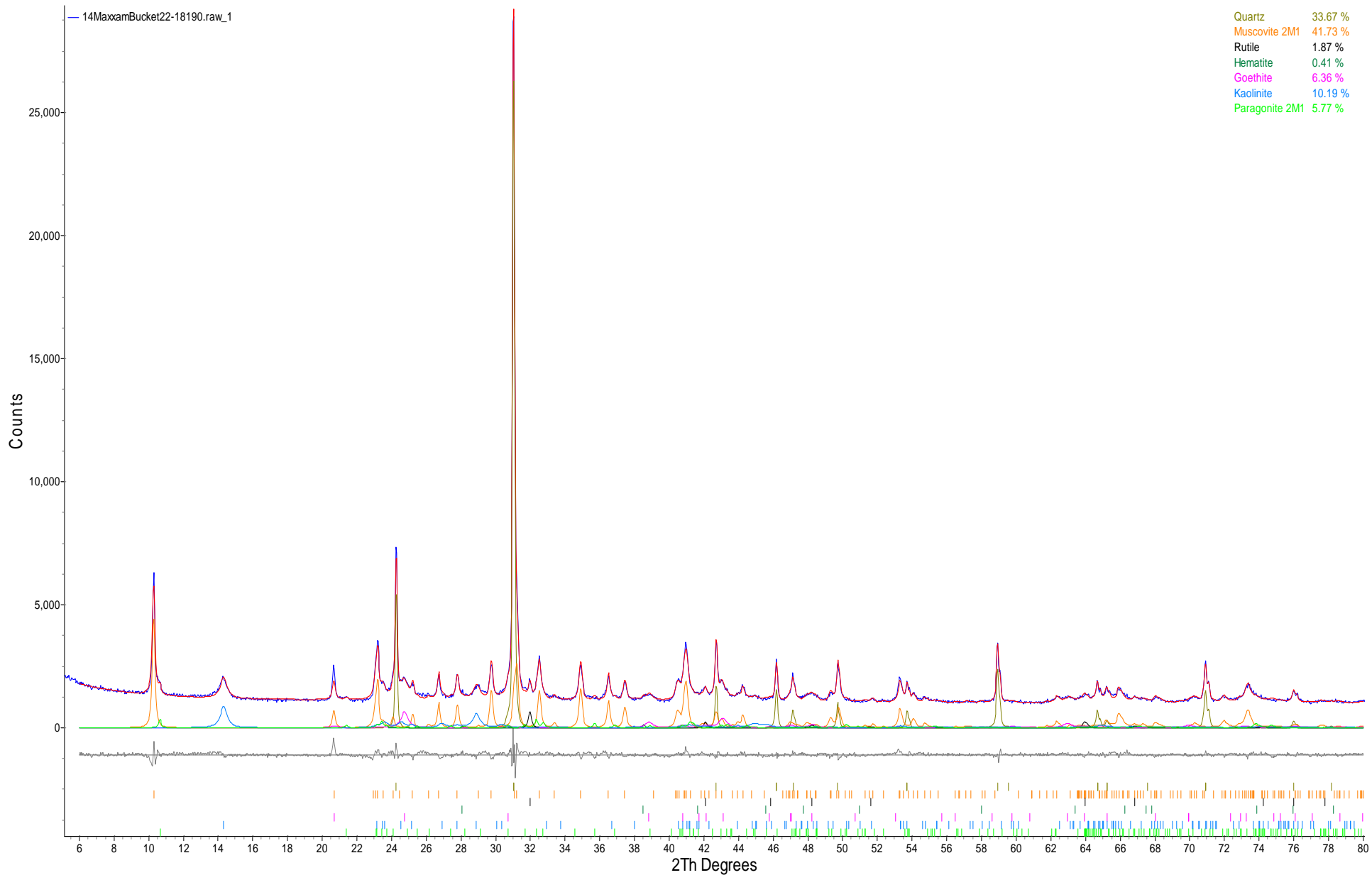


Figure 14 Rietveld refinement plot of sample “Bucket #22 18190” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

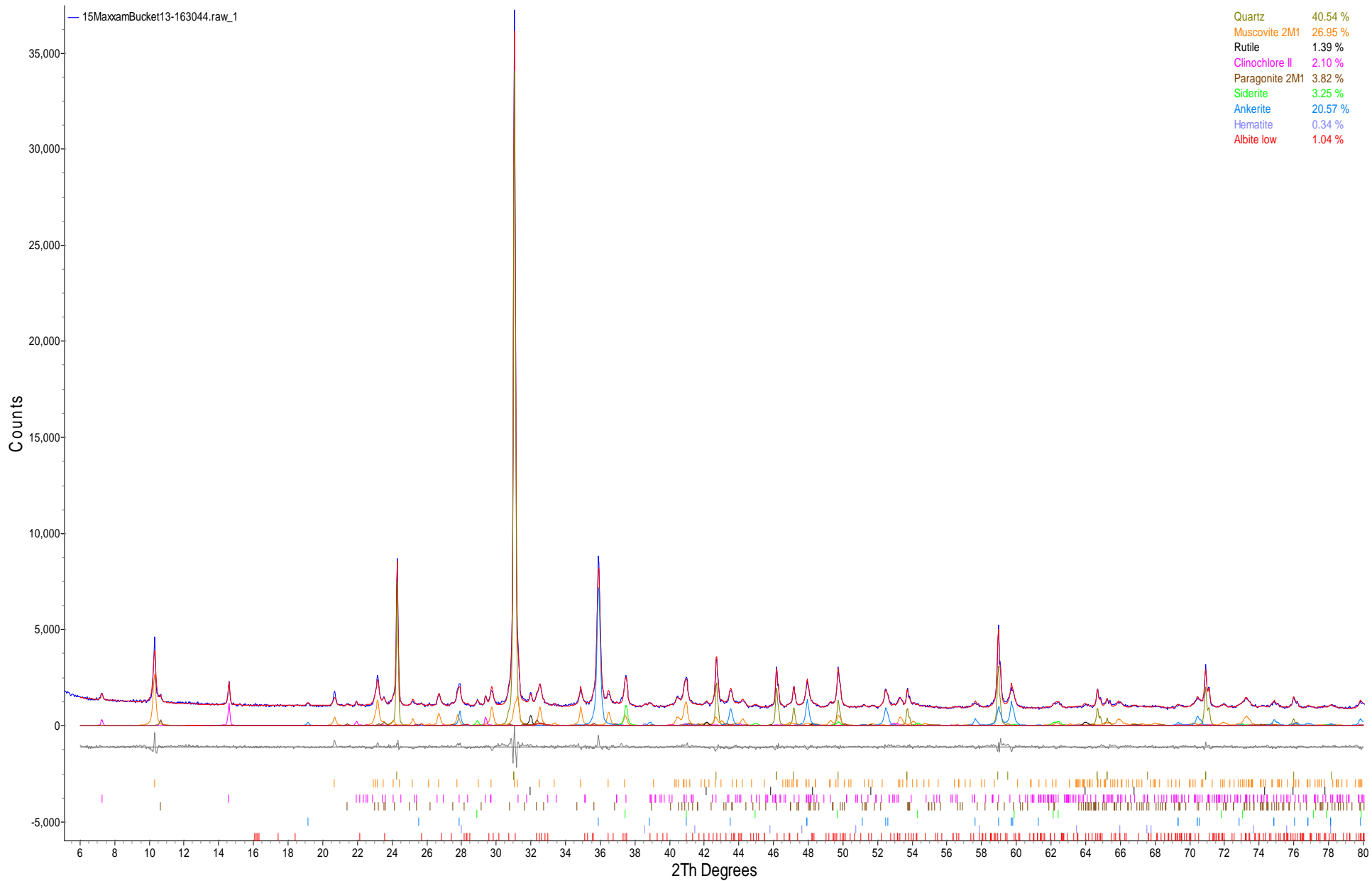


Figure 15 Rietveld refinement plot of sample “Bucket #13 163044” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

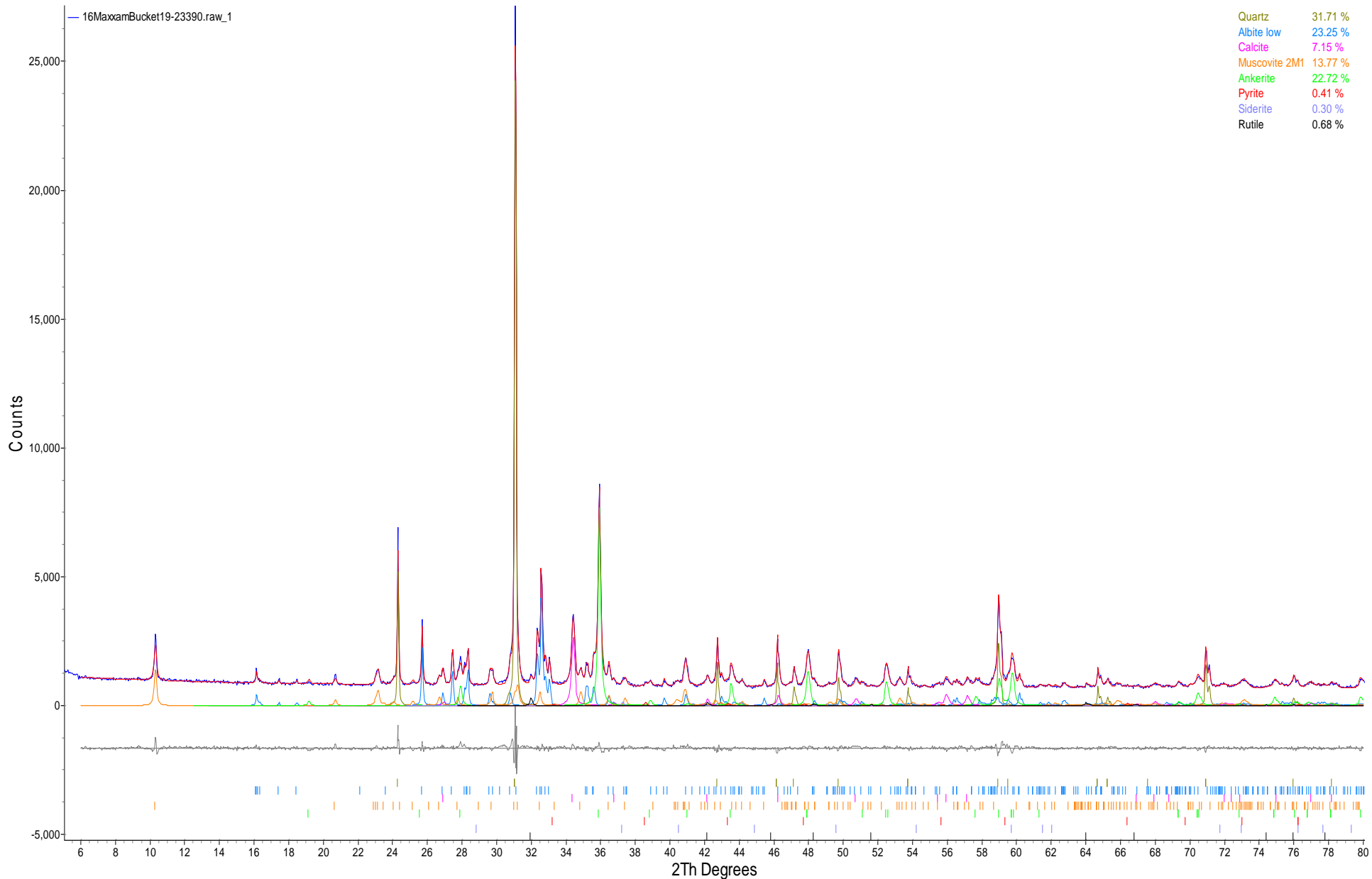


Figure 16 Rietveld refinement plot of sample “Bucket #19 23390” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

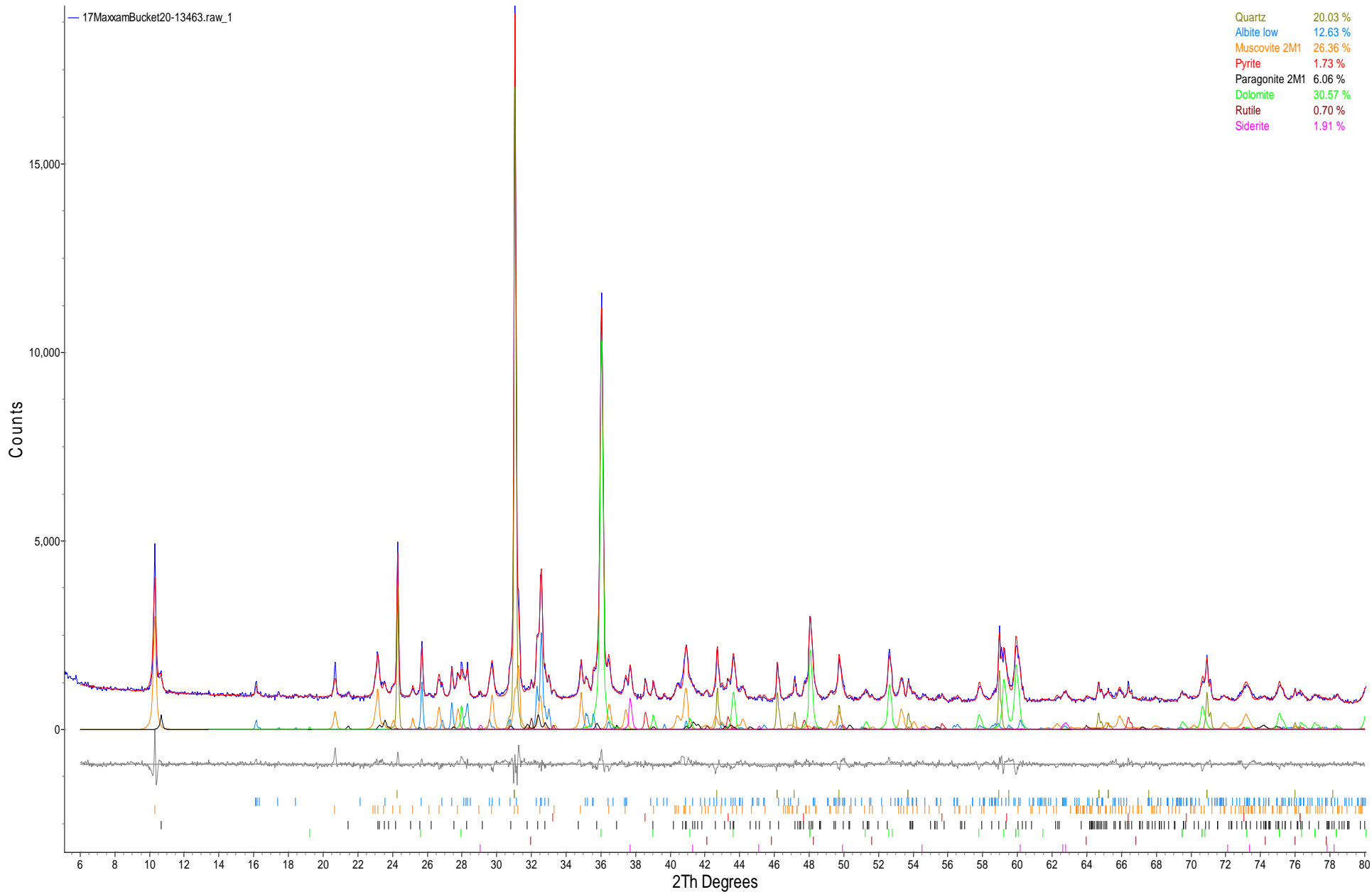


Figure 17 Rietveld refinement plot of sample “Bucket #20 13463” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

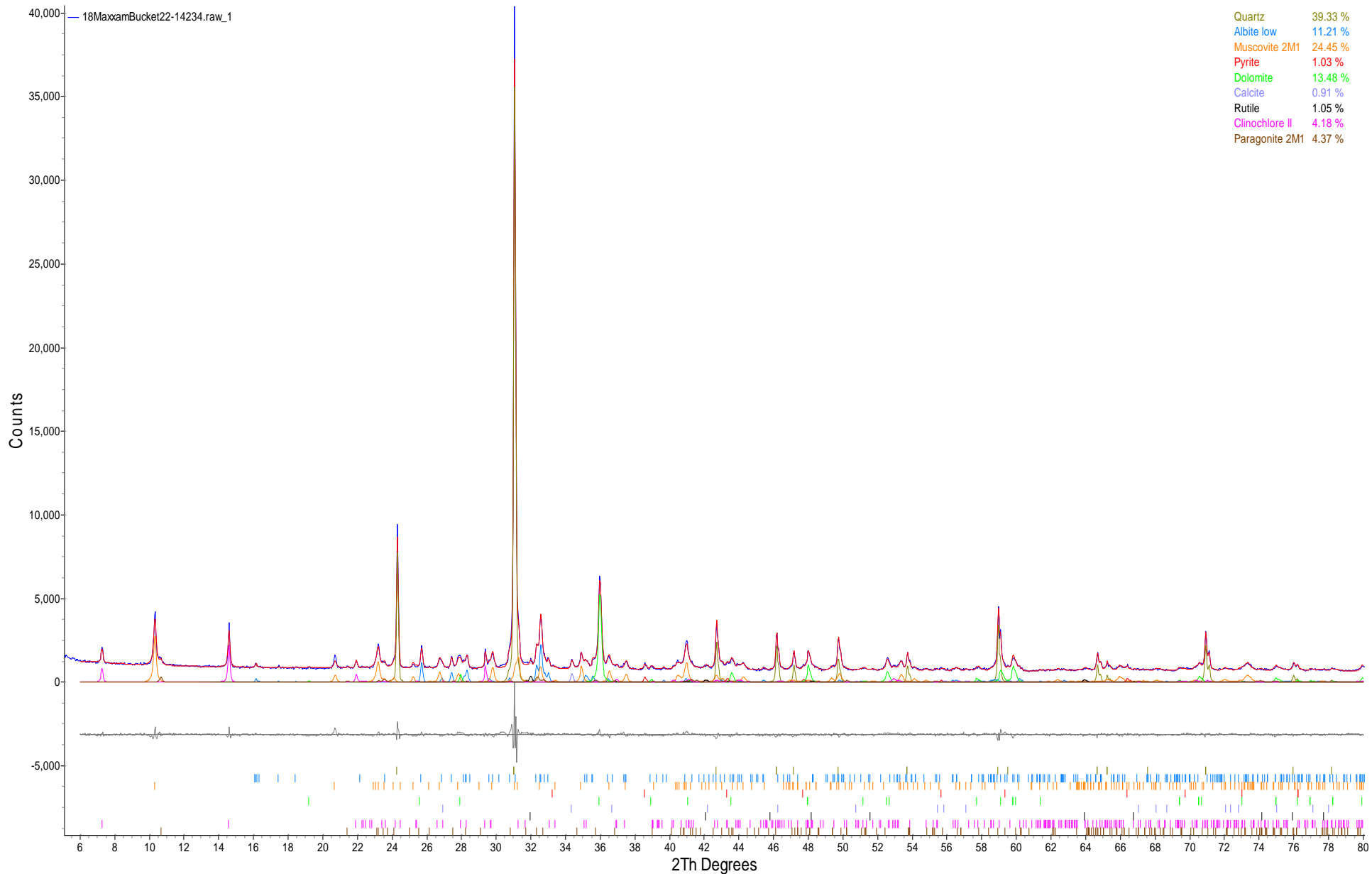


Figure 18 Rietveld refinement plot of sample “Bucket #22 14234” (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

Maxxam HC ID	Sample ID	Date Samples Rec'd	Sample Type	Sample Prep for Flushings	Humidity Cell Dimensions (cm)		Wt. of Sample Used for Testing (g)	Other Materials Used (1 Layer)	Column Material	Total Volume of Initial Flushings	Weekly Flushing Rate (ml)	Air Temp (°C)	Sampling Frequency	Start-up Date	Termination Date (proposed)	Proposed No. of Weeks	Sampling Day	Operation Procedure
					Diameter	Height												
HC-1	B 14 35211	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-2	B 11 172822	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-3	B 10 90355	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-4	B 21 8189	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-5	B 18 20822	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-6	B 11 112924	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-7	B 14 12876	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-8	B 18 20690	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-9	B 24 727941	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-10	B 10 170764	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-11	B 11 170704	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-12	B 2 109375	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-13	B 21 19965	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-14	B 22 18190	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-15	B 13 163044	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-16	B 19 23390	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-17	B 20 13463	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*
HC-18	B 22 14234	6 & 18-Oct-2011	Coarse Rock	Cone crushed to <1/4 inch particle size.	11 cm	20 cm	1000	200 Nylon mesh	Clear Acrylic	750	500	18-24	Weekly	21-Dec-11	2-May-12	20 weeks	Wednesday	MEND Procedure*

*Prediction Manual for Drainage Chemistry from Sulphidic Geologic Material. Version 0 - Dec. 2009. MEND Report 1.20.1; Pages 18-1 to 18-19; Humidity Cell Procedures.

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Report Verified By:	Bonnie Tsang
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Client: Klohn Crippen
 Client Project Name: Guyana-Aurora Gold
 HC-1; Sample ID: B 14 35211

Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan										
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L		mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001
21-Dec-11	0	750	565	8.86	286	140	59.40	-0.5	-0.5	38.8	1.7	0.320	49.3	0.0957	0.00049	0.00087	0.018	-0.00001	-0.000005	-0.05	0.00044	0.000009	12.1	-0.0001
28-Dec-11	1	500	470	8.67	123	110	8.03	-0.5	-0.5	46.4	-0.5	0.210	32.1	0.190	0.00052	0.0009	0.0144	-0.00001	-0.000005	-0.05	0.00029	0.000007	6.88	-0.0001
4-Jan-12	2	500	450	8.51	115	115	5.64	-0.5	-0.5	45.4	-0.5	0.150	37.9	0.202	0.00045	0.00087	0.015	-0.00001	-0.000005	-0.05	0.0002	0.000007	7.89	-0.0001
11-Jan-12	3	500	450	8.41	123	115	4.92	-0.5	-0.5	50.0	-0.5	0.120	41.4	0.195	0.00046	0.00101	0.0149	-0.00001	-0.000005	-0.05	0.00023	0.00001	8.16	0.0001
18-Jan-12	4	500	470	8.40	119	110	4.13	-0.5	-0.5	55.4	-0.5	0.091	45.4	0.179	0.00038	0.00066	0.0161	-0.00001	-0.000005	-0.05	0.00019	-0.000005	9.35	0.0001
25-Jan-12	5	500	470	8.62	127	110	4.61	-0.5	-0.5	51.9	-0.5	0.084	44.0	0.210	0.00043	0.00084	0.0141	-0.00001	-0.000005	-0.05	0.00022	-0.000005	9.36	-0.0001
1-Feb-12	6	500	480	8.58	115	110	7.06	-0.5	-0.5	48.5	-0.5	0.060	43.6	0.206	0.00037	0.00072	0.0119	-0.00001	-0.000005	-0.05	0.00018	-0.000005	9.07	-0.0001
8-Feb-12	7	500	480	8.62	107	110	4.41	-0.5	0.7	51.2	-0.5	0.061	46.0	0.244	0.00032	0.00066	0.0118	-0.00001	-0.000005	-0.05	0.00019	-0.000005	9.76	-0.0001
15-Feb-12	8	500	475	8.56	110	105	3.93	-0.5	-0.5	50.1	-0.5	0.055	49.9	0.236	0.00034	0.00071	0.0129	-0.00001	-0.000005	-0.05	0.00017	-0.000005	10.5	-0.0001
22-Feb-12	9	500	470	8.51	117	115	5.16	-0.5	-0.5	48.4	0.6	0.045	45.9	0.22	0.00031	0.00069	0.0118	-0.00001	-0.000005	-0.05	0.00017	-0.000005	10.1	-0.0001
29-Feb-12	10	500	460	8.48	116	125	5.12	-0.5	-0.5	47.1	-0.5	0.039	47.6	0.226	0.00032	0.00062	0.0102	-0.00001	-0.000005	-0.05	0.00013	-0.000005	10.6	0.0001
7-Mar-12	11	500	465	8.30	114	125	4.33	-0.5	-0.5	43.8	-0.5	0.025	43.4	0.181	0.00025	0.0006	0.00877	-0.00001	-0.000005	-0.05	0.0001	-0.000005	10.3	0.0002
14-Mar-12	12	500	475	8.47	113	120	4.81	-0.5	-0.5	47.6	-0.5	0.031	50.1	0.223	0.0003	0.00072	0.0105	-0.00001	-0.000005	-0.05	0.0001	-0.000005	10.6	0.0001
21-Mar-12	13	500	460	8.47	105	115	3.63	-0.5	-0.5	46.6	-0.5	0.030	42.0	0.199	0.00027	0.00064	0.00959	-0.00001	-0.000005	-0.05	0.0001	-0.000005	9.75	0.0002
28-Mar-12	14	500	455	8.49	102	120	4.17	-0.5	0.7	41.4	-0.5	0.029	47.6	0.189	0.00027	0.00063	0.00855	-0.00001	-0.000005	-0.05	0.00009	-0.000005	11.4	0.0001
4-Apr-12	15	500	480	8.45	100	120	3.53	-0.5	-0.5	43.8	-0.5	0.027	43.6	0.195	0.00025	0.00062	0.00885	-0.00001	-0.000005	-0.05	0.00011	0.000008	10.6	0.0002
11-Apr-12	16	500	460	8.52	92	120	3.81	-0.5	-0.5	40.6	-0.5	0.020	39.7	0.175	0.0002	0.00058	0.00824	-0.00001	-0.000005	-0.05	0.00005	-0.000005	9.57	-0.0001
18-Apr-12	17	500	485	8.09	98	120	4.17	-0.5	1.7	41.9	-0.5	0.029	44.6	0.199	0.000217	0.00056	0.00811	-0.00001	-0.000005	-0.05	0.000078	-0.000005	10.8	-0.0001
25-Apr-12	18	500	490	8.54	99	120	4.34	-0.5	-0.5	41.7	-0.5	0.022	45.0	0.204	0.000224	0.000672	0.0075	-0.00001	-0.000005	-0.05	0.000088	-0.000005	11.3	0.00013
2-May-12	19	500	470	8.50	102	115	4.21	-0.5	0.7	36.8	-0.5	0.021	39.8	0.162	0.000174	0.000478	0.00697	-0.00001	-0.000005	-0.05	0.000058	-0.000005	9.32	-0.0001
9-May-12	20	500	485	8.43	85	115	5.14	-0.5	-0.5	36.6	-0.5	0.02	40.1	0.163	0.000184	0.000396	0.00666	-0.00001	-0.000005	-0.05	0.000058	-0.000005	9.67	-0.0001
16-May-12	21	500																						
23-May-12	22	500																						
30-May-12	23	500	470	8.54	119	115	7.33	-0.5	-0.5	40.9	-0.5	0.023	44.5	0.167	0.000237	0.00047	0.00828	-0.00001	-0.000005	-0.05	0.000067	-0.000005	10.8	-0.0001
6-Jun-12	24	500	455	8.52	87	115	4.32	-0.5	-0.5	37.5	-0.5	0.022	38.5	0.184	0.000174	0.000306	0.00637	-0.00001	-0.000005	-0.05	-0.000005	0.000131	9.45	-0.0001
13-Jun-12	25	500	485	8.17	91	120																		
20-Jun-12	26	500																						
27-Jun-12	27	500																						

