

Eagle Gold Geochemical Source Term Predictions - Model Description and Results



19 June 2014



2289 Burrard Street
Vancouver, BC, V6J 3H9
Canada
1-604-688-7173

Table of Contents

TABLE OF CONTENTS	I
1. INTRODUCTION.....	1-1
2. SOURCE TERM DEVELOPMENT APPROACH	2-1
2.1 BACKGROUND AND OVERVIEW.....	2-1
2.2 MODEL APPROACH	2-2
2.2.1 WASTE ROCK AND PIT WALL MATERIAL	2-2
2.2.2 100-DAY STOCKPILE ORE	2-3
2.2.3 HEAP LEACH FACILITY (HLF)	2-3
2.3 UP-SCALING OF KINETIC TEST LOADS	2-7
2.4 ADJUSTMENT OF UP-SCALED LOADS	2-10
2.4.1 TEMPERATURE.....	2-10
2.4.2 GRAIN SIZE DISTRIBUTION	2-11
2.4.3 CONTACT WATER.....	2-12
2.4.4 STORED LOADS.....	2-14
2.5 MINERAL SOLUBILITY CONTROL	2-14
2.6 EXAMPLE CALCULATION	2-16
2.7 N SOURCE TERM DERIVATION.....	2-17
2.7.1 ASSUMPTIONS.....	2-18
2.7.2 PIT WATER NITROGEN SOURCE TERMS	2-18
2.7.3 WASTE ROCK DRAINAGE NITROGEN SOURCE TERMS	2-19
3. SITE ANALOGUE COMPARISON.....	3-1
3.1 BACKGROUND.....	3-1
3.2 BREWERY CREEK.....	3-1
3.3 HEAP LEACH FACILITY	3-2
3.4 WASTE ROCK STORAGE FACILITIES (BLUE WRSA)	3-4
3.5 PIT WALLS.....	3-4
4. FIELD KINETIC EXPERIMENTS	4-1
5. RESULTS AND DISCUSSION.....	5-1
5.1 ARSENIC	5-2
5.2 ANTIMONY.....	5-2
5.3 SELENIUM	5-3
REFERENCES.....	R-1
APPENDIX A: RAW LABORATORY LEACHATE DATA	
APPENDIX B: REVIEW OF SCALING FACTORS APPLIED TO GEOCHEMICAL PREDICTIONS	
APPENDIX C: FIELD BARREL LEACHATE RESULTS	
APPENDIX D: SOURCE TERM PREDICTIONS	

LIST OF FIGURES

FIGURE 1-1:	PROPOSED LOCATION OF MINE COMPONENTS CONSIDERED FOR SOURCE TERM DEVELOPMENT.....	1-2
FIGURE 2-1:	PREDICTED NITROGEN STORAGE AND RELEASE IN EAGLE PUP AND PLATINUM GULCH WASTE ROCK PILES.....	2-25
FIGURE 2-2:	ANNUAL NITRATE, AMMONIA AND NITRITE SOURCE TERMS FOR EAGLE PUP AND PLATINUM GULCH WASTE ROCK.....	2-28
FIGURE 4-1:	SULPHATE CONCENTRATIONS OVER TIME IN LEACHATES FROM EAGLE GOLD FIELD BARRELS	4-2
FIGURE 4-2:	ARSENIC CONCENTRATIONS OVER TIME IN LEACHATES FROM EAGLE GOLD FIELD BARRELS 4-2	
FIGURE 4-3:	ANTIMONY CONCENTRATIONS OVER TIME IN LEACHATES FROM EAGLE GOLD FIELD BARRELS	4-3
FIGURE 4-4:	SELENIUM CONCENTRATIONS OVER TIME IN LEACHATES FROM EAGLE GOLD FIELD BARRELS.....	4-3
FIGURE 5-1:	PREDICTED ARSENIC CONCENTRATIONS FOR PLATINUM GULCH DRAINAGE IN COMPARISON WITH BREWERY CREEK AND FIELD BARREL DATA	5-6
FIGURE 5-2:	PREDICTED ARSENIC CONCENTRATIONS FOR EAGLE PUP DRAINAGE IN COMPARISON WITH BREWERY CREEK AND FIELD BARREL DATA.....	5-6
FIGURE 5-3:	PREDICTED ARSENIC CONCENTRATIONS FOR PIT WALL RUNOFF IN COMPARISON WITH FIELD BARREL DATA.....	5-7
FIGURE 5-4:	PREDICTED ARSENIC CONCENTRATIONS FOR HEAP LEACH FACILITY AND ORE STOCKPILE SEEPAGE IN COMPARISON WITH BREWERY CREEK DATA.....	5-7
FIGURE 5-5:	PREDICTED ANTIMONY CONCENTRATIONS FOR PLATINUM GULCH DRAINAGE IN COMPARISON WITH BREWERY CREEK AND FIELD BARREL DATA	5-8
FIGURE 5-6:	PREDICTED ANTIMONY CONCENTRATIONS FOR EAGLE PUP DRAINAGE IN COMPARISON WITH BREWERY CREEK AND FIELD BARREL DATA.....	5-8
FIGURE 5-7:	PREDICTED ANTIMONY CONCENTRATIONS FOR PIT WALL RUNOFF IN COMPARISON WITH FIELD BARREL DATA.....	5-9
FIGURE 5-8:	PREDICTED ANTIMONY CONCENTRATIONS FOR HEAP LEACH FACILITY AND ORE STOCKPILE SEEPAGE IN COMPARISON WITH BREWERY CREEK DATA.....	5-9
FIGURE 5-9:	PREDICTED SELENIUM CONCENTRATIONS FOR PLATINUM GULCH DRAINAGE IN COMPARISON WITH BREWERY CREEK AND FIELD BARREL DATA	5-10
FIGURE 5-10:	PREDICTED SELENIUM CONCENTRATIONS FOR EAGLE PUP DRAINAGE IN COMPARISON WITH BREWERY CREEK AND FIELD BARREL DATA.....	5-10
FIGURE 5-11:	PREDICTED SELENIUM CONCENTRATIONS FOR PIT WALL RUNOFF IN COMPARISON WITH FIELD BARREL DATA.....	5-11
FIGURE 5-12:	PREDICTED SELENIUM CONCENTRATIONS FOR HEAP LEACH FACILITY AND ORE STOCKPILE SEEPAGE IN COMPARISON WITH BREWERY CREEK DATA.....	5-11

LIST OF TABLES

TABLE 2-1: SUMMARY OF KINETIC TEST CELLS USED FOR THE INDIVIDUAL ROCK UNITS MODELLED.....	2-2
TABLE 2-2: COMPOSITE INPUT LOADS USED FOR THE DIFFERENT MODEL SCENARIOS IN EAGLE GOLD WASTE ROCK FACILITIES	2-5
TABLE 2-3: COMPOSITE INPUT LOADS USED FOR THE EAGLE GOLD ORE FACILITIES	2-7
TABLE 2-4: WASTE ROCK PRODUCTION SCHEDULE AND EXPOSURE AREAS BY MINE-YEAR FOR VARIOUS EAGLE GOLD MINE COMPONENTS	2-8
TABLE 2-5: SUMMARY OF TEMPERATURE CORRECTION FACTORS APPLIED TO SCALING	2-11
TABLE 2-6: MAXIMUM CONTACT WATER SCALING FACTORS IMPLEMENTED OVER TIME FOR THE WRSA PREDICTION MODEL.....	2-12
TABLE 2-7: MINERAL PHASE ALLOWED TO PRECIPITATE IN THE EAGLE GOLD SPECIATION MODEL	2-15
TABLE 2-8: EAGLE GOLD PIT WATER BEST JUDGEMENT NITROGEN SPECIES SOURCE TERMS	2-19
TABLE 2-9: PLANNED EXPLOSIVE USE, WASTE ROCK PLACEMENT AND ESTIMATED ANNUAL NITROGEN LOADING TO WASTE ROCK AT EAGLE GOLD MINE	2-20
TABLE 2-10: DIAVIK MINE NITROGEN RELEASE RATE FROM BASAL DRAIN TEST PILES (FROM BAILY, 2013) .	2-21
TABLE 2-11: DERIVATION OF EAGLE GOLD NITROGEN RELEASE RATE	2-22
TABLE 2-12: EAGLE PUP WASTE ROCK NITROGEN LOADING, STORAGE AND RELEASE.....	2-26
TABLE 2-13: PLATINUM GULCH WASTE ROCK NITROGEN LOADING, STORAGE AND RELEASE.....	2-27
TABLE 2-14: EAGLE PUP WASTE ROCK NITROGEN RELEASE, FLOWS, ATTENUATION AND SOURCE TERMS FOR NITRATE, NITRITE AND AMMONIA.....	2-29
TABLE 2-15: PLATINUM GULCH WASTE ROCK NITROGEN RELEASE, FLOWS, ATTENUATION AND SOURCE TERMS FOR NITRATE, NITRITE AND AMMONIA	2-30
TABLE 3-1: COMPARISON OF UN-SCALED AND SCALED SEEPAGE QUALITY PREDICTIONS WITH RELEVANT SITE DRAINAGE DATA FOR BREWERY CREEK.....	3-3
TABLE 3-2: COMPARISON OF FIELD BARREL LEACHATE AND PIT SUMP WATER CHEMISTRY (MINESITE UNDISCLOSED)	3-5
TABLE 5-1: RANGES IN PREDICTED DRAINAGE CONCENTRATION FOR THE EAGLE GOLD MINE SITE FACILITIES	5-4
TABLE 5-2: MONTHLY GEOCHEMISTRY PREDICTED FOR BOTH SCENARIOS IN EAGLE PUP SEEPAGE	5-5

1. Introduction

The Eagle Gold Project is a proposed gold mine operation located near Mayo in the Yukon Territory within the Tintina gold province. The project will be developed as an open pit mine with gold being extracted in a ~92 Mt heap leach facility. A total of ~132 Mt of waste rock is expected to be generated and will be stored in two waste rock storage areas (WRSA) on both sides of the open pit.

Geologically, the site is characterized by a variably altered granodiorite intrusion emplaced within a package of older metasediments (primarily phyllitic). Gold mineralization is associated with quartz veining that apparently shows its maximum density above the apex of the igneous intrusion. The commodity occurs as elemental gold or in association with bismuth and arsenopyrite. Other identified phases that potentially lead to acid rock drainage and/or metal leaching upon exposure to the atmosphere include marcasite/pyrite > pyrrhotite >> sphalerite, chalcopyrite, galena molybdenite and Fe-oxyhydroxides. Static testing of waste materials revealed, however that acid-neutralizing carbonate phases (primarily calcite) are well in excess of sulphide minerals. As such, the potential of acid rock drainage from components of the Eagle Gold mine is considered very low. Nevertheless, kinetic testing showed that elevated dissolved concentrations of metalloids forming oxyanions such as As and Sb, and to a lesser extent Se, are to be expected in mine contact waters. For a discussion of the geochemical testing methodology and results, the reader is referred to SRK (2014).

Since certain components of the mine plan (including operations through closure phases) are strongly tied to drainage geochemistry (*e.g.*, construction of water storage ponds, timing and capacity water treatment facilities), Lorax was retained by Victoria Gold Corporation (VIT) to develop a water quality prediction model that reflects geochemical and hydrogeological processes occurring during and after operation at the Eagle Gold mine. The following report outlines the source term development approach for providing estimates of mine contact water chemistry throughout the project life for key mine components.

In Section 2, the source term development approach methodology is described for the following key mine components:

- Eagle Pup Waste Rock Storage Area (EP WRSA)
- Platinum Gulch Waste Rock Storage Area (PG WRSA)
- Pit Wall contact water;

- 100-day Ore Stockpile (SP); and
- Heap Leach Facility (HLF)

Figure 1-1 provides an illustration of the proposed locations of the key mine components considered for source term development.



Figure 1-1: Proposed Location of Mine Components Considered for Source Term Development

In Sections 3 and 4, analogue datasets are discussed for the Brewery Creek mine and Eagle Gold field barrel experiments, respectively. The results of the adjusted and calibrated Eagle Gold drainage quality model are then presented and discussed in Section 5.

2. Source Term Development Approach

2.1 Background and Overview

Prediction of both the major and trace element geochemistry of waste rock, pit walls and heap leach ore seepage waters is conducted using a combination of: 1) interpretation and scale-up of laboratory and field kinetic testwork; 2) geochemical modeling of secondary mineral controls that limit maximum elemental concentrations in drainage waters; and 3) seepage chemistry observed in field-scale mining operations with similar geologic conditions.

Drainage chemistry from waste rock is influenced by a number of factors that are related to the lithological and physical characteristics of the mine waste material as well as temperature effects on weathering rates. The physical characteristics of the exposed rock, and in particular the particle size distribution, strongly influences the drainage chemistry ultimately discharging from waste facilities.

The particle size distribution of the waste rock influences the degree of water-rock interactions by controlling the exposed surface area. Surface area increases exponentially on an area per mass basis as the particle size decreases. This phenomenon allows for the greatest surface area to be associated with the finest particles, which may comprise a relatively small quantity of the waste rock dump. Strömberg and Banwart (1999) observed a large difference in weathering rates between fine particles and larger waste rock at the Aitik mine in northern Sweden. Particles with diameters (d) smaller than 25 mm were shown to account for 80% of the sulphide and silicate weathering. The finer particle sizes within waste rock dumps are typically only a small fraction of the total mass of the dump. Strömberg and Banwart (1999) determined the <25 mm fraction to be roughly 27% of the total waste rock mass. Wickland and Wilson (2004) measured the particle size distribution of a waste rock dump and material less than 6.0 mm accounted for approximately 15% of the total dump mass. Golder Associates (1987) and Dawson (1994) reported that waste rock comprised of fine grained siltstones and shales have approximately 20% of the rock mass <6.3 mm or $1/4''$. This is the upper particle diameter for the humidity cell samples, suggesting that around 20% (and possibly less for igneous waste rock) of the material contained in the waste rock dump has a geochemical reactivity equivalent to that observed in humidity cells.

In addition to surface area effects, physical characteristics such as particle size distributions also control the hydrologic infiltration pathways in waste rock dumps. The unsaturated fluid flow pathways in waste rock dumps have important implications for the

geochemical behavior of waste rock systems. The rate at which minerals weather chemically in laboratory kinetic tests is typically observed to be many times faster than rates inferred from field observations of drainage from the toe of waste rock piles (Malmstrom, 2000). This discrepancy is in part due to the formation of distinct flow channels within the waste rock pile that results in the incomplete flushing of weathering products from the waste rock dump (Nichol et al., 2005).

The methodology and parameters used for calculating the seepage chemistry from waste rock, pit walls and heap leach ore are discussed below.

2.2 Model Approach

As a first step in the development of geochemical source terms, the appropriate input solution chemistry needs to be defined. Dissolved concentrations for all chemical species produced during recent and historical kinetic experiments were converted into geochemical loads (in mg/kg_{rock}/wk) by multiplying each species with the amount of leachate output volume (in L) and dividing this load by the mass of rock reacting with the leachate (standard humidity cell = 1 kg). Note that due to relatively high detection limits and a restricted suite of analyzed metals, only major dissolved species (*e.g.*, SO₄, Ca, Na, etc.) were considered from the historic humidity cell experiments.

2.2.1 Waste Rock and Pit Wall Material

For WRSA and pit wall drainage chemistry predictions, Eagle Gold humidity cells were grouped to represent the various waste rock types expected to be exposed during mine development. Humidity cells used to produce the individual input solutions are listed in Table 2-1.