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:																							
Sampling Date	Week No.	Input Vol.	Output Vol.	Co	Cu	La	Fe	Pb	Li	Mg	Hg	Mn	P	Mo	Ni	K	Rb	Se	Si	Ag	Na	Sr	Te
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Detection Limits		5	5	0.000005	0.00005	0.00005	0.001	0.000005	0.0005	0.05	0.00001	0.00005	0.002	0.00005	0.00002	0.05	0.00005	0.00004	0.1	0.000005	0.05	0.00005	0.00002
21-Dec-11	0	750	565	0.000016	0.00061	-0.00005	0.003	0.00008	-0.0005	4.65	-0.00001	0.00886	0.037	0.0809	0.00017	34.1	0.0207	0.00069	0.8	-0.000005	4.83	0.0773	0.00005
28-Dec-11	1	500	470	0.000042	0.00062	-0.00005	-0.001	0.000054	-0.0005	3.61	-0.00001	0.0206	0.009	0.0227	0.0002	13.9	0.0101	0.00015	0.9	-0.000005	0.95	0.0592	0.00003
4-Jan-12	2	500	450	0.000025	0.00044	-0.00005	0.003	0.000027	0.0005	4.43	-0.00001	0.022	0.006	0.0121	0.00015	10.6	0.0086	0.00017	1.0	-0.000005	0.60	0.0624	-0.00002
11-Jan-12	3	500	450	0.000031	0.00059	-0.00005	0.015	0.000018	0.0006	5.12	-0.00001	0.0225	0.007	0.00858	0.00026	9.2	0.0076	0.00176	1.0	-0.000005	0.44	0.0707	0.00004
18-Jan-12	4	500	470	0.000016	0.00074	-0.00005	0.003	0.000018	-0.0005	5.36	-0.00001	0.0248	0.006	0.00662	0.0001	6.9	0.00604	0.00014	1.0	-0.000005	0.29	0.0721	-0.00002
25-Jan-12	5	500	470	0.000015	0.00016	-0.00005	0.009	0.000008	0.0005	5.01	-0.00001	0.0229	0.004	0.00486	0.00015	5.8	0.0059	0.00016	1.1	-0.000005	0.24	0.07	0.00002
1-Feb-12	6	500	480	0.000021	0.00021	-0.00005	0.003	0.000016	-0.0005	5.08	-0.00001	0.023	0.010	0.00427	0.00008	4.5	0.00479	0.00013	1.0	-0.000005	0.20	0.0689	-0.00002
8-Feb-12	7	500	480	0.000012	0.00016	-0.00005	0.002	0.000010	-0.0005	5.25	-0.00001	0.0245	0.005	0.003	0.00009	4.0	0.00419	0.00014	1.1	-0.000005	0.20	0.0689	-0.00002
15-Feb-12	8	500	475	0.000021	0.00024	-0.00005	0.002	0.000011	-0.0005	5.73	-0.00001	0.024	0.012	0.00295	0.00005	3.8	0.00386	0.00014	1.2	-0.000005	0.17	0.0701	0.00003
22-Feb-12	9	500	470	0.000035	0.00021	-0.00005	0.003	0.00002	0.0005	5.04	-0.00001	0.0227	0.002	0.00243	0.00009	3.1	0.00354	0.00012	1.1	-0.000005	0.13	0.0707	0.00002
29-Feb-12	10	500	460	0.000009	0.00012	-0.00005	0.003	0.000013	-0.0005	5.15	-0.00001	0.0226	0.011	0.00247	0.00006	2.8	0.00316	0.00013	1.2	-0.000005	0.15	0.0676	-0.00002
7-Mar-12	11	500	465	0.000029	0.00024	-0.00005	0.009	0.000032	-0.0005	4.29	-0.00001	0.0277	0.01	0.00178	0.00009	2.0	0.00232	0.0001	1.0	-0.000005	0.10	0.0612	-0.00002
14-Mar-12	12	500	475	0.000016	0.00017	-0.00005	0.004	0.00003	-0.0005	5.72	-0.00001	0.0281	0.012	0.00234	0.00004	2.4	0.00252	0.00011	1.1	-0.000005	0.12	0.07	0.00003
21-Mar-12	13	500	460	0.000024	0.00105	-0.00005	0.004	0.0002	-0.0005	4.29	-0.00001	0.0219	0.002	0.00201	0.00008	1.8	0.00188	0.00011	1.0	-0.000005	0.09	0.064	0.00002
28-Mar-12	14	500	455	0.000027	0.00021	-0.00005	0.007	0.000026	-0.0005	4.63	-0.00001	0.0256	0.003	0.00217	0.00008	1.9	0.00207	0.00016	1.1	-0.000005	0.09	0.0655	0.00005
4-Apr-12	15	500	480	0.00001	0.00034	-0.00005	0.005	0.000024	-0.0005	4.16	-0.00001	0.0224	0.009	0.00205	0.0001	1.6	0.00199	0.00013	1.0	-0.000005	0.08	0.0645	-0.00002
11-Apr-12	16	500	460	0.000015	0.00018	-0.00005	0.01	0.000012	-0.0005	3.83	-0.00001	0.0235	0.003	0.00187	0.00009	1.4	0.00168	0.0001	0.9	-0.000005	0.05	0.0599	0.00003
18-Apr-12	17	500	485	0.0000111	0.000251	-0.00005	0.0045	0.0000161	-0.0005	4.3	-0.00001	0.0229	0.0053	0.00179	0.000037	1.41	0.00166	0.000088	1.15	-0.000005	0.078	0.0624	-0.00002
25-Apr-12	18	500	490	0.000011	0.000913	-0.00005	0.0066	0.000037	-0.0005	4.08	-0.00001	0.0263	0.0046	0.00162	0.000084	1.3	0.00157	0.000151	1.14	-0.000005	0.075	0.0618	-0.00002
2-May-12	19	500	470	0.000022	0.000285	-0.00005	0.0053	0.000061	-0.0005	4.02	-0.00001	0.0245	0.0045	0.00155	0.000069	1.12	0.00122	0.000117	0.87	-0.000005	0.077	0.0575	-0.00002
9-May-12	20	500	485	0.000013	0.000145	-0.00005	0.0044	0.000015	-0.0005	3.87	-0.00001	0.024	0.0106	0.00166	0.000036	1.06	0.00124	0.000059	0.8	-0.000005	0.062	0.0583	-0.00002
16-May-12	21	500																					
23-May-12	22	500																					
30-May-12	23	500	470	0.0000175	0.000139	-0.00005	0.0055	0.0000163	-0.0005	4.24	-0.00001	0.0245	0.0118	0.00265	0.000068	1.15	0.00156	0.000134	0.96	-0.000005	0.076	0.0706	-0.00002
6-Jun-12	24	500	455	0.0000097	0.000272	-0.00005	0.0054	0.0000157	-0.0005	3.61	-0.00001	0.0228	0.003	0.0016	0.000052	0.893	0.00105	0.000098	0.85	-0.000005	0.055	0.0561	-0.00002
13-Jun-12	25	500	485																				
20-Jun-12	26	500																					
27-Jun-12	27	500																					

Continue v

Proposed l



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan												
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr	Co	
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001	0.000005	
21-Dec-11	0	750	520	8.28	221	115	23.7	-0.5	-0.5	63.5	3.7	0.13	31.6	0.187	0.00055	0.00036	0.00352	-0.00001	-0.000005	-0.05	0.00015	-0.000005	8.9	-0.0001	0.00001	
28-Dec-11	1	500	465	8.00	112	125	4.0	-0.5	-0.5	50.4	-0.5	0.05	39.3	0.225	0.00049	0.00032	0.00131	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	12.1	-0.0001	0.000009	
4-Jan-12	2	500	460	7.88	106	125	3.7	-0.5	-0.5	48.7	-0.5	0.03	47.0	0.231	0.00042	0.00026	0.00127	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	14.8	0.0001	-0.000005	
11-Jan-12	3	500	445	7.86	108	120	4.9	-0.5	-0.5	46.9	-0.5	0.02	45.1	0.215	0.00034	0.00027	0.00102	-0.00001	-0.000005	-0.05	-0.00005	0.000008	13.8	0.0001	-0.000005	
18-Jan-12	4	500	460	8.13	109	115	3.9	-0.5	-0.5	48.7	-0.5	0.03	46.8	0.239	0.00030	0.00031	0.00098	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	14.4	0.0001	-0.000005	
25-Jan-12	5	500	490	8.31	71	110	1.9	-0.5	-0.5	34.4	-0.5	0.01	32.3	0.222	0.00010	0.00020	0.00047	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	11.0	-0.0001	-0.000005	
1-Feb-12	6	500	460	7.84	75	115	3.2	-0.5	-0.5	36.6	-0.5	0.01	33.9	0.197	0.00014	0.00014	0.00130	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	11.4	-0.0001	0.000007	
8-Feb-12	7	500	465	7.98	103	115	3.9	-0.5	-0.5	46.5	-0.5	0.02	47.3	0.278	0.00025	0.00036	0.00280	-0.00001	-0.000005	-0.05	0.00005	-0.000005	14.9	-0.0001	0.000006	
15-Feb-12	8	500	475	7.88	86	110	1.4	-0.5	0.6	40.9	-0.5	0.02	42.2	0.326	0.00019	0.00030	0.00071	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	13.5	-0.0001	-0.000005	
22-Feb-12	9	500	455	8.12	97	120	2.9	-0.5	-0.5	41.9	0.5	0.01	38.9	0.279	0.00017	0.00037	0.0006	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	12.7	-0.0001	0.000059	
29-Feb-12	10	500	470	8.06	76	120	1.4	-0.5	-0.5	36.2	-0.5	0.01	37.0	0.344	0.00011	0.00026	0.00048	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	12.6	-0.0001	0.000007	
7-Mar-12	11	500	485	8.04	87	115	2.2	-0.5	-0.5	37.8	-0.5	-0.01	34.3	0.341	0.00011	0.00028	0.00081	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	11.4	-0.0001	0.000011	
14-Mar-12	12	500	450	8.10	85	120	2.4	-0.5	-0.5	40.5	-0.5	0.01	37.4	0.336	0.00013	0.00024	0.00067	-0.00001	-0.000005	-0.05	-0.00005	0.000006	12.1	-0.0001	0.000006	
21-Mar-12	13	500	490	8.14	101	115	2.0	-0.5	-0.5	44.9	-0.5	0.01	41.3	0.255	0.00016	0.00033	0.00067	-0.00001	-0.000005	-0.05	-0.00005	0.00001	13.6	-0.0001	-0.000005	
28-Mar-12	14	500	440	8.17	101	120	2.6	-0.5	0.9	42.0	-0.5	0.01	49.4	0.236	0.00017	0.00031	0.00072	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	16.3	-0.0001	-0.000005	
4-Apr-12	15	500	475	8.09	102	125	2.0	-0.5	-0.5	42.9	-0.5	0.01	42.4	0.248	0.00018	0.00039	0.00084	-0.00001	-0.000005	-0.05	-0.00005	0.000005	13.8	0.0001	0.000009	
11-Apr-12	16	500	475	8.33	85	120	2.3	-0.5	-0.5	40.7	0.6	0.01	36.1	0.304	0.00013	0.00037	0.00064	-0.00001	-0.000005	-0.05	-0.00005	0.00001	11.9	-0.0001	-0.000005	
18-Apr-12	17	500	430	8.10	85	125	2.1	-0.5	0.7	38.7	-0.5	0.02	43.0	0.324	0.00014	0.000429	0.000807	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	14.2	-0.0001	-0.000005	
25-Apr-12	18	500	485	8.15	87	125	2.2	-0.5	-0.5	40.5	-0.5	-0.01	40.1	0.344	0.000121	0.000459	0.000801	-0.00001	-0.000005	-0.05	-0.00005	0.000056	13.5	-0.0001	0.000008	
2-May-12	19	500	440	8.10	97	125	2.4	-0.5	1.71	39.6	-0.5	0.01	37.9	0.364	0.000129	0.000495	0.000694	-0.00001	-0.000005	-0.05	-0.00005	0.000007	12.7	-0.0001	-0.000005	
9-May-12	20	500	485	8.19	76	120	2.9	-0.5	-0.5	39.3	0.51	0.01	38.6	0.415	0.000117	0.000526	0.000543	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	13.2	-0.0001	0.000006	
16-May-12	21	500																								
23-May-12	22	500																								
30-May-12	23	500	475	8.26	97	110	3.98	-0.5	-0.5	37.5	-0.5	-0.01	37.5	0.338	0.000171	0.000392	0.000619	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	12.9	-0.0001	-0.000005	
6-Jun-12	24	500	495	8.08	89	115	3.17	-0.5	-0.5	38.5	-0.5	-0.01	40.3	0.337	0.00013	0.000405	0.000677	-0.00001	-0.000005	-0.05	-0.000005	-0.00005	14	-0.0001	-0.000005	
13-Jun-12	25	500	465	8.18	95	120																				
20-Jun-12	26	500																								
27-Jun-12	27	500																								

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	520	-0.000005	0.00032	-0.0005	0.00019	0.000042	0.0044	0.0018	-0.0001
28-Dec-11	1	500	465	-0.000005	0.00016	-0.0005	0.00014	0.000023	0.0040	0.0028	-0.0001
4-Jan-12	2	500	460	-0.000005	-0.0002	-0.0005	0.0001	0.00002	0.0042	0.0006	-0.0001
11-Jan-12	3	500	445	-0.000005	-0.0002	-0.0005	0.00006	0.000016	0.0048	0.001	-0.0001
18-Jan-12	4	500	460	-0.000005	-0.0002	-0.0005	0.00005	0.000012	0.0056	0.0005	-0.0001
25-Jan-12	5	500	490	-0.000005	-0.0002	-0.0005	0.00001	-0.000002	0.0029	-0.0001	-0.0001
1-Feb-12	6	500	460	-0.000005	-0.0002	-0.0005	0.00002	0.000004	0.0022	-0.0001	-0.0001
8-Feb-12	7	500	465	-0.000005	-0.0002	-0.0005	0.00003	0.000009	0.0049	0.0008	-0.0001
15-Feb-12	8	500	475	-0.000005	-0.0002	-0.0005	0.00003	0.000004	0.0054	0.0001	-0.0001
22-Feb-12	9	500	455	-0.000005	0.0007	-0.0005	0.00002	0.00001	0.0044	0.0005	-0.0001
29-Feb-12	10	500	470	-0.000005	0.0007	-0.0005	0.00002	0.000005	0.0038	0.0005	-0.0001
7-Mar-12	11	500	485	-0.000005	0.0003	-0.0005	0.00001	0.000009	0.004	0.0006	-0.0001
14-Mar-12	12	500	450	-0.000005	-0.0002	-0.0005	0.00002	0.000006	0.0048	0.0002	-0.0001
21-Mar-12	13	500	490	-0.000005	-0.0002	-0.0005	-0.00001	0.000008	0.0043	0.0007	0.0004
28-Mar-12	14	500	440	-0.000005	0.0004	-0.0005	0.00002	0.000008	0.0054	0.0003	-0.0001
4-Apr-12	15	500	475	-0.000005	0.0006	-0.0005	0.00003	0.000011	0.0072	0.0019	-0.0001
11-Apr-12	16	500	475	-0.000005	-0.0002	-0.0005	0.00002	0.000005	0.0079	0.0007	-0.0001
18-Apr-12	17	500	430	-0.000005	0.00043	-0.0005	0.000019	0.0000185	0.00954	0.00021	-0.0001
25-Apr-12	18	500	485	-0.000005	0.00082	-0.0005	-0.00001	0.00001	0.00903	0.00123	-0.0001
2-May-12	19	500	440	-0.000005	-0.0002	-0.0005	0.000018	0.000013	0.00983	0.00012	-0.0001
9-May-12	20	500	485	-0.000005	-0.0002	-0.0005	0.000013	0.000012	0.0106	0.00032	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	475	-0.000005	0.00025	-0.0005	0.000012	0.0000144	0.00739	0.00043	0.00022
6-Jun-12	24	500	495	-0.000005	0.00024	-0.0005	0.00001	0.0000151	0.00731	0.00058	-0.0001
13-Jun-12	25	500	465								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)

1.87	1.84	0.93	Sample left to drain overnight
1.10	1.02	3.45	Sample left to drain overnight
1.04	1.12	-3.66	Sample left to drain overnight
1.03	1.03	-0.16	Sample left to drain overnight
1.04	1.05	-0.28	Sample left to drain overnight
0.71	0.70	1.06	Sample left to drain overnight
0.79	0.73	3.34	Sample left to drain overnight
1.00	1.04	-2.18	Sample left to drain overnight
0.83	0.92	-5.17	Sample left to drain overnight
0.91	0.85	3.79	Sample left to drain overnight
0.74	0.81	-4.25	Sample left to drain overnight
0.79	0.75	2.42	Sample left to drain overnight
0.85	0.81	1.88	Sample left to drain overnight
0.93	0.89	2.06	Sample left to drain overnight
0.88	1.05	-8.77	Sample left to drain overnight
0.89	0.91	-1.49	Sample left to drain overnight
0.88	0.78	5.94	Sample left to drain overnight
0.81	0.93	-7.10	Sample left to drain overnight
0.84	0.87	-1.50	Sample left to drain overnight
0.83	0.83	0.08	Sample left to drain overnight
0.86	0.84	1.11	Sample left to drain overnight
			Stopped leaching
			Stopped leaching
0.82	0.81	0.60	Sample left to drain overnight
0.82	0.86	-2.53	Sample left to drain overnight
			Sample left to drain overnight



Client: Klohn Crippen
 Client Project Name: Guyana-Aurora Gold
 HC-3; Sample ID: B 10 90355

Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan										
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001
21-Dec-11	0	750	545	9.22	437	85	57.4	-0.5	-0.5	116.0	2.0	1.00	19.2	0.214	0.00184	0.00316	0.0129	-0.00001	-0.000005	-0.05	0.00026	-0.000005	3.65	-0.0001
28-Dec-11	1	500	470	8.29	264	100	17.2	-0.5	-0.5	106.0	-0.5	0.34	59.6	0.0820	0.00163	0.00095	0.0545	-0.00001	-0.000005	-0.05	0.00021	-0.000005	10.3	-0.0001
4-Jan-12	2	500	465	8.37	210	115	9.5	-0.5	-0.5	89.5	-0.5	0.19	71.6	0.0983	0.00115	0.00072	0.0567	-0.00001	-0.000005	-0.05	0.00017	-0.000005	13.1	-0.0001
11-Jan-12	3	500	470	8.31	221	120	7.2	-0.5	-0.5	93.3	-0.5	0.14	78.2	0.0980	0.00106	0.00071	0.0633	-0.00001	-0.000005	-0.05	0.00014	0.000007	13.9	-0.0001
18-Jan-12	4	500	455	8.37	179	120	7.4	-0.5	-0.5	83.3	-0.5	0.11	76.3	0.135	0.00091	0.00082	0.0651	-0.00001	-0.000005	-0.05	0.00011	-0.000005	14.2	-0.0001
25-Jan-12	5	500	500	8.25	186	125	5.6	-0.5	-0.5	85.6	-0.5	0.09	73.8	0.132	0.00087	0.00078	0.0625	-0.00001	-0.000005	-0.05	0.00012	0.000008	14.9	-0.0001
1-Feb-12	6	500	475	8.26	179	110	6.2	-0.5	-0.5	79.7	-0.5	0.07	70.6	0.153	0.00076	0.00078	0.063	-0.00001	-0.000005	-0.05	0.00005	-0.000005	13.9	-0.0001
8-Feb-12	7	500	470	8.27	165	120	5.1	-0.5	-0.5	76.8	-0.5	0.06	70.4	0.184	0.00067	0.00085	0.0557	-0.00001	-0.000005	-0.05	0.00009	-0.000005	14.9	-0.0001
15-Feb-12	8	500	465	8.31	169	120	3.5	-0.5	1.0	78.7	-0.5	0.05	74.5	0.173	0.00069	0.00075	0.055	-0.00001	-0.000005	-0.05	0.00007	-0.000005	15.2	-0.0001
22-Feb-12	9	500	470	8.35	154	125	4.6	-0.5	-0.5	72.8	0.6	0.05	63.9	0.184	0.00069	0.0009	0.0531	-0.00001	-0.000005	-0.05	0.00007	-0.000005	13.5	-0.0001
29-Feb-12	10	500	470	8.33	157	120	3.3	-0.5	-0.5	65.1	-0.5	0.04	65.7	0.21	0.00059	0.00094	0.0471	-0.00001	-0.000005	-0.05	0.00006	-0.000005	13.9	-0.0001
7-Mar-12	11	500	465	8.35	134	115	2.8	-0.5	-0.5	53.7	-0.5	0.02	49.6	0.23	0.00032	0.00047	0.0369	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	11	-0.0001
14-Mar-12	12	500	475	8.36	180	125	4.7	-0.5	-0.5	81.5	-0.5	0.03	75.8	0.168	0.00066	0.00058	0.0586	-0.00001	-0.000005	-0.05	-0.00005	0.000015	14.9	-0.0001
21-Mar-12	13	500	470	8.39	159	110	2.8	-0.5	-0.5	70.9	-0.5	0.03	67.1	0.175	0.00052	0.00072	0.0455	-0.00001	0.000005	-0.05	-0.00005	-0.000005	13.9	-0.0001
28-Mar-12	14	500	475	8.35	162	120	4.6	-0.5	-0.5	71.6	-0.5	0.03	73.5	0.195	0.00054	0.00061	0.0498	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	16.2	-0.0001
4-Apr-12	15	500	470	8.23	150	120	2.5	-0.5	-0.5	68.6	0.7	0.03	61.9	0.192	0.00047	0.00074	0.0484	-0.00001	-0.000005	-0.05	-0.00005	0.000073	13.8	-0.0001
11-Apr-12	16	500	470	8.23	151	125	2.8	-0.5	-0.5	73.6	-0.5	0.03	66.7	0.19	0.00043	0.00063	0.0546	-0.00001	-0.000005	-0.05	-0.00005	0.000005	14	-0.0001
18-Apr-12	17	500	460	8.23	154	120	3.8	-0.5	0.6	74.1	-0.5	0.03	74.1	0.209	0.00046	0.000593	0.0479	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	16.2	-0.0001
25-Apr-12	18	500	485	8.21	135	120	3.3	-0.5	-0.5	62.8	-0.5	0.03	66.6	0.241	0.000369	0.000615	0.0435	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	15.7	-0.0001
2-May-12	19	500	485	8.22	147	115	3.7	-0.5	1.1	70.4	-0.5	0.02	69.9	0.248	0.000412	0.000482	0.0496	-0.00001	-0.000005	-0.05	-0.00005	0.000009	14.8	-0.0001
9-May-12	20	500	480	8.29	146	115	4.3	-0.5	-0.5	72.7	0.7	0.03	74.2	0.224	0.000431	0.000441	0.0506	-0.00001	0.000005	-0.05	-0.00005	0.000006	16.3	-0.0001
16-May-12	21	500																						
23-May-12	22	500																						
30-May-12	23	500	450	8.28	184	115	6.71	-0.5	-0.5	71.2	-0.5	0.024	71	0.205	0.000423	0.000343	0.0493	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	15.4	-0.0001
6-Jun-12	24	500	440	8.39	140	110	3.45	-0.5	-0.5	61.3	0.55	0.016	61	0.237	0.00031	0.00021	0.0405	-0.00001	-0.000005	-0.05	-0.000005	-0.000005	14.5	-0.0001
13-Jun-12	25	500	450	8.24	182	115																		
20-Jun-12	26	500																						
27-Jun-12	27	500																						

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	545	-0.000005	0.00018	-0.0005	0.00183	0.000011	0.0054	0.0005	-0.0001
28-Dec-11	1	500	470	-0.000005	0.00012	-0.0005	0.00126	0.000008	0.0012	0.0004	-0.0001
4-Jan-12	2	500	465	-0.000005	-0.0002	-0.0005	0.00044	0.000004	0.0010	0.0004	-0.0001
11-Jan-12	3	500	470	-0.000005	0.0003	-0.0005	0.00025	0.000004	0.0010	0.0009	-0.0001
18-Jan-12	4	500	455	-0.000005	-0.0002	-0.0005	0.00023	0.000011	0.0015	0.0005	-0.0001
25-Jan-12	5	500	500	-0.000005	-0.0002	-0.0005	0.00013	0.000005	0.0013	0.0011	-0.0001
1-Feb-12	6	500	475	-0.000005	-0.0002	-0.0005	0.00014	0.000015	0.0014	0.0003	-0.0001
8-Feb-12	7	500	470	-0.000005	-0.0002	-0.0005	0.00011	0.000023	0.0017	0.0002	-0.0001
15-Feb-12	8	500	465	-0.000005	0.0004	-0.0005	0.00009	0.000028	0.0017	0.0016	-0.0001
22-Feb-12	9	500	470	-0.000005	-0.0002	-0.0005	0.00008	0.00005	0.0019	0.0004	-0.0001
29-Feb-12	10	500	470	-0.000005	0.0003	-0.0005	0.00009	0.000071	0.0024	0.0004	-0.0001
7-Mar-12	11	500	465	-0.000005	-0.0002	-0.0005	0.00004	0.000045	0.0010	0.0002	-0.0001
14-Mar-12	12	500	475	-0.000005	-0.0002	-0.0005	0.00009	0.000095	0.0015	0.0022	-0.0001
21-Mar-12	13	500	470	-0.000005	-0.0002	-0.0005	0.00005	0.000094	0.0022	0.0007	-0.0001
28-Mar-12	14	500	475	-0.000005	-0.0002	-0.0005	0.00007	0.000116	0.0019	0.0029	-0.0001
4-Apr-12	15	500	470	-0.000005	0.0008	-0.0005	0.00006	0.000139	0.0019	0.0027	-0.0001
11-Apr-12	16	500	470	-0.000005	0.0004	-0.0005	0.00005	0.000124	0.002	0.001	-0.0001
18-Apr-12	17	500	460	-0.000005	0.00027	-0.0005	0.000066	0.000134	0.00174	0.00019	-0.0001
25-Apr-12	18	500	485	-0.000005	0.00025	-0.0005	0.000056	0.000157	0.00178	0.00028	-0.0001
2-May-12	19	500	485	-0.000005	-0.0002	-0.0005	0.000066	0.000156	0.00154	0.00029	0.00045
9-May-12	20	500	480	-0.000005	0.00052	-0.0005	0.000074	0.000184	0.0016	0.00074	0.00012
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	450	-0.000005	0.00022	-0.0005	0.000063	0.000169	0.00125	0.00177	-0.0001
6-Jun-12	24	500	440	-0.000005	0.00023	0.00174	0.000051	0.0000406	0.00051	0.00061	0.00026
13-Jun-12	25	500	450								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)