Table 2-1:
Summary of kinetic test cells used for the individual rock units modelled

Lithology/Material	Kinetic cell used
Oxidized Granodiorite (OGD)	DGK 3, HC 5, HC 10
Fresh Granodiorite (FGD)	DGK 2, HC 3, HC 9
Altered Granodiorite (AGD)	DGK 4, HC 4, HC 6, HC 11
Oxide Metasediment (OMS)	HC 8
Fresh Metasediment (FMS)	DGK 1, HC 1, HC 2, HC 8, HC 13
Overburden (OB)	HC 10
Stockpiled ore (SP)	HC 7, HC 12
Heap leach ore (HLF)	Col 63301

A total of four different source term scenarios are presented. These consist of a combination of operational versus post-closure and best estimate versus reasonably conservative source terms. More specifically, for the operational scenario, the median (or 75th percentile for the conservative model) of all available humidity cell leachates for a given species were used as a hypothetical input solution. In contrast, to model longer term (“stable”) geochemical loading rates, the median (or 75th percentile for the conservative model) of the last three humidity cell cycles with metal analysis was utilized to produce a solution input, assuming that geochemical reaction rates reach a steady-state after soluble minerals have been flushed. Note that for the derivation of the input pH, only the respective median value was used for operational and post-closure scenarios.

2.2.2 100-day Stockpile Ore

Stockpile ore drainage chemistry predictions are based on the 75th percentile of all leachates from two ore composite humidity cells (HC 7, 12; Table 2-1) to account for the relatively short duration of storage of material and expected initially high flushing concentrations. Since changes in tonnage and water balance will repeat annually, an average case drainage quality prediction model was found to be appropriate for this facility.

2.2.3 Heap Leach Facility (HLF)

For the HLF drainage chemistry predictions, three different phases were modelled using the median (best estimate) and 75th percentile (reasonably conservative) of geochemical loads calculated from metallurgical column (col. 63301; mass = 80 kg) leachates. The three phases include: 1) an early draindown, 2) an intermediate draindown, and 3) an end-of-draindown (long-term) case. Leachate sampling cycles used for early, intermediate and end of draindown are respectively, 4-6, 7-17, and 25-27. The rationale for starting the early draindown model at cycle 4 is that the WAD cyanide concentration in this cycle dropped below 0.2 mg/L for the first time which, according to the project description, marks the beginning of the draindown period after cyanide destruction is completed. Note that for the best estimate scenario, certain parameters of concern (total CN, sulphate, As, Cu Fe, Hg, Sb, Se and Zn), values were calibrated directly using a ratio derived from column and heap seepage data from the Brewery Creek mine. Where maximum seepage values observed at Brewery Creek were exceeded using this approach, the maximum value was used instead. For certain parameters (Fe, Sb, and Se) it was noted that concentrations derived using this approach even exceeded values from the conservative scenario, in which case the latter values were adjusted to the best estimate concentrations.

Table 2-2 and Table 2-3 provide an overview of the input solution chemistries used for waste rock and ore-containing facilities, respectively. Relevant leachate raw data is given

in Appendix A. Refer to SRK (2014) for a detailed description of humidity cell sample selection rationale and solid phase characteristics.

Table 2-2:
Composite input loads used for the different model scenarios in Eagle Gold waste rock facilities

Scenario	Operational (median)						Post-Closure (median)					
Lithology	OGD	FGD	AGD	OMS	FMS	OB	OGD	FGD	AGD	OMS	FMS	OB
pH	7.6	7.6	7.7	7.3	7.4	7.7	7.5	7.5	7.5	7.1	7.2	7.7
Alkalinity	12	13	14	4.6	10	17	11	10	13	4.3	7.7	17
Sulfate	7.3	6.9	6.8	0.95	15	0.93	6.0	5.5	5.9	0.95	11	1.4
Chloride	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.23	0.24	0.23	0.24	0.24
Fluoride	0.053	0.12	0.055	0.019	0.050	0.084	0.026	0.088	0.025	0.023	0.048	0.042
Al	0.021	0.042	0.027	0.016	0.026	0.015	0.018	0.038	0.025	0.012	0.023	0.013
As	0.0080	0.0031	0.021	0.014	0.0083	0.0027	0.0059	0.0019	0.015	0.011	0.0070	0.0021
Ba	0.0043	0.0026	0.0023	0.00019	0.0019	0.0054	0.0040	0.0020	0.0018	0.00023	0.0014	0.0055
Ca	5.3	6.1	6.0	1.4	8.3	3.2	4.0	4.6	5.3	1.1	5.8	2.9
Cd	0.0000032	0.0000032	0.0000066	0.0000024	0.0000028	0.0000040	0.0000024	0.0000024	0.0000039	0.0000023	0.0000024	0.0000024
Co	0.000017	0.000017	0.000031	0.000016	0.000046	0.0000058	0.000013	0.000014	0.000022	0.000013	0.000031	0.0000038
Cr	0.000047	0.000048	0.000047	0.000048	0.000048	0.000048	0.000070	0.000069	0.000048	0.000046	0.000047	0.000093
Cu	0.00023	0.00030	0.00032	0.00019	0.00023	0.00013	0.00019	0.00026	0.00026	0.00020	0.00024	0.00013
Fe	0.0029	0.0014	0.0026	0.0032	0.0025	0.0028	0.0023	0.0017	0.0025	0.0032	0.0029	0.0019
Hg	0.0000047	0.0000047	0.0000047	0.0000047	0.0000048	0.0000048	0.0000047	0.0000047	0.0000047	0.0000046	0.0000047	0.0000047
K	1.8	0.79	0.77	0.34	1.3	0.76	1.4	0.46	0.47	0.29	0.86	0.50
Mg	0.63	0.76	0.99	0.084	0.76	1.2	0.53	0.52	1.0	0.064	0.57	1.2
Mn	0.0032	0.0051	0.0029	0.00066	0.0079	0.00068	0.0025	0.0034	0.0024	0.00051	0.0056	0.00047
Mo	0.0041	0.00067	0.0024	0.00032	0.00018	0.0078	0.0023	0.00030	0.0014	0.00020	0.00010	0.0045
Na	0.26	0.29	0.19	0.091	0.16	0.28	0.12	0.13	0.093	0.074	0.095	0.12
Ni	0.000091	0.00011	0.000099	0.00011	0.00018	0.000093	0.000075	0.000095	0.000072	0.00013	0.00012	0.000072
Pb	0.000010	0.000017	0.000048	0.0000068	0.0000096	0.000011	0.0000065	0.000017	0.000029	0.0000032	0.0000076	0.0000043
Sb	0.00087	0.025	0.024	0.00031	0.0018	0.000093	0.00072	0.013	0.018	0.00017	0.0012	0.000077
Se	0.00020	0.00039	0.0014	0.000091	0.00039	0.00011	0.00015	0.00032	0.0010	0.000077	0.00025	0.000093
Si	0.59	0.60	0.48	0.40	0.62	0.66	0.47	0.46	0.32	0.32	0.51	0.54
Sn	0.0000048	0.0000088	0.0000077	0.0000048	0.000052	0.0000048	0.0000047	0.0000059	0.000033	0.0000047	0.000034	0.0000048
U	0.0013	0.015	0.0084	0.00069	0.00040	0.0011	0.0011	0.0065	0.0049	0.00044	0.00025	0.0011
Zn	0.00019	0.00027	0.00033	0.00014	0.00025	0.00014	0.00014	0.00027	0.00031	0.000091	0.00013	0.000093

Scenario	Operational (75 th percentile)						Post-Closure (75 th percentile)					
Lithology	OGD	FGD	AGD	OMS	FMS	OB	OGD	FGD	AGD	OMS	FMS	OB
pH	7.6	7.6	7.7	7.3	7.4	7.7	7.5	7.5	7.5	7.1	7.2	7.7
Alkalinity	14	15	17	5.1	15	18	11	12	14	4.7	8.7	17
Sulfate	10	14	9.6	1.7	21	1.4	6.5	5.7	6.5	1.5	13	1.8
Chloride	0.27	0.26	0.32	0.24	0.29	0.24	0.27	0.24	0.26	0.24	0.25	0.31
Fluoride	0.081	0.15	0.10	0.030	0.088	0.14	0.028	0.11	0.027	0.019	0.052	0.043
Al	0.025	0.049	0.032	0.021	0.033	0.019	0.019	0.038	0.026	0.016	0.025	0.014
As	0.010	0.0046	0.029	0.016	0.011	0.0029	0.0068	0.0024	0.016	0.014	0.0089	0.0022
Ba	0.0049	0.0036	0.0028	0.00022	0.0028	0.0057	0.0044	0.0022	0.0019	0.00029	0.0015	0.0056
Ca	6.7	8.3	7.1	1.6	11	3.4	4.8	5.4	5.4	1.4	6.2	3.0
Cd	0.0000041	0.0000049	0.0000088	0.0000024	0.0000049	0.0000054	0.0000034	0.0000031	0.0000047	0.0000024	0.0000038	0.0000045
Co	0.000026	0.000025	0.000040	0.000018	0.000065	0.0000071	0.000014	0.000014	0.000024	0.000014	0.000039	0.0000040
Cr	0.000049	0.000071	0.000049	0.000061	0.000052	0.000049	0.000072	0.000069	0.000055	0.000082	0.000057	0.000095
Cu	0.00036	0.00040	0.00051	0.00023	0.00042	0.00018	0.00032	0.00032	0.00023	0.00021	0.00023	0.00013
Fe	0.0045	0.0022	0.0033	0.0038	0.0035	0.0033	0.0026	0.0017	0.0036	0.0031	0.0029	0.0024
Hg	0.0000048	0.0000049	0.0000048	0.0000048	0.0000049	0.0000048	0.0000048	0.0000048	0.0000048	0.0000048	0.0000048	0.0000048
K	2.2	1.2	1.2	0.41	2.1	1.1	1.6	0.54	0.48	0.35	0.96	0.52
Mg	0.75	1.1	1.2	0.099	1.1	1.3	0.58	0.63	1.0	0.082	0.60	1.2
Mn	0.0047	0.0080	0.0044	0.00097	0.010	0.00073	0.0028	0.0039	0.0025	0.00053	0.0059	0.00048
Mo	0.0060	0.0013	0.0037	0.00048	0.00034	0.012	0.0024	0.00043	0.0014	0.00029	0.00013	0.0046
Na	0.71	1.6	0.53	0.18	0.34	0.88	0.14	0.16	0.10	0.081	0.10	0.13
Ni	0.00013	0.00014	0.00015	0.00013	0.00030	0.00013	0.000088	0.00010	0.000074	0.00018	0.00016	0.000078
Pb	0.000028	0.000027	0.000068	0.000019	0.000036	0.000032	0.000015	0.000022	0.000042	0.0000047	0.00015	0.000017
Sb	0.0011	0.032	0.032	0.00037	0.0031	0.00010	0.00087	0.021	0.019	0.00023	0.0015	0.000078
Se	0.00028	0.00056	0.0020	0.00012	0.00077	0.00013	0.00018	0.00035	0.0011	0.000093	0.00028	0.000094
Si	0.68	0.74	0.64	0.45	0.92	0.71	0.53	0.54	0.33	0.40	0.57	0.57
Sn	0.000012	0.000019	0.000015	0.000015	0.00010	0.000015	0.0000095	0.0000097	0.000071	0.0000048	0.000098	0.0000095
U	0.0017	0.023	0.012	0.00091	0.00053	0.0011	0.0013	0.0096	0.0051	0.00067	0.00034	0.0011
Zn	0.00027	0.00036	0.00044	0.00019	0.00044	0.00022	0.00016	0.00030	0.00032	0.00013	0.00035	0.000094

Notes: All chemical species given in mg/kg/wk;

OGD = Oxidized granodiorite; FGD = fresh granodiorite; AGD = altered granodiorite; OMS = oxidized metasediment; FMS = fresh metasediment; OB = overburden

Table 2-3:
Composite input loads used for the Eagle Gold ore facilities

Lithology	Ore (100-day SP)	Ore (HFL) median			Ore (HFL) 75 th percentile		
Scenario	Operational	Early Draindown	Intermediate Draindown	End Draindown/ Long-term	Early Draindown	Intermediate Draindown	End Draindown/ Long-term
pH	7.6	8.7	8.7	8.6	8.7	8.7	8.6
Alkalinity	15	17	15	11	18	17	11
Sulfate	7.7	3.6	2.9	2.6	3.9	3.4	2.8
Chloride	0.14	0.0038	0.0038	0.0041	0.021	0.0038	0.0081
Fluoride	0.080	0.060	0.045	0.028	0.069	0.049	0.033
Total CN	N/A	0.021	0.012	0.0064	0.023	0.015	0.0066
Al	0.029	0.13	0.12	0.11	0.14	0.13	0.13
As	0.026	0.18	0.16	0.083	0.20	0.17	0.090
Ba	0.0029	0.0014	0.0014	0.0015	0.0016	0.0015	0.0017
Ca	7.1	0.26	0.27	0.33	0.28	0.29	0.37
Cd	0.0000044	0.000015	0.000034	0.000034	0.000017	0.000034	0.000034
Co	0.000020	0.00015	0.00011	0.000086	0.00017	0.00011	0.000088
Cr	0.000024	0.000098	0.000094	0.000075	0.00011	0.00010	0.000081
Cu	0.00047	0.00086	0.00060	0.00035	0.00090	0.00079	0.00036
Fe	0.0019	0.083	0.068	0.053	0.088	0.075	0.060
Hg	0.0000023	0.000015	0.000026	0.0000038	0.000021	0.000038	0.0000038
K	1.0	0.15	0.14	0.15	0.16	0.15	0.18
Mg	0.52	0.026	0.023	0.019	0.030	0.026	0.022
Mn	0.0021	0.0023	0.0021	0.0018	0.0026	0.0022	0.0020
Mo	0.0024	0.00064	0.00041	0.00019	0.00071	0.00053	0.00025
Na	0.67	9.0	7.1	5.6	9.2	8.3	6.6
Ni	0.00013	0.00021	0.00016	0.00011	0.00024	0.00018	0.00011
P	0.00078	0.038	0.035	0.029	0.039	0.038	0.032
Pb	0.000035	0.0090	0.010	0.011	0.011	0.011	0.012
Sb	0.019	0.028	0.021	0.016	0.032	0.024	0.019
Se	0.00070	0.00060	0.00053	0.00031	0.00064	0.00060	0.00034
Si	0.66	0.86	0.90	1.1	0.88	0.90	1.1
Sn	0.000063	0.00038	0.00038	0.00038	0.00038	0.00038	0.00038
U	0.0041	0.0045	0.0032	0.0010	0.0053	0.0045	0.0010
Zn	0.00054	0.0014	0.0014	0.0012	0.0023	0.0014	0.0014
Notes:	All chemical species given in mg/kg/wk; SP = stockpile; HLF = heap leach facility						

2.3 Up-scaling of Kinetic Test Loads

Once the input solution chemistry was defined, the geochemical loads were up-scaled to match the tonnage of the mine component in question. Estimates of mine tonnage stored in WRSA, stockpile and HLF were provided by Victoria Gold and based on the Feasibility Study mine plan. The waste production schedule used for this assessment is given in Table 2-4

Table 2-4:
Waste rock production schedule and exposure areas by mine-year for various Eagle Gold mine components

Facility	Waste Type	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Total
Eagle Pup (tonnes)	OGD	352,859	954,400	4,062,186	1,642,610	3,905,114	4,053,319	938,430	874,540	4,211,731	328,038	21,323,229
	FGD	5,679	157,507	169,308	1,260,939	2,401,825	2,114,709	5,342,899	4,015,937	5,216,601	2,497,816	23,183,220
	AGD		8,951	30,972	601,560	229,110	354,667	1,214,224	918,068	1,026,342	309,088	4,692,982
	OMS	695,684	3,399,082	4,905,129	2,213,983	4,859,466	2,625,667	3,238,308	3,124,857	3,437,740	739,948	29,239,865
	FMS	37,527	-	3,798,259	1,941,274	5,435,469	9,443,942	1,349,424	1,066,130	602,736	359,082	24,033,841
	OB	2,813,252	3,949,192	1,092,755	3,314,070	598,123	1,304,776	589,410	1,113,538	1,444,433	17,172	16,236,721
Platinum Gulch (tonnes)	OGD	-	-	-	-	-	-	-	-	-	-	-
	FGD	-	-	-	-	-	-	-	-	-	-	-
	AGD	-	-	-	-	-	-	-	-	-	-	-
	OMS	900,000	2,082,364	1,350,435	1,859,102	-	-	-	-	-	-	6,191,901
	FMS	-	1,319,168	949,565	2,372,668	-	-	-	-	-	-	4,641,401
	OB	-	2,498,468	-	368,230	-	-	-	-	-	-	2,866,699
Pit walls (m²)	OGD	-	138,093	170,771	178,999	157,267	131,050	116,834	99,080	134,387	167,571	1,294,051
	FGD	-	23,016	93,148	178,999	216,242	262,099	303,769	346,779	349,406	335,142	2,108,600
	AGD	-	23,016	31,049	35,800	58,975	87,366	93,467	99,080	134,387	167,571	730,711
	OMS	-	138,093	155,246	143,199	117,950	87,366	93,467	99,080	134,387	167,571	1,136,360
	FMS	-	138,093	170,771	178,999	235,900	305,783	327,136	346,779	322,529	279,285	2,305,275
	OB	-	-	-	-	-	-	-	-	-	-	-

Notes: OGD = Oxidized granodiorite; FGD = fresh granodiorite; AGD = altered granodiorite; OMS = oxidized metasediment; FMS= fresh metasediment; OB = overburden.

With regards to ore piles, the HLF will have a final capacity of ~91.6 Mt while the 100 day ore SP will vary in tonnage seasonally between zero to ~3 Mt. More specifically, the latter laydown area will be constructed every year between November and March (maximum tonnage) at which point the ore is removed and transported to the HLF at a rate of 11,800 t/day until all material is consumed by November of the following year.

While the rock mass of the described mine components can be easily translated from the waste and ore production schedule, the derivation of reactive rock mass within the exposed pit walls is less straightforward. The final pit walls are expected to be fractured as a result of blasting operations. Fracturing of the pit walls exposes a greater proportion of the wall rock to weathering and hence wall rock drainage will have the geochemical signature of the respective rock type. In this assessment, it was assumed that controlled blasting would be used at the limits of the proposed open pit mine. However, controlled blasting of rock does not completely eliminate fracture of underlying rock, but results in a blast-damaged transition zone extending into the pit walls. This blast-damaged transition zone comprises a crushed zone, fractured zone and an influenced zone. The crushed zone would be removed as ore for processing or for waste dump disposal, and the fractured and influenced zones would remain in place upon closure of the mine and be subjected to ongoing weathering. The penetration depth of the blast-influenced zone into the wall rock is dependent on a variety of parameters. Hustrulid (1999) estimated ranges of 0.85 to 1.05 m and 2.65 to 3.15 m for the blast-fractured and the blast-influenced zones, respectively. These estimates are based on controlled blasting and an intermediate rock strength. For the Eagle Gold pit walls, penetration depths of 0.9 and 2.9 m were chosen for the blast-fractured and the blast-influenced zones, respectively. Using a bulk density of 2.5 t/m³ along with the annual surface areas broken out into waste rock type, these thicknesses were subsequently used to calculate a rock mass that will come in contact with infiltrating waters and produce a geochemical load.

Alkalinity is generally limited by the solubility of carbonate phases and is closely related to pH. Up-scaling alkalinity in the same manner as dissolved metals would lead to unrealistically high values affecting the PHREEQC input file (discussed in Section 2.4) and leading to extensive carbonate precipitation which would, in turn, alter the output pH inordinately. In that context, field barrels represent a useful analogue (see Section 4) with an acid-base balance and climatic conditions similar to those expected in the Eagle Gold mine components. Therefore, constant typical values seen in field barrel leachates were used for the predictive model (100 mg CaCO₃/L for WRSA, and ore SP; 60 mg CaCO₃/L for pit walls; between 100 and 200 kg CaCO₃/L for different HLF scenarios).

2.4 Adjustment of Up-scaled Loads

Owing to several lab-to-field comparison studies (Sapsford *et al.*, 2009; Plante *et al.*, 2014) it has been recognized that drainage chemistry predictions based on direct mass-up-scaling often strongly overestimate the amount of dissolved solids that are in fact leached from the mine rock (Malmström *et al.*, 2000). This is likely due to a variety of differences between lab and field conditions such as climate, water/rock ratios, hydrogeological pathways, grain size distribution and secondary mineral controls all of which would reduce geochemical loads in the field. As a result, many workers implement scaling factors when up-scaling humidity cell leachate results to account for these discrepancies. The following describes the scaling factors applied in the Eagle Gold source term model along with their rationale as it relates to the difference in field conditions. Refer to Kempton (2012) for a review of the various scaling factors commonly considered for geochemical source term predictions (Appendix B).

2.4.1 Temperature

The Eagle Gold project is located in the Yukon with average monthly temperatures ranging from -19.7 to 11.4°C in December and July, respectively (Knight Piesold, 2013). Kinetic experiments used for the source term model were conducted at SGS laboratories at a temperature of 22°C and it is well known that the rate of many geochemical reactions leading to the release of acidity and dissolved metals is highly temperature-dependent. For Eagle Gold ore and waste rock, the oxidation of pyrite can be considered the driving force in terms of contaminant leaching for most parameters of concern. This reaction has been extensively studied and its rate has been determined over a range of temperatures that can be expressed in terms of an Arrhenius correlation. The Arrhenius relationship describing pyrite oxidation rate as a function of temperature is given by:

$$\text{Temperature adjustment [\%]} = e^{[E_a * (T_x - T_y) / (R * T_x * T_y)]}$$

With E_a = activation energy;

R = universal gas constant;

T_x = temperature of interest; and

T_y = experimental temperature.

As opposed to pit wall runoff, the bulk portion of waste and ore piles will not adopt ambient air temperatures with a much smaller amplitude in temperature variation to be expected throughout the year. To account for this thermal inertia, monthly temperatures were adjusted for these mine components to produce a smoother distribution curve while still maintaining average annual temperatures and an average temperature scaling factor of approximately 20% (range from 16-25% depending upon month) (Table 2-5).

Table 2-5:
Summary of Temperature Correction Factors Applied to Scaling

Month	Mean Monthly Temperature (deg. C)	Up-scale Temp. Correction factor
Jan	-3.7	16%
Feb	-3.45	17%
Mar	-2.81	18%
Apr	-0.52	21%
May	0.66	23%
Jun	1.7	25%
Jul	2.04	26%
Aug	1.35	25%
Sep	0.52	23%
Oct	-1.3	20%
Nov	-2.18	19%
Dec	-3.72	16%
Average		21%

2.4.2 Grain Size Distribution

Before representative material is placed into laboratory kinetic test cells, rock samples are crushed to a nominal grain size of <1/4" to allow for better comparability of reaction rates between different cells containing different geological material. The smaller the grain size, the higher the amount of surface area that is exposed to weathering. Therefore, reaction rates are generally elevated in the fine fraction of a rock sample. Studies investigating the effect of grain size distribution on drainage chemistry in mine environments found that likely >80% of the geochemical loads are leached from the <25 mm fraction (Stockwell *et al.*, 2006). Highly dependent on the rock type and blasting method, it was estimated that this fraction represents between 10 and 40% by mass of a typical waste dump with the majority of studied waste dumps falling into the lower end of this range. For the lack of detailed work regarding the grain size distribution at Eagle Gold WRSA and pit walls, a reasonably conservative scaling factor of 20% was implemented to account for the mass of relatively unreactive rock fractions.

For optimized gold recovery, ore grade material will go through one crushing cycle before being stored in the 100-day SP and additional two crushing cycles before being stacked on the heap leach pads. The final crushed ore product will have a target grain size of 80% <6.4 mm which is roughly equivalent to that used in the kinetic test columns and humidity cells, such that no grain size scaling factor was applied for material in the HLF. The primary crusher setting is designed to produce a particle size of 150 mm or less

in the temporary ore SP, which is between of the expected grain sizes of waste rock and the final ore product, so a grain size correction factor of 50% was implemented.

2.4.3 Contact Water

Humidity cell experiments are conducted using water/rock ratios that allow for the flushing of all rock material placed into the cells. The hydrogeology of unsaturated waste and ore piles is still poorly understood, however various studies suggest that only a portion of the rock mass contained in a waste dump is contacted by infiltrating water. In one study, for example, a small scale waste rock dump was disassembled one year after its construction and the distribution of moisture contents within the dump indicated that the development of preferential flow paths is an important process (Marcoline *et al.*, 2006). Under low-flow conditions, water is retained in and will travel along the fine fractions within the waste dumps, whereas heavy rainfalls may flush relatively higher proportions of the coarser grain sizes. It has also been suggested that, in months of higher rain intensity, a larger overall portion of the dump is contacted as more pathways are being activated. In accordance with this concept, a contact water scaling factor was applied that was dependent on the infiltration volume in each month. Furthermore, as the WRSA becomes larger with time during operations, it was assumed that the percentage of contact water decreases with increasing dump size over time as larger areas become isolated from infiltration as a result of the increasing volume-to-area ratio. An overview of the maximum assumed contact water factor for the two WRSA is provided in Table 2-6.

Table 2-6:
Maximum contact water scaling factors implemented over time for the WRSA prediction model

	Eagle Pup	Platinum Gulch
Year 1*	25%	60%
Year 2*	22.5%	25%
Year 3	20%	22.5%
Year 4	17.5%	20%
Year 5	16%	20%
Year 6	15%	-
Year 7	14%	-
Year 8	13%	-
Year 9	12%	-
Year 10	10%	-
PC	10%	-

*concentrations were set to initial field barrel concentrations
if found to be higher than the modeled concentrations

A similar approach was taken for the 100-day ore SP where seasonal changes in water balance and material tonnage were considered as best as possible leading to a contact water factor of 0.1 to 22% throughout the year. Note that the maximum contact water factor was held constant for pit walls over time with 75% and 50% assumed to come in contact with the blast-fractured and blast-influenced zones in the highest infiltration month, respectively.

Due to the scarcity of available data comparing metallurgical column leachates with site drainage as well as HLF hydrological investigations, estimating the contact water factor for the HLF after operations cease is less straightforward. The application of contact water factors in the range of those implemented for the WRSA led to unrealistically high concentrations which is likely a reflection of the use of column vs. humidity cell loads for the HLF prediction model (see Section 2.2.3). As discussed in Section 3.3 below, a site analogue bulk correction factor could be derived using up-scaled Brewery Creek humidity cell data from representative ore lithologies and comparing those to the HLF seepage chemistry (see Table 3-1). Using ore column 63301 as well as ratios derived from column-vs.-field data from Brewery Creek (Alexco, pers. comm., 2014), it was possible to make drainage quality predictions for several species of concern (As, Sb, Se, Hg and Sulphate). Where no direct comparison to Brewery Creek was possible (due to the lack of column data), up-scaling was based on the approximate bulk correction factor derived in Section 3.3, yielding contact water factors of 2% for early draindown and 1% for intermediate and late draindown). It was found that these resulting predicted concentrations were higher, but within the same order of magnitude of the highest concentrations produced by the metallurgical columns in the post-detoxification phase, consistent with observations reported for the Brewery Creek mine (Alexco, pers. comm., 2014).

Both WRSA and the HLF will be covered with soil to reduce infiltration into these mine facilities. A reduction of infiltration will simultaneously reduce the geochemical loads being released from the waste rock and ore. Cover performance studies relating infiltration to geochemistry have shown however, that the reduction in infiltration is not equivalent to the reduction of geochemical loads with the latter generally being attenuated to a lesser degree (Marcoline, 2008). Consequently, while the water infiltration reduction in response to soil cover placement is typically >50%, a geochemical loading reduction of only 25% (i.e., cover correction factor = 0.75) was conservatively assumed.

2.4.4 Stored Loads

Pyrite oxidation occurs at relatively low moisture contents (down to <1%) and may therefore even proceed in the unfrozen portions of the waste dump and pit walls that are not regularly flushed. Conceptually, in months with relatively low infiltration rates, a portion of hydrogeological pathways are not actively rinsed, however the moisture content in these months is still high enough to promote sulphide weathering. Geochemical loads produced during these months are then temporarily stored and subsequently released when these pathways become activated again (*e.g.*, during heavy rainfall events in May). This mechanism has been observed in various mine settings where increased concentrations correlated with heavy rainfalls, especially after extended dry periods (Kempton and Atkins, 2000). This seasonal variation of the load distribution was accounted for by tracking the amount of loads being produced in lower-infiltration months followed by subsequent release of a portion (10%) of these stored loads in April and May. It was found reasonable to assume that only a portion of the accumulated mass will be released as some of the minerals formed may have become stable and hence remain in the dump as a solid phases.

2.5 Mineral Solubility Control

Water/rock ratios in humidity cell testing are high enough to prevent supersaturation of most species such that secondary mineral precipitation in the test cells is unlikely to occur to a high degree. Up-scaling of geochemical loads as described above is generally carried out with no consideration given to mineral phases that may limit the dissolved concentrations of insoluble elements such as Fe, Al, and Ba (at circum-neutral pH). In order to avoid the calculation of unrealistically high concentrations of species that are known to form secondary phases in mine drainage, PHREEQC - a thermodynamic mineral solubility model (Minteq v.4) - was employed on the up-scaled concentrations to account for mineral solubility controls (Parkhurst and Appelo, 1999). Minerals commonly seen in mine drainage and allowed to precipitate from the predicted drainage solutions are listed in Table 2-7. Phases that were in fact identified to be supersaturated in at least one output solution draining from the individual mine components are indicated by a check mark. Unmarked phases merely served as a theoretical concentration cap. Note that for heap leach seepage predictions, the PHREEQC model concentrations may have been overruled by the concentrations derived from calibration to Brewery Creek data. This is justified, as residual CN^- in heap pore water may act as a ligand, altering the solubility behaviour for certain species, which is not captured by the speciation model.

Adsorption is known to be an important (and for some species dominant) mechanism in reducing dissolved concentrations in mine drainage (Cheng et al., 2009). PHREEQC has the capability of modelling adsorption attenuation onto surfaces of hydrous ferric oxides (HFO) such as ferrihydrite. Commonly, the effect of adsorption is most prominent in acidic Fe-rich seepage that becomes neutralized downstream and precipitates significant amounts of these HFO. For Eagle Gold drainage, high Fe-concentrations are not expected, and while ferrihydrite was found to be supersaturated in most of the modelled solutions, it should be noted that a thermodynamic database may overestimate the amount of HFO precipitating in the field, therefore overestimating potential adsorption impacts. To maintain conservatism with respect to the dissolved parameters of concern, and to not overcomplicate the prediction mode, adsorption modelling was omitted in this approach. This is further justified by the fact that the drainage prediction model was calibrated using site analogue data and bulk scaling factors that already account for adsorption, as “real” drainage data is used as a reference point.