3.62	3.70	-1.09	Sample left to drain overnight
2.50	2.36	2.82	Sample left to drain overnight
1.98	2.06	-1.95	Sample left to drain overnight
2.01	2.03	-0.46	Sample left to drain overnight
1.81	1.88	-1.91	Sample left to drain overnight
1.82	1.75	1.88	Sample left to drain overnight
1.71	1.65	2.01	Sample left to drain overnight
1.63	1.62	0.44	Sample left to drain overnight
1.64	1.69	-1.51	Sample left to drain overnight
1.57	1.43	4.59	Sample left to drain overnight
1.36	1.47	-3.96	Sample left to drain overnight
1.12	1.10	0.96	Sample left to drain overnight
1.72	1.66	1.58	Sample left to drain overnight
1.46	1.47	-0.25	Sample left to drain overnight
1.52	1.60	-2.64	Sample left to drain overnight
1.44	1.35	3.37	Sample left to drain overnight
1.52	1.44	2.54	Sample left to drain overnight
1.55	1.60	-1.51	Sample left to drain overnight
1.31	1.44	-4.53	Sample left to drain overnight
1.47	1.51	-1.44	Sample left to drain for > 20 hours
1.56	1.60	-1.02	Sample left to drain for > 20 hours
			Stopped leaching
			Stopped leaching
1.55	1.52	1.04	Sample left to drain for > 20 hours
1.31	1.31	0.12	Sample left to drain for > 20 hours



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan												
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr	Co	
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001	0.000005
21-Dec-11	0	750	535	7.69	405	125	155	-0.5	-0.5	24.5	1.6	0.340	82.1	0.0344	0.00152	0.0227	0.00325	-0.00001	-0.000005	-0.05	0.00006	0.000052	19.10	-0.0001	0.000755	
28-Dec-11	1	500	455	7.38	52	105	5.13	-0.5	-0.5	20.4	-0.5	0.055	15.0	0.0257	0.00112	0.00641	0.00069	-0.00001	-0.000005	-0.05	-0.00005	0.000015	3.42	-0.0001	0.000182	
4-Jan-12	2	500	445	7.83	60	125	4.34	-0.5	-0.5	24.8	-0.5	0.056	22.5	0.0325	0.00159	0.00936	0.00113	-0.00001	-0.000005	-0.05	-0.00005	0.000017	5.44	-0.0001	0.000209	
11-Jan-12	3	500	475	7.59	53	125	1.64	-0.5	-0.5	24.0	-0.5	0.043	19.0	0.0297	0.00133	0.00716	0.00078	-0.00001	-0.000005	-0.05	-0.00005	0.000017	4.47	-0.0001	0.000216	
18-Jan-12	4	500	470	7.61	46	115	2.30	-0.5	-0.5	24.1	-0.5	0.041	20.8	0.0345	0.00137	0.00605	0.00081	-0.00001	-0.000005	-0.05	-0.00005	0.00001	4.79	-0.0001	0.000204	
25-Jan-12	5	500	485	7.63	45	115	1.30	-0.5	0.6	23.3	-0.5	0.031	19.7	0.0283	0.00121	0.00550	0.00086	-0.00001	-0.000005	-0.05	-0.00005	0.00001	4.79	-0.0001	0.000211	
1-Feb-12	6	500	465	7.72	59	120	2.75	-0.5	-0.5	29.8	-0.5	0.032	26.1	0.0255	0.00160	0.00557	0.00170	-0.00001	-0.000005	-0.05	-0.00005	0.000016	6.03	-0.0001	0.000236	
8-Feb-12	7	500	450	7.80	85	120	1.68	-0.5	-0.5	39.4	0.6	0.043	38.5	0.0334	0.00211	0.00979	0.00141	-0.00001	-0.000005	-0.05	-0.00005	0.00001	9.46	-0.0001	0.000197	
15-Feb-12	8	500	470	7.82	76	120	1.90	-0.5	0.9	38.2	-0.5	0.034	36.2	0.0320	0.00177	0.00879	0.00119	-0.00001	-0.000005	-0.05	-0.00005	0.000007	8.58	-0.0001	0.000173	
22-Feb-12	9	500	465	7.91	76	120	1.94	-0.5	-0.5	35.1	0.7	0.022	31.6	0.0336	0.00153	0.00741	0.00106	-0.00001	-0.000005	-0.05	-0.00005	0.000008	7.65	-0.0001	0.000102	
29-Feb-12	10	500	480	7.94	77	125	0.88	-0.5	-0.5	35.0	-0.5	0.020	36.4	0.0333	0.00154	0.0084	0.00116	-0.00001	-0.000005	-0.05	0.00006	0.000008	8.57	0.0001	0.000074	
7-Mar-12	11	500	465	7.72	42	125	0.53	-0.5	-0.5	23.1	-0.5	0.012	21.5	0.0306	0.00072	0.00302	0.0007	-0.00001	-0.000005	-0.05	-0.00005	0.00001	5.24	-0.0001	0.000171	
14-Mar-12	12	500	485	7.90	67	120	1.88	-0.5	-0.5	32.7	-0.5	0.013	31.5	0.0385	0.00113	0.00491	0.00096	-0.00001	-0.000005	-0.05	-0.00005	0.000009	7.06	-0.0001	0.000105	
21-Mar-12	13	500	475	7.88	56	120	1.11	-0.5	-0.5	30.1	-0.5	0.012	26.5	0.0313	0.00094	0.00447	0.00159	-0.00001	-0.000005	-0.05	-0.00005	0.000008	6.24	-0.0001	0.000129	
28-Mar-12	14	500	475	7.94	77	120	1.82	-0.5	-0.5	38.6	-0.5	0.016	38.1	0.0304	0.00129	0.00547	0.00115	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	9.18	-0.0001	0.000049	
4-Apr-12	15	500	470	7.80	51	130	0.61	-0.5	-0.5	25.9	-0.5	0.011	24.2	0.0314	0.00084	0.00322	0.00082	-0.00001	-0.000005	-0.05	-0.00005	0.00002	5.73	0.0001	0.000061	
11-Apr-12	16	500	465	8.03	81	130	1.61	-0.5	-0.5	39.6	-0.5	0.013	36	0.029	0.00111	0.00571	0.00121	-0.00001	-0.000005	-0.05	-0.00005	0.000007	8.53	-0.0001	0.000056	
18-Apr-12	17	500	450	7.85	71	125	1.37	-0.5	1.6	36.9	-0.5	0.016	37.3	0.0286	0.00104	0.00593	0.000946	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	8.92	-0.0001	0.0000536	
25-Apr-12	18	500	480	7.96	80	125	1.71	-0.5	-0.5	37.3	-0.5	0.012	36.2	0.033	0.00102	0.0054	0.000973	-0.00001	-0.000005	-0.05	-0.00005	0.000022	8.82	-0.0001	0.00006	
2-May-12	19	500	475	7.87	83	120	1.5	-0.5	1.5	38.6	-0.5	0.012	38.4	0.029	0.000948	0.00431	0.000971	-0.00001	-0.000005	-0.05	-0.00005	0.00001	8.84	-0.0001	0.000041	
9-May-12	20	500	475	7.87	83	120	1.09	-0.5	0.8	30.1	0.59	0.01	30.5	0.0343	0.000636	0.00298	0.000779	-0.00001	-0.000005	-0.05	-0.00005	0.000007	7.31	-0.0001	0.000104	
16-May-12	21	500																								
23-May-12	22	500																								
30-May-12	23	500	475	7.91	76	120	2.32	-0.5	-0.5	32.1	-0.5	0.011	31.5	0.0288	0.000675	0.00235	0.000922	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	7.46	-0.0001	0.0000869	
6-Jun-12	24	500	470	7.66	38	130	1.95	-0.5	-0.5	16.5	0.68	0.011	19.2	0.0209	0.000311	0.000586	0.000592	-0.00001	-0.000005	-0.05	0.0000099	-0.00005	4.76	-0.0001	0.000297	
13-Jun-12	25	500	475	8.03	84	130																				
20-Jun-12	26	500																								
27-Jun-12	27	500																								

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	535	-0.000005	0.00013	-0.0005	0.00022	0.000077	0.0013	0.0013	0.0002
28-Dec-11	1	500	455	-0.000005	0.00009	-0.0005	0.00014	0.000018	0.0004	0.0005	0.0001
4-Jan-12	2	500	445	-0.000005	-0.0002	-0.0005	0.00016	0.000027	0.0005	0.0007	-0.0001
11-Jan-12	3	500	475	-0.000005	-0.0002	-0.0005	0.00011	0.000019	0.0007	0.0009	0.0002
18-Jan-12	4	500	470	-0.000005	-0.0002	-0.0005	0.0001	0.000021	0.0006	0.001	0.0001
25-Jan-12	5	500	485	-0.000005	-0.0002	-0.0005	0.00008	0.000013	0.0004	0.0007	-0.0001
1-Feb-12	6	500	465	-0.000005	-0.0002	-0.0005	0.00011	0.000025	0.0003	0.0007	0.0001
8-Feb-12	7	500	450	-0.000005	-0.0002	-0.0005	0.00011	0.000034	0.0006	0.001	0.0002
15-Feb-12	8	500	470	-0.000005	-0.0002	-0.0005	0.00008	0.000034	0.0005	0.0005	0.0001
22-Feb-12	9	500	465	-0.000005	0.0003	-0.0005	0.00007	0.000036	0.0004	0.0008	-0.0001
29-Feb-12	10	500	480	-0.000005	0.0003	-0.0005	0.00007	0.000031	0.0005	0.0006	-0.0001
7-Mar-12	11	500	465	-0.000005	-0.0002	-0.0005	0.00003	0.000024	-0.0002	0.0007	-0.0001
14-Mar-12	12	500	485	-0.000005	-0.0002	-0.0005	0.00006	0.000046	0.0008	0.0008	-0.0001
21-Mar-12	13	500	475	-0.000005	-0.0002	-0.0005	0.00003	0.000036	0.0003	0.0013	-0.0001
28-Mar-12	14	500	475	-0.000005	0.0005	-0.0005	0.00007	0.000042	0.0002	0.0007	-0.0001
4-Apr-12	15	500	470	-0.000005	0.0003	-0.0005	0.00004	0.000034	-0.0002	0.001	-0.0001
11-Apr-12	16	500	465	-0.000005	-0.0002	-0.0005	0.00005	0.000038	0.0003	0.0007	-0.0001
18-Apr-12	17	500	450	-0.000005	0.00068	-0.0005	0.00005	0.0000436	0.00033	0.00077	0.00015
25-Apr-12	18	500	480	-0.000005	0.00063	-0.0005	0.00005	0.000042	0.00029	0.00109	0.00018
2-May-12	19	500	475	-0.000005	-0.0002	-0.0005	0.000054	0.000052	0.00023	0.00029	-0.0001
9-May-12	20	500	475	-0.000005	0.00027	-0.0005	0.000045	0.000031	-0.0002	0.00079	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	475	-0.000005	0.00049	-0.0005	0.000037	0.0000558	0.00021	0.00133	0.00012
6-Jun-12	24	500	470	-0.000005	0.00043	-0.0005	0.000018	0.0000157	-0.0002	0.00126	-0.0001
13-Jun-12	25	500	475								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)
3.78	3.58	2.70
0.52	0.47	4.82
0.58	0.62	-3.88
0.50	0.51	-0.28
0.52	0.52	-0.05
0.48	0.46	1.72
0.64	0.61	2.78
0.84	0.86	-1.27
0.79	0.79	0.09
0.76	0.68	6.10
0.71	0.78	-4.81
0.46	0.46	0.50
0.68	0.67	0.99
0.61	0.56	4.68
0.80	0.80	0.05
0.52	0.51	0.92
0.81	0.75	4.12
0.75	0.78	-1.44
0.77	0.75	1.13
0.79	0.79	-0.32
0.64	0.63	1.03
0.68	0.65	1.84
0.39	0.40	-0.72

Sample left to drain over 2 nights (leachate collected on 4-May-12)

Sample left to drain overnight

Stopped leaching

Stopped leaching

Sample left to drain overnight

Sample left to drain overnight



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan										
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001
21-Dec-11	0	750	585	9.49	78	90	5.59	-0.5	-0.5	25.1	-0.5	0.035	15.9	0.0655	0.00007	0.00013	0.00044	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	3.53	-0.0001
28-Dec-11	1	500	485	8.94	98	100	7.08	-0.5	-0.5	37.6	-0.5	0.024	24.4	0.0502	0.00013	0.00016	0.00078	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.63	-0.0001
4-Jan-12	2	500	455	9.24	67	115	3.51	-0.5	-0.5	28.3	0.5	0.017	21.5	0.0479	0.0001	0.00009	0.00084	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.43	-0.0001
11-Jan-12	3	500	460	8.87	71	115	2.76	-0.5	-0.5	30.6	-0.5	0.021	22.4	0.0388	0.0001	0.00013	0.00097	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	3.98	-0.0001
18-Jan-12	4	500	465	8.71	65	110	3.22	-0.5	-0.5	32.5	-0.5	0.032	23.7	0.0440	0.0001	0.00017	0.00112	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	3.97	-0.0001
25-Jan-12	5	500	465	9.15	76	110	2.62	-0.5	-0.5	34.4	-0.5	0.020	25.8	0.0440	0.00012	0.00012	0.00137	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.65	-0.0001
1-Feb-12	6	500	480	9.10	73	110	3.61	-0.5	-0.5	34.4	-0.5	0.018	27.1	0.0420	0.00012	0.00011	0.00148	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.50	-0.0001
8-Feb-12	7	500	465	9.12	58	115	1.14	-0.5	-0.5	26.6	-0.5	0.017	24.0	0.0429	0.00009	0.00006	0.00158	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.61	-0.0001
15-Feb-12	8	500	455	9.01	58	110	1.28	-0.5	-0.5	27.2	-0.5	0.019	24.0	0.0348	0.00008	0.00004	0.00219	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.28	-0.0001
22-Feb-12	9	500	450	8.94	58	120	1.57	-0.5	-0.5	22.6	0.6	0.013	21.1	0.0236	0.00007	0.00004	0.0019	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	3.48	-0.0001
29-Feb-12	10	500	480	8.50	49	125	1.48	-0.5	-0.5	23.2	-0.5	0.012	22.7	0.0233	0.00007	0.00014	0.00163	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	3.79	-0.0001
7-Mar-12	11	500	465	8.78	53	120	1.12	-0.5	-0.5	27.7	-0.5	0.013	24.2	0.0281	0.00008	0.00004	0.00154	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.38	-0.0001
14-Mar-12	12	500	455	8.55	34	120	1.02	-0.5	0.5	23.6	-0.5	0.011	21.0	0.0236	0.00007	-0.00002	0.00209	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	3.16	-0.0001
21-Mar-12	13	500	465	8.50	53	115	0.76	-0.5	-0.5	28.5	-0.5	0.014	24.2	0.0289	0.00009	0.00002	0.00183	-0.00001	-0.000005	-0.05	-0.00005	0.000005	4.38	-0.0001
28-Mar-12	14	500	470	8.70	51	120	0.79	-0.5	0.9	25.5	-0.5	0.012	26.9	0.0243	0.00008	-0.00002	0.00185	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.43	-0.0001
4-Apr-12	15	500	465	8.81	55	130	-0.50	-0.5	-0.5	27.5	-0.5	0.012	25.0	0.0200	0.00008	0.00005	0.00209	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.07	-0.0001
11-Apr-12	16	500	470	8.69	58	120	0.62	-0.5	-0.5	27	-0.5	0.012	26.2	0.0247	0.00009	0.00003	0.00199	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.2	-0.0001
18-Apr-12	17	500	465	8.87	47	120	0.83	-0.5	-0.5	26.6	-0.5	0.015	26.3	0.0239	0.000089	0.000062	0.00174	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.29	-0.0001
25-Apr-12	18	500	465	8.14	60	125	0.83	-0.5	-0.5	27.7	-0.5	-0.01	25.7	0.0203	0.000072	-0.00002	0.00166	-0.00001	-0.000005	-0.05	-0.00005	0.000005	4.01	-0.0001
2-May-12	19	500	460	8.13	64	125	-0.5	-0.5	0.62	27	-0.5	-0.01	25.2	0.0227	0.000064	-0.00002	0.00159	0.000014	0.000009	-0.05	-0.00005	-0.000005	3.7	-0.0001
9-May-12	20	500	485	8.17	56	120	0.55	-0.5	-0.5	27.4	0.7	0.01	27.2	0.0138	0.000063	-0.00002	0.00193	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	3.94	-0.0001
16-May-12	21	500																						
23-May-12	22	500																						
30-May-12	23	500	460	8.80	69	115	1.06	-0.5	-0.5	31.8	-0.5	0.011	30.3	0.0203	0.000095	0.000033	0.00234	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.36	-0.0001
6-Jun-12	24	500	450	8.79	68	125	1.06	-0.5	3.49	31.2	0.84	0.011	30.4	0.0274	0.000089	-0.00002	0.00222	-0.00001	-0.000005	-0.05	-0.000005	-0.000005	5.07	-0.0001
13-Jun-12	25	500	475	8.81	65	120																		
20-Jun-12	26	500																						
27-Jun-12	27	500																						

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	585	-0.000005	0.00015	-0.0005	-0.00001	-0.000002	0.0005	-0.0001	-0.0001
28-Dec-11	1	500	485	-0.000005	0.00016	-0.0005	0.00002	-0.000002	0.0002	0.0005	-0.0001
4-Jan-12	2	500	455	-0.000005	-0.0002	-0.0005	0.00001	-0.000002	-0.0002	0.0002	-0.0001
11-Jan-12	3	500	460	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	0.0003	0.0003	-0.0001
18-Jan-12	4	500	465	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	0.0003	0.0002	-0.0001
25-Jan-12	5	500	465	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	0.0003	-0.0001	-0.0001
1-Feb-12	6	500	480	-0.000005	0.0003	-0.0005	-0.00001	0.000003	-0.0002	0.0003	-0.0001
8-Feb-12	7	500	465	-0.000005	-0.0002	0.0006	-0.00001	-0.000002	-0.0002	0.0021	-0.0001
15-Feb-12	8	500	455	-0.000005	-0.0002	-0.0005	-0.00001	0.000007	-0.0002	0.0005	-0.0001
22-Feb-12	9	500	450	-0.000005	0.0003	-0.0005	-0.00001	-0.000002	-0.0002	0.0003	-0.0001
29-Feb-12	10	500	480	-0.000005	0.0004	-0.0005	-0.00001	0.000005	0.0021	0.0003	-0.0001
7-Mar-12	11	500	465	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	-0.0002	0.0008	-0.0001
14-Mar-12	12	500	455	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	-0.0002	0.0006	-0.0001
21-Mar-12	13	500	465	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	-0.0002	0.0005	0.0001
28-Mar-12	14	500	470	-0.000005	0.0003	-0.0005	-0.00001	-0.000002	-0.0002	0.0006	-0.0001
4-Apr-12	15	500	465	-0.000005	0.0009	-0.0005	-0.00001	-0.000002	-0.0002	0.00257	-0.0001
11-Apr-12	16	500	470	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	-0.0002	0.0002	-0.0001
18-Apr-12	17	500	465	-0.000005	0.00056	-0.0005	-0.00001	-0.000002	-0.0002	0.00048	-0.0001
25-Apr-12	18	500	465	-0.000005	0.00096	-0.0005	-0.00001	-0.000002	-0.0002	0.001	-0.0001
2-May-12	19	500	460	-0.000005	0.0138	-0.0005	-0.00001	-0.000002	-0.0002	0.00197	-0.0001
9-May-12	20	500	485	-0.000005	0.00027	-0.0005	-0.00001	-0.000002	-0.0002	0.00069	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	460	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	-0.0002	0.00038	-0.0001
6-Jun-12	24	500	450	-0.000005	0.00056	-0.0005	-0.00001	0.0000022	-0.0002	0.00084	-0.0001
13-Jun-12	25	500	475								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)
0.62	0.62	0.35
0.90	0.89	0.83
0.65	0.63	1.59
0.66	0.66	-0.38
0.70	0.67	2.63
0.73	0.68	3.53
0.75	0.70	3.58
0.54	0.57	-2.43
0.56	0.56	-0.10
0.50	0.48	1.96
0.48	0.51	-2.55
0.56	0.53	3.25
0.48	0.46	2.42
0.57	0.52	4.93
0.51	0.57	-5.61
0.53	0.53	-0.26
0.54	0.55	-1.03
0.54	0.55	-1.09
0.56	0.53	2.06
0.51	0.52	-0.62
0.58	0.56	1.66

Stopped leaching
Stopped leaching



Client: Klohn Crippen
 Client Project Name: Guyana-Aurora Gold
 HC-6; Sample ID: B 11 112924

Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan										
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L		mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001
21-Dec-11	0	750	600	8.90	245	120	74.9	-0.5	-0.5	13.3	-0.5	0.12	58.4	0.055	0.00036	0.00014	0.025	-0.00001	-0.000005	-0.05	0.00018	-0.000005	11.7	-0.0001
28-Dec-11	1	500	485	8.30	254	120	76.5	-0.5	-0.5	31.5	-0.5	0.12	68.0	0.087	0.00055	0.00019	0.0385	-0.00001	-0.000005	-0.05	0.0002	-0.000005	10.9	-0.0001
4-Jan-12	2	500	470	8.75	166	120	38.8	-0.5	-0.5	28.3	-0.5	0.08	51.9	0.098	0.00045	0.00019	0.0357	-0.00001	-0.000005	-0.05	0.00015	0.000007	8.5	-0.0001
11-Jan-12	3	500	470	8.30	124	120	23.5	-0.5	-0.5	28.6	-0.5	0.069	38.4	0.085	0.00046	0.00016	0.037	-0.00001	-0.000005	-0.05	0.00012	0.000006	6.07	-0.0001
18-Jan-12	4	500	465	8.62	112	115	17.6	-0.5	-0.5	29.3	-0.5	0.064	36.1	0.103	0.00052	0.00014	0.0412	-0.00001	-0.000005	-0.05	0.0001	-0.000005	5.92	0.0001
25-Jan-12	5	500	470	8.86	99	110	11.5	-0.5	-0.5	29.3	-0.5	0.055	31.0	0.106	0.00052	0.00019	0.0415	-0.00001	-0.000005	-0.05	0.00009	0.000006	5.12	-0.0001
1-Feb-12	6	500	475	8.80	101	110	14.3	-0.5	-0.5	30.9	-0.5	0.050	34.4	0.114	0.00061	0.00016	0.0518	-0.00001	-0.000005	-0.05	0.00009	0.000005	5.59	-0.0001
8-Feb-12	7	500	475	8.74	88	115	10.4	-0.5	-0.5	29.3	-0.5	0.043	33.9	0.112	0.00053	0.00011	0.0502	-0.00001	-0.000005	-0.05	0.0001	-0.000005	5.43	-0.0001
15-Feb-12	8	500	475	8.73	90	105	10.0	-0.5	-0.5	32.2	-0.5	0.048	36.4	0.131	0.00068	0.00013	0.0575	-0.00001	-0.000005	-0.05	0.00009	-0.000005	5.77	-0.0001
22-Feb-12	9	500	475	8.69	91	120	8.8	-0.5	-0.5	29.9	0.6	0.038	31.1	0.115	0.00073	0.00012	0.0571	-0.00001	-0.000005	-0.05	0.00008	-0.000005	5.22	-0.0001
29-Feb-12	10	500	475	8.53	91	125	8.6	-0.5	-0.5	28.0	-0.5	0.032	33.6	0.116	0.00088	0.00014	0.0547	-0.00001	-0.000005	-0.05	0.00008	0.000014	5.65	-0.0001
7-Mar-12	11	500	485	8.33	106	125	8.9	-0.5	-0.5	33.9	-0.5	0.030	36.6	0.109	0.0009	0.00011	0.0606	-0.00001	-0.000005	-0.05	0.00006	-0.000005	6.26	-0.0001
14-Mar-12	12	500	475	8.45	88	120	8.8	-0.5	-0.5	31.8	-0.5	0.044	35.9	0.126	0.00099	0.00005	0.0633	-0.00001	-0.000005	-0.05	0.00008	0.00002	5.99	-0.0001
21-Mar-12	13	500	470	8.48	86	120	8.5	-0.5	-0.5	33.4	-0.5	0.027	33.2	0.107	0.00098	0.00006	0.0644	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	6.04	-0.0001
28-Mar-12	14	500	465	8.35	84	125	7.3	-0.5	-0.5	30.5	-0.5	0.028	36.6	0.112	0.00107	0.00009	0.0677	-0.00001	-0.000005	-0.05	0.00006	-0.000005	6.69	-0.0001
4-Apr-12	15	500	485	8.57	85	130	6.7	-0.5	-0.5	31.5	-0.5	0.029	33.9	0.107	0.00121	0.00011	0.0716	-0.00001	-0.000005	-0.05	0.00009	-0.000005	6.25	-0.0001
11-Apr-12	16	500	460	8.63	76	120	6.0	-0.5	-0.5	28.9	-0.5	0.020	29.8	0.106	0.00105	0.00008	0.0725	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	5.38	-0.0001
18-Apr-12	17	500	475	8.54	78	120	6.5	-0.5	-0.5	29.9	-0.5	0.028	35.0	0.121	0.00118	0.000083	0.0664	-0.00001	-0.000005	-0.05	-0.00005	0.0000264	6.36	-0.0001
25-Apr-12	18	500	475	8.36	78	125	6.4	-0.5	-0.5	27.9	-0.5	0.022	31.8	0.101	0.00107	0.000052	0.0669	-0.00001	-0.000005	-0.05	-0.00005	0.000005	5.84	-0.0001
2-May-12	19	500	460	8.26	94	130	6.0	-0.5	0.83	30.3	-0.5	0.019	32	0.108	0.00122	0.000096	0.0696	-0.00001	-0.000005	-0.05	0.000073	-0.000005	5.64	-0.0001
9-May-12	20	500	480	8.21	78	120	6.4	-0.5	-0.5	32.4	-0.5	0.021	35.5	0.101	0.00128	0.000073	0.0752	-0.00001	-0.000005	-0.05	0.000052	0.000007	6.61	-0.0001
16-May-12	21	500																						
23-May-12	22	500																						
30-May-12	23	500	465	8.59	85	120	7	-0.5	-0.5	28.5	-0.5	0.019	31	0.101	0.00148	0.000084	0.0609	-0.00001	-0.000005	-0.05	0.000076	-0.000005	5.6	-0.0001
6-Jun-12	24	500	450	8.74	80	115	6.3	-0.5	-0.5	29.3	0.55	0.015	33.8	0.132	0.00156	0.000087	0.0631	-0.00001	-0.000005	-0.05	-0.000005	-0.000005	6.39	-0.0001
13-Jun-12	25	500	470	8.58	77	120																		
20-Jun-12	26	500																						
27-Jun-12	27	500																						

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	600	-0.000005	0.00031	-0.0005	0.00006	-0.000002	0.0002	0.0004	-0.0001
28-Dec-11	1	500	485	-0.000005	0.00024	-0.0005	0.00006	0.000012	0.0003	0.0003	-0.0001
4-Jan-12	2	500	470	-0.000005	-0.0002	-0.0005	0.00005	0.000004	-0.0002	0.0002	-0.0001
11-Jan-12	3	500	470	-0.000005	0.0004	-0.0005	0.00004	-0.000002	0.0003	0.0004	-0.0001
18-Jan-12	4	500	465	-0.000005	0.0003	-0.0005	0.00004	0.000003	0.0003	0.0008	-0.0001
25-Jan-12	5	500	470	-0.000005	-0.0002	-0.0005	0.00004	-0.000002	0.0003	-0.0001	-0.0001
1-Feb-12	6	500	475	-0.000005	-0.0002	-0.0005	0.00006	0.000004	0.0002	0.0005	-0.0001
8-Feb-12	7	500	475	-0.000005	-0.0002	-0.0005	0.00004	0.000003	-0.0002	0.0002	-0.0001
15-Feb-12	8	500	475	-0.000005	-0.0002	-0.0005	0.00004	-0.000002	-0.0002	0.0002	-0.0001
22-Feb-12	9	500	475	-0.000005	-0.0002	-0.0005	0.00003	0.000003	-0.0002	0.0002	-0.0001
29-Feb-12	10	500	475	-0.000005	0.0003	-0.0005	0.00004	0.000007	-0.0002	0.0002	-0.0001
7-Mar-12	11	500	485	-0.000005	0.0002	-0.0005	0.00003	0.000005	-0.0002	0.0005	-0.0001
14-Mar-12	12	500	475	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.0004	-0.0001
21-Mar-12	13	500	470	-0.000005	-0.0002	-0.0005	0.00002	-0.000002	0.0002	0.0009	-0.0001
28-Mar-12	14	500	465	-0.000005	0.0002	-0.0005	0.00004	-0.000002	-0.0002	0.0004	-0.0001
4-Apr-12	15	500	485	-0.000005	0.0003	-0.0005	0.00004	0.000003	-0.0002	0.0008	-0.0001
11-Apr-12	16	500	460	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.0003	-0.0001
18-Apr-12	17	500	475	-0.000005	0.00067	-0.0005	0.000032	-0.000002	-0.0002	0.00175	-0.0001
25-Apr-12	18	500	475	-0.000005	0.00035	-0.0005	0.000024	-0.000002	0.0002	0.00029	-0.0001
2-May-12	19	500	460	-0.000005	-0.0002	-0.0005	0.000037	-0.000002	-0.0002	0.00032	-0.0001
9-May-12	20	500	480	-0.000005	0.0002	-0.0005	0.000031	0.000002	0.00023	0.00029	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	465	-0.000005	0.00021	-0.0005	0.000027	0.0000021	-0.0002	0.00048	-0.0001
6-Jun-12	24	500	450	-0.000005	-0.0002	-0.0005	0.000024	0.000002	-0.0002	0.00045	-0.0001
13-Jun-12	25	500	470								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)
1.83	1.89	-1.43
2.23	2.08	3.48
1.36	1.46	-3.30
1.05	1.03	1.06
0.94	0.92	1.25
0.81	0.76	3.69
0.90	0.82	4.97
0.79	0.79	0.20
0.84	0.84	0.34
0.80	0.70	6.40
0.73	0.75	-1.76
0.85	0.81	2.71
0.81	0.79	1.11
0.83	0.72	7.12
0.75	0.79	-2.92
0.76	0.73	1.62
0.69	0.64	3.77
0.72	0.75	-2.10
0.68	0.68	-0.17
0.72	0.69	2.26
0.77	0.75	1.09

Stopped leaching
Stopped leaching



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan									
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L		mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	
21-Dec-11	0	750	580	9.44	118	90	18.4	-0.5	-0.5	24	-0.5	0.14	12.8	0.134	0.0036	0.0496	0.00069	-0.00001	-0.000005	-0.05	0.00016	-0.000005	
28-Dec-11	1	500	485	8.78	156	95	25.6	-0.5	-0.5	43	-0.5	0.17	28.1	0.129	0.0243	0.268	0.00132	-0.00001	-0.000005	-0.05	0.00017	-0.000005	
4-Jan-12	2	500	455	8.94	110	115	12.5	-0.5	-0.5	38	-0.5	0.10	28.0	0.119	0.0256	0.373	0.00114	-0.00001	-0.000005	-0.05	0.00016	0.000005	
11-Jan-12	3	500	465	8.63	105	120	8.1	-0.5	-0.5	39	-0.5	0.10	30.6	0.112	0.0285	0.44	0.00119	-0.00001	-0.000005	-0.05	0.00019	-0.000005	
18-Jan-12	4	500	460	8.63	85	115	5.4	-0.5	0.6	35	-0.5	0.07	29.4	0.106	0.0237	0.393	0.00114	-0.00001	-0.000005	-0.05	0.00013	-0.000005	
25-Jan-12	5	500	460	8.65	86	110	5.8	-0.5	-0.5	36	-0.5	0.06	30.3	0.109	0.0232	0.416	0.00113	-0.00001	-0.000005	-0.05	0.00016	-0.000005	
1-Feb-12	6	500	455	8.70	74	115	4.9	-0.5	-0.5	32	-0.5	0.04	28.9	0.113	0.0197	0.342	0.00100	-0.00001	-0.000005	-0.05	0.00012	-0.000005	
8-Feb-12	7	500	485	8.55	77	110	2.9	-0.5	-0.5	35	-0.5	0.04	32.0	0.103	0.0178	0.298	0.00107	-0.00001	-0.000005	-0.05	0.00016	-0.000005	
15-Feb-12	8	500	455	8.45	75	105	3.2	-0.5	-0.5	30	-0.5	0.04	29.3	0.123	0.0171	0.312	0.00096	-0.00001	-0.000005	-0.05	0.00014	-0.000005	
22-Feb-12	9	500	460	8.62	71	120	2.8	-0.5	-0.5	28	0.5	0.03	27.9	0.105	0.0169	0.294	0.00097	-0.00001	-0.000005	-0.05	0.00015	-0.000005	
29-Feb-12	10	500	445	8.49	73	125	2.0	-0.5	-0.5	31	-0.5	0.03	31.8	0.106	0.0174	0.290	0.00104	-0.00001	-0.000005	-0.05	0.00015	-0.000005	
7-Mar-12	11	500	480	8.32	79	120	2.0	-0.5	-0.5	35	-0.5	0.02	33.0	0.094	0.0144	0.206	0.00102	-0.00001	-0.000005	-0.05	0.00015	-0.000005	
14-Mar-12	12	500	450	8.39	65	120	3.2	-0.5	-0.5	34	-0.5	0.02	32.3	0.129	0.0146	0.253	0.00104	-0.00001	-0.000005	-0.05	0.00013	-0.000005	
21-Mar-12	13	500	470	8.23	68	115	1.5	-0.5	-0.5	32	-0.5	0.02	31.9	0.104	0.0133	0.226	0.00089	-0.00001	-0.000005	-0.05	0.00015	-0.000005	
28-Mar-12	14	500	470	8.30	67	125	2.5	-0.5	0.8	33	-0.5	0.02	33.8	0.110	0.0137	0.214	0.00100	-0.00001	-0.000005	-0.05	0.00012	-0.000005	
4-Apr-12	15	500	485	8.59	65	130	1.4	-0.5	-0.5	31	0.7	0.02	28.5	0.092	0.012	0.180	0.00094	-0.00001	-0.000005	-0.05	0.00009	-0.000005	
11-Apr-12	16	500	460	8.63	54	130	1.4	-0.5	-0.5	27	-0.5	0.01	23.6	0.105	0.00876	0.15	0.00072	-0.00001	-0.000005	-0.05	0.00007	-0.000005	
18-Apr-12	17	500	485	7.89	51	125	2.0	-0.5	-0.5	26	-0.5	0.02	27.7	0.0952	0.0105	0.154	0.00109	-0.00001	-0.000005	-0.05	0.00008	0.0000059	
25-Apr-12	18	500	450	7.95	55	130	2.5	-0.5	-0.5	24	-0.5	0.01	24.6	0.0934	0.0088	0.138	0.000597	-0.00001	-0.000005	-0.05	0.000058	-0.000005	
2-May-12	19	500	450	8.00	72	130	1.9	-0.5	1.1	29	-0.5	0.01	27.2	0.0851	0.00939	0.13	0.000668	-0.00001	-0.000005	-0.05	0.000094	-0.000005	
9-May-12	20	500	495	8.01	62	120	2.4	-0.5	-0.5	30.4	0.52	0.015	30.2	0.0693	0.00872	0.116	0.001	-0.00001	-0.000005	-0.05	0.000081	-0.000005	
16-May-12	21	500																					
23-May-12	22	500																					
30-May-12	23	500	465	8.20	56	115	2.42	<0.50	<0.50	23.7	<0.50	0.014	24	0.0799	0.0085	0.115	0.000665	-0.00001	-0.000005	-0.05	0.000063	-0.000005	
6-Jun-12	24	500	460	8.41	63	115	2.49	<0.50	2.03	28.7	1.1	0.012	27.5	0.111	0.00854	0.132	0.000654	-0.00001	-0.000005	-0.05	-0.000005	0.000092	
13-Jun-12	25	500	490	8.36	61	120																	
20-Jun-12	26	500																					
27-Jun-12	27	500																					

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	580	-0.000005	0.00028	-0.0005	0.00021	0.00001	0.0015	0.0004	-0.0001
28-Dec-11	1	500	485	-0.000005	0.00005	-0.0005	0.00048	0.000069	0.0016	0.0001	-0.0001
4-Jan-12	2	500	455	-0.000005	-0.0002	-0.0005	0.00041	0.00005	0.0014	0.0002	-0.0001
11-Jan-12	3	500	465	-0.000005	0.0002	-0.0005	0.00041	0.000055	0.0016	0.0004	-0.0001
18-Jan-12	4	500	460	-0.000005	-0.0002	-0.0005	0.00031	0.000049	0.0014	0.0003	-0.0001
25-Jan-12	5	500	460	-0.000005	-0.0002	-0.0005	0.00028	0.000041	0.0012	0.0002	-0.0001
1-Feb-12	6	500	455	-0.000005	-0.0002	-0.0005	0.00024	0.000037	0.0009	0.0003	-0.0001
8-Feb-12	7	500	485	-0.000005	-0.0002	-0.0005	0.00019	0.000047	0.0008	0.0003	-0.0001
15-Feb-12	8	500	455	-0.000005	-0.0002	-0.0005	0.00016	0.000059	0.0009	0.0006	-0.0001
22-Feb-12	9	500	460	-0.000005	-0.0002	-0.0005	0.00015	0.000068	0.0007	0.0001	-0.0001
29-Feb-12	10	500	445	-0.000005	0.0004	-0.0005	0.00017	0.000067	0.001	0.0007	-0.0001
7-Mar-12	11	500	480	-0.000005	-0.0002	-0.0005	0.00013	0.000072	0.0009	0.0003	0.0002
14-Mar-12	12	500	450	-0.000005	-0.0002	-0.0005	0.00014	0.000082	0.0007	0.0004	-0.0001
21-Mar-12	13	500	470	-0.000005	-0.0002	-0.0005	0.00011	0.000078	0.0005	0.0008	-0.0001
28-Mar-12	14	500	470	-0.000005	-0.0002	-0.0005	0.00014	0.000073	0.0006	0.0006	0.0001
4-Apr-12	15	500	485	-0.000005	-0.0002	-0.0005	0.00012	0.000089	0.0006	0.0007	-0.0001
11-Apr-12	16	500	460	-0.000005	-0.0002	-0.0005	0.00009	0.000057	0.0005	0.0003	-0.0001
18-Apr-12	17	500	485	-0.000005	0.00046	-0.0005	0.000101	0.0000629	0.00052	0.00158	-0.0001
25-Apr-12	18	500	450	-0.000005	0.00063	-0.0005	0.000068	0.000055	0.00056	0.00106	-0.0001
2-May-12	19	500	450	-0.000005	-0.0002	-0.0005	0.000094	0.000063	0.0004	0.00023	-0.0001
9-May-12	20	500	495	-0.000005	-0.0002	-0.0005	0.000099	0.000063	0.00032	0.00084	0.00018
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	465	-0.000005	-0.0002	-0.0005	0.000096	0.0000576	0.00044	0.0006	0.00016
6-Jun-12	24	500	460	-0.000005	-0.0002	-0.0005	0.000079	0.0000589	0.00053	0.00043	0.00017
13-Jun-12	25	500	490								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)
0.87	0.90	-1.39
1.41	1.39	0.59
1.02	1.06	-2.06
0.93	0.95	-0.91
0.81	0.81	0.05
0.83	0.76	4.63
0.73	0.69	3.22
0.74	0.73	0.89
0.65	0.67	-1.21
0.63	0.62	0.88
0.64	0.70	-4.68
0.72	0.71	0.64
0.74	0.70	2.87
0.65	0.68	-2.09
0.71	0.72	-1.09
0.67	0.61	5.01
0.55	0.50	4.09
0.56	0.59	-2.81
0.51	0.52	-1.16
0.60	0.58	1.60
0.67	0.63	3.17

Stopped leaching
Stopped leaching



Client: Klohn Crippen

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Client Project Name: Guyana-Aurora Gold

HC-8; Sample ID: B 18 20690

Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan										
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001
21-Dec-11	0	750	540	8.50	297	115	47.5	-0.5	-0.5	72.3	2.4	0.06	41.5	0.157	0.00108	0.00045	0.00464	-0.00001	-0.000005	-0.05	0.00014	-0.000005	11.5	-0.0001
28-Dec-11	1	500	475	8.01	140	120	10.8	-0.5	-0.5	56.0	-0.5	0.03	47.8	0.149	0.00134	0.00042	0.00873	-0.00001	-0.000005	-0.05	0.00006	-0.000005	14.0	-0.0001
4-Jan-12	2	500	455	8.08	127	125	7.3	-0.5	-0.5	55.4	-0.5	0.02	54.0	0.158	0.00119	0.00046	0.00952	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	16.0	-0.0001
11-Jan-12	3	500	450	8.11	130	120	5.2	-0.5	-0.5	56.1	-0.5	0.02	53.1	0.157	0.0011	0.00042	0.01000	-0.00001	-0.000005	-0.05	-0.00005	0.000006	15.3	0.0001
18-Jan-12	4	500	465	8.13	146	110	5.0	-0.5	-0.5	53.9	-0.5	0.02	51.7	0.197	0.00095	0.00043	0.0107	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	14.8	0.0001
25-Jan-12	5	500	450	8.42	76	110	-0.5	-0.5	-0.5	32.8	-0.5	-0.01	20.3	0.188	0.00008	0.00012	0.00292	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	7.2	-0.0001
1-Feb-12	6	500	450	8.79	65	110	3.1	-0.5	-0.5	31.0	-0.5	-0.01	28.0	0.253	0.00023	0.00046	0.00454	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	9.0	-0.0001
8-Feb-12	7	500	475	8.15	96	115	4.3	-0.5	-0.5	46.0	-0.5	0.01	44.3	0.343	0.00043	0.00027	0.00774	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	13.8	-0.0001
15-Feb-12	8	500	465	8.14	66	110	1.7	-0.5	-0.5	26.8	-0.5	-0.01	25.5	0.329	0.00011	0.00029	0.00384	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	8.6	-0.0001
22-Feb-12	9	500	435	8.20	86	115	3.2	-0.5	-0.5	35.1	0.7	-0.01	33.5	0.277	0.00026	0.00029	0.00535	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	10.7	-0.0001
29-Feb-12	10	500	455	8.16	110	120	4.1	-0.5	-0.5	42.7	-0.5	-0.01	46.3	0.269	0.0004	0.00031	0.00816	-0.00001	-0.000005	-0.05	-0.00005	0.000005	14.1	-0.0001
7-Mar-12	11	500	435	8.19	134	120	4.7	-0.5	-0.5	51.5	-0.5	-0.01	52.4	0.258	0.00044	0.0003	0.00907	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	15.8	-0.0001
14-Mar-12	12	500	475	8.23	127	125	5.0	-0.5	-0.5	52.7	-0.5	-0.01	52.2	0.253	0.00052	0.00026	0.0108	-0.00001	-0.000005	-0.05	-0.00005	0.000006	15.1	-0.0001
21-Mar-12	13	500	470	8.22	137	120	4.1	-0.5	-0.5	57.1	-0.5	-0.01	51.1	0.208	0.00059	0.00035	0.0101	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	15.2	-0.0001
28-Mar-12	14	500	450	8.10	100	125	3.2	-0.5	-0.5	42.3	-0.5	0.01	48.9	0.303	0.00038	0.00024	0.00731	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	15.6	-0.0001
4-Apr-12	15	500	465	8.11	106	125	3.0	-0.5	-0.5	46.1	0.6	-0.01	44.9	0.257	0.00041	0.00026	0.00751	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	14.0	0.0004
11-Apr-12	16	500	465	8.27	111	120	3.3	-0.5	-0.5	46.2	-0.5	-0.01	45.0	0.261	0.00037	0.00025	0.00806	-0.00001	-0.000005	-0.05	-0.00005	0.000007	13.9	-0.0001
18-Apr-12	17	500	455	8.16	93	120	3.3	-0.5	-0.5	44.0	-0.5	0.01	46.9	0.300	0.000319	0.000242	0.00683	-0.00001	-0.000005	-0.05	-0.00005	0.000008	14.7	-0.0001
25-Apr-12	18	500	430	8.25	108	120	3.8	-0.5	-0.5	44.8	-0.5	-0.01	50.3	0.273	0.000318	0.000261	0.00733	-0.00001	-0.000005	-0.05	-0.00005	0.000009	15.8	-0.0001
2-May-12	19	500	495	8.29	125	120	3.2	-0.5	0.7	50.9	-0.5	-0.01	50.5	0.293	0.000293	0.000299	0.00763	-0.00001	-0.000005	-0.05	-0.00005	0.000006	16	-0.0001
9-May-12	20	500	465	8.24	103	115	4	-0.5	-0.5	50.6	-0.5	-0.01	52.9	0.278	0.00028	0.00026	0.00766	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	17.1	-0.0001
16-May-12	21	500																						
23-May-12	22	500																						
30-May-12	23	500	465	8.29	121	110	5.09	-0.5	-0.5	44.6	0.55	-0.01	47.2	0.26	0.00028	0.000269	0.00808	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	15.4	-0.0001
6-Jun-12	24	500	490	8.29	95	120	3.77	-0.5	-0.5	42.9	-0.5	-0.01	42.8	0.317	0.000214	0.000239	0.00658	-0.00001	-0.000005	-0.05	-0.000005	-0.000005	14.3	-0.0001
13-Jun-12	25	500	490	8.32	95	120																		
20-Jun-12	26	500																						
27-Jun-12	27	500																						

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	540	-0.000005	0.00026	-0.0005	0.00061	0.000144	0.0047	0.0003	-0.0001
28-Dec-11	1	500	475	-0.000005	0.00007	-0.0005	0.0006	0.000056	0.0042	0.0003	-0.0001
4-Jan-12	2	500	455	-0.000005	-0.0002	-0.0005	0.0004	0.00004	0.0042	0.0001	-0.0001
11-Jan-12	3	500	450	-0.000005	0.0003	-0.0005	0.00028	0.000033	0.0045	0.0006	-0.0001
18-Jan-12	4	500	465	-0.000005	0.0004	-0.0005	0.00021	0.000031	0.0047	0.0004	-0.0001
25-Jan-12	5	500	450	-0.000005	0.0002	-0.0005	0.00002	-0.000002	0.0021	-0.0001	-0.0001
1-Feb-12	6	500	450	-0.000005	-0.0002	-0.0005	0.00005	0.000009	0.0032	0.0003	-0.0001
8-Feb-12	7	500	475	-0.000005	-0.0002	-0.0005	0.00009	0.000018	0.0039	0.0002	-0.0001
15-Feb-12	8	500	465	-0.000005	-0.0002	-0.0005	0.00003	0.000003	0.0027	0.0001	-0.0001
22-Feb-12	9	500	435	-0.000005	-0.0002	-0.0005	0.00005	0.00001	0.0032	0.0003	-0.0001
29-Feb-12	10	500	455	-0.000005	0.0002	-0.0005	0.00009	0.000018	0.0034	0.0003	-0.0001
7-Mar-12	11	500	435	-0.000005	0.0002	-0.0005	0.00009	0.000022	0.0035	0.0004	-0.0001
14-Mar-12	12	500	475	-0.000005	-0.0002	-0.0005	0.00011	0.000025	0.0047	0.0002	-0.0001
21-Mar-12	13	500	470	-0.000005	-0.0002	-0.0005	0.00011	0.000028	0.0038	0.0007	-0.0001
28-Mar-12	14	500	450	-0.000005	-0.0002	-0.0005	0.00010	0.000023	0.0044	0.0003	-0.0001
4-Apr-12	15	500	465	-0.000005	0.0026	-0.0005	0.00010	0.000028	0.0043	0.00188	-0.0001
11-Apr-12	16	500	465	-0.000005	-0.0002	-0.0005	0.00009	0.000028	0.0046	0.0008	-0.0001
18-Apr-12	17	500	455	-0.000005	0.00062	-0.0005	0.000081	0.0000286	0.00512	0.00295	-0.0001
25-Apr-12	18	500	430	-0.000005	0.00051	-0.0005	0.000067	0.000035	0.00503	0.00178	-0.0001
2-May-12	19	500	495	-0.000005	-0.0002	0.00082	0.000072	0.000041	0.00579	0.00033	0.0001
9-May-12	20	500	465	-0.000005	-0.0002	-0.0005	0.000083	0.000041	0.00585	0.00083	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	465	-0.000005	-0.0002	-0.0005	0.000079	0.000052	0.00546	0.00093	-0.0001
6-Jun-12	24	500	490	-0.000005	0.00023	-0.0005	0.000063	0.0000411	0.00605	0.00071	-0.0001
13-Jun-12	25	500	490								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)

2.51	2.56	-1.16	Sample left to drain overnight
1.35	1.33	0.72	Sample left to drain overnight
1.25	1.31	-2.58	Sample left to drain overnight
1.22	1.23	-0.58	Sample left to drain overnight
1.17	1.18	-0.39	Sample left to drain overnight
0.66	0.44	19.87	Sample left to drain overnight
0.67	0.62	3.69	
1.00	0.98	0.63	Sample left to drain overnight
0.56	0.57	-0.99	Sample left to drain overnight
0.79	0.74	3.48	Sample left to drain overnight
0.93	1.01	-4.55	Sample left to drain overnight
1.11	1.14	-1.28	Sample left to drain overnight
1.14	1.14	0.02	Sample left to drain overnight
1.21	1.10	4.73	Sample left to drain overnight
0.90	1.06	-8.03	Sample left to drain overnight
1.00	0.97	1.63	Sample left to drain overnight
0.98	0.97	0.28	Sample left to drain overnight
0.93	1.01	-3.94	Sample left to drain overnight
0.96	1.08	-5.79	Sample left to drain overnight
1.07	1.08	-0.68	Sample left to drain overnight
1.08	1.13	-2.17	Sample left to drain overnight
			Stopped leaching
			Stopped leaching
1.01	1.01	0.28	Sample left to drain overnight
0.92	0.92	0.07	Sample left to drain overnight