Table 2-7:
Mineral phase allowed to precipitate in the Eagle Gold speciation model

Mineral	Ideal Formula	Eagle Pup	Platinum Gulch	Pit walls	100-day SP	Heap Leach
Barite	BaSO ₄	✓	✓	✓	✓	✓
Calcite	CaCO ₃	✓	✓	✓	✓	✓
Dolomite	(Ca, Mg)(CO ₃) ₂					
Ferrihydrite	Fe(OH) ₃ (a)	✓	✓	✓	✓	✓
Gibbsite	Al(OH) ₃	✓	✓	✓	✓	✓
Gypsum	CaSO ₄ *2H ₂ O					
Malachite	CuCO ₃	✓				
Quartz	SiO ₂	✓	✓	✓	✓	✓
Rhodochrosite	MnCO ₃					
Smithsonite	ZnCO ₃					

2.6 Example Calculation

To allow the reader a better understanding of the various steps taken to derive geochemical source term predictions presented in the next section, a step-by-step sample calculation is provided below:

Derivation of July SO₄-source term concentration for Eagle Pup (post-closure;75th percentile scenario)

1) Scale average weekly load (Table 2-2) to monthly load and waste dump tonnage (by waste type proportion; Table 2-4):

$$\sum(\text{weekly load} * \text{waste tonnage})_{\text{waste type}} * (\text{weeks/month in July}) = \text{Up-scaled SO}_4\text{-load}$$

$$(6.5 \text{ mg/kg/wk} * 21.323*10^9 \text{ kg} + 5.7 \text{ mg/kg/wk} * 23.183*10^9 \text{ kg} + 6.5 \text{ mg/kg/wk} * 4.693*10^9 \text{ kg} + 1.5 \text{ mg/kg/wk} * 29.240*10^9 \text{ kg} + 13 \text{ mg/kg/wk} * 24.034*10^9 \text{ kg} + 1.8 \text{ mg/kg/wk} * 16.237*10^9 \text{ kg}) * 4.43 \text{ wk} = 3.026*10^{12} \text{ mg}$$

3) Apply scaling factors to account for hydrogeological pathways, grain size, and temperature:

$$(\text{Up-scaled SO}_4\text{-load}) * (\text{grain size factor}) * (\text{contact water factor}) * (\text{temperature factor}) * (\text{cover correction factor}) = \text{Adjusted SO}_4\text{- load}$$

$$3.026*10^{12} \text{ mg} * 0.20 * 0.047 * 0.26 * 0.75 = 5.604*10^9 \text{ mg}$$

4) Convert mass into a concentration

$$\text{Adjusted SO}_4\text{- load} / \text{seepage volume} = \text{Predicted SO}_4\text{-concentration}$$

$$5.604*10^9 \text{ mg} / 19,354,119 \text{ L} = 290 \text{ mg/L}$$

5) Apply secondary mineral controls

Geochemical speciation modelling using the PHREEQC Minetq v.4 database yields that no sulphate bearing solid phase is expected to precipitate leaving the final output concentration at around **290 mg/L**.

2.7 N Source Term Derivation

Nitrogen based blasting reagents have been identified by Pommen (1983) as a source of nitrogen compounds from surface mining operations. The nitrogen compounds ammonia (NH_3) and nitrate (NO_3) are constituents of the explosives, while nitrite (NO_2) is typically an intermediate oxidation product of ammonia. The release of nitrogen compounds from blasting reagents can occur within the pit during mining operations and from residual reagents stored within blasted rock. The release of nitrogen from explosives loaded in boreholes and from explosive residue on blasted rock surfaces occurs by dissolution of nitrogen compounds into water and subsequent aqueous transport to the downstream receiving environment. Nitrogen compounds in explosive mixtures are readily water soluble, with solubility rates varying from minutes for ANFO to weeks for water resistant emulsion mixtures as described by Revy (1996). For open pit mining operations the export of nitrogen to the receiving environment has been observed to be predominantly in the form of nitrate, and to a lesser extent, nitrite and ammonia (Ferguson and Leask, 1988). Concentrations of nitrogen species in mine-site effluents depend on the type and quantity of explosives used for blasting and the blasting efficiency. The export of nitrogen is controlled by implementing best blasting practices to maximize explosive consumption during blasting by avoiding explosive losses within the pit prior to detonation and minimizing non-detonated explosive residue stored on waste rock.

The export of aqueous nitrogen species from the mine pit water by surface water or ground water can occur during active mining (Cameron, 2007). Infiltration of water into loaded blast patterns can lead to nitrogen release prior to blasting from explosives loaded into boreholes or from explosives spilled on the pit floor. Subsequent to blasting, infiltration water in contact with blasted rock on the pit floor can mobilize residual nitrogen species. There is limited storage of nitrogen within the pit as blasted rock is removed for processing or storage after blasting. Significant export of nitrogen from mine pit contact water is generally expected during active mining only.

Explosive residue on blasted rock is stored in rock piles, usually waste rock, and the release of nitrogen compounds is directly related to the volume of blasted rock, porosity and surface water infiltration volumes of the rock pile. Water is stored and moves slowly in rock piles leading to a time lag between rock deposition and observed release of nitrogen at significant concentrations (Baily, 2013). Preferential flow paths develop within a rock pile leading to partial and gradual wetting from the outer to the inner portions of the pile. The nitrogen available for leaching is limited to the wetted areas of the pile and over time newly wetted areas will release stored nitrogen, therefore nitrogen release from a large rock pile can persist for years or decades after rock placement.

The following sections describe the model assumptions, methodologies and results for the nitrogen source term modelling in Eagle Gold mine pit and waste rock pile drainage water.

2.7.1 Assumptions

The nitrogen source terms are derived from the explosive use and waste rock placement described in the mine plan. As indicated previously, nitrogen export from the project area will be influenced by explosive handling and blasting practices as well site specific conditions. Key model assumptions are summarized below:

- Mining, explosive use, waste rock production and placement will proceed as per the mine plan;
- Explosive types to be used are ANFO (34% N) and Emulsion (27.5% N; Orica Fortis® or Fortan® products);
- Best explosive use and blasting practices will be implemented to maximize explosive consumption during blasting (*i.e.*, to minimize explosive residue on waste rock surfaces);
- Over the life of the mine wet blast holes (*i.e.*, challenging blasting conditions) will be encountered for approximately 30% of the total explosives used;
- Nitrogen is exported to the aqueous downstream receiving environment in species proportions that are similar to average distributions observed by Ferguson and Leask (1988), with nitrate, ammonia and nitrite respectively representing 87%, 11% and 2% of the total nitrogen release;
- The nitrogen compound release characteristics from blasted rock surfaces at Eagle Gold are similar to those observed at other cold climate mines in the Northwest Territories and Northeastern British Columbia (Baily, 2013; Lorax, 2014 confidential client);
- All nitrogen compounds in pit water and waste rock seepage originate entirely from explosive residue on blasted surfaces.

2.7.2 Pit Water Nitrogen Source Terms

Nitrogen species source terms for mine pit discharge water were estimated based on observations of pit water at Diavik Diamond Mine surface mining operations and from data collected at surface coal mines in British Columbia. Concentrations of nitrogen species in Diavik pit water have been observed to vary significantly on a daily basis depending on pit water inflows, types of explosives used, specific blasting conditions for

each blast pattern and the timing of blasting. From 2003 to 2005 daily ammonia concentrations in Diavik pit A154 water varied from approximately 1 mg/L to 37 mg/L, with monthly average ammonia concentrations ranging from approximately 3 mg/L to 14 mg/L (SNC, 2006). During this time period ammonia ranged from 3% to 61% of the total nitrogen in the pit water and averaged 35% (SNC, 2006); from this it was inferred that the average monthly concentrations of total nitrogen in the Diavik pit water ranged from approximately 3 mg/L to 40 mg/L. The primary nitrogen species in Diavik pit water are considered to be ammonia and nitrate (Cameron, 2007); this is consistent with observations by Pommen (1983) and Ferguson and Leask (1988) at surface coal mines. Observations at a high elevation surface coal mine in northeastern British Columbia (Lorax, 2014 confidential client) indicate pit water monthly total nitrogen concentrations typically range from approximately 12 mg/L to 36 mg/L (10th and 90th percentile respectively) with a median concentration of 22 mg/L and nitrate as the dominant nitrogen species (~ 95% of the total nitrogen) in the pit sump discharge.

The best judgement average monthly nitrogen source term concentration in Eagle Gold pit water was modeled to be 25 mg/L total nitrogen based on the operational observations at Diavik mine and at British Columbia surface coal mines. Daily levels are expected to fluctuate based on factors such as pattern sleep time, explosive type used, precipitation, surface water and groundwater flows. Discharge from the Eagle Gold pit will drain to sedimentation ponds prior to discharge to the receiving environment. Considering the Eagle Gold mining conditions and anticipated surface transport of pit water to sedimentation ponds that will allow time for oxidation of ammonia to nitrate, the nitrogen species distribution reporting to the receiving environment is expected to be similar to that observed at surface coal mines in British Columbia, and is modeled based on the average distributions reported by Ferguson and Leask (1988) with nitrate, ammonia and nitrite respectively comprising 87%, 11% and 2% of the total nitrogen concentration as shown in Table 2-8 below.

Table 2-8:
Eagle Gold pit water best judgement nitrogen species source terms

	Total Nitrogen	Nitrate	Ammonia	Nitrite
	(mg/L as N)	(mg/L as N)	(mg/L as N)	(mg/L as N)
Pit water source term	25	22	2.8	0.50

2.7.3 Waste Rock Drainage Nitrogen Source Terms

For Eagle Gold waste rock nitrogen modelling the Ferguson and Leask (1988) method was used to estimate annual nitrogen loads to waste rock piles. Ferguson and Leask

(1988) studied coal mines discharges in southeastern British Columbia and described an empirical method for estimating annual nitrogen loads to waste rock dumps based on the amount and type of explosive used annually. The planned explosive use and waste rock production volumes were used to estimate annual nitrogen loads to each waste rock pile (refer to Table 2-9) based the Ferguson and Leask (1988) equation for mines that use more than 20% emulsion:

$$N_{Load(k)} = 0.94\% \times E_{An(k)} + 5.1\% \times E_{Em(k)}$$

Where,

$N_{Load(k)}$ = annual nitrogen load (kg N) in year k of mine operation;

$E_{An(k)}$ = annual ANFO explosive use (kg N) in year k of mine operation;

$E_{Em(k)}$ = annual Emulsion explosive use (kg N) in year k mine operation;

Note: ANFO = 34% nitrogen by weight, and Emulsion = 27.5% nitrogen by weight.

Table 2-9:
Planned explosive use, waste rock placement and estimated annual nitrogen loading to waste rock at Eagle Gold mine

Mine Year	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
Planned Blasting Metrics										
pF (kg/bcm)	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
% Emulsion	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Eagle Pup Rock Pile										
Volume of Blasted Rock (Kbcm)	1,502	3,257	5,407	4,221	6,704	7,653	4,874	4,274	6,131	1,635
ANFO used (t)	599	1,300	2,157	1,684	2,675	3,053	1,945	1,705	2,446	652
Emulsion used (t)	257	557	925	722	1,146	1,309	833	731	1,048	280
Estimated N Load (kg as N)	5,517	11,966	19,863	15,506	24,625	28,112	17,905	15,701	22,521	6,006
Platinum Gulch Rock Pile										
Volume of Blasted Rock (Kbcm)	346	2,269	885	1,769	0	0	0	0	0	0
ANFO used (t)	138	905	353	706	0	0	0	0	0	0
Emulsion used (t)	59	388	151	303	0	0	0	0	0	0
Estimated N Load (kg as N)	1,272	8,336	3,250	6,499	0	0	0	0	0	0

A nitrogen release rate for Eagle Gold waste rock pile was derived and used to estimate annual releases of nitrogen from waste rock during open inflow conditions (*i.e.*, prior to the installation of the cover). Observations at Diavik mine reported by Baily (2013) indicate the release of significant levels nitrogen in waste rock test piles commenced with the third freshet (*i.e.*, the third year) after rock deposition. As noted in Table 2-10, approximately 8.2% of the total nitrogen load was released in the first three years after waste rock placement.

Table 2-10:
Diavik Mine nitrogen release rate from basal drain test piles (from Baily, 2013)

	N stored expressed as % N used for blasting	N released from 2007-2010 expressed as % N used for blasting	N release rate from 2007 to 2010 expressed as % of N stored ¹
Blasted Rock Leach Test	5.4	5.4	100%
Type III test pile	5.4	0.45	8.3%
Type I test pile	5.4	0.43	8.0%
Test pile average	-	-	8.2%

¹Derived using data presented in Section 3.1 and Table 5 of Baily (2013).

Increases in precipitation are expected to lead to increased infiltration and increased nitrogen release to waste rock pile infiltration water. The mean annual precipitation (MAP) observed at Diavik is 280 mm (Fretz, 2011). The Eagle Gold project area elevation ranges from 750 masl to 1500 masl (BGC, 2012) and the MAP ranges from 375mm to 600mm, significantly higher than precipitation levels observed at Diavik mine. The nitrogen release rate of the Eagle Gold waste rock piles was scaled up from the rate observed at Diavik mine based on the proportional differences in rainfall at the two locations using the equation below with the results shown in Table 2-11. The Eagle Gold mine is in mountainous terrain at elevations similar to surface coal mines in British Columbia. During open infiltration conditions 20% of the estimated residue in the Eagle Gold waste rock piles were assumed to be released each year commencing the second freshet (year 2) after waste rock deposition, one year sooner than observed at Diavik test pile (Baily, 2013), and similar to what has been observed at surface coal mines in northeastern British Columbia.

$$r_{EG} = \frac{P_{EG}}{P_D} \times r_D$$

Where,

r_{EG} = nitrogen release rate estimated for the Eagle Gold project location;

r_D = nitrogen release rate observed at Diavik (Baily, 2013);

P_{EG} = precipitation (mm) at the Eagle Gold project location;

P_D = precipitation (mm) at the Diavik project location;

Table 2-11:
Derivation of Eagle Gold nitrogen release rate

Term	Value
Diavik N release rate (2007-2010) (r_D)	8.2%
Diavik MAP (mm) (P_D)	280
Eagle Gold MAP (mm) (P_{EG})	600
Calculated Eagle Gold N release rate (r_{EG})	17.5%
Eagle Gold N release rate used for modelling (r_{EG})	20%

The waste rock piles will be decommissioned by resloping and covering to reduce water infiltration. Under restricted infiltration conditions (*i.e.*, after the installation of a cover to divert infiltration water) infiltration and flushing rates of the pile will be reduced. The reduction of waste rock infiltration flows is expected to reduce the nitrogen release from the waste rock pile, therefore a cover attenuation factor was derived proportional to the change in flow between open condition and the covered condition. The cover attenuation factor was used to model reduction in nitrogen release due to cover installation. The Eagle Gold nitrogen cover attenuation factor was calculated as follows:

$$a_{(k)} = \frac{F_{Closed(k)}}{F_{Open(max)}}$$

Where,

$a_{(k)}$ = nitrogen release cover attenuation factor for the covered condition in year k ;

$F_{Closed(k)}$ = waste rock pile inflow for the covered condition in year k ;

$F_{Open(max)}$ = waste rock pile inflow for the open condition at maximum pile build out;

Nitrogen release from each annual waste rock layer is expected to commence two years after waste rock placement due to the time lag between water infiltration and the appearance of significant nitrogen species concentrations in drainage water as described above. For each layer the nitrogen release was calculated using the release rate, the cover attenuation factor and the estimated amount stored nitrogen within the layer as shown

below. Significant nitrogen release in year zero (the year of rock layer placement) and year one (the year after rock layer placement) was not expected and was therefore assumed to be zero (0) in both years.

$$N_{Layer\ Release\ (a)} = r_{EG} \times a_{(k)} \times N_{Layer\ Store\ (a-1)}$$

Where,

$N_{Layer\ Release\ (a)}$ = nitrogen released (kg N) from waste rock layer in year a after layer placement;

r_{EG} = nitrogen release rate estimated for the Eagle Gold project location;

$a_{(k)}$ = nitrogen release rate attenuation factor in year k of mine operation; and,

$N_{Layer\ Store\ (i-1)}$ = nitrogen stored (kg N) in waste rock in year $a-1$ after layer placement.

Nitrogen storage in each annual waste rock layer is the difference between the amount of nitrogen loaded to the layer in year zero of layer placement, and the cumulative amount of nitrogen released from the layer since the load was placed. The entire nitrogen load was assumed to be stored in each annual layer for year zero and year one after placement; from year two onwards the stored nitrogen was reduced by the nitrogen released each year as represented by the following equation:

$$N_{Layer\ Store\ (i)} = N_{Layer\ Load\ (i=0)} - \sum_{a=2}^{i, i \geq 2} N_{Layer\ Release\ (a)}$$

Where,

$N_{Layer\ Store\ (i)}$ = nitrogen stored (kg N) in waste rock layer in year i after placement;

$N_{Layer\ Load\ (i=0)}$ = initial nitrogen load (kg N) to the rock layer year zero of placement; and,

$N_{Layer\ Release\ (a)}$ = nitrogen released (kg N) from annual waste rock layer year a after placement.

The total annual nitrogen store in the waste rock pile was calculated by summing the nitrogen stored in each annual waste rock layer:

$$N_{Total\ Store\ (k)} = \sum_{i=0}^n N_{Layer\ Store\ (i,k)}$$

Where,

$N_{Total\ Store\ (k)}$ = total nitrogen stored (kg N) in the waste rock pile at the end of year k ; and,

$N_{Layer\ Store\ (i,k)}$ = nitrogen stored (kg N) in rock layer i in at the end of year k , where n equals the number of annual waste rock layers placed to the end of year k .

The total annual nitrogen release from the waste rock pile was calculated by summing the nitrogen release from each annual waste rock layer:

$$N_{Total\ Release\ (k)} = \sum_{i=0}^n N_{Layer\ Release\ (i,k)}$$

Where,

$N_{Total\ Release\ (k)}$ = total nitrogen released (kg N) from the waste rock pile in year k ; and,

$N_{Layer\ Release\ (i,k)}$ = nitrogen released (kg N) from annual waste rock layer i in year k , where n equals the number of annual waste rock layers placed to the end of year k .

The results of nitrogen storage and release calculations are presented in Figure 2-1, Table 2-12 and Table 2-13 below. Nitrogen storage in waste rock piles is increased annually by the the volume of waste rock added to the pile and the powder factor used for blasting. Storage is reduced each year by the release of stored nitrogen compounds to infiltration water seeping through the pile. The differences in the storage and release curves (Figure 2-1) for the Platinum Gulch and Eagle Pup waste rock piles are due to the distinct waste rock loading rates for each pile (Table 2-9, above). The Platinum Gulch peak nitrogen storage (approximately 17,000 kg-N) occurs at the end of mine year 3, the last year of waste rock deposition to the pile, beginning year 4 both the stored and released nitrogen begin to decline due to the absence of new inputs to the pile. In contrast, as shown in Figure 2-1, the peak nitrogen storage in Eagle Pup occurs in mine year 9 (approximately 91,000 kg-N), the last year of waste rock addition to this pile (Table 2.9, above).

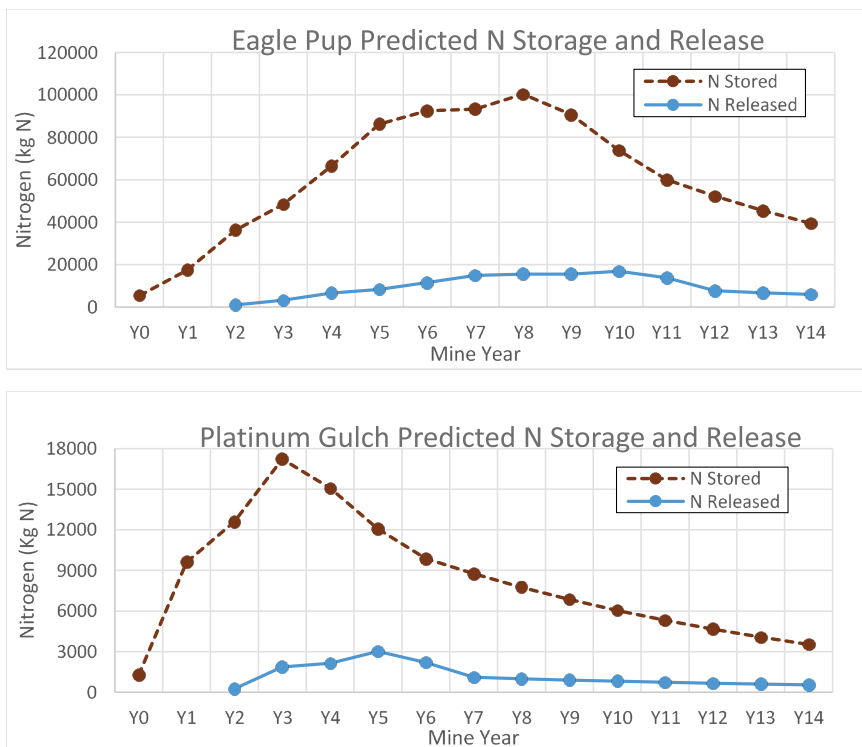


Figure 2-1: Predicted nitrogen storage and release in Eagle Pup and Platinum Gulch waste rock piles

Table 2-12:
Eagle Pup waste rock nitrogen loading, storage and release

	Nitrogen (kg N)														
Year After Start of Mining	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
Annual N Load	5517	11966	19863	15506	24625	28112	17905	15701	22521	6006	0	0	0	0	0
Total N Stored	5517	17483	36243	48472	66504	86240	92520	93298	100299	90750	73801	60031	52320	45506	39482
Total Annual N Release			1103	3276	6593	8376	11626	14923	15519	15556	16949	13770	7711	6813	6024
Y0 Layer Annual N Release			1103	883	706	565	452	362	289	231	185	138	78	68	61
Y1 Layer Annual N Release				2393	1915	1532	1225	980	784	627	502	375	210	186	164
Y2 Layer Annual N Release					3973	3178	2542	2034	1627	1302	1041	779	436	385	341
Y3 Layer Annual N Release						3101	2481	1985	1588	1270	1016	760	425	376	332
Y4 Layer Annual N Release							4925	3940	3152	2522	2017	1508	845	746	660
Y5 Layer Annual N Release								5622	4498	3598	2879	2152	1205	1065	941
Y6 Layer Annual N Release									3581	2865	2292	1713	959	848	750
Y7 Layer Annual N Release										3140	2512	1878	1052	929	822
Y8 Layer Annual N Release											4504	3367	1886	1666	1473
Y9 Layer Annual N Release												1099	616	544	481

Table 2-13:
Platinum Gulch waste rock nitrogen loading, storage and release

	Nitrogen (kg N)														
Year After Start of Mining	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14
Annual N Load	1272	8336	3250	6499	0	0	0	0	0	0	0	0	0	0	0
Total N Stored	1272	9608	12603	17231	15085	12068	9874	8762	7761	6860	6049	5318	4659	4066	3532
Total Annual N Release			254	1871	2146	3017	2194	1112	1000	901	812	731	658	593	534
Y0 Layer Annual N Release			254	203	163	130	95	48	43	39	35	32	28	26	23
Y1 Layer Annual N Release				1667	1334	1067	776	393	354	319	287	259	233	210	189
Y2 Layer Annual N Release					650	520	378	192	172	155	140	126	113	102	92
Y3 Layer Annual N Release						1300	945	479	431	388	350	315	284	256	230

The annual nitrogen species source terms for waste rock seepage were estimated using the total annual nitrogen release and annual waste rock pile water infiltration volume for a given year. Nitrogen species were distributed according to observations by Ferguson and Leask (1988) with most of the load exported as nitrate (87%) and the balance as ammonia (11%) and nitrite (2%). The concentration of each species was estimated using the following equation, with the results of calculations graphed in Figure 2-2 and summarized in Table 2-14 and Table 2-15.

$$N_{Source\ Term\ Species\ (k)} = \frac{N_{Total\ Release\ (k)} \times p_{N\ Species} \times 1000}{F_{(k)}}$$

Where,

$N_{Source\ Term\ Species\ (k)}$ = nitrogen species source term (mg/L) in year k seepage;

$N_{Total\ Release\ (k)}$ = total nitrogen released (kg N) from the waste rock pile in year k ;

$p_{N\ Species}$ = proportion of nitrogen as a specific species (*i.e.*, nitrate, nitrite, ammonia);

$F_{(k)}$ = waste rock pile inflow (m³) for year k ;

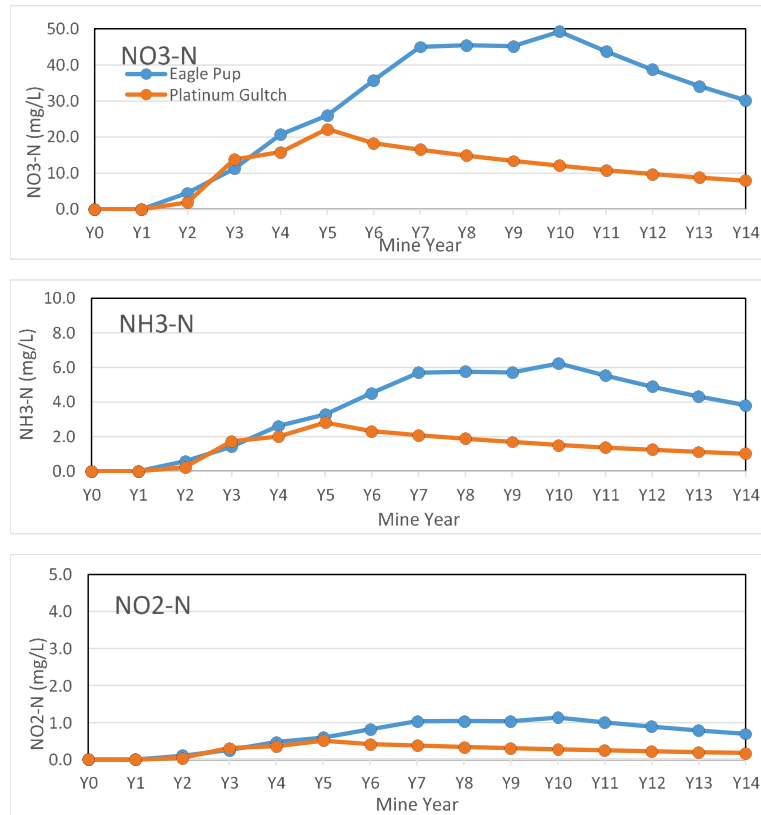


Figure 2-2: Annual nitrate, ammonia and nitrite source terms for Eagle Pup and Platinum Gulch waste rock.

Table 2-14:
Eagle Pup waste rock nitrogen release, flows, attenuation and source terms for
nitrate, nitrite and ammonia

Year After Start of Mining	Eagle Pup Annual N Release (kg)	Eagle Pup Annual Flow (m3)	Eagle Pup Flow Attenuation Factor	Eagle Pup Annual N source Term NO3-N (mg/L)	Eagle Pup Annual N source Term NH3-N (mg/L)	Eagle Pup Annual N source Term NO2-N (mg/L)
Y0	0	55844	1	0.0	0.0	0.0
Y1	0	134659	1	0.0	0.0	0.0
Y2	1103	210376	1	4.6	0.6	0.1
Y3	3276	253322	1	11.3	1.4	0.3
Y4	6593	276629	1	20.7	2.6	0.5
Y5	8376	280936	1	25.9	3.3	0.6
Y6	11626	283055	1	35.7	4.5	0.8
Y7	14923	288423	1	45.0	5.7	1.0
Y8	15519	296968	1	45.5	5.7	1.0
Y9	15556	299410	1	45.2	5.7	1.0
Y10	16949	299413	1	49.2	6.2	1.1
Y11	13770	273993	0.92	43.7	5.5	1.0
Y12	7711	173550	0.58	38.7	4.9	0.9
Y13	6813	173432	0.58	34.2	4.3	0.8
Y14	6024	173432	0.58	30.2	3.8	0.7

Table 2-15:
Platinum Gulch waste rock nitrogen release, flows, attenuation and source terms for
nitrate, nitrite and ammonia

Year After Start of Mining	P. Gulch Annual N Release (kg)	P. Gulch Annual Flow (m3)	P. Gulch Flow Attenuation Factor	P. Gulch Annual N source Term NO3-N (mg/L)	P. Gulch Annual N source Term NH3-N (mg/L)	P. Gulch Annual N source Term NO2-N (mg/L)
Y0	0	58452	1	0.0	0.0	0.0
Y1	0	104877	1	0.0	0.0	0.0
Y2	254	116590	1	1.9	0.2	0.0
Y3	1871	117971	1	13.8	1.7	0.3
Y4	2146	117976	1	15.8	2.0	0.4
Y5	3017	117976	1	22.2	2.8	0.5
Y6	2194	104228	0.88	18.3	2.3	0.4
Y7	1112	58627	0.50	16.5	2.1	0.4
Y8	1000	58575	0.50	14.9	1.9	0.3
Y9	901	58575	0.50	13.4	1.7	0.3
Y10	812	58575	0.50	12.1	1.5	0.3
Y11	731	58575	0.50	10.9	1.4	0.2
Y12	658	58575	0.50	9.8	1.2	0.2
Y13	593	58575	0.50	8.8	1.1	0.2
Y14	534	58575	0.50	7.9	1.0	0.2

3. Site Analogue Comparison

3.1 Background

As described above, geochemical source terms for mine components are modelled using data collected from bench-scale kinetic experiments conducted on representative geologic materials followed by a scale adjustment to account for several geochemical and hydrogeological discrepancies between laboratory based experiments and full-scale mine site facilities. While advances have been made in better constraining individual scaling factors, values used in the literature still vary widely, leading to a large variability in predicted values, especially when several scaling factors are used in combination. The reason for this is the highly variable nature in dump design, rock types and climatic conditions encountered at an operational mine, as well as inconsistencies with respect to data interpretation between different studies. To gain a better understanding of the magnitude in difference between geochemical loads produced by humidity cells versus full-scale mine components, the comparison with operational scale site analogues provides a robust means of model calibration if both lab and field data are available. The quality of this calibration approach is dependent on the comparability of geologic, climatic and mine operational factors.