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan										
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001
21-Dec-11	0	750	565	8.50	394	120	141.0	-0.5	-0.5	11.8	1.5	0.17	127.0	0.0284	0.00123	0.00104	0.0165	-0.00001	-0.000005	-0.05	0.00046	-0.000005	39.2	-0.0001
28-Dec-11	1	500	430	7.93	381	120	132.0	-0.5	-0.5	26.6	1.2	0.21	130.0	0.0297	0.00201	0.0013	0.0244	-0.00001	-0.000005	-0.05	0.00047	-0.000005	36.0	-0.0001
4-Jan-12	2	500	420	7.61	182	125	51.4	-0.5	-0.5	20.9	0.7	0.15	64.2	0.0428	0.00158	0.00101	0.0180	-0.00001	-0.000005	-0.05	0.00026	0.000008	17.4	-0.0001
11-Jan-12	3	500	390	7.73	150	125	35.9	-0.5	0.6	27.1	-0.5	0.17	51.1	0.0437	0.00195	0.00101	0.0241	-0.00001	-0.000005	-0.05	0.00021	0.000012	13.3	-0.0001
18-Jan-12	4	500	420	8.23	116	120	20.2	-0.5	-0.5	28.8	-0.5	0.14	42.8	0.0431	0.00182	0.00093	0.0335	-0.00001	-0.000005	-0.05	0.00016	0.000008	10.8	0.0002
25-Jan-12	5	500	420	8.00	111	115	12.5	-0.5	-0.5	32.9	-0.5	0.12	39.4	0.0378	0.0020	0.00067	0.0422	-0.00001	-0.000005	-0.05	0.00015	0.000007	10.1	-0.0001
1-Feb-12	6	500	415	8.34	94	115	12.1	-0.5	-0.5	36.3	-0.5	0.12	37.4	0.0490	0.00252	0.00109	0.0537	-0.00001	-0.000005	-0.05	0.00015	0.000007	9.5	-0.0001
8-Feb-12	7	500	400	8.44	90	110	10.0	-0.5	-0.5	32.4	-0.5	0.09	34.2	0.0485	0.00237	0.00107	0.0541	-0.00001	-0.000005	-0.05	0.00012	-0.000005	8.3	-0.0001
15-Feb-12	8	500	400	7.69	86	110	9.6	-0.5	1.2	32.1	-0.5	0.09	37.4	0.0519	0.00279	0.00122	0.0590	-0.00001	-0.000005	-0.05	0.00011	-0.000005	8.1	-0.0001
22-Feb-12	9	500	410	8.51	89	115	7.5	-0.5	-0.5	32.4	0.6	0.08	31.7	0.0490	0.00246	0.0015	0.0552	-0.00001	-0.000005	-0.05	0.00014	-0.000005	6.9	-0.0001
29-Feb-12	10	500	410	8.60	64	125	6.0	-0.5	2.0	25.4	-0.5	0.05	27.4	0.0479	0.00202	0.00128	0.0479	-0.00001	-0.000005	-0.05	0.00008	0.000006	5.6	-0.0001
7-Mar-12	11	500	460	8.46	73	120	4.6	-0.5	-0.5	30.6	-0.5	0.03	29.6	0.0400	0.00177	0.00083	0.059	-0.00001	-0.000005	-0.05	-0.00005	0.000008	7.3	-0.0001
14-Mar-12	12	500	470	8.48	62	120	4.4	-0.5	-0.5	28.9	-0.5	0.03	29.1	0.0363	0.00196	0.00068	0.0613	-0.00001	-0.000005	-0.05	0.00006	0.000009	6.7	-0.0001
21-Mar-12	13	500	440	8.63	71	115	4.2	-0.5	-0.5	31.4	-0.5	0.03	30.8	0.0376	0.00264	0.00065	0.0696	-0.00001	-0.000005	-0.05	0.00005	0.000009	7.9	-0.0001
28-Mar-12	14	500	465	8.30	73	125	4.7	-0.5	0.5	31.4	-0.5	0.03	34.5	0.0358	0.00274	0.00058	0.0749	-0.00001	-0.000005	-0.05	0.00008	-0.000005	8.6	-0.0001
4-Apr-12	15	500	475	8.77	77	125	3.8	-0.5	-0.5	33.3	-0.5	0.03	28.9	0.0339	0.00312	0.00053	0.0806	-0.00001	-0.000005	-0.05	0.00006	0.000006	6.4	-0.0001
11-Apr-12	16	500	470	8.52	75	130	4.7	-0.5	-0.5	32.0	-0.5	0.02	29.3	0.0328	0.00284	0.00045	0.0832	-0.00001	-0.000005	-0.05	0.00007	0.000006	7.2	-0.0001
18-Apr-12	17	500	485	8.16	69	125	3.5	-0.5	-0.5	30.6	-0.5	0.03	31.7	0.0336	0.00296	0.000428	0.07	-0.00001	-0.000005	-0.05	0.00006	0.0000059	7.51	-0.0001
25-Apr-12	18	500	475	8.08	75	130	3.9	-0.5	-0.5	29.5	-0.5	0.02	31.6	0.0341	0.00292	0.000393	0.0765	-0.00001	-0.000005	-0.05	0.000053	0.000006	7.73	-0.0001
2-May-12	19	500	475	8.26	89	120	4.1	-0.5	0.8	30.3	-0.5	0.02	31.3	0.0328	0.00301	0.000465	0.0784	-0.00001	-0.000005	-0.05	0.000065	0.000007	7.02	-0.0001
9-May-12	20	500	485	8.25	82	120	3.45	-0.5	-0.5	32.8	1.8	0.019	33	0.0309	0.00295	0.000367	0.0796	-0.00001	-0.000005	-0.05	0.000053	0.000005	7.78	-0.0001
16-May-12	21	500																						
23-May-12	22	500																						
30-May-12	23	500	470	8.34	89	120	5.5	-0.5	-0.5	31.2	-0.5	0.018	32.7	0.0352	0.00385	0.000422	0.0943	-0.00001	-0.000005	-0.05	0.000085	-0.000005	7.79	-0.0001
6-Jun-12	24	500	460	8.03	80	125	4.49	-0.5	-0.5	32.8	-0.5	0.014	33	0.0392	0.00396	0.000338	0.0815	-0.00001	-0.000005	-0.05	-0.000005	-0.000005	7.76	-0.0001
13-Jun-12	25	500	460	8.24	79	125																		
20-Jun-12	26	500																						
27-Jun-12	27	500																						

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	565	-0.000005	0.0002	-0.0005	0.00007	0.000003	0.0005	0.0002	-0.0001
28-Dec-11	1	500	430	-0.000005	0.00008	-0.0005	0.0001	0.00001	0.0004	-0.0001	-0.0001
4-Jan-12	2	500	420	-0.000005	-0.0002	-0.0005	0.00009	0.000002	-0.0002	0.0003	-0.0001
11-Jan-12	3	500	390	-0.000005	0.0006	-0.0005	0.00009	0.000003	0.0005	0.0003	-0.0001
18-Jan-12	4	500	420	-0.000005	0.0013	-0.0005	0.00008	0.000003	0.0005	0.0015	-0.0001
25-Jan-12	5	500	420	-0.000005	-0.0002	-0.0005	0.00007	-0.000002	0.0003	0.0001	-0.0001
1-Feb-12	6	500	415	-0.000005	0.0020	-0.0005	0.00009	-0.000002	0.0003	0.0003	-0.0001
8-Feb-12	7	500	400	-0.000005	0.0031	-0.0005	0.00007	0.000003	0.0004	0.0005	-0.0001
15-Feb-12	8	500	400	-0.000005	0.0027	-0.0005	0.00009	-0.000002	0.0003	0.0002	-0.0001
22-Feb-12	9	500	410	-0.000005	0.0022	-0.0005	0.00007	-0.000002	0.0003	0.0003	-0.0001
29-Feb-12	10	500	410	-0.000005	0.0014	-0.0005	0.00006	-0.000002	0.0005	0.0003	-0.0001
7-Mar-12	11	500	460	-0.000005	0.0013	-0.0005	0.00004	-0.000002	0.0009	0.0007	-0.0001
14-Mar-12	12	500	470	-0.000005	0.0010	-0.0005	0.00003	-0.000002	-0.0002	0.0002	-0.0001
21-Mar-12	13	500	440	-0.000005	0.0010	-0.0005	0.00002	-0.000002	-0.0002	0.0004	-0.0001
28-Mar-12	14	500	465	-0.000005	0.0011	-0.0005	0.00004	-0.000002	-0.0002	0.0004	-0.0001
4-Apr-12	15	500	475	-0.000005	0.0013	-0.0005	0.00003	-0.000002	-0.0002	0.0004	-0.0001
11-Apr-12	16	500	470	-0.000005	0.0012	-0.0005	0.00003	-0.000002	-0.0002	0.0016	-0.0001
18-Apr-12	17	500	485	-0.000005	0.00186	-0.0005	0.000027	-0.000002	-0.0002	0.00278	-0.0001
25-Apr-12	18	500	475	-0.000005	0.00107	-0.0005	0.000015	-0.000002	-0.0002	0.0004	-0.0001
2-May-12	19	500	475	-0.000005	0.00099	-0.0005	0.000019	-0.000002	-0.0002	0.00024	-0.0001
9-May-12	20	500	485	-0.000005	0.00111	-0.0005	0.000019	-0.000002	-0.0002	0.00045	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	470	-0.000005	0.00198	-0.0005	0.000021	-0.000002	-0.0002	0.0007	-0.0001
6-Jun-12	24	500	460	-0.000005	0.0012	-0.0005	0.000017	-0.000002	-0.0002	0.00069	-0.0001
13-Jun-12	25	500	460								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)
3.22	3.24	-0.24
3.33	3.28	0.73
1.52	1.56	-1.55
1.28	1.20	3.37
0.99	0.96	1.35
0.91	0.85	3.40
0.97	0.80	9.44
0.85	0.73	7.42
0.83	0.79	2.35
0.83	0.67	10.10
0.62	0.58	3.20
0.70	0.62	5.99
0.66	0.61	4.04
0.70	0.64	5.04
0.71	0.71	0.17
0.73	0.60	10.06
0.72	0.60	9.23
0.67	0.65	1.63
0.66	0.65	0.67
0.68	0.64	2.70
0.78	0.67	7.25

Leak in the cell

Sample left to drain overnight

Sample left to drain overnight

Sample left to drain overnight

Stopped leaching

Stopped leaching



Client: Klohn Crippen
 Client Project Name: Guyana-Aurora Gold
 HC-10; Sample ID: B 10 170764

Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan									
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L		mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05
21-Dec-11	0	750	680	9.08	305	115	92.5	-0.5	-0.5	16.9	-0.5	0.16	49.7	0.0915	0.00024	0.00026	0.097	-0.00001	-0.000005	-0.05	0.00039	0.000006	10.6
28-Dec-11	1	500	460	8.40	300	120	89.0	-0.5	-0.5	42.4	-0.5	0.20	72.4	0.111	0.00056	0.00027	0.111	-0.00001	-0.000005	-0.05	0.00041	0.000011	14.6
4-Jan-12	2	500	455	8.69	205	120	43.2	-0.5	-0.5	41.1	-0.5	0.16	60.0	0.133	0.0005	0.00021	0.082	-0.00001	-0.000005	-0.05	0.0003	0.000021	12.0
11-Jan-12	3	500	465	8.39	174	120	29.4	-0.5	1.7	43.8	-0.5	0.14	54.9	0.134	0.00053	0.0003	0.110	-0.00001	-0.000005	-0.05	0.00027	0.000026	10.9
18-Jan-12	4	500	470	8.39	148	115	21.1	-0.5	-0.5	41.1	-0.5	0.11	50.5	0.142	0.0005	0.00021	0.131	-0.00001	-0.000005	-0.05	0.0002	0.000018	10.1
25-Jan-12	5	500	450	7.63	152	115	23.3	-0.5	-0.5	45.8	-0.5	0.10	54.2	0.158	0.00062	0.00041	0.232	-0.00001	-0.000005	-0.05	0.0002	0.000027	12.2
1-Feb-12	6	500	480	8.08	117	110	18.2	-0.5	-0.5	38.1	-0.5	0.07	38.9	0.170	0.00057	0.00035	0.258	-0.00001	-0.000005	-0.05	0.00013	0.000017	8.5
8-Feb-12	7	500	480	8.59	117	115	13.4	-0.5	-0.5	46.4	-0.5	0.05	42.4	0.142	0.00048	0.00027	0.229	-0.00001	-0.000005	-0.05	0.00012	0.000018	8.9
15-Feb-12	8	500	460	8.61	107	110	11.1	-0.5	1.2	39.3	-0.5	0.05	39.7	0.136	0.00045	0.00018	0.202	-0.00001	-0.000005	-0.05	0.0001	0.00003	8.5
22-Feb-12	9	500	460	8.77	108	120	10.0	-0.5	-0.5	36.4	0.6	0.05	33.3	0.122	0.00047	0.00011	0.203	-0.00001	-0.000005	-0.05	0.00009	0.000011	7.5
29-Feb-12	10	500	465	8.50	113	125	9.8	-0.5	-0.5	38.6	-0.5	0.04	38.0	0.118	0.00051	0.00023	0.201	-0.00001	-0.000005	-0.05	0.00009	0.000022	8.1
7-Mar-12	11	500	460	8.63	120	120	10.8	-0.5	-0.5	39.6	-0.5	0.04	37.8	0.132	0.00052	0.0002	0.223	-0.00001	-0.000005	-0.05	0.00008	0.000016	8.4
14-Mar-12	12	500	480	8.63	109	120	11.0	-0.5	-0.5	39.2	-0.5	0.04	36.4	0.148	0.00054	0.00014	0.217	-0.00001	-0.000005	-0.05	0.00008	0.000025	7.5
21-Mar-12	13	500	450	8.55	106	120	10.0	-0.5	-0.5	36.4	-0.5	0.03	34.2	0.137	0.00056	0.00015	0.233	-0.00001	-0.000005	-0.05	0.00008	0.000025	7.4
28-Mar-12	14	500	465	8.53	106	125	9.7	-0.5	0.5	35.3	0.6	0.03	39.4	0.146	0.00062	0.00019	0.229	-0.00001	-0.000005	-0.05	0.00008	0.000016	8.8
4-Apr-12	15	500	470	8.63	101	120	9.6	-0.5	-0.5	36.7	-0.5	0.03	35.6	0.125	0.00067	0.00025	0.211	-0.00001	-0.000005	-0.05	0.00008	0.000011	8.1
11-Apr-12	16	500	460	8.71	101	120	10.2	-0.5	-0.5	35.6	0.6	0.03	34.5	0.129	0.00073	0.00022	0.223	-0.00001	-0.000005	-0.05	0.0001	0.000016	7.8
18-Apr-12	17	500	470	8.16	104	120	9.3	-0.5	-0.5	35.5	-0.5	0.03	38.2	0.147	0.00103	0.000215	0.2	-0.00001	-0.000005	-0.05	0.000091	0.0000341	8.55
25-Apr-12	18	500	480	8.14	98	125	9.3	-0.5	-0.5	34.8	-0.5	0.02	35.4	0.123	0.00103	0.000194	0.183	-0.00001	-0.000005	-0.05	0.000074	0.000019	8.11
2-May-12	19	500	475	8.30	113	120	9.0	-0.5	0.68	33.3	-0.5	0.02	35.2	0.133	0.00121	0.000201	0.192	-0.00001	-0.000005	-0.05	0.000062	0.000018	7.5
9-May-12	20	500	480	8.35	96	120	8.7	-0.5	0.68	36.2	1.0	0.03	37.5	0.132	0.00138	0.000159	0.193	-0.00001	-0.000005	-0.05	0.000072	0.000024	8.44
16-May-12	21	500																					
23-May-12	22	500																					
30-May-12	23	500	460	8.65	116	115	10.9	-0.5	0.63	33.2	-0.5	0.028	34.5	0.147	0.00182	0.00022	0.176	-0.00001	-0.000005	-0.05	0.000078	0.0000113	7.69
6-Jun-12	24	500	450	8.46	100	120	9.69	-0.5	0.69	34.9	-0.5	0.019	35.5	0.14	0.00157	0.000221	0.199	-0.00001	-0.000005	-0.05	0.0000162	0.000099	8.01
13-Jun-12	25	500	465	8.57	103	125																	
20-Jun-12	26	500																					
27-Jun-12	27	500																					

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:												
Sampling Date	Week No.	Input Vol.	Output Vol.	Tl	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000002	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	680	0.000003	-0.000005	0.0002	-0.0005	0.00013	0.000014	0.0003	0.0002	-0.0001
28-Dec-11	1	500	460	0.000005	-0.000005	0.00002	-0.0005	0.00011	0.00005	-0.0002	0.0002	-0.0001
4-Jan-12	2	500	455	0.000005	-0.000005	-0.0002	-0.0005	0.00009	0.000025	-0.0002	0.0002	-0.0001
11-Jan-12	3	500	465	0.000005	-0.000005	-0.0002	-0.0005	0.00009	0.000016	0.0003	0.0003	-0.0001
18-Jan-12	4	500	470	0.000002	-0.000005	0.0006	-0.0005	0.00008	0.000013	0.0003	0.0035	-0.0001
25-Jan-12	5	500	450	0.000003	-0.000005	0.0003	-0.0005	0.00011	0.000013	0.0003	0.0006	-0.0001
1-Feb-12	6	500	480	0.000002	-0.000005	0.0004	-0.0005	0.00011	0.000007	0.0002	0.0003	-0.0001
8-Feb-12	7	500	480	0.000002	-0.000005	0.0006	-0.0005	0.00006	0.000007	-0.0002	0.0003	-0.0001
15-Feb-12	8	500	460	0.000002	-0.000005	0.0005	-0.0005	0.00006	0.000004	-0.0002	0.0014	-0.0001
22-Feb-12	9	500	460	-0.000002	-0.000005	0.0006	-0.0005	0.00005	0.000006	-0.0002	0.0002	-0.0001
29-Feb-12	10	500	465	0.000004	-0.000005	0.0007	-0.0005	0.00005	0.000011	0.0003	0.0005	-0.0001
7-Mar-12	11	500	460	-0.000002	-0.000005	0.0005	-0.0005	0.00005	0.000008	-0.0002	0.0005	-0.0001
14-Mar-12	12	500	480	-0.000002	-0.000005	0.0006	-0.0005	0.00006	0.000006	-0.0002	0.0003	-0.0001
21-Mar-12	13	500	450	0.000002	-0.000005	0.0005	-0.0005	0.00003	0.000008	-0.0002	0.0008	-0.0001
28-Mar-12	14	500	465	-0.000002	-0.000005	0.0006	-0.0005	0.00005	0.000007	-0.0002	0.0004	-0.0001
4-Apr-12	15	500	470	-0.000002	-0.000005	0.001	-0.0005	0.00005	0.000008	-0.0002	0.0007	-0.0001
11-Apr-12	16	500	460	-0.000002	-0.000005	0.0008	-0.0005	0.00005	0.000007	-0.0002	0.0014	-0.0001
18-Apr-12	17	500	470	-0.000002	-0.000005	0.00169	-0.0005	0.000045	0.0000068	-0.0002	0.00806	-0.0001
25-Apr-12	18	500	480	-0.000002	-0.000005	0.00078	-0.0005	0.00003	0.000007	-0.0002	0.00061	-0.0001
2-May-12	19	500	475	0.000002	-0.000005	0.00067	-0.0005	0.000039	0.000009	-0.0002	0.00034	-0.0001
9-May-12	20	500	480	0.000002	-0.000005	0.00076	-0.0005	0.000042	0.000008	-0.0002	0.00055	-0.0001
16-May-12	21	500										
23-May-12	22	500										
30-May-12	23	500	460	0.0000021	-0.000005	0.00084	-0.0005	0.000044	0.0000112	-0.0002	0.00062	-0.0001
6-Jun-12	24	500	450	-0.000002	-0.000005	0.00067	-0.0005	0.000038	0.0000101	-0.0002	0.00059	-0.0001
13-Jun-12	25	500	465									
20-Jun-12	26	500										
27-Jun-12	27	500										

Ion Balance		
Anions	Cations	Balance (%)
2.27	2.18	2.12
2.71	2.36	7.04
1.72	1.66	1.74
1.48	1.41	2.61
1.25	1.22	1.36
1.39	1.25	5.32
1.13	0.90	11.60
1.20	0.96	11.07
1.01	0.88	6.41
0.96	0.73	13.09
0.96	0.84	7.12
1.00	0.83	9.61
1.00	0.80	11.20
0.92	0.75	10.53
0.93	0.85	4.06
0.92	0.77	8.99
0.94	0.74	11.70
0.89	0.82	4.09
0.88	0.76	7.26
0.84	0.76	5.35
0.93	0.80	7.71

Stopped leaching
Stopped leaching



Client: Klohn Crippen
 Client Project Name: Guyana-Aurora Gold
 HC-11; Sample ID: B 11 170704

Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan										
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L		mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001
21-Dec-11	0	750	505	4.94	194	135	50.1	-0.5	4.1	-0.5	8.7	0.025	16.7	0.1180	-0.00002	0.00042	0.0454	0.00004	-0.000005	-0.05	0.00067	0.000894	3.85	-0.0001
28-Dec-11	1	500	465	5.48	65	165	16.8	-0.5	0.5	-0.5	2.7	0.015	9.2	0.0306	-0.00002	0.00027	0.0222	0.00001	-0.000005	-0.05	0.00016	0.0003	2.07	-0.0001
4-Jan-12	2	500	450	5.03	51	135	13.1	-0.5	0.9	0.6	1.9	0.011	10.1	0.0284	-0.00002	0.00033	0.0251	-0.00001	-0.000005	-0.05	0.00014	0.0003	2.26	-0.0001
11-Jan-12	3	500	455	5.12	82	135	22.0	-0.5	2.6	-0.5	2.5	0.013	17.1	0.0554	-0.00002	0.00043	0.0419	0.00002	-0.000005	-0.05	0.00027	0.000503	3.76	-0.0001
18-Jan-12	4	500	455	4.89	77	130	24.4	-0.5	1.7	-0.5	0.6	0.021	19.5	0.0616	-0.00002	0.00032	0.0479	0.00003	-0.000005	-0.05	0.00026	0.000565	4.32	-0.0001
25-Jan-12	5	500	485	4.83	23	130	7.0	-0.5	-0.5	0.6	-0.5	0.011	6.4	0.0195	-0.00002	0.0003	0.0175	-0.00001	-0.000005	-0.05	0.00011	0.000197	1.42	-0.0001
1-Feb-12	6	500	445	5.23	32	135	8.3	-0.5	-0.5	-0.5	-0.5	0.015	5.7	0.0159	-0.00002	0.00027	0.0157	-0.00001	-0.000005	-0.05	0.00007	0.00017	1.24	-0.0001
8-Feb-12	7	500	480	4.76	48	135	15.8	-0.5	1.2	1.3	0.6	0.016	12.6	0.0436	-0.00002	0.00024	0.0321	0.00001	-0.000005	-0.05	0.00016	0.000346	2.76	-0.0001
15-Feb-12	8	500	470	4.84	52	145	16.4	-0.5	2.6	-0.5	-0.5	0.018	14.3	0.0448	-0.00002	0.00029	0.0347	0.00001	-0.000005	-0.05	0.00017	0.000396	3.08	-0.0001
22-Feb-12	9	500	485	4.93	53	155	14.9	-0.5	0.9	-0.5	0.5	0.015	11.9	0.0373	-0.00002	0.00023	0.0347	0.00002	-0.000005	-0.05	0.00015	0.000379	2.62	-0.0001
29-Feb-12	10	500	485	5.29	32	155	11.8	-0.5	0.9	-0.5	-0.5	0.014	11	0.0323	-0.00002	0.00021	0.0298	0.00001	-0.000005	-0.05	0.00013	0.000305	2.34	-0.0001
7-Mar-12	11	500	440	5.04	12	150	4.9	-0.5	-0.5	-0.5	-0.5	0.011	4.1	0.0124	-0.00002	0.00012	0.012	-0.00001	-0.000005	-0.05	-0.00005	0.000116	0.91	-0.0001
14-Mar-12	12	500	495	5.35	26	150	7.9	-0.5	1.1	-0.5	-0.5	0.012	6.9	0.0240	-0.00002	0.00016	0.0199	0.00001	-0.000005	-0.05	0.00006	0.000194	1.41	-0.0001
21-Mar-12	13	500	465	5.04	26	145	8.4	-0.5	1.0	-0.5	-0.5	0.011	7.8	0.0240	-0.00002	0.00023	0.0218	0.00001	-0.000005	-0.05	0.00006	0.000238	1.70	-0.0001
28-Mar-12	14	500	465	4.95	28	145	9.1	-0.5	1.3	-0.5	-0.5	0.012	9.3	0.0266	-0.00002	0.00019	0.0228	0.00001	-0.000005	-0.05	0.00008	0.000238	2.04	-0.0001
4-Apr-12	15	500	465	4.93	31	150	8.5	-0.5	1.2	-0.5	-0.5	0.013	7.9	0.0234	-0.00002	0.00021	0.0222	0.00001	-0.000005	-0.05	-0.00005	0.000225	1.76	0.0001
11-Apr-12	16	500	465	4.92	26	155	6.5	-0.5	1.0	-0.5	-0.5	0.010	5.9	0.0199	-0.00002	0.00015	0.018	-0.00001	-0.000005	-0.05	-0.00005	0.000163	1.29	-0.0001
18-Apr-12	17	500	465	5.15	13	155	4.6	-0.5	0.9	0.9	-0.5	0.012	4.4	0.013	-0.00002	0.000113	0.0122	-0.00001	-0.000005	-0.05	-0.00005	0.000132	0.976	-0.0001
25-Apr-12	18	500	475	5.15	28	160	6.8	-0.5	0.7	0.6	-0.5	-0.01	6.1	0.0183	-0.00002	0.00015	0.0161	-0.00001	-0.000005	-0.05	-0.00005	0.000167	1.35	-0.0001
2-May-12	19	500	465	5.40	15	160	4.8	-0.5	0.6	-0.5	-0.5	-0.01	4.36	0.0147	-0.00002	0.000153	0.0115	0.000018	0.000005	-0.05	-0.00005	0.000125	0.951	-0.0001
9-May-12	20	500	455	5.12	19	170	4.7	-0.5	-0.5	-0.5	3.5	-0.01	4.45	0.013	-0.00002	0.000104	0.0116	-0.00001	-0.000005	-0.05	-0.00005	0.000125	1.01	-0.0001
16-May-12	21	500																						
23-May-12	22	500																						
30-May-12	23	500	490	4.70	27	165	6.31	-0.5	0.84	-0.5	-0.5	0.011	5.83	0.0214	-0.00002	0.000109	0.0175	0.000011	-0.000005	-0.05	0.000054	0.000167	1.32	-0.0001
6-Jun-12	24	500	470	4.91	19	155	4.31	-0.5	0.64	-0.5	0.78	0.011	4.06	0.0125	-0.00002	0.000111	0.0112	-0.00001	-0.000005	-0.05	0.000112	-0.00005	0.931	-0.0001
13-Jun-12	25	500	490	5.42	17	145																		
20-Jun-12	26	500																						
27-Jun-12	27	500																						