3.2 Brewery Creek

The Brewery Creek mine is a decommissioned heap leach gold mine in the Yukon Territory with an extensive environmental dataset compiled before, during and after operations. Due to its geographic location, deposit geology and operational similarities, Brewery Creek is considered a well-suited analogue for the proposed Eagle Gold mine. The necessary background information was compiled from site monitoring records and background geochemical studies to develop an inverse model relating humidity cell testing with drainage chemistry. The inverse model was then able to shed light on the actual “bulk scaling factor” (*i.e.*, the product of all individual scaling factors contributing to the reduction of field scale geochemical loads) observed at full-scale, which can then be used as a ground-truthing measure for the Eagle Gold source term predictions. Previous studies investigating other mine sites suggest that this bulk scaling factor may be on the order of <1% (e.g. un-scaled laboratory kinetic release load rates are 99% greater than what is released from full-scale dump based on measured drainage chemistry) as a result of load retention and limited water-rock contact (Malmström et al., 2000). This section outlines the inverse model results with and without application of a bulk scaling factor to illustrate the findings.

The Brewery Creek mine is a structurally-controlled oxide-gold deposit hosted in Cretaceous monzonites and Devonian sediments and was actively developed between 1997 and 2001. A total of eight different mineralization zones were mined and the oxide ore was transported to a heap leach facility where the gold was extracted. As with the Eagle Gold project, As, Se and Sb were identified to be parameters of environmental concern in drainage from the Brewery Creek mine and a comprehensive geochemistry dataset (including static and kinetic testing results) was established to minimize uncertainties related to mine-affected water quality. Seepage and groundwater monitoring stations were additionally built during operations with water quality data being collected through operations, during reclamation and up to the present. Note that this section merely presents the model results and conclusions drawn.

3.3 Heap Leach Facility

Cyanide used to extract gold in heap leach facilities is also capable of mobilizing other metals and metalloids which may then lead to contaminated heap drainage shortly after drainage before all cyanide has decomposed geochemically. At Brewery Creek, elevated CN^- and metal concentrations were observed for the first four to five months after closure. When developing heap drainage chemistry predictions, it is therefore advisable that short and long-term post-closure scenarios are considered. Post-detoxification column experiments were conducted, however only statistical values for leachate concentrations (but not geochemical loads) were available to Lorax, such that a long-term scenario was modeled using up-scaled humidity cell leachates under consideration of reported rock type proportions in the heap leach pads. If laboratory humidity cell data loading rates (i.e., unscaled) were applied without application of scaling factors, the predicted concentrations are typically several orders of magnitude higher than actual measured concentrations. For example, un-scaled sulphate predicted values approach concentrations in excess of 98,000 mg/L whereas maximum measured sulphate seepage concentrations were all less than 550 mg/L (Table 3-1). After the up-scaling exercise (to ~10 Mt ore), the bulk scaling factor conservatively coinciding water quality predictions with maximum field concentrations, was calculated. For Brewery Creek, this bulk scaling factor was approximately 0.5%. From experience, it can be assumed that due to the presence of dissolved CN^- , loads of many species from the post-detox column experiments would have been higher than those seen in humidity cells, which would further reduce the calculated bulk scaling factor in this model. Selected long-term heap drainage quality predictions with and without this bulk scaling factor and in comparison with relevant field data are presented in Table 3-1.

Table 3-1:
Comparison of un-scaled and scaled seepage quality predictions with relevant site drainage data for Brewery Creek

<i>in mg/L</i>	Sulphate	As	Ba	Ca	Cd	Cu	Mg	Mn	Na	Ni	Sb	Se	Zn
Heap Leach													
Un-scaled from humidity cell data	98169	80				11		112			2392		35
Bulk Scaling Factor (0.5%)	488	0.40				0.056		0.56			12		0.17
Max drainage	547	0.41				0.0050		0.47			0.62		0.031
Blue WRSA													
Un-scaled from humidity cell data	7746	50	33	5400	0.43	4.3	1611	156	210	24	13	4.4	31
Bulk Scaling Factor (0.13%)	50	0.32	0.21	35	0.0028	0.028	10	1.0	1.4	0.16	0.086	0.029	0.20
Max drainage	122	0.24	0.20	222	0.00067	0.0033	38	0.88	3.8	0.014	0.15	0.012	0.027

Notes: the bulk scaling factor was adjusted (calibrated) to yield the best fit with actual monitoring data

3.4 Waste Rock Storage Facilities (Blue WRSA)

In terms of waste rock storage facilities the Blue WRSA is by far the best geochemically characterized component at the Brewery Creek mine as materials from the Blue zone were the only ones expected to turn acidic. The Blue WRSA is a facility with a footprint of 110,000 m² containing 1.1 Mt of waste rock mined from the Blue Pit. It is significantly smaller than the waste rock facilities designed for the Eagle Gold mine, therefore likely representing a conservative analogue when comparing bulk scaling factors between the two sites. Several rounds of predictive modelling were run for the drainage from the Blue WRSA and eight humidity cells containing Blue zone materials were initiated after construction of the facility. Leachate data from these humidity cell tests is available to Lorax and was used for an inverse model relating these lab-based results to the water quality observed in the field. Table 3-1 provides WRSA drainage quality predictions from direct up-scaling and with a bulk scaling factor of 0.13 % applied.

A trend that is commonly seen in mine drainage prediction when up-scaling humidity cell loads is that major dissolved species (sulphate, Ca, Mg, Na) are generally under-predicted, while trace metals which are commonly the parameters of concern, are over-predicted. This is interpreted to be at least in part a result of the differential leaching behaviour in lab-test versus field conditions with the major ions being depleted relatively fast from soluble phases in the humidity cell tests.

3.5 Pit Walls

Meteoric water coming in contact with pit wall exposures will enter fractures along the walls and pick up a geochemical load before accumulating at the bottom of the pit. As with ore and waste piles, the magnitude to which geochemical loading occurs is dependent on a variety of factors including the amount of rock encountered (*i.e.*, fracture density, wall failure), as well as hydrogeological, climatic and geochemical/mineralogical parameters.

The data available from the Blue pit at the Brewery Creek mine was too limited to develop a robust analogue model. In an effort to obtain a rough estimate of a possible bulk scaling factor for pit wall runoff, a water balance similar to that constrained for Eagle Gold was used as an input for this analogue site. A further major uncertainty in this analysis are the unknown waste rock proportions in the pit wall exposures as well as the average slope angle. Making relatively arbitrary assumptions regarding these data gaps, the up-scaled concentrations matched the Blue pit monitoring data best with a scaling factor in the range of 0.3 – 3%. This large range arose from the mismatch of a single bulk scaling factor for different species highlighting the uncertainty related to this

analogue model (therefore not shown in Table 3-1). In various geochemical characterization programs, it has been found that field barrel leachate elemental concentrations are generally in the range of, but typically somewhat lower than, concentrations observed in pit wall runoff. Therefore, to better account for the site-climatic and lithologic conditions, Eagle Gold pit wall runoff predictions more heavily relied on the available field barrel dataset as a model calibration. An example of field barrel versus waste rock seepage chemistry at an undisclosed mine-site is shown in Table 3-2. Refer to the following section for a brief discussion of the field barrel leachate results.

Table 3-2:
Comparison of field barrel leachate and waste rock seepage chemistry
(minesite undisclosed)

Sample ID	pH	Alk.	SO ₄	As	Ca	Cu	Fe	Mg	Mn	Mo	Sb	Se	U	Zn
FB data														
median	8.1	74	85	0.016	21	0.0087	0.030	18	0.00047	0.18	0.0016	0.0057	0.00048	0.0030
max	9.1	128	1030	0.096	277	0.12	6.3	92	0.27	1.1	0.0032	0.042	0.0026	0.20
WR seep data														
median	7.7	228	844	0.0035	93	0.014	0.033	117	0.020	0.98	0.0013	0.023	0.0054	0.0035
max	8.4	386	1380	0.0048	134	0.019	0.16	218	0.92	2.0	0.0015	0.027	0.011	0.014

Notes: All values except pH are in mg/L; FB = field barrel; WR = waste rock;

Median WR seepage values shaded in red are more than one order of magnitude greater than median FB values.

4. Field Kinetic Experiments

Larger mass, field-based experiments are advantageous because, compared to humidity cell testing, they closely resemble the actual conditions present within WRSA and pit walls including site-specific climate, scale, grain-size, and water-rock ratios. A total of eight field barrels (FB) containing ~225 kg of representative waste rock lithologies were constructed by StrataGold in 2012. Specifically, the barrels were composed of:

- FB 1: Oxide metasediment
- FB 2: Fresh metasediment
- FB 3: Oxide/fresh metasediment
- FB 4: Oxide granodiorite
- FB 5: Fresh granodiorite
- FB 6: Altered granodiorite
- FB 7: Oxide/fresh granodiorite
- FB 8: Overburden (mixed oxide metaseds and oxide granodiorite)

To date, six leachates (most recent: October, 2013) have been collected and analyzed for physical and geochemical parameters. This section serves as a brief overview of the data relevant to this report in the context of geochemical source term predictions. Details with regards to the construction and sampling protocol for the FB are discussed in detail in SRK (2014). Figure 4-1 through 4-4 illustrate the temporal leaching behaviour of some species of interest for the various waste types. The entire dataset is provided in Appendix C.

With pH remaining relatively stable between 7.5 and 8.2 (not shown), dissolved sulphate and metalloids (As, Sb, Se) concentrations display a generally decreasing trend over time with a spike in concentration observed for most field barrels in August, 2013, although the spikes are generally less than the maximums from 2012. The initially relatively high concentrations are inferred to be a result of stored loads that may (at least in part) have accumulated in the waste rock pores during storage of drill core. If not caused by an analytical issue, the spike in August is most likely an indicator of an increased flushing rate, for example in response to a heavy rainfall. Interestingly, there is no one lithology that consistently releases the highest loads for all metalloids, but rather every species shows the highest concentration in leachates from a different field barrel. Of note is that the Se trend mimics that of sulphate suggesting that these two species are mineralogically associated.

Acting as an analogue dataset, it is important to point out that the concentrations produced by field barrel materials are likely to be conservative representing a relatively short leaching time span (*i.e.*, adequate for early operations). This is supported by the

decreasing trend in concentrations for most parameters suggesting that flushing of soluble constituents was not complete at the time of the most recent sampling cycle.

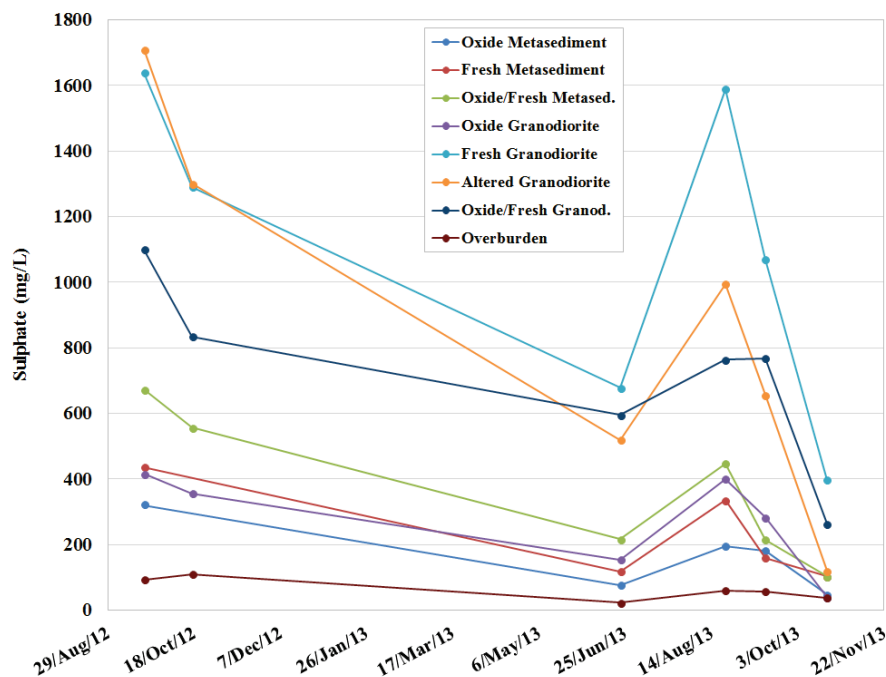


Figure 4-1: Sulphate concentrations over time in leachates from Eagle Gold field barrels

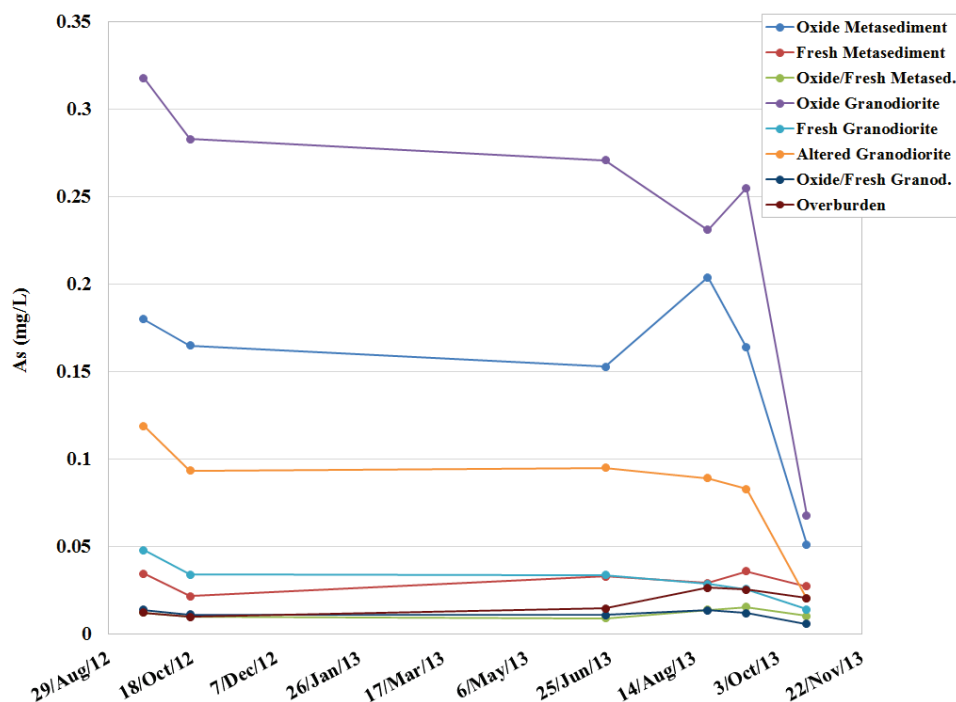


Figure 4-2: Arsenic concentrations over time in leachates from Eagle Gold field barrels