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	505	-0.000005	0.00016	-0.0005	0.00003	0.000003	-0.0002	0.2520	-0.0001
28-Dec-11	1	500	465	-0.000005	0.00008	-0.0005	-0.00001	0.000003	-0.0002	0.0982	-0.0001
4-Jan-12	2	500	450	-0.000005	-0.00020	-0.0005	0.00001	0.000003	0.0002	0.0999	-0.0001
11-Jan-12	3	500	455	-0.000005	-0.0002	-0.0005	0.00007	0.000004	0.0006	0.1740	-0.0001
18-Jan-12	4	500	455	-0.000005	-0.0002	-0.0005	0.00013	0.000004	-0.0002	0.1890	-0.0001
25-Jan-12	5	500	485	-0.000005	-0.0002	-0.0005	0.00001	-0.000002	-0.0002	0.0630	-0.0001
1-Feb-12	6	500	445	-0.000005	-0.0002	-0.0005	0.00002	-0.000002	-0.0002	0.0522	-0.0001
8-Feb-12	7	500	480	-0.000005	-0.0002	-0.0005	0.00001	0.000004	-0.0002	0.1170	-0.0001
15-Feb-12	8	500	470	-0.000005	-0.0002	-0.0005	0.00002	0.000002	-0.0002	0.1310	-0.0001
22-Feb-12	9	500	485	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.1180	-0.0001
29-Feb-12	10	500	485	-0.000005	-0.0002	-0.0005	0.00002	-0.000002	-0.0002	0.1010	-0.0001
7-Mar-12	11	500	440	-0.000005	0.0003	-0.0005	-0.00001	-0.000002	-0.0002	0.0378	-0.0001
14-Mar-12	12	500	495	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	-0.0002	0.0640	-0.0001
21-Mar-12	13	500	465	-0.000005	-0.0002	-0.0005	-0.00001	0.000003	0.0002	0.0764	-0.0001
28-Mar-12	14	500	465	-0.000005	-0.0002	-0.0005	0.00002	-0.000002	-0.0002	0.0827	-0.0001
4-Apr-12	15	500	465	-0.000005	0.0004	-0.0005	-0.00001	0.000002	0.0003	0.0747	-0.0001
11-Apr-12	16	500	465	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	-0.0002	0.0576	-0.0001
18-Apr-12	17	500	465	-0.000005	0.00081	-0.0005	0.000015	-0.000002	-0.0002	0.0402	-0.0001
25-Apr-12	18	500	475	-0.000005	0.00024	-0.0005	-0.00001	-0.000002	-0.0002	0.0551	-0.0001
2-May-12	19	500	465	-0.000005	-0.0002	-0.0005	0.00013	0.000015	-0.0002	0.0397	-0.0001
9-May-12	20	500	455	-0.000005	0.00049	-0.0005	0.000013	-0.000002	-0.0002	0.0413	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	490	-0.000005	0.00027	-0.0005	-0.00001	0.0000022	-0.0002	0.0555	-0.0001
6-Jun-12	24	500	470	-0.000005	-0.0002	-0.0005	-0.00001	-0.000002	-0.0002	0.0394	-0.0001
13-Jun-12	25	500	490								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)

1.05	1.35	-12.80	
0.43	0.42	0.43	
0.34	0.35	-2.20	
0.52	0.55	-2.86	
0.52	0.53	-1.45	Sample left to drain overnight
0.14	0.17	-7.11	Sample left to drain overnight
0.15	0.15	1.19	Sample left to drain overnight
0.37	0.32	8.02	Sample left to drain overnight
0.32	0.35	-5.11	Sample left to drain overnight
0.32	0.29	3.33	Sample left to drain overnight
0.22	0.27	-9.74	Sample left to drain overnight
0.08	0.10	-10.61	
0.14	0.17	-9.33	Sample left to drain overnight
0.15	0.19	-11.26	Sample left to drain overnight
0.17	0.22	-15.02	Sample left to drain overnight
0.15	0.19	-10.93	Sample left to drain overnight
0.11	0.14	-10.86	Sample left to drain overnight
0.10	0.10	-0.71	
0.14	0.15	-2.11	
0.07	0.11	-17.40	
0.18	0.10	28.53	
			Stopped leaching
			Stopped leaching
0.11	0.14	-13.31	Sample left to drain overnight
0.10	0.09	4.85	
			Sample left to drain overnight



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan													
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr	Co	Cu	La
Units	ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits	5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001	0.000005	0.00005	0.00005
21-Dec-11	0	750	480	8.40	307	110	12.2	-0.5	-0.5	114	4.0	2.20	18.2	0.0528	0.00079	0.00037	0.00102	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	5.2	0.0235	0.000073	0.00127	-0.00005
28-Dec-11	1	500	460	8.27	264	100	2.8	-0.5	-0.5	115	-0.5	1.10	35.5	0.0382	0.00094	0.0002	0.00160	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	9.9	0.0048	0.000022	0.0005	-0.00005
4-Jan-12	2	500	460	8.18	188	120	-0.5	-0.5	-0.5	93	-0.5	0.71	61.9	0.0384	0.00115	0.00014	0.00172	-0.00001	-0.000005	-0.05	-0.00005	0.000006	17.6	0.0021	0.000015	0.0002	-0.00005
11-Jan-12	3	500	455	8.08	173	125	-0.5	-0.5	-0.5	83	-0.5	0.64	70.4	0.0382	0.00111	0.00016	0.00167	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	19.9	0.0017	0.000019	0.00023	-0.00005
18-Jan-12	4	500	475	8.24	174	120	-0.5	-0.5	-0.5	82	-0.5	0.56	70.3	0.0416	0.00106	0.00012	0.00190	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	19.5	0.0014	0.000018	0.00065	-0.00005
25-Jan-12	5	500	500	8.24	172	120	1.3	-0.5	-0.5	84	-0.5	0.47	68.6	0.0403	0.00100	0.00009	0.00179	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	18.7	0.0012	0.000009	0.00008	-0.00005
1-Feb-12	6	500	445	8.22	170	120	1.4	-0.5	-0.5	80	-0.5	0.40	70.5	0.0440	0.00089	0.00014	0.00158	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	19.9	0.0009	0.000017	0.00014	-0.00005
8-Feb-12	7	500	445	8.22	161	120	-0.5	-0.5	-0.5	81	-0.5	0.37	73.2	0.0456	0.00078	0.00009	0.00163	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	20.8	0.0008	0.000007	0.00009	-0.00005
15-Feb-12	8	500	475	7.83	146	115	0.9	-0.5	1.9	72	-0.5	0.31	71.3	0.0478	0.00072	0.00009	0.00166	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	20.0	0.0008	0.000009	0.00011	-0.00005
22-Feb-12	9	500	475	8.31	156	120	1.0	-0.5	-0.5	73	-0.5	0.27	61.2	0.0656	0.00066	0.00005	0.00151	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	17.3	0.0007	0.000017	0.00018	-0.00005
29-Feb-12	10	500	420	8.21	156	125	-0.5	-0.5	0.6	70	-0.5	0.25	67.3	0.0500	0.00062	0.00007	0.00143	-0.00001	-0.000005	-0.05	-0.00005	0.000006	18.9	0.0007	0.00002	0.00028	-0.00005
7-Mar-12	11	500	475	8.22	172	125	0.6	-0.5	-0.5	73	-0.5	0.21	66.6	0.0481	0.00052	0.00009	0.00145	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	19.0	0.0006	0.000013	0.00028	-0.00005
14-Mar-12	12	500	460	8.22	130	125	1.1	-0.5	-0.5	67	-0.5	0.17	55.2	0.0585	0.00042	0.00006	0.00116	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	14.7	0.0005	0.000011	0.00009	-0.00005
21-Mar-12	13	500	485	8.31	162	120	-0.5	-0.5	-0.5	70	-0.5	0.16	62.8	0.0508	0.00046	0.00009	0.00136	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	18.0	0.0006	0.000007	0.00026	-0.00005
28-Mar-12	14	500	460	8.34	157	120	0.8	-0.5	-0.5	73	-0.5	0.16	72.6	0.0487	0.00042	0.00004	0.00137	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	20.8	0.0005	0.000005	0.00007	-0.00005
4-Apr-12	15	500	465	8.27	136	125	-0.5	-0.5	-0.5	66	0.6	0.14	60.0	0.0472	0.00036	0.00010	0.00120	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	17.4	0.0013	0.000009	0.00048	-0.00005
11-Apr-12	16	500	490	8.26	136	125	0.6	-0.5	-0.5	65	0.6	0.13	60.2	0.0503	0.00033	0.00009	0.00129	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	17.4	0.0004	0.000009	0.00018	-0.00005
18-Apr-12	17	500	475	8.26	134	130	0.8	-0.5	-0.5	65	-0.5	0.13	67.8	0.0576	0.000332	0.000044	0.0014	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	19.8	0.00044	0.0000128	0.000235	-0.00005
25-Apr-12	18	500	470	8.26	136	120	0.8	-0.5	-0.5	65	-0.5	0.11	66.7	0.0526	0.000312	0.000062	0.00122	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	19.6	0.00042	0.000013	0.000232	-0.00005
2-May-12	19	500	490	8.32	139	120	0.9	-0.5	1.0	68	-0.5	0.1	65.2	0.0705	0.000277	0.000071	0.00139	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	19	0.00039	0.00003	0.00015	-0.00005
9-May-12	20	500	485	8.32	146	120	1.32	-0.5	-0.5	76	-0.5	0.093	76	0.0499	0.00028	0.00005	0.00175	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	22.2	0.00045	0.000016	0.000179	-0.00005
16-May-12	21	500																									
23-May-12	22	500																									
30-May-12	23	500	480	8.23	163	120	1.61	-0.5	-0.5	65.2	0.54	0.08	63.1	0.0441	0.000251	0.000062	0.00164	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	18.6	0.00045	0.000021	0.000179	-0.00005
6-Jun-12	24	500	455	8.21	156	125	1.39	-0.5	-0.5	72.3	0.68	0.075	74.7	0.0468	0.000228	0.000048	0.00148	-0.00001	-0.000005	-0.05	-0.000005	-0.000005	22.8	0.00036	0.0000255	0.000369	-0.00005
13-Jun-12	25	500	450	8.17	150	125																					
20-Jun-12	26	500																									
27-Jun-12	27	500																									

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	480	-0.000005	0.00015	-0.0005	0.00579	0.000041	0.0005	0.0006	0.0002
28-Dec-11	1	500	460	-0.000005	0.00022	-0.0005	0.00357	0.000031	0.0004	0.0008	-0.0001
4-Jan-12	2	500	460	-0.000005	-0.0002	-0.0005	0.00253	0.00002	-0.0002	0.0003	-0.0001
11-Jan-12	3	500	455	-0.000005	0.0004	-0.0005	0.00242	0.000018	0.0002	0.0003	-0.0001
18-Jan-12	4	500	475	-0.000005	0.0008	-0.0005	0.00246	0.000033	0.0003	0.0007	-0.0001
25-Jan-12	5	500	500	-0.000005	-0.0002	-0.0005	0.00197	0.000018	0.0004	0.0004	-0.0001
1-Feb-12	6	500	445	-0.000005	-0.0002	-0.0005	0.00261	0.000017	0.0003	0.001	-0.0001
8-Feb-12	7	500	445	-0.000005	-0.0002	-0.0005	0.00249	0.000023	0.0003	0.0001	-0.0001
15-Feb-12	8	500	475	-0.000005	-0.0002	-0.0005	0.00212	0.000016	0.0003	0.0003	-0.0001
22-Feb-12	9	500	475	-0.000005	-0.0002	-0.0005	0.00196	0.00002	0.0003	0.0003	-0.0001
29-Feb-12	10	500	420	-0.000005	0.0002	-0.0005	0.00251	0.000022	0.0005	0.0007	-0.0001
7-Mar-12	11	500	475	-0.000005	-0.0002	-0.0005	0.00202	0.000024	-0.0002	0.0006	-0.0001
14-Mar-12	12	500	460	-0.000005	-0.0002	-0.0005	0.00198	0.000024	0.0006	0.0003	-0.0001
21-Mar-12	13	500	485	-0.000005	-0.0002	-0.0005	0.00193	0.000027	-0.0002	0.0028	-0.0001
28-Mar-12	14	500	460	-0.000005	0.0002	-0.0005	0.00193	0.000027	0.0003	0.0004	-0.0001
4-Apr-12	15	500	465	-0.000005	0.0005	-0.0005	0.00168	0.000024	0.0002	0.0005	-0.0001
11-Apr-12	16	500	490	-0.000005	-0.0002	-0.0005	0.00175	0.000021	0.0003	0.0006	-0.0001
18-Apr-12	17	500	475	-0.000005	0.00036	-0.0005	0.0015	0.0000286	0.00034	0.00058	-0.0001
25-Apr-12	18	500	470	-0.000005	0.00038	-0.0005	0.00143	0.000025	0.00032	0.00051	-0.0001
2-May-12	19	500	490	-0.000005	-0.0002	-0.0005	0.00106	0.000031	0.00024	0.00021	0.00035
9-May-12	20	500	485	-0.000005	-0.0002	-0.0005	0.00142	0.00003	0.00031	0.00036	0.00017
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	480	-0.000005	0.00024	-0.0005	0.000901	0.0000327	0.00024	0.00066	-0.0001
6-Jun-12	24	500	455	-0.000005	0.00028	-0.0005	0.000837	0.0000341	0.00025	0.00103	-0.0001
13-Jun-12	25	500	450								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)

2.76	2.81	-0.91	Sample left to drain overnight
2.42	2.33	1.77	Sample left to drain overnight
1.87	1.94	-1.69	Sample left to drain overnight
1.66	1.77	-3.27	Sample left to drain overnight
1.63	1.66	-0.61	Sample left to drain overnight
1.73	1.56	5.14	Sample left to drain overnight
1.64	1.57	2.45	Sample left to drain overnight
1.61	1.60	0.21	Sample left to drain overnight
1.47	1.55	-2.86	Sample left to drain overnight
1.48	1.32	5.75	Sample left to drain overnight
1.38	1.45	-2.35	Sample left to drain overnight
1.48	1.42	1.93	Sample left to drain overnight
1.35	1.19	6.33	Sample left to drain overnight
1.38	1.33	1.96	Sample left to drain overnight
1.47	1.53	-2.14	Sample left to drain overnight
1.34	1.27	2.74	Sample left to drain overnight
1.33	1.27	2.30	Sample left to drain overnight
1.30	1.42	-4.39	Sample left to drain overnight
1.30	1.40	-3.61	Sample left to drain overnight
1.36	1.37	-0.31	Sample left to drain over 2 nights (collected on 4-May)
1.54	1.59	-1.73	Sample left to drain over 2 nights (collected on 11-May)
			Stopped leaching
			Stopped leaching
1.36	1.32	1.19	Sample left to drain for >20 hours
1.50	1.56	-1.96	



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan											
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr	Co
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001	0.000005
21-Dec-11	0	750	540	8.39	527	95	39.70	-0.5	-0.5	190	6.0	1.10	12.0	0.367	0.00797	0.00787	0.00511	-0.00001	-0.000005	-0.05	0.00072	0.000007	2.47	0.0002	0.000015
28-Dec-11	1	500	465	8.25	313	105	5.39	-0.5	-0.5	155	-0.5	0.25	54.2	0.128	0.00529	0.00155	0.00565	-0.00001	-0.000005	-0.05	0.00087	-0.000005	9.86	-0.0001	0.000011
4-Jan-12	2	500	475	8.35	334	125	2.35	-0.5	-0.5	118	-0.5	0.13	86.0	0.105	0.00337	0.00098	0.00517	-0.00001	-0.000005	-0.05	0.00068	-0.000005	15.70	-0.0001	0.000014
11-Jan-12	3	500	470	8.24	228	115	1.48	-0.5	-0.5	132	-0.5	0.11	101.0	0.087	0.00317	0.00067	0.00525	-0.00001	-0.000005	-0.05	0.00064	0.000018	17.90	-0.0001	0.000022
18-Jan-12	4	500	455	8.51	226	120	1.95	-0.5	-0.5	114	-0.5	0.09	101.0	0.103	0.00275	0.00049	0.00487	-0.00001	-0.000005	-0.05	0.00042	-0.000005	19.20	-0.0001	0.000014
25-Jan-12	5	500	450	8.06	247	110	1.48	-0.5	-0.5	120	-0.5	0.07	100.0	0.095	0.00277	0.00048	0.00487	-0.00001	-0.000005	-0.05	0.00041	-0.000005	19.70	-0.0001	0.000015
1-Feb-12	6	500	460	8.26	214	105	2.13	-0.5	-0.5	105	-0.5	0.05	90.6	0.109	0.0023	0.00055	0.00374	-0.00001	-0.000005	-0.05	0.00024	-0.000005	18.10	-0.0001	0.000012
8-Feb-12	7	500	455	8.40	235	110	1.22	-0.5	-0.5	111	0.6	0.05	101.0	0.111	0.00225	0.00045	0.00410	-0.00001	-0.000005	-0.05	0.00022	-0.000005	20.60	-0.0001	0.000018
15-Feb-12	8	500	480	8.42	220	110	1.71	-0.5	-0.5	104	-0.5	0.04	99.7	0.110	0.00223	0.00042	0.00335	-0.00001	-0.000005	-0.05	0.00018	-0.000005	19.60	-0.0001	0.000009
22-Feb-12	9	500	485	8.29	209	130	1.68	-0.5	-0.5	104	-0.5	0.04	89.1	0.097	0.00217	0.00032	0.00313	-0.00001	-0.000005	-0.05	0.00015	-0.000005	19.10	-0.0001	0.000014
29-Feb-12	10	500	475	8.05	206	110	1.22	-0.5	-0.5	101	-0.5	0.03	100.0	0.104	0.00214	0.00037	0.00333	-0.00001	-0.000005	-0.05	0.00014	0.000005	20.70	-0.0001	0.000015
7-Mar-12	11	500	460	8.46	205	110	1.55	-0.5	-0.5	104	-0.5	0.021	96.5	0.093	0.00194	0.00036	0.00327	-0.00001	-0.000005	-0.05	0.00013	-0.000005	20.20	-0.0001	0.000015
14-Mar-12	12	500	455	8.37	210	115	1.85	-0.5	-0.5	107	-0.5	0.028	96.6	0.097	0.00197	0.00026	0.00311	-0.00001	-0.000005	-0.05	0.00013	-0.000005	19.30	-0.0001	0.000021
21-Mar-12	13	500	450	8.38	161	120	0.51	-0.5	-0.5	76	-0.5	0.020	70.3	0.158	0.00141	0.00038	0.00216	-0.00001	-0.000005	-0.05	0.00007	-0.000005	15.80	-0.0001	0.000013
28-Mar-12	14	500	460	8.39	150	125	1.40	-0.5	-0.5	71	-0.5	0.017	72.0	0.146	0.00107	0.00020	0.00191	-0.00001	-0.000005	-0.05	0.00007	-0.000005	16.20	-0.0001	0.000009
4-Apr-12	15	500	455	8.63	60	130	-0.5	-0.5	-0.5	24	-0.5	-0.01	23.8	0.290	0.00023	0.00030	0.00559	0.00002	0.000006	-0.05	0.00007	0.000007	6.08	0.0004	0.000246
11-Apr-12	16	500	460	8.50	41	120	-0.5	-0.5	-0.5	20	0.6	-0.01	18.2	0.0723	0.00011	0.00002	0.0011	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.9	-0.0001	0.000008
18-Apr-12	17	500	460	8.40	115	120	2.3	-0.5	-0.5	55	-0.5	0.02	57.8	0.125	0.000987	0.000173	0.00143	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	11.4	-0.0001	0.0000244
25-Apr-12	18	500	485	8.44	94	125	1.4	-0.5	-0.5	43	-0.5	-0.01	44.0	0.072	0.000478	0.000047	0.000999	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	9.98	0.00018	0.000012
2-May-12	19	500	470	8.34	49	130	-0.5	-0.5	-0.5	31	-0.5	-0.01	20.5	0.0749	0.00012	0.00002	0.00105	-0.00001	0.000005	-0.05	-0.00005	-0.000005	5.17	-0.0001	0.000007
9-May-12	20	500	460	8.17	47	115	1.16	-0.5	-0.5	20.1	-0.5	-0.01	19.4	0.0661	0.00011	0.000027	0.000443	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	4.98	-0.0001	0.000019
16-May-12	21	500																							
23-May-12	22	500																							
30-May-12	23	500	485	8.29	73	110	1.83	-0.5	0.77	31.9	-0.5	0.011	30.9	0.0945	0.000329	0.000108	0.000776	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	6.85	-0.0001	0.0000089
6-Jun-12	24	500	465	8.23	112	125	3.51	-0.5	0.6	50.9	0.68	0.017	51	0.0969	0.000797	0.000134	0.00127	-0.00001	-0.000005	-0.05	-0.00005	0.000074	9.2	-0.0001	0.0000125
13-Jun-12	25	500	480	8.26	84	120																			
20-Jun-12	26	500																							
27-Jun-12	27	500																							

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	540	-0.000005	0.00079	-0.0005	0.00046	0.000065	0.006	0.0006	-0.0001
28-Dec-11	1	500	465	-0.000005	0.00014	-0.0005	0.00013	0.000015	0.0004	0.0005	-0.0001
4-Jan-12	2	500	475	-0.000005	0.0004	-0.0005	0.00011	0.000012	-0.0002	0.0007	-0.0001
11-Jan-12	3	500	470	-0.000005	0.0002	-0.0005	0.0001	0.000015	0.0004	0.0010	-0.0001
18-Jan-12	4	500	455	-0.000005	0.0005	-0.0005	0.00008	0.000019	0.0004	0.0006	-0.0001
25-Jan-12	5	500	450	-0.000005	0.0002	-0.0005	0.00009	0.000022	0.0005	0.0007	-0.0001
1-Feb-12	6	500	460	-0.000005	-0.0002	-0.0005	0.00006	0.000029	0.0004	0.0003	-0.0001
8-Feb-12	7	500	455	-0.000005	-0.0002	-0.0005	0.00005	0.000038	0.0005	0.0004	-0.0001
15-Feb-12	8	500	480	-0.000005	-0.0002	-0.0005	0.00005	0.000031	0.0004	0.0001	-0.0001
22-Feb-12	9	500	485	-0.000005	-0.0002	-0.0005	0.00003	0.000042	0.0003	0.0003	-0.0001
29-Feb-12	10	500	475	-0.000005	-0.0002	-0.0005	0.00004	0.000038	0.0004	0.0008	-0.0001
7-Mar-12	11	500	460	-0.000005	-0.0002	-0.0005	0.00004	0.000043	0.0003	0.0007	-0.0001
14-Mar-12	12	500	455	-0.000005	-0.0002	-0.0005	0.00005	0.000041	0.0003	0.0007	-0.0001
21-Mar-12	13	500	450	-0.000005	-0.0002	-0.0005	-0.00001	0.000025	-0.0002	0.0005	-0.0001
28-Mar-12	14	500	460	-0.000005	-0.0002	-0.0005	0.00002	0.00002	0.0002	0.0003	-0.0001
4-Apr-12	15	500	455	-0.000005	0.0005	0.00285	0.00002	0.000008	0.0003	0.0007	-0.0001
11-Apr-12	16	500	460	-0.000005	0.0002	-0.0005	0.00002	-0.000002	-0.0002	0.0004	-0.0001
18-Apr-12	17	500	460	-0.000005	0.00088	-0.0005	-0.00001	0.0000025	-0.0002	0.00046	-0.0001
25-Apr-12	18	500	485	-0.000005	0.00041	-0.0005	0.000023	0.000003	-0.0002	0.00064	-0.0001
2-May-12	19	500	470	-0.000005	-0.0002	-0.0005	0.00001	-0.000002	-0.0002	0.00023	-0.0001
9-May-12	20	500	460	-0.000005	0.00021	-0.0005	0.000013	0.000002	-0.0002	0.00047	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	485	-0.000005	0.00033	-0.0005	0.000018	0.0000023	-0.0002	0.00045	-0.0001
6-Jun-12	24	500	465	-0.000005	-0.0002	-0.0005	0.000015	0.0000042	-0.0002	0.00059	-0.0001
13-Jun-12	25	500	480								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)

4.85	4.99	-1.35	Sample left to drain over the weekend
3.23	3.09	2.15	Sample left to drain over the weekend
2.40	2.58	-3.54	Sample left to drain over the weekend
2.66	2.66	0.11	Sample left to drain over the weekend
2.31	2.42	-2.27	Sample left to drain over the weekend
2.42	2.34	1.61	Sample left to drain over the weekend
2.13	2.05	2.09	Sample left to drain over the weekend
2.26	2.24	0.48	
2.10	2.18	-1.80	Sample left to drain over the weekend
2.10	1.93	4.28	Sample left to drain over the weekend
2.03	2.15	-2.79	Sample left to drain over the weekend
2.10	2.06	1.06	
2.17	2.05	2.76	
1.51	1.49	0.63	Sample left to drain overnight
1.43	1.51	-2.70	Sample left to drain overnight
0.46	0.55	-8.93	
0.41	0.38	4.50	
1.13	1.21	-3.40	Sample left to drain overnight
0.86	0.92	-2.88	Sample left to drain overnight
0.59	0.43	15.99	
0.41	0.41	0.80	
			Stopped leaching
			Stopped leaching
0.66	0.65	0.91	Sample left to drain overnight
1.11	1.07	1.88	Sample left to drain overnight
			Sample left to drain overnight



Client: Klohn Crippen
 Client Project Name: Guyana-Aurora Gold
 HC-14; Sample ID: B 22 18190

Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan										
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05
21-Dec-11	0	750	590	9.36	137	110	21.8	-0.5	-0.5	26.9	0.7	0.14	18.7	0.120	0.00076	0.0007	0.126	-0.00001	-0.000005	-0.05	0.00025	-0.000005	5.07	
28-Dec-11	1	500	480	8.88	129	105	14.2	-0.5	-0.5	44.5	-0.5	0.12	30.3	0.104	0.00142	0.00036	0.196	-0.00001	-0.000005	-0.05	0.00027	0.000007	7.22	
4-Jan-12	2	500	430	9.07	107	115	9.1	-0.5	-0.5	39.3	-0.5	0.08	33.7	0.120	0.00138	0.00038	0.231	-0.00001	-0.000005	-0.05	0.00024	0.000008	7.00	
11-Jan-12	3	500	470	8.80	105	120	5.2	-0.5	-0.5	41.2	-0.5	0.07	36.6	0.112	0.00137	0.00037	0.283	-0.00001	-0.000005	-0.05	0.00024	-0.000005	7.69	
18-Jan-12	4	500	485	8.95	90	115	5.3	-0.5	-0.5	35.5	-0.5	0.05	32.0	0.118	0.00115	0.0004	0.352	-0.00001	-0.000005	-0.05	0.00015	-0.000005	6.67	
25-Jan-12	5	500	460	9.03	74	110	3.7	-0.5	-0.5	33.9	-0.5	0.04	28.3	0.123	0.00114	0.00026	0.353	-0.00001	-0.000005	-0.05	0.00013	-0.000005	6.19	
1-Feb-12	6	500	450	8.96	77	115	4.5	-0.5	-0.5	33.6	-0.5	0.03	32.2	0.116	0.00125	0.00025	0.328	-0.00001	-0.000005	-0.05	0.00013	0.000011	6.62	
8-Feb-12	7	500	535	8.84	85	115	3.5	-0.5	-0.5	39.4	0.6	0.04	37.5	0.128	0.00142	0.00020	0.350	-0.00001	-0.000005	-0.05	0.00015	-0.000005	7.98	
15-Feb-12	8	500	470	9.06	72	110	3.2	-0.5	-0.5	33.7	-0.5	0.03	33.8	0.113	0.00128	0.00013	0.334	-0.00001	-0.000005	-0.05	0.00015	-0.000005	7.40	
22-Feb-12	9	500	425	9.09	76	120	2.8	-0.5	-0.5	31.0	0.5	0.02	28.4	0.092	0.00123	0.00025	0.296	-0.00001	-0.000005	-0.05	0.00013	-0.000005	6.45	
29-Feb-12	10	500	470	8.93	89	125	2.3	-0.5	-0.5	35.5	-0.5	0.02	35.3	0.082	0.0013	0.00019	0.344	-0.00001	-0.000005	-0.05	0.00014	-0.000005	7.66	
7-Mar-12	11	500	460	8.78	98	125	3.4	-0.5	-0.5	41.0	-0.5	0.02	37.0	0.110	0.00128	0.00014	0.433	-0.00001	-0.000005	-0.05	0.00011	-0.000005	8.11	
14-Mar-12	12	500	445	8.74	72	115	3.0	-0.5	-0.5	36.3	-0.5	0.02	34.2	0.092	0.00113	0.00008	0.314	-0.00001	-0.000005	-0.05	0.00010	-0.000005	7.09	
21-Mar-12	13	500	480	8.65	79	115	2.1	-0.5	-0.5	36.4	-0.5	0.02	35.0	0.079	0.00109	0.00012	0.346	-0.00001	-0.000005	-0.05	0.00005	-0.000005	8.14	
28-Mar-12	14	500	425	8.69	66	125	2.6	-0.5	-0.5	28.6	-0.5	0.02	32.7	0.133	0.00093	0.00011	0.334	-0.00001	-0.000005	-0.05	0.00008	-0.000005	7.57	
4-Apr-12	15	500	460	8.90	78	130	2.5	-0.5	-0.5	34.8	-0.5	0.01	33.3	0.073	0.00092	0.00011	0.364	-0.00001	-0.000005	-0.05	0.00007	-0.000005	7.80	
11-Apr-12	16	500	455	8.96	82	120	2.3	-0.5	-0.5	36.5	-0.5	0.01	34.6	0.0864	0.00093	0.0001	0.415	-0.00001	-0.000005	-0.05	0.00008	-0.000005	7.78	
18-Apr-12	17	500	445	8.56	70	125	2.1	-0.5	-0.5	35.2	-0.5	0.02	34.2	0.0782	0.000877	0.000109	0.325	-0.00001	-0.000005	-0.05	-0.00005	0.0000053	7.88	
25-Apr-12	18	500	450	8.60	81	120	2.8	-0.5	-0.5	33.9	-0.5	0.01	35.3	0.0704	0.000805	0.000088	0.334	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	8.27	
2-May-12	19	500	480	8.62	85	125	2.2	-0.5	0.74	36	-0.5	-0.01	36.5	0.0633	0.000789	0.000073	0.385	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	8	
9-May-12	20	500	495	8.67	74	120	2.51	-0.5	-0.5	34.7	0.54	0.011	35.4	0.0598	0.00074	0.000063	0.392	-0.00001	-0.000005	-0.05	0.00005	-0.000005	8.17	
16-May-12	21	500																						
23-May-12	22	500																						
30-May-12	23	500	430	8.75	68	110	2.25	-0.5	-0.5	28.8	-0.5	-0.01	27.5	0.0819	0.000693	0.000119	0.355	-0.00001	-0.000005	-0.05	0.000061	-0.000005	6.34	
6-Jun-12	24	500	450	8.93	65	110	2.17	-0.5	-0.5	29.4	-0.5	0.012	27.9	0.0773	0.000614	0.000103	0.347	-0.00001	-0.000005	-0.05	-0.000005	-0.000005	6.69	
13-Jun-12	25	500	430	8.74	76	110																		
20-Jun-12	26	500																						
27-Jun-12	27	500																						

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	590	-0.000005	0.00028	-0.0005	0.00343	-0.000002	0.0009	0.0006	-0.0001
28-Dec-11	1	500	480	-0.000005	0.00011	-0.0005	0.00407	0.000003	-0.0002	0.0004	-0.0001
4-Jan-12	2	500	430	-0.000005	0.0002	-0.0005	0.00247	-0.000002	-0.0002	0.0005	-0.0001
11-Jan-12	3	500	470	-0.000005	-0.0002	-0.0005	0.00121	-0.000002	0.0003	0.0006	-0.0001
18-Jan-12	4	500	485	-0.000005	0.0002	-0.0005	0.0008	-0.000002	0.0002	0.0036	-0.0001
25-Jan-12	5	500	460	-0.000005	-0.0002	-0.0005	0.00061	-0.000002	0.0003	0.0004	0.0001
1-Feb-12	6	500	450	-0.000005	-0.0002	-0.0005	0.00059	-0.000002	0.0002	0.0004	-0.0001
8-Feb-12	7	500	535	-0.000005	-0.0002	-0.0005	0.00051	0.000003	-0.0002	0.0005	-0.0001
15-Feb-12	8	500	470	-0.000005	-0.0002	-0.0005	0.00036	-0.000002	-0.0002	0.0005	-0.0001
22-Feb-12	9	500	425	-0.000005	-0.0002	-0.0005	0.00033	0.000003	-0.0002	0.0003	-0.0001
29-Feb-12	10	500	470	-0.000005	-0.0002	-0.0005	0.00036	-0.000002	-0.0002	0.0004	-0.0001
7-Mar-12	11	500	460	-0.000005	-0.0002	-0.0005	0.00036	0.000003	-0.0002	0.0008	-0.0001
14-Mar-12	12	500	445	-0.000005	-0.0002	-0.0005	0.00034	-0.000002	-0.0002	0.0005	-0.0001
21-Mar-12	13	500	480	-0.000005	0.0003	-0.0005	0.00028	-0.000002	-0.0002	0.0006	-0.0001
28-Mar-12	14	500	425	-0.000005	0.0002	-0.0005	0.00030	0.000003	0.0004	0.0007	-0.0001
4-Apr-12	15	500	460	-0.000005	0.0003	-0.0005	0.00028	0.000003	-0.0002	0.0007	-0.0001
11-Apr-12	16	500	455	-0.000005	0.0003	-0.0005	0.00028	-0.000002	-0.0002	0.0007	-0.0001
18-Apr-12	17	500	445	-0.000005	0.00065	-0.0005	0.00024	0.0000032	-0.0002	0.00329	-0.0001
25-Apr-12	18	500	450	-0.000005	0.00024	-0.0005	0.000209	0.000003	-0.0002	0.00079	-0.0001
2-May-12	19	500	480	-0.000005	-0.0002	-0.0005	0.000229	0.000003	-0.0002	0.00062	-0.0001
9-May-12	20	500	495	-0.000005	-0.0002	-0.0005	0.000221	0.000002	-0.0002	0.00044	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	430	-0.000005	-0.0002	-0.0005	0.000256	0.0000023	-0.0002	0.00049	0.00016
6-Jun-12	24	500	450	-0.000005	-0.0002	-0.0005	0.000201	0.0000045	-0.0002	0.00038	-0.0001
13-Jun-12	25	500	430								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)
1.02	1.03	-0.70
1.19	1.04	6.60
0.97	0.99	-1.22
0.92	0.95	-1.76
0.81	0.79	1.20
0.74	0.67	5.03
0.75	0.74	0.59
0.88	0.85	1.66
0.73	0.75	-1.52
0.69	0.63	5.05
0.74	0.77	-1.62
0.88	0.80	4.58
0.78	0.74	2.39
0.76	0.74	1.05
0.61	0.71	-7.34
0.73	0.70	2.11
0.76	0.73	2.07
0.73	0.72	0.82
0.72	0.74	-1.22
0.75	0.76	-0.76
0.76	0.74	1.53

Sample left to drain overnight



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan												
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr	Co	Cu
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001	0.000005	0.00005
21-Dec-11	0	750	550	8.53	1225	110	155.0	-0.5	-0.5	52.9	0.9	0.56	91.2	0.065	0.0055	0.001	0.124	-0.00005	-0.00003	-0.3	0.0004	-0.00003	17.9	-0.0005	0.00009	0.002
28-Dec-11	1	500	465	7.95	192	120	29.6	-0.5	-0.5	44.7	-0.5	0.17	44.5	0.100	0.00051	0.00012	0.195	-0.00001	-0.000005	-0.1	0.0001	0.000015	6.7	-0.0001	0.000039	0.00155
4-Jan-12	2	500	460	8.33	282	120	49.8	-0.5	-0.5	77.2	-0.5	0.25	90.2	0.160	0.001	-0.001	0.236	-0.00005	-0.00003	-3.0	-0.003	-0.0003	12.0	-0.0050	-0.00030	-0.003
11-Jan-12	3	500	450	8.33	297	110	52.6	-0.5	-0.5	81.4	-0.5	0.25	92.9	0.132	0.0012	0.0006	0.239	-0.00005	-0.00003	-0.3	-0.0003	0.00005	13.3	-0.0005	0.00003	0.0011
18-Jan-12	4	500	485	8.02	216	120	26.1	-0.5	-0.5	53.6	-0.5	0.13	57.7	0.151	0.00071	0.00012	0.221	-0.00001	-0.000005	-0.1	0.00007	0.000027	9.7	-0.0001	0.000017	0.00056
25-Jan-12	5	500	475	8.10	208	110	26.7	-0.5	-0.5	65.6	-0.5	0.14	66.7	0.149	0.0009	0.00010	0.258	-0.00005	-0.00003	-0.3	-0.0003	-0.00003	11.0	-0.0005	-0.00003	0.0006
1-Feb-12	6	500	460	8.27	215	115	45.1	-0.5	-0.5	78.2	-0.5	0.18	91.8	0.139	0.0014	0.00040	0.290	-0.00005	-0.00003	-0.3	-0.0003	0.00005	14.2	-0.0005	-0.00003	0.0007
8-Feb-12	7	500	475	8.19	243	115	44.8	-0.5	-0.5	74.5	-0.5	0.15	85.1	0.150	0.00121	0.00015	0.248	-0.00001	-0.000005	-0.1	0.0001	0.00004	14.8	-0.0001	0.00003	0.0005
15-Feb-12	8	500	495	8.59	87	110	8.2	-0.5	-0.5	30.0	-0.5	0.04	31.7	0.165	0.00031	0.00004	0.204	-0.00001	-0.000005	-0.1	-0.00005	0.000006	6.2	-0.0001	0.00002	0.00024
22-Feb-12	9	500	485	8.44	142	120	13.6	-0.5	-0.5	47.7	-0.5	0.04	44.9	0.204	0.00059	0.00004	0.276	-0.00001	-0.000005	-0.05	-0.00005	0.000019	8.6	-0.0001	0.000018	0.00024
29-Feb-12	10	500	485	8.35	249	125	30.8	-0.5	-0.5	75.4	-0.5	0.08	81.4	0.142	0.00118	0.00026	0.379	-0.00001	-0.000005	-0.05	0.00005	0.000076	13.7	-0.0001	0.00005	0.00063
7-Mar-12	11	500	480	8.30	205	125	29.2	-0.5	-0.5	66.0	-0.5	0.08	66.5	0.168	0.00121	0.00015	0.299	-0.00001	-0.000005	-0.05	0.00006	0.000055	11.8	-0.0001	0.000029	0.00032
14-Mar-12	12	500	495	8.29	200	125	27.3	-0.5	-0.5	62.2	-0.5	0.07	64.8	0.188	0.00108	0.00013	0.28	-0.00001	-0.000005	-0.05	-0.00005	0.000028	11.4	-0.0001	0.000033	0.00261
21-Mar-12	13	500	485	8.29	183	120	21.3	-0.5	-0.5	60.2	-0.5	0.06	58.5	0.179	0.0011	0.00013	0.263	-0.00001	-0.000005	-0.05	-0.00005	0.000033	10.9	-0.0001	0.000023	0.0002
28-Mar-12	14	500	465	8.40	158	120	17.2	-0.5	0.5	73.5	-0.5	0.05	61.2	0.233	0.0010	0.00020	0.271	-0.00005	-0.00003	-0.3	-0.0003	-0.00003	11.7	-0.0005	-0.00003	-0.0003
4-Apr-12	15	500	475	8.47	151	120	15.6	-0.5	-0.5	52.0	-0.5	0.04	53.0	0.199	0.0011	0.00009	0.284	-0.00001	-0.000005	-0.05	-0.00005	0.000018	10.0	-0.0001	0.000029	0.00042
11-Apr-12	16	500	470	8.47	143	120	12.8	-0.5	-0.5	52.0	-0.5	0.03	49.9	0.210	0.00099	0.00011	0.303	-0.00001	-0.000005	-0.05	-0.00005	0.000016	9.42	-0.0001	0.000029	0.00022
18-Apr-12	17	500	480	8.36	183	120	21.4	-0.5	-0.5	62.6	-0.5	0.06	75.0	0.173	0.00164	-0.0001	0.327	-0.00005	-0.000025	-0.25	-0.00025	0.000032	12.9	-0.0005	0.000028	0.0005
25-Apr-12	18	500	470	8.40	170	125	25.4	-0.5	-0.5	67.8	-0.5	0.06	76.1	0.132	0.0018	0.000118	0.327	-0.00001	-0.000005	-0.05	-0.00005	0.000042	14.2	-0.0001	0.000038	0.000569
2-May-12	19	500	475	8.32	216	120	23.1	-0.5	-0.5	39.1	-0.5	0.05	78.2	0.176	0.0021	0.00019	0.348	-0.00005	-0.000025	-0.25	-0.00025	0.00006	13.8	-0.0005	0.000045	0.00086
9-May-12	20	500	480	8.34	185	115	23.7	-0.5	-0.5	66.3	0.51	0.048	80.4	0.165	0.00227	-0.0001	0.327	-0.00005	-0.000025	-0.25	-0.00025	0.000046	14.9	-0.0005	0.000042	0.00058
16-May-12	21	500																								
23-May-12	22	500																								
30-May-12	23	500	445	8.28	240	120	20.3	-0.5	-0.5	74.6	-0.5	0.036	78.6	0.121	0.00322	0.00018	0.331	-0.00005	-0.000025	-0.25	-0.00025	-0.000025	14.4	-0.0005	0.000026	0.0004
6-Jun-12	24	500	440	8.27	209	120	20.2	-0.5	-0.5	72.3	-0.5	0.036	75.3	0.139	0.00308	0.00011	0.348	-0.00005	-0.000025	-0.25	-0.00025	-0.000025	14.2	-0.0005	0.000028	-0.00025
13-Jun-12	25	500	450	8.19	166	130																				
20-Jun-12	26	500																								
27-Jun-12	27	500																								

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	550	-0.00003	0.00009	-0.003	0.00009	0.00091	0.003	0.0006	-0.0005
28-Dec-11	1	500	465	-0.000005	0.00008	-0.0005	0.00009	0.000023	-0.0002	0.0011	-0.0001
4-Jan-12	2	500	460	-0.0003	-0.0100	-0.03	-0.0005	-0.0001	-0.01	-0.005	-0.005
11-Jan-12	3	500	450	-0.00003	-0.001	-0.003	0.00017	0.00007	0.002	0.0014	-0.0005
18-Jan-12	4	500	485	-0.000005	-0.0002	-0.0005	0.00005	0.000034	0.0004	0.0008	-0.0001
25-Jan-12	5	500	475	-0.00003	-0.001	-0.003	-0.00005	0.00004	0.001	-0.0005	-0.0005
1-Feb-12	6	500	460	-0.00003	-0.001	-0.003	0.0001	0.0001	-0.001	-0.0005	-0.0005
8-Feb-12	7	500	475	-0.00001	-0.0002	-0.0005	0.00005	0.000074	0.001	0.0013	-0.0001
15-Feb-12	8	500	495	-0.000005	-0.0002	-0.0005	0.00002	0.000005	-0.0002	0.0006	0.0001
22-Feb-12	9	500	485	-0.000005	-0.0002	-0.0005	0.00003	0.000028	0.0003	0.0005	-0.0001
29-Feb-12	10	500	485	-0.000005	0.0008	-0.0005	0.00006	0.000073	-0.0002	0.0032	-0.0001
7-Mar-12	11	500	480	-0.000005	0.0012	-0.0005	0.00005	0.000069	0.0007	0.0085	-0.0001
14-Mar-12	12	500	495	-0.000005	-0.0002	-0.0005	0.00006	0.000052	0.0006	0.0022	-0.0001
21-Mar-12	13	500	485	-0.000005	-0.0002	-0.0005	0.00002	0.00006	0.0006	0.0009	-0.0001
28-Mar-12	14	500	465	-0.00003	-0.001	-0.003	-0.00005	0.00004	-0.001	0.0006	-0.0005
4-Apr-12	15	500	475	-0.000005	0.0003	-0.0005	0.00004	0.00004	0.0007	0.0005	-0.0001
11-Apr-12	16	500	470	-0.000005	-0.0002	-0.0005	0.00003	0.000029	0.0005	0.0005	-0.0001
18-Apr-12	17	500	480	-0.000025	-0.001	-0.0025	-0.00005	0.000051	-0.001	0.00067	-0.0005
25-Apr-12	18	500	470	-0.000005	0.00046	-0.0005	0.000039	0.000057	0.00045	0.0007	-0.0001
2-May-12	19	500	475	-0.000025	-0.001	-0.0025	0.000079	0.000066	-0.001	-0.0005	-0.0005
9-May-12	20	500	480	-0.000025	-0.001	-0.0025	0.000053	0.000037	-0.001	0.00086	-0.0005
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	445	-0.000025	-0.001	-0.0025	-0.00005	0.000064	-0.001	0.0022	-0.0005
6-Jun-12	24	500	440	-0.000025	-0.001	-0.0025	-0.00005	0.000051	-0.001	-0.0005	-0.0005
13-Jun-12	25	500	450								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)

4.34	4.02	3.86	Sample left to drain overnight
1.52	1.29	8.01	Sample left to drain overnight
2.58	2.49	1.82	Sample left to drain overnight
2.72	2.42	5.89	Sample left to drain overnight
1.61	1.41	6.71	Sample left to drain overnight
1.86	1.61	7.16	Sample left to drain overnight
2.50	2.16	7.17	Sample left to drain overnight
2.42	1.96	10.45	Sample left to drain overnight
0.76	0.71	3.21	
1.23	1.01	9.73	Sample left to drain overnight
2.14	1.82	8.07	
1.92	1.58	9.80	Sample left to drain overnight
1.80	1.45	10.84	Sample left to drain overnight
1.64	1.29	11.67	Sample left to drain overnight
1.82	1.36	14.51	Sample left to drain overnight
1.35	1.17	7.37	Sample left to drain overnight
1.29	1.09	8.39	Sample left to drain overnight
1.69	1.63	1.57	Sample left to drain overnight
1.87	1.66	6.18	Sample left to drain overnight
1.25	1.71	-15.41	Sample left to drain for 20 hours
1.84	1.74	2.61	Sample left to drain for 20 hours
			Stopped leaching
			Stopped leaching
1.90	1.69	5.83	Sample left to drain for >20 hours
1.85	1.62	6.69	Sample drained very slowly, left to drain for >20 hours



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan										
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	
21-Dec-11	0	750	610	8.23	356	130	129	-0.5	-0.5	7.4	1.4	0.06	127	0.0412	0.0004	0.00014	0.101	-0.00001	-0.000005	-0.05	0.00023	-0.000005	32.5	
28-Dec-11	1	500	465	7.64	368	130	142	-0.5	-0.5	17.0	1.2	0.08	142	0.052	0.00058	0.00018	0.146	-0.00001	-0.000005	-0.05	0.00028	0.000007	33.6	
4-Jan-12	2	500	460	7.81	207	130	68	-0.5	-0.5	15.2	0.5	0.06	81	0.0393	0.00047	0.00034	0.119	-0.00001	-0.000005	-0.05	0.00018	0.000011	19.0	
11-Jan-12	3	500	455	8.16	143	130	40	-0.5	-0.5	16.2	-0.5	0.06	51	0.0284	0.0004	0.00015	0.097	-0.00001	-0.000005	-0.05	0.00014	0.000009	11.6	
18-Jan-12	4	500	450	7.92	103	120	23	-0.5	-0.5	14.8	-0.5	0.05	35	0.0305	0.00038	0.0001	0.100	-0.00001	-0.000005	-0.05	0.00011	0.000006	7.74	
25-Jan-12	5	500	475	7.92	102	115	21	-0.5	-0.5	20.6	-0.5	0.04	35	0.0268	0.00042	0.00011	0.105	-0.00001	-0.000005	-0.05	0.00013	0.000001	8.1	
1-Feb-12	6	500	455	7.97	82	120	20	-0.5	-0.5	21.0	-0.5	0.04	31	0.0261	0.00039	0.00013	0.096	-0.00001	-0.000005	-0.05	0.0001	0.000006	6.8	
8-Feb-12	7	500	465	8.32	82	120	15	-0.5	-0.5	24.4	-0.5	0.04	30	0.0257	0.00036	0.00009	0.102	-0.00001	-0.000005	-0.05	0.00016	-0.000005	6.8	
15-Feb-12	8	500	455	8.38	73	120	13	-0.5	0.6	17.4	-0.5	0.04	29	0.0292	0.00037	0.00007	0.103	-0.00001	-0.000005	-0.05	0.00015	-0.000005	6.3	
22-Feb-12	9	500	455	8.54	79	125	11	-0.5	-0.5	20.2	0.6	0.03	25	0.0269	0.00039	0.00007	0.112	-0.00001	-0.000005	-0.05	0.00016	0.000006	5.6	
29-Feb-12	10	500	460	8.20	70	125	10	-0.5	-0.5	17.8	-0.5	0.02	27	0.0272	0.00035	0.00011	0.119	-0.00001	-0.000005	-0.05	0.00017	0.000009	5.9	
7-Mar-12	11	500	465	7.95	80	125	12	-0.5	-0.5	20.5	-0.5	0.02	29	0.0241	0.00034	0.00009	0.147	-0.00001	-0.000005	-0.05	0.00011	0.000008	6.3	
14-Mar-12	12	500	435	8.13	76	125	12	-0.5	-0.5	23.7	-0.5	0.02	29	0.0361	0.00038	0.00009	0.145	-0.00001	-0.000005	-0.05	0.00011	0.000016	5.9	
21-Mar-12	13	500	436	8.28	59	125	9	-0.5	-0.5	15.9	-0.5	0.02	21	0.0255	0.00027	0.00008	0.122	-0.00001	-0.000005	-0.05	0.00008	-0.000005	4.4	
28-Mar-12	14	500	455	8.03	88	125	16	-0.5	0.8	22.3	-0.5	0.02	35	0.0263	0.00040	0.00013	0.132	-0.00001	-0.000005	-0.05	0.00012	-0.000005	7.7	
4-Apr-12	15	500	450	8.26	77	130	13	-0.5	-0.5	17.2	0.5	0.02	27	0.0387	0.00036	0.00010	0.123	-0.00001	-0.000005	-0.05	0.00009	-0.000005	6.0	
11-Apr-12	16	500	450	7.99	71	130	11	-0.5	-0.5	17.6	0.8	0.01	25	0.0221	0.00028	0.00006	0.108	-0.00001	-0.000005	-0.05	0.0001	-0.000005	5.39	
18-Apr-12	17	500	445	7.63	73	130	14	-0.5	0.7	14.8	-0.5	0.02	29	0.0225	0.000319	0.000028	0.0911	-0.00001	-0.000005	-0.05	0.000073	-0.000005	6.27	
25-Apr-12	18	500	455	7.82	88	130	16	-0.5	-0.5	15.6	-0.5	0.01	31	0.0186	0.000306	0.000051	0.0815	-0.00001	-0.000005	-0.05	0.000077	0.000014	6.63	
2-May-12	19	500	450	7.91	92	125	16	-0.5	1.2	15.2	-0.5	0.02	31.7	0.023	0.000331	0.000065	0.0878	-0.00001	-0.000005	-0.05	0.000111	0.000012	6.6	
9-May-12	20	500	450	7.91	84	125	16	-0.5	-0.5	17.6	0.51	0.015	34.1	0.0181	0.000322	0.000028	0.0824	-0.00001	-0.000005	-0.05	0.000086	0.000012	7.4	
16-May-12	21	500																						
23-May-12	22	500																						
30-May-12	23	500	455	8.15	109	120	20.5	-0.5	-0.5	16.2	0.54	0.014	34.2	0.0226	0.00034	0.000059	0.0799	-0.00001	-0.000005	-0.05	0.000086	0.000008	7.66	
6-Jun-12	24	500	455	7.70	96	125	18.8	-0.5	0.74	17.4	0.77	0.014	34.9	0.0206	0.000325	0.000059	0.0756	-0.00001	-0.000005	-0.05	0.000081	0.000129	7.69	
13-Jun-12	25	500	460	7.91	99	125																		
20-Jun-12	26	500																						
27-Jun-12	27	500																						