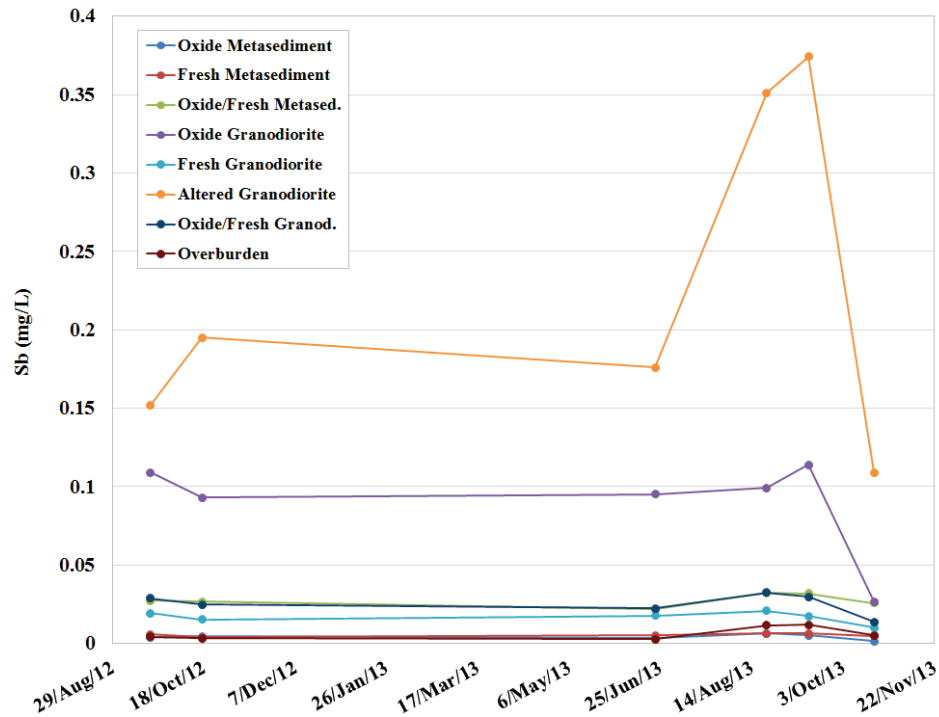


Figure 4-3: Antimony concentrations over time in leachates from Eagle Gold field barrels

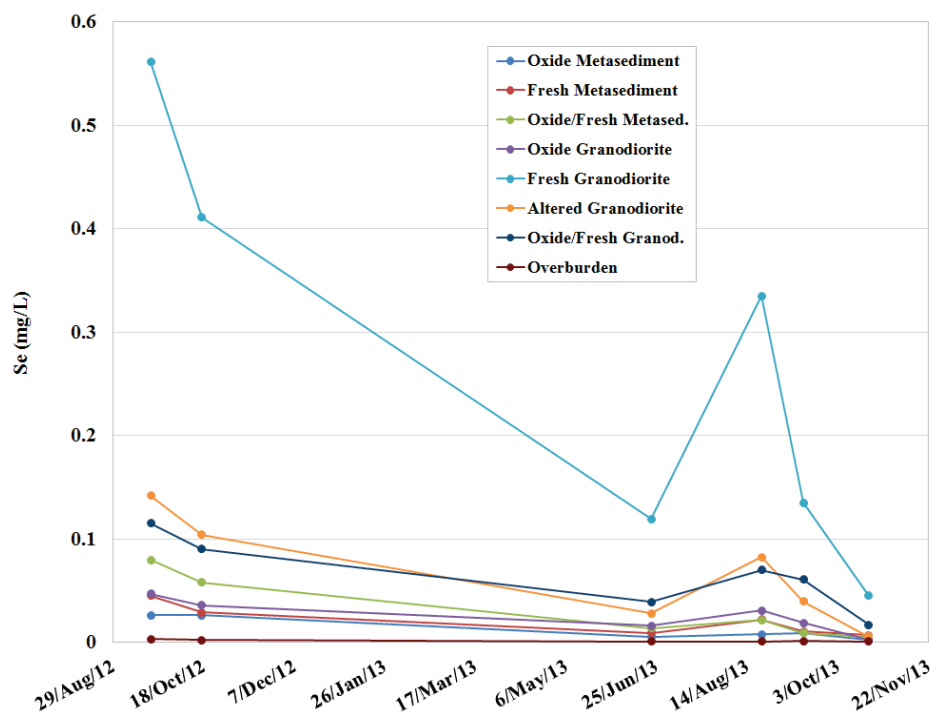


Figure 4-4: Selenium concentrations over time in leachates from Eagle Gold field barrels.

5. Results and Discussion

The concentration range of produced source term predictions is given for selected parameters and all mine components in Table 5-1. Table 5-2 provides monthly concentrations predicted for the median and 75th percentile scenarios in year 5 of operations. Appendix D presents detailed results for all parameters for each year of the mine life on a monthly time-step. Figure 5-1 through 5-12 depict a comparison of predicted concentrations with drainage chemistry data from Brewery Creek and the Eagle Gold field barrels for parameters of concern (As, Sb, Se). Note that the range (median to 75th percentile of all leachates) of field barrel leachate concentrations presented in these plots were not proportioned according to waste rock types to be expected in the individual facilities as these proportions change over time. However, leachates from granodiorite waste rock were not considered as the comparison of Platinum Gulch WRSA predictions, as this facility will be made up exclusively of metasediment and overburden. Additionally, to provide site comparison for the HLF, the median and maximum observed concentrations from the Brewery Creek heap leach facility (Brewery C. I and II, respectively) are referenced for seepage sampling conducted between December 2001 and October 2002.

Analysis of the model output data lead to the finding that WRSA seepage concentrations were unrealistically low for some species in the first two years of operations using the adjusted humidity cell scale-up alone. Based on professional judgement, low values (*e.g.* sulphate) were set to the 75th percentile concentration observed in field barrel leachates. A similar observation was made for the seepage chemistry from the 100-day ore stockpile, especially keeping in mind that freshly-blasted and crushed ore material will replenish this facility annually and initial flushing of soluble components will play a more important role. Since only one year of geochemical source terms (average case) is provided for this facility, values that appeared too low were set to the 75th percentile of FB leachate data calculated as an average case lithological proportion.

Another adaption made to the up-scaled loads is the derivation of selenium concentrations. Both humidity cell and field barrel data suggest that Se is strongly correlated with dissolved sulphate and is interpreted to be mineralogically associated with sulphur in both sulphate and sulphide minerals. For predictions made based on humidity cell up-scaling, Se concentrations were modeled as a function of the sulphate concentration using Se/SO₄ ratios observed in the individual humidity cells and proportioned according to rock type.

As shown in Table 5-1, predicted pH values are circum-neutral with little variation between the different mine site components. Sulphate concentrations reach a value of up to 583 mg/L in waste rock drainage (Eagle Pup) but are expected to be highest in the heap leach facility with a maximum value of roughly 900 mg/L predicted for July of the early draindown phase. The relatively large range in the values within a scenario and mine component presented in Table 5-1 and Figure 5-1 through 5-12 can be explained by the consideration of temperature effects as well as stored loads release (in response to water balance) leading to a relatively pronounced seasonal variability in geochemistry. Where both minimum and maximum values are identical (*e.g.*, for SO₄ in the ore SP predictions), the predicted concentrations were adjusted to field barrel or ore column leachate results. Parameters of concern (metalloids) are discussed in more detail below.

5.1 Arsenic

Predicted As concentrations in WRSA seepage are generally consistent with or slightly higher than those observed in drainage from the Blue WRSA at Brewery Creek. Leachates from the field barrels display consistently lower As concentrations (Figure 5-1 and 5-2) but are in the range of concentrations predicted for pit wall seepage (Figure 5-3). Not surprisingly, the highest As concentrations are predicted for seepage from the HLF with values reaching up to 8.6 mg/L in July of the intermediate draindown period (conservative scenario) and still reaching 3.3 mg/L in July of the long-term scenario (Figure 5-4). Conservative model values are considerably higher than those measured in Brewery Creek HLF drainage, while best estimate (median) model results are slightly lower. The latter is consistent with median column leachate concentrations from spent Eagle Gold ore being slightly lower than those observed from Brewery Creek experiments (3.5 vs. 5.0 mg/L). The operational 100-day ore SP arsenic predictions are not dissimilar from Brewery Creek HLF site data and fall below 0.6 mg/L (Figure 5-4).

5.2 Antimony

Owing to the lack of granodiorite material in the Platinum Gulch WRSA, the predicted Sb concentrations for this facility's seepage are predicted to be around an order of magnitude lower than for the Eagle Pup WRSA and is in the range of values observed in field barrel leachates (Figure 5-5 and 5-6). Dissolved Brewery Creek Sb concentrations are considerably higher than predicted values for Platinum Gulch, however the former site is known to have much higher overall solid phase Sb-contents than the Eagle Gold site, hence likely not representing an adequate analogue for this element. In general, predicted Sb concentrations in seepage from the other mine facilities are in the range of, or higher than, analogue values and can be considered reasonably conservative. Operational ore SP values for antimony fall below concentrations measured in Brewery

Creek heap leach facility drainage data (Figure 5-8), however, due to the coarser grain size of stockpiled ore material, values in this range are still considered conservative keeping in mind the much lower solid phase Sb contents at Eagle Gold. Concentrations of antimony predicted for the Eagle Gold HLF are higher than those measured at Brewery Creek during draindown (Figure 5-8).

5.3 Selenium

For the two WRSA, Se ranges from 0.0024 to 0.037 mg/L which is in general agreement with field barrel and analogue site data with the 75th percentile field barrel concentrations being in the same range or slightly exceeding drainage predictions for both WRSA (Figure 5-9 and 5-10). For pit wall drainage, predicted Se concentrations fall below the median concentrations seen in field barrel leachates (Figure 5-11). The geochemical behaviour of Se may still make the predicted concentrations justifiable: Selenium appears to be strongly correlated with soluble sulphate phases being initially flushed and is steadily decreasing in concentration over time (Figure 4-4). Therefore the statistical field barrel values used may not be representative of longer-term Se release. More specifically, in the most recent sampling cycle, most field barrels produced a Se concentration of 0.007 mg/L or less which is in the range of predictions made herein.

In drainage from the heap, the maximum Se concentration is expected to be on the order of 0.084 mg/L, representing the highest concentration of all mine site facilities. In comparison with other species, predicted Se concentrations in the 100-day ore SP are not significantly lower than values modeled for HLF drainage (Figure 5-12). This can be explained by the fact that this species was set to field barrel concentrations in response to modeling results that were deemed too low. Given that Se appears to be associated with readily flushed sulphosalts, relatively high, short-term concentrations are to be expected.

The range of Se concentrations predicted for the two ore facilities (0.048-0.084 mg/L) is lower than values observed at Brewery Creek, however they are still somewhat higher than maximum values observed in both metallurgical columns and field barrels and can therefore be considered reasonable estimates. Due to the lack of solid-phase selenium data from the Brewery Creek ore material, a comparison of leachate chemistry relative to solid phase concentrations was not possible.

Table 5-1:
Ranges in predicted drainage concentration for the Eagle Gold mine site facilities

Facility/Scenario		pH	Alkal.	SO ₄	Cl	Al	As	Ca	Cd	Cu	Fe	Hg	Mg	Mn	Ni	Pb	Sb	Se	Zn
Eagle Pup																			
Median	min	7.8	24	58	1.4	0.0053	0.074	36	0.000030	0.0025	0.0015	0.000030	8.6	0.019	0.0015	0.00012	0.012	0.0040	0.0023
	max	8.2	46	375	8.5	0.011	0.50	268	0.00015	0.015	0.0025	0.00017	39	0.21	0.0073	0.00072	0.36	0.024	0.012
75 th PCTL	min	7.8	23	84	1.5	0.0051	0.074	45	0.000040	0.0036	0.0016	0.000030	9.7	0.019	0.0020	0.00031	0.017	0.0058	0.0034
	max	8.2	45	583	12	0.011	0.64	349	0.00024	0.017	0.0026	0.00017	49	0.30	0.0099	0.0030	0.47	0.037	0.018
Platinum Gulch																			
Median	min	7.9	28	41	1.1	0.0063	0.089	23	0.000020	0.0017	0.0014	0.000010	5.4	0.0086	0.0012	0.000050	0.0054	0.0024	0.0016
	max	8.3	55	251	6.8	0.013	0.46	159	0.000070	0.012	0.0021	0.00014	27	0.13	0.0066	0.00029	0.030	0.013	0.0061
75 th PCTL	min	7.9	27	61	1.5	0.0062	0.092	30	0.000030	0.0025	0.0015	0.000010	6.4	0.0086	0.0016	0.00011	0.0054	0.0035	0.0025
	max	8.2	51	315	9.4	0.012	0.58	176	0.00014	0.012	0.0022	0.00014	29	0.14	0.0089	0.0032	0.038	0.017	0.011
Pit walls																			
Median	min	8.1	37	2.3	0.074	0.0070	0.0032	1.6	0.0000010	0.000069	0.00086	0.0000010	0.16	0.0012	0.000039	0.0000030	0.0010	0.00014	0.000063
	max	8.3	49	99	2.8	0.012	0.11	64	0.000040	0.0030	0.0017	0.000054	7.7	0.057	0.0014	0.00020	0.13	0.0055	0.0028
75 th PCTL	min	8.0	34	3.4	0.083	0.0079	0.0040	2.0	0.0000010	0.00011	0.0012	0.0000010	0.21	0.0017	0.000055	0.0000090	0.0014	0.00020	0.000096
	max	8.3	49	158	3.2	0.012	0.14	86	0.000057	0.0045	0.0018	0.000055	10	0.082	0.0021	0.00046	0.17	0.0087	0.0041
Heap Leach F.																			
median	min	7.2	128	670	0.087	0.059	0.27	250	0.00035	0.000013	1.6	0.00000052	50	0.039	0.0023	0.21	1.1	0.061	0.0080
	max	7.9	149	670	0.20	0.74	0.41	291	0.0017	0.00058	3.1	0.000023	55	0.12	0.011	0.50	1.5	0.084	0.031
75 th PCTL	min	7.6	53	670	0.11	0.056	2.0	250	0.00039	0.0078	1.6	0.000081	50	0.044	0.0024	0.25	1.1	0.061	0.029
	max	7.8	93	901	1.1	0.74	8.6	292	0.0017	0.034	3.1	0.0019	55	0.14	0.013	0.57	1.7	0.084	0.12
100-day ore SP																			
75 th PCTL	min	8.0	32	459	4.4	0.0074	0.20	117	0.00014	0.0086	0.0019	0.000012	21	0.040	0.0070	0.00024	0.093	0.048	0.0096
	max	8.0	34	459	4.4	0.0079	0.58	138	0.00014	0.010	0.0020	0.000051	21	0.046	0.0070	0.00077	0.41	0.048	0.012

Notes: all concentrations are in mg/L

Table 5-2:
Monthly geochemistry predicted for both scenarios in Eagle Pup seepage