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	610	-0.000005	0.00042	-0.0005	0.00007	0.000004	-0.0002	0.0007	-0.0001
28-Dec-11	1	500	465	-0.000005	0.00012	-0.0005	0.00007	0.000006	-0.0002	0.0012	-0.0001
4-Jan-12	2	500	460	-0.000005	-0.0002	-0.0005	0.00006	0.000002	-0.0002	0.0008	-0.0001
11-Jan-12	3	500	455	-0.000005	0.0003	-0.0005	0.00005	-0.000002	-0.0002	0.0006	-0.0001
18-Jan-12	4	500	450	-0.000005	0.0003	-0.0005	0.00004	-0.000002	-0.0002	0.0006	-0.0001
25-Jan-12	5	500	475	-0.000005	-0.0002	-0.0005	0.00004	-0.000002	-0.0002	0.0003	-0.0001
1-Feb-12	6	500	455	-0.000005	-0.0002	-0.0005	0.00004	-0.000002	-0.0002	0.0007	-0.0001
8-Feb-12	7	500	465	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.0003	-0.0001
15-Feb-12	8	500	455	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.0003	-0.0001
22-Feb-12	9	500	455	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.0003	-0.0001
29-Feb-12	10	500	460	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.0006	-0.0001
7-Mar-12	11	500	465	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.0004	-0.0001
14-Mar-12	12	500	435	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.0008	-0.0001
21-Mar-12	13	500	436	-0.000005	0.0005	-0.0005	-0.00001	-0.000002	-0.0002	0.0008	-0.0001
28-Mar-12	14	500	455	-0.000005	-0.0002	-0.0005	0.00003	-0.000002	-0.0002	0.0005	-0.0001
4-Apr-12	15	500	450	-0.000005	0.0003	-0.0005	0.00003	-0.000002	-0.0002	0.0006	-0.0001
11-Apr-12	16	500	450	-0.000005	0.0003	-0.0005	0.00002	-0.000002	-0.0002	0.0008	-0.0001
18-Apr-12	17	500	445	-0.000005	0.00068	-0.0005	0.000022	-0.000002	-0.0002	0.00045	-0.0001
25-Apr-12	18	500	455	-0.000005	0.00057	-0.0005	0.000011	-0.000002	-0.0002	0.00054	-0.0001
2-May-12	19	500	450	-0.000005	-0.0002	-0.0005	0.000018	0.000002	-0.0002	0.00036	-0.0001
9-May-12	20	500	450	-0.000005	-0.0002	-0.0005	0.000018	-0.000002	-0.0002	0.00034	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	455	-0.000005	-0.0002	-0.0005	0.000026	-0.000002	-0.0002	0.00056	-0.0001
6-Jun-12	24	500	455	-0.000005	-0.0002	-0.0005	0.000016	-0.000002	-0.0002	0.00046	-0.0001
13-Jun-12	25	500	460								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)
2.88	2.78	1.81
3.34	3.06	4.25
1.74	1.78	-1.21
1.15	1.10	1.98
0.77	0.77	-0.37
0.83	0.75	5.22
0.82	0.66	11.14
0.78	0.64	10.31
0.61	0.61	-0.24
0.66	0.53	10.63
0.55	0.57	-1.43
0.64	0.60	2.88
0.72	0.61	8.43
0.49	0.43	6.51
0.76	0.72	2.68
0.62	0.57	4.59
0.61	0.52	7.87
0.57	0.60	-2.74
0.63	0.63	0.30
0.63	0.65	-1.93
0.70	0.70	0.45

Stopped leaching
Stopped leaching



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan											
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca	Cr	
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05	0.0001
21-Dec-11	0	750	550	8.57	516	110	437.0	-0.5	-0.5	66.9	4.6	0.840	220	0.115	0.00183	0.00048	0.0874	-0.00001	-0.000005	-0.05	0.00067	0.000016	15.9	-0.0001	
28-Dec-11	1	500	470	8.15	289	110	73.2	-0.5	-0.5	57.8	-0.5	0.340	82.7	0.074	0.00450	0.00090	0.176	-0.00005	-0.00003	-0.30	-0.0003	0.00006	17.0	-0.0005	
4-Jan-12	2	500	475	8.23	242	125	53.5	-0.5	-0.5	52.9	-0.5	0.180	81.1	0.122	0.00320	0.00080	0.197	-0.00005	-0.00003	-0.30	-0.0003	0.00009	18.0	-0.0005	
11-Jan-12	3	500	465	8.09	230	125	55.3	-0.5	0.7	52.8	-0.5	0.140	70.4	0.141	0.00280	0.00100	0.225	-0.00005	-0.00003	-0.30	-0.0003	0.00007	15.2	-0.0005	
18-Jan-12	4	500	460	8.09	215	120	40.8	-0.5	-0.5	49.7	-0.5	0.110	66.1	0.172	0.0026	0.00060	0.278	-0.00005	-0.00003	-0.30	-0.0003	0.00006	14.8	-0.0005	
25-Jan-12	5	500	480	8.47	116	115	17.5	-0.5	-0.5	33.8	-0.5	0.039	38.9	0.144	0.00100	0.00030	0.362	-0.00005	-0.00003	-0.30	-0.0003	-0.00003	8.9	-0.0005	
1-Feb-12	6	500	475	8.76	106	115	19.3	-0.5	-0.5	33.1	-0.5	0.035	35.3	0.116	0.00094	0.00018	0.257	-0.00001	-0.000005	-0.05	-0.00005	0.000019	7.8	-0.0001	
8-Feb-12	7	500	485	8.44	104	115	15.6	-0.5	-0.5	34.4	-0.5	0.034	35.8	0.106	0.00078	0.00025	0.243	-0.00001	-0.000005	-0.05	-0.00005	0.000012	8.2	-0.0001	
15-Feb-12	8	500	485	8.57	99	110	15.6	-0.5	0.7	29.5	-0.5	0.036	36.8	0.105	0.00084	0.00011	0.188	-0.00001	-0.000005	-0.05	-0.00005	0.000013	7.7	-0.0001	
22-Feb-12	9	500	465	8.52	176	120	28.9	-0.5	-0.5	44.1	0.7	0.051	59	0.109	0.00161	0.00022	0.251	-0.00001	-0.000005	-0.05	0.00007	0.000025	11.9	-0.0001	
29-Feb-12	10	500	485	8.36	176	125	26.9	-0.5	-0.5	41.9	-0.5	0.048	59	0.159	0.00137	0.00019	0.262	-0.00001	-0.000005	-0.05	0.00007	0.000045	12.4	0.0008	
7-Mar-12	11	500	485	8.50	190	120	29.5	-0.5	-0.5	44.5	-0.5	0.045	58.4	0.128	0.00131	0.00019	0.278	-0.00001	-0.000005	-0.05	-0.00005	0.000045	12.8	0.0002	
14-Mar-12	12	500	490	8.43	114	120	18.5	-0.5	-0.5	35.1	-0.5	0.034	40.7	0.121	0.00082	0.00010	0.222	-0.00001	-0.000005	-0.05	-0.00005	0.000026	8.4	-0.0001	
21-Mar-12	13	500	460	8.30	111	120	14.6	-0.5	-0.5	32.9	-0.5	0.023	33.2	0.100	0.00070	0.00010	0.269	-0.00001	-0.000005	-0.05	-0.00005	0.000024	7.1	-0.0001	
28-Mar-12	14	500	475	8.16	119	125	17.1	-0.5	-0.5	33.1	-0.5	0.028	43.4	0.108	0.00082	0.00009	0.248	-0.00001	-0.000005	-0.05	-0.00005	0.000019	9.4	-0.0001	
4-Apr-12	15	500	480	8.60	132	125	20.1	-0.5	-0.5	37.1	-0.5	0.029	44.9	0.126	0.00099	0.00011	0.265	-0.00001	-0.000005	-0.05	-0.00005	0.000019	10.1	-0.0001	
11-Apr-12	16	500	465	8.56	96	125	12.2	-0.5	-0.5	29.1	-0.5	0.019	31.3	0.0919	0.00057	0.00009	0.25	-0.00001	-0.000005	-0.05	-0.00005	0.00001	6.87	-0.0001	
18-Apr-12	17	500	475	8.28	94	130	12.2	-0.5	-0.5	27.3	-0.5	0.026	34.6	0.120	0.000611	0.000086	0.205	-0.00001	-0.000005	-0.05	-0.00005	0.0000175	7.55	-0.0001	
25-Apr-12	18	500	480	8.27	117	130	15.6	-0.5	-0.5	31.5	-0.5	0.021	40.4	0.114	0.000746	0.000059	0.229	-0.00001	-0.000005	-0.05	-0.00005	0.000025	8.82	0.0001	
2-May-12	19	500	440	8.06	122	125	16.9	-0.5	0.81	36	-0.5	0.024	41.9	0.148	0.000785	0.000119	0.268	-0.00001	-0.000005	-0.05	-0.00005	0.00003	8.96	-0.0001	
9-May-12	20	500	490	8.04	117	125	19.6	-0.5	-0.5	37.1	-0.5	0.03	47	0.114	0.000799	0.000096	0.294	-0.00001	-0.000005	-0.05	0.000055	0.000027	10.4	-0.0001	
16-May-12	21	500																							
23-May-12	22	500																							
30-May-12	23	500	465	8.23	216	125	37.3	<0.50	0.55	47.2	0.54	0.039	68.1	0.115	0.00158	0.00021	0.259	-0.00005	-0.000025	-0.25	-0.00025	-0.000025	14.3	-0.0005	
6-Jun-12	24	500	450	8.19	120	130	15.1	<0.50	0.58	37.9	0.64	0.017	43.8	0.112	0.000662	0.000154	0.353	-0.00001	-0.000005	-0.05	0.0000219	0.000087	9.68	-0.0001	
13-Jun-12	25	500	490	8.27	139	125																			
20-Jun-12	26	500																							
27-Jun-12	27	500																							

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	550	-0.000005	0.00008	-0.0005	0.00025	0.000564	0.0013	0.0012	-0.0001
28-Dec-11	1	500	470	-0.00003	0.00025	-0.0030	0.00015	0.000600	0.0030	0.0006	-0.0005
4-Jan-12	2	500	475	-0.00003	-0.00100	-0.0030	0.00008	0.000390	0.0030	0.0015	-0.0005
11-Jan-12	3	500	465	-0.00003	-0.00100	-0.0030	0.00006	0.000330	0.0050	-0.0005	-0.0005
18-Jan-12	4	500	460	-0.00003	-0.0010	-0.003	0.00005	0.000500	0.0030	0.0007	-0.0005
25-Jan-12	5	500	480	-0.00003	-0.0010	-0.0030	-0.00005	0.000070	0.0020	-0.0005	-0.0005
1-Feb-12	6	500	475	-0.000005	-0.0002	-0.0005	0.00001	0.000079	0.0009	0.0002	-0.0001
8-Feb-12	7	500	485	-0.000005	-0.0002	-0.0005	0.00001	0.000073	0.0006	0.0003	-0.0001
15-Feb-12	8	500	485	-0.000005	-0.0002	-0.0005	-0.00001	0.000059	0.0006	0.0002	-0.0001
22-Feb-12	9	500	465	-0.000005	0.0003	-0.0005	0.0001	0.000197	0.0012	0.0004	-0.0001
29-Feb-12	10	500	485	0.00001	0.0013	0.0014	0.00002	0.000149	0.0005	0.005	-0.0001
7-Mar-12	11	500	485	-0.000005	0.0017	-0.0005	0.00002	0.000119	0.0002	0.0061	-0.0001
14-Mar-12	12	500	490	0.000012	-0.0002	-0.0005	-0.00001	0.000082	0.0007	0.0003	-0.0001
21-Mar-12	13	500	460	-0.000005	0.0004	-0.0005	-0.00001	0.000071	0.0003	0.0013	-0.0001
28-Mar-12	14	500	475	-0.000005	-0.0002	-0.0005	-0.00001	0.000070	0.0006	0.0004	-0.0001
4-Apr-12	15	500	480	-0.000005	0.0004	-0.0005	0.00001	0.000114	0.0004	0.0005	-0.0001
11-Apr-12	16	500	465	-0.000005	-0.0002	-0.0005	-0.00001	0.000034	0.0003	0.0003	0.0002
18-Apr-12	17	500	475	-0.000005	0.00041	-0.0005	-0.00001	0.000042	0.0004	0.00048	-0.0001
25-Apr-12	18	500	480	-0.000005	0.00137	-0.0005	-0.00001	0.000064	0.00072	0.0012	-0.0001
2-May-12	19	500	440	-0.000005	-0.0002	-0.0005	-0.00001	0.000075	0.00034	0.0003	-0.0001
9-May-12	20	500	490	-0.000005	0.00023	-0.0005	0.00001	0.00007	0.00048	0.00049	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	465	-0.000025	-0.001	-0.0025	-0.00005	0.000166	-0.001	0.00112	-0.0005
6-Jun-12	24	500	450	-0.000005	0.00022	-0.0005	-0.00001	0.000063	0.0004	0.00058	-0.0001
13-Jun-12	25	500	490								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)

10.62	10.50	0.55	Sample left to drain overnight
2.70	2.00	14.92	Sample left to drain overnight
2.17	1.81	9.02	Sample left to drain overnight
2.20	1.54	17.67	Sample left to drain overnight
1.84	1.43	12.31	Sample left to drain overnight
1.03	0.82	11.05	Sample left to drain overnight
1.05	0.76	16.39	Sample left to drain overnight
1.00	0.76	13.63	Sample left to drain overnight
0.90	0.78	7.18	Sample left to drain overnight
1.51	1.24	9.82	Sample left to drain overnight
1.39	1.24	5.43	Sample left to drain overnight
1.49	1.22	9.99	Sample left to drain overnight
1.08	0.85	11.43	Sample left to drain overnight
0.95	0.69	15.52	Sample left to drain overnight
1.01	0.90	5.29	Sample left to drain overnight
1.15	0.94	10.01	
0.82	0.65	11.80	
0.79	0.72	4.32	
0.94	0.84	5.70	
1.06	0.88	9.51	Sample left to drain overnight
1.14	0.98	7.64	
			Stopped leaching
			Stopped leaching
1.74	1.41	10.38	Sample left to drain overnight
1.09	0.91	9.25	Sample left to drain overnight
			Sample left to drain overnight



Method:				pH Meter	EC Meter	ORP Meter	Auto Turbidity	PC Titrator			IC	SIE	Calculated from Ca & Mg	Dissolved metals by ICP-MS scan									
Sampling Date	Week No.	Input Vol.	Output Vol.	pH	EC	ORP	Sulphate	Acidity to pH 4.5	Acidity to pH 8.3	Total Alkalinity (to pH 4.5)	Chloride	Fluoride	Hardness as CaCO3	Al	Sb	As	Ba	Be	Bi	B	Cs	Cd	Ca
Units		ml	ml	pH Units	µS/cm	mV	mg/L	mg CaCO3/L	mg CaCO3/L	mg CaCO3/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.01	0.5	5.0	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.0002	0.00002	0.00002	0.00002	0.00001	0.000005	0.05	0.00005	0.000005	0.05
21-Dec-11	0	750	625	8.38	762	125	301	-0.5	-0.5	9.9	1.4	0.060	323	0.0278	0.00070	0.00130	0.00941	-0.00001	-0.000005	-0.05	0.00026	-0.000005	81.0
28-Dec-11	1	500	495	7.73	713	140	266	-0.5	-0.5	16.5	0.9	0.058	320	0.0245	0.00092	0.00169	0.01570	-0.00001	-0.000005	-0.05	0.00024	0.000006	81.2
4-Jan-12	2	500	475	7.77	471	130	186	-0.5	1.2	13.2	-0.5	0.033	222	0.0280	0.00059	0.00093	0.00956	-0.00001	-0.000005	-0.05	0.00018	-0.000005	60.9
11-Jan-12	3	500	475	8.18	407	125	157	-0.5	1.4	13.6	-0.5	0.033	172	0.0303	0.00059	0.0009	0.00961	-0.00001	-0.000005	-0.05	0.00016	0.000007	48.2
18-Jan-12	4	500	470	7.75	303	120	125	-0.5	-0.5	12.7	-0.5	0.032	117	0.0233	0.00048	0.0006	0.01050	-0.00001	-0.000005	-0.05	0.0001	0.000007	34.3
25-Jan-12	5	500	485	7.92	223	115	74	-0.5	-0.5	15.8	-0.5	0.025	89	0.0290	0.00045	0.00059	0.00828	-0.00001	-0.000005	-0.05	0.00012	-0.000005	26.2
1-Feb-12	6	500	480	7.86	135	120	43	-0.5	-0.5	17.6	-0.5	0.026	55	0.0351	0.00039	0.00050	0.00740	-0.00001	-0.000005	-0.05	0.00009	-0.000005	15.6
8-Feb-12	7	500	485	8.04	101	120	22	-0.5	-0.5	24.3	-0.5	0.024	42	0.0305	0.00033	0.00038	0.00731	-0.00001	-0.000005	-0.05	0.00009	-0.000005	11.8
15-Feb-12	8	500	475	8.24	76	110	13	-0.5	0.6	21.9	-0.5	0.023	36	0.0301	0.00034	0.00033	0.00914	-0.00001	-0.000005	-0.05	0.00007	0.000005	9.6
22-Feb-12	9	500	475	8.50	66	120	8	-0.5	-0.5	20.4	0.6	0.016	26	0.0256	0.00029	0.00027	0.00706	-0.00001	-0.000005	-0.05	0.00008	-0.000005	7.3
29-Feb-12	10	500	475	8.50	57	125	6	-0.5	-0.5	21.4	-0.5	0.016	28	0.0241	0.0003	0.00024	0.01000	-0.00001	-0.000005	-0.05	0.00007	-0.000005	7.5
7-Mar-12	11	500	475	8.25	69	125	6	-0.5	-0.5	27.4	-0.5	0.014	31	0.0323	0.00032	0.00031	0.00935	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	8.1
14-Mar-12	12	500	475	8.38	59	125	5	-0.5	-0.5	24.5	-0.5	0.013	28	0.0323	0.00029	0.0002	0.00926	-0.00001	-0.000005	-0.05	0.00005	-0.000005	6.8
21-Mar-12	13	500	470	8.23	51	125	4	-0.5	-0.5	22.4	-0.5	0.011	23	0.0208	0.00026	0.00018	0.00889	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	5.7
28-Mar-12	14	500	470	8.19	50	130	5	-0.5	-0.5	20.8	-0.5	0.011	27	0.0225	0.00027	0.00017	0.00944	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	7.2
4-Apr-12	15	500	455	8.63	50	130	4	-0.5	-0.5	17.7	-0.5	0.010	23	0.0201	0.00025	0.00015	0.00849	-0.00001	-0.000005	-0.05	0.00005	-0.000005	5.7
11-Apr-12	16	500	460	8.70	54	130	4	-0.5	-0.5	20.3	-0.5	-0.010	24	0.0176	0.00023	0.00013	0.0106	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	5.78
18-Apr-12	17	500	470	7.87	46	130	5	-0.5	0.5	20.0	-0.5	0.013	26	0.0185	0.000231	0.000119	0.00911	-0.00001	-0.000005	-0.05	-0.00005	0.0000178	6.27
25-Apr-12	18	500	465	7.91	57	130	5	-0.5	-0.5	20.0	-0.5	-0.01	25	0.0164	0.000197	0.00013	0.00862	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	5.78
2-May-12	19	500	475	7.95	64	130	5	-0.5	0.6	24.2	-0.5	-0.01	27.7	0.0193	0.00023	0.000084	0.0116	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	6.6
9-May-12	20	500	470	7.89	58	135	6	-0.5	-0.5	21.8	-0.5	-0.01	27.7	0.0165	0.000222	0.000082	0.0103	-0.00001	-0.000005	-0.05	-0.00005	-0.000005	6.76
16-May-12	21	500																					
23-May-12	22	500																					
30-May-12	23	500	455	7.86	79	130	8	-0.5	0.97	23.5	-0.5	-0.01	31.5	0.0382	0.000311	0.000227	0.0102	-0.00001	-0.000005	-0.05	0.000054	-0.000005	7.69
6-Jun-12	24	500	470	8.00	78	130	6.76	-0.5	-0.5	24.9	-0.5	0.011	30.7	0.0344	0.000252	0.00017	0.0101	-0.00001	0.0000058	-0.05	-0.000005	-0.000005	7.57
13-Jun-12	25	500	475	8.02	70	130																	
20-Jun-12	26	500																					
27-Jun-12	27	500																					

Continue with same analytical schedule until further notice (email from Claudio Andrade 28-May-12)

Proposed No. of weeks: 20 weeks



Method:											
Sampling Date	Week No.	Input Vol.	Output Vol.	Th	Sn	Ti	W	U	V	Zn	Zr
Units		ml	ml	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limits		5	5	0.000005	0.0002	0.0005	0.00001	0.000002	0.0002	0.0001	0.0001
21-Dec-11	0	750	625	-0.000005	0.0003	-0.0005	0.00007	0.000117	-0.0002	0.0002	-0.0001
28-Dec-11	1	500	495	-0.000005	0.00015	-0.0005	0.00011	0.000266	-0.0002	0.0003	-0.0001
4-Jan-12	2	500	475	-0.000005	-0.0002	-0.0005	0.00007	0.000181	-0.0002	-0.0001	-0.0001
11-Jan-12	3	500	475	-0.000005	0.0003	-0.0005	0.00004	0.000172	-0.0002	0.0003	-0.0001
18-Jan-12	4	500	470	-0.000005	-0.0002	-0.0005	0.00001	0.000124	-0.0002	0.0003	-0.0001
25-Jan-12	5	500	485	-0.000005	-0.0002	-0.0005	0.00003	0.000073	-0.0002	-0.0001	-0.0001
1-Feb-12	6	500	480	-0.000005	-0.0002	-0.0005	0.00001	0.000028	-0.0002	0.0002	-0.0001
8-Feb-12	7	500	485	-0.000005	-0.0002	-0.0005	-0.00001	0.000015	-0.0002	0.0002	-0.0001
15-Feb-12	8	500	475	-0.000005	-0.0002	-0.0005	0.00002	0.000007	-0.0002	0.0009	-0.0001
22-Feb-12	9	500	475	-0.000005	-0.0002	-0.0005	0.00002	0.000004	-0.0002	0.0003	-0.0001
29-Feb-12	10	500	475	-0.000005	-0.0002	-0.0005	-0.00001	0.000004	-0.0002	0.0003	0.0001
7-Mar-12	11	500	475	-0.000005	0.0002	-0.0005	-0.00001	0.000004	-0.0002	0.0004	-0.0001
14-Mar-12	12	500	475	-0.000005	-0.0002	-0.0005	0.00002	0.000003	0.00101	0.0003	-0.0001
21-Mar-12	13	500	470	-0.000005	0.0006	-0.0005	-0.00001	0.000002	-0.0002	0.0005	-0.0001
28-Mar-12	14	500	470	-0.000005	0.0003	-0.0005	0.00001	0.000003	-0.0002	0.0003	-0.0001
4-Apr-12	15	500	455	-0.000005	0.0002	-0.0005	0.00001	-0.000002	-0.0002	0.0005	-0.0001
11-Apr-12	16	500	460	-0.000005	0.0004	-0.0005	0.00001	-0.000002	-0.0002	0.0006	-0.0001
18-Apr-12	17	500	470	-0.000005	0.00062	-0.0005	0.000012	-0.000002	-0.0002	0.00185	-0.0001
25-Apr-12	18	500	465	-0.000005	0.00061	-0.0005	-0.00001	0.000003	-0.0002	0.00106	0.00015
2-May-12	19	500	475	-0.000005	-0.0002	-0.0005	0.00001	0.000003	-0.0002	0.00025	-0.0001
9-May-12	20	500	470	-0.000005	-0.0002	-0.0005	0.000012	0.000002	-0.0002	0.00022	-0.0001
16-May-12	21	500									
23-May-12	22	500									
30-May-12	23	500	455	-0.000005	0.00057	-0.0005	0.000019	0.0000057	-0.0002	0.00051	-0.0001
6-Jun-12	24	500	470	-0.000005	-0.0002	-0.0005	0.000017	0.0000061	-0.0002	0.00036	-0.0001
13-Jun-12	25	500	475								
20-Jun-12	26	500									
27-Jun-12	27	500									

Ion Balance		
Anions	Cations	Balance (%)
6.51	6.98	-3.45
5.90	6.82	-7.22
4.13	4.66	-6.10
3.53	3.57	-0.57
2.85	2.42	8.01
1.85	1.83	0.62
1.24	1.14	4.14
0.94	0.87	3.61
0.70	0.74	-3.09
0.59	0.54	4.15
0.55	0.59	-3.43
0.67	0.63	2.64
0.59	0.57	1.55
0.52	0.47	5.10
0.51	0.56	-5.33
0.42	0.46	-4.62
0.48	0.49	-1.13
0.49	0.53	-4.37
0.49	0.50	-0.72
0.57	0.57	0.27
0.55	0.56	-1.18

Stopped leaching
Stopped leaching



Client: Klohn Crippen

Client Project Name: Guyana-Aurora Gold

ARD Project No: 2-21-900

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Sampling Date	Week	DI Water		HC Room Temperature (°C)
		pH (pH Units)	EC (µS/cm)	
Detection Limits		0.5	0.5	N/A
21-Dec-11	0	5.70/5.78	0.87	20.1
28-Dec-11	1	5.75/5.87	0.77	20.8
4-Jan-12	2	5.72/5.86	0.83	20.4
11-Jan-12	3	5.56/5.70	0.71	20.9
18-Jan-12	4	6.28/6.10	0.87	20.3
25-Jan-12	5	5.83/5.89	0.72	20.5
1-Feb-12	6	5.92/5.85	0.80	20.0
8-Feb-12	7	5.81/5.76	0.90	20.8
15-Feb-12	8	5.77/5.73	0.90	20.8
22-Feb-12	9	5.79/5.73	0.80	21.1
29-Feb-12	10	5.83/5.87	0.90	20.8
7-Mar-12	11	5.64/5.61	0.55	20.4
14-Mar-12	12	5.84/5.70	0.39	19.8
21-Mar-12	13	5.85/5.79	0.93	21.1
28-Mar-12	14	5.83/5.82	0.91	20.9
4-Apr-12	15	5.75/5.78	0.92	20.4
11-Apr-12	16	5.53/5.57	0.87	20.3
18-Apr-12	17	5.80/5.85	0.81	20.6
25-Apr-12	18	5.82/5.65	0.84	20.3
2-May-12	19	5.71/5.75	0.83	20.8
9-May-12	20	5.80/5.80	0.80	20.6
16-May-12	21	5.75/5.77	0.49	20.3
23-May-12	22	5.81/5.80	0.79	20.9
30-May-12	23	5.73/5.74	0.90	21.3
6-Jun-12	24	5.66/5.67	0.77	21.0
13-Jun-12	25	5.84/5.78	0.74	20.2
20-Jun-12	26			
27-Jun-12	27			
4-Jul-12	28			