Scenario	Month	pH	Alkal.	SO ₄	Al	As	Cd	Co	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Zn
Yr-5 MEDIAN	Jan	8.1	38	99	0.0089	0.15	0.000040	0.00036	0.0036	0.0017	0.000040	0.054	0.048	0.0021	0.00019	0.051	0.0065	0.0034
	Feb	8.1	39	93	0.0092	0.14	0.000040	0.00034	0.0034	0.0017	0.000040	0.050	0.045	0.0020	0.00017	0.048	0.0061	0.0031
	Mar	8.1	37	107	0.0086	0.16	0.000050	0.00039	0.0039	0.0017	0.000050	0.058	0.052	0.0023	0.00020	0.055	0.0070	0.0036
	Apr	7.9	27	229	0.0063	0.35	0.00010	0.00084	0.0083	0.0021	0.00010	0.12	0.11	0.0048	0.00043	0.12	0.015	0.0077
	May	8.0	29	187	0.0068	0.29	0.000080	0.00069	0.0068	0.0020	0.000080	0.10	0.091	0.0040	0.00035	0.096	0.012	0.0063
	Jun	8.0	32	149	0.0074	0.23	0.000070	0.00055	0.0054	0.0019	0.000060	0.081	0.073	0.0032	0.00028	0.077	0.0098	0.0050
	Jul	8.0	31	158	0.0073	0.24	0.000070	0.00058	0.0058	0.0019	0.000070	0.086	0.077	0.0033	0.00029	0.082	0.010	0.0053
	Aug	8.0	32	150	0.0074	0.23	0.000070	0.00055	0.0055	0.0019	0.000060	0.082	0.073	0.0032	0.00028	0.077	0.0099	0.0051
	Sep	8.0	33	136	0.0077	0.21	0.000060	0.00050	0.0049	0.0018	0.000060	0.074	0.066	0.0029	0.00025	0.070	0.0089	0.0046
	Oct	8.1	35	121	0.0081	0.19	0.000050	0.00044	0.0044	0.0018	0.000050	0.066	0.059	0.0026	0.00023	0.062	0.0080	0.0041
	Nov	8.1	36	109	0.0085	0.17	0.000050	0.00040	0.0040	0.0017	0.000050	0.059	0.053	0.0023	0.00020	0.056	0.0072	0.0037
	Dec	8.1	38	99	0.0089	0.15	0.000040	0.00036	0.0036	0.0017	0.000040	0.054	0.048	0.0021	0.00018	0.051	0.0065	0.0033
Yr-5 75th Percentile	Jan	8.1	35	148	0.0081	0.19	0.000070	0.00050	0.0054	0.0018	0.000040	0.075	0.072	0.0029	0.00051	0.068	0.0098	0.0050
	Feb	8.1	36	138	0.0084	0.18	0.000060	0.00046	0.0050	0.0017	0.000040	0.069	0.067	0.0027	0.00047	0.063	0.0091	0.0047
	Mar	8.0	34	160	0.0079	0.20	0.000070	0.00053	0.0058	0.0018	0.000050	0.080	0.078	0.0031	0.00054	0.073	0.011	0.0054
	Apr	7.9	26	342	0.0059	0.43	0.00015	0.0011	0.012	0.0023	0.00010	0.17	0.17	0.0067	0.0012	0.16	0.022	0.012
	May	7.9	28	280	0.0063	0.35	0.00013	0.00093	0.010	0.0021	0.000080	0.14	0.14	0.0055	0.00095	0.13	0.018	0.0094
	Jun	8.0	30	223	0.0069	0.28	0.00010	0.00074	0.0081	0.0020	0.000060	0.11	0.11	0.0044	0.00076	0.10	0.015	0.0075
	Jul	8.0	29	237	0.0067	0.30	0.00011	0.00079	0.0085	0.0020	0.000070	0.12	0.11	0.0046	0.00081	0.11	0.016	0.0080
	Aug	8.0	30	224	0.0069	0.28	0.00010	0.00075	0.0081	0.0020	0.000070	0.11	0.11	0.0044	0.00076	0.10	0.015	0.0076
	Sep	8.0	31	203	0.0072	0.26	0.000090	0.00068	0.0073	0.0019	0.000060	0.10	0.099	0.0040	0.00069	0.093	0.013	0.0069
	Oct	8.0	32	181	0.0075	0.23	0.000080	0.00060	0.0065	0.0019	0.000050	0.091	0.088	0.0036	0.00062	0.083	0.012	0.0061
	Nov	8.0	33	163	0.0078	0.21	0.000070	0.00054	0.0059	0.0018	0.000050	0.082	0.079	0.0032	0.00055	0.074	0.011	0.0055
	Dec	8.1	35	148	0.0082	0.19	0.000070	0.00050	0.0054	0.0018	0.000040	0.074	0.072	0.0029	0.00050	0.068	0.0098	0.0050

Note: all values reported in mg/L except for pH.

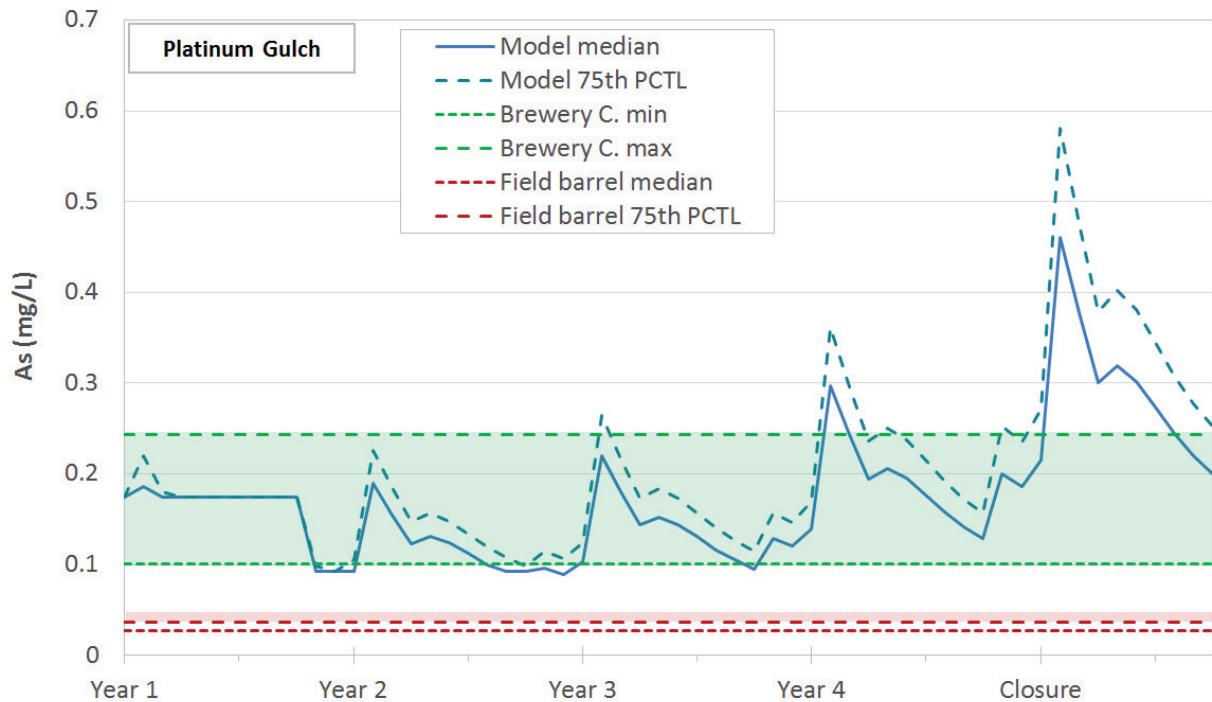


Figure 5-1: Predicted arsenic concentrations for Platinum Gulch drainage in comparison with Brewery Creek and field barrel data

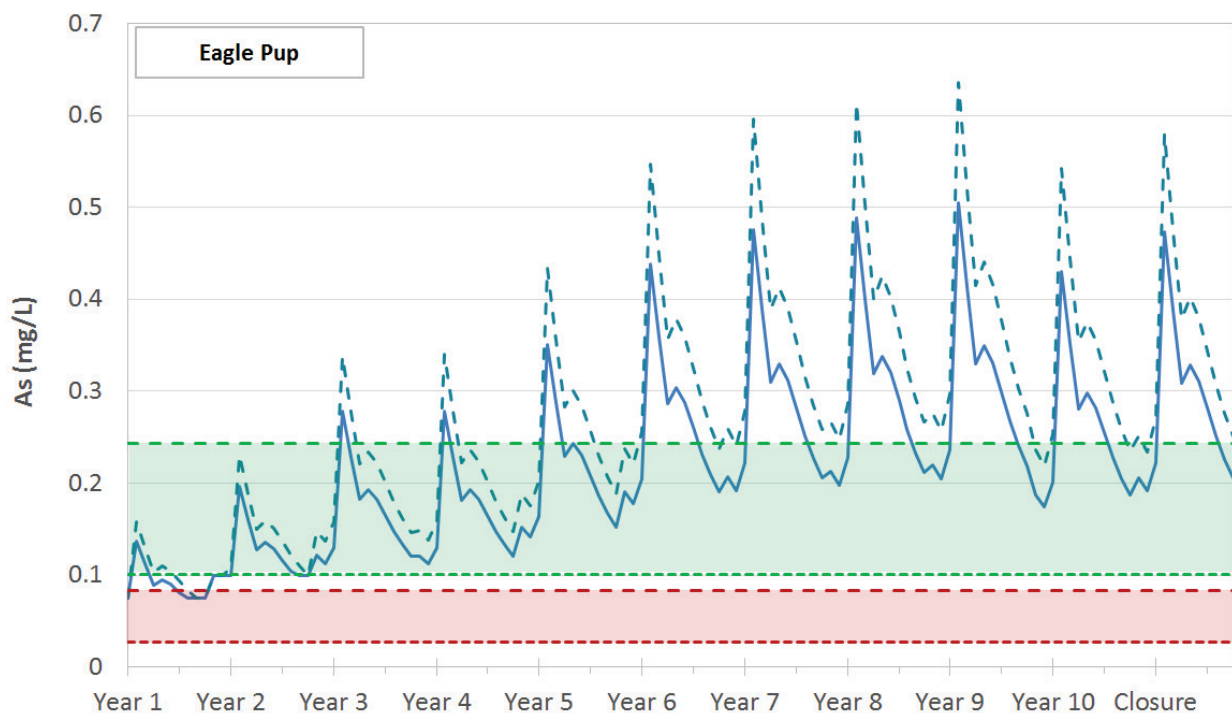


Figure 5-2: Predicted arsenic concentrations for Eagle Pup drainage in comparison with Brewery Creek and field barrel data

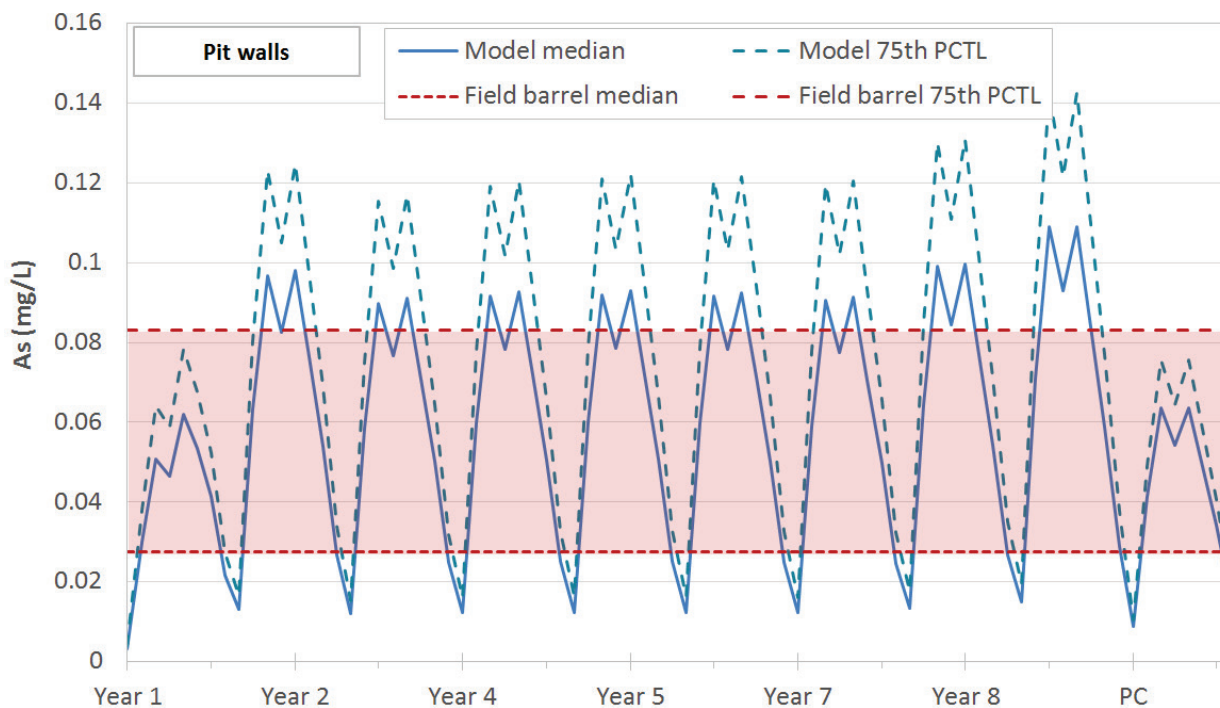


Figure 5-3: Predicted arsenic concentrations for pit wall runoff in comparison with field barrel data

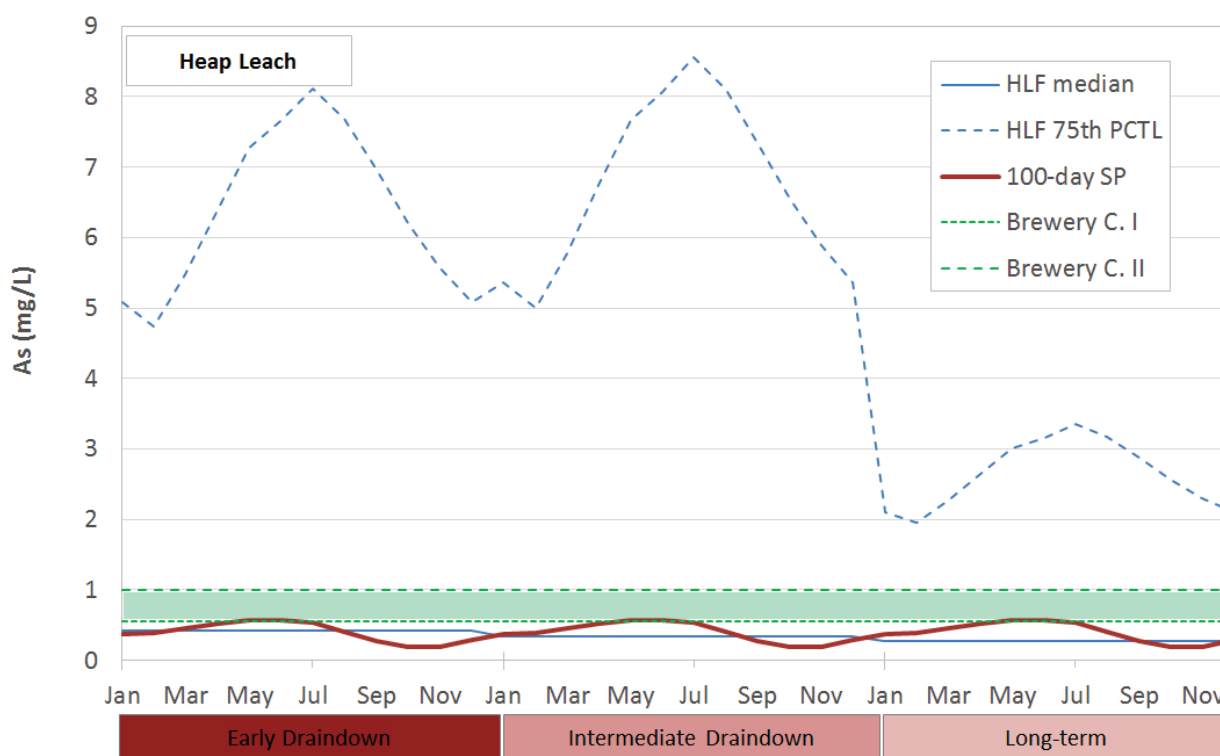


Figure 5-4: Predicted arsenic concentrations for heap leach facility and ore stockpile seepage in comparison with Brewery Creek data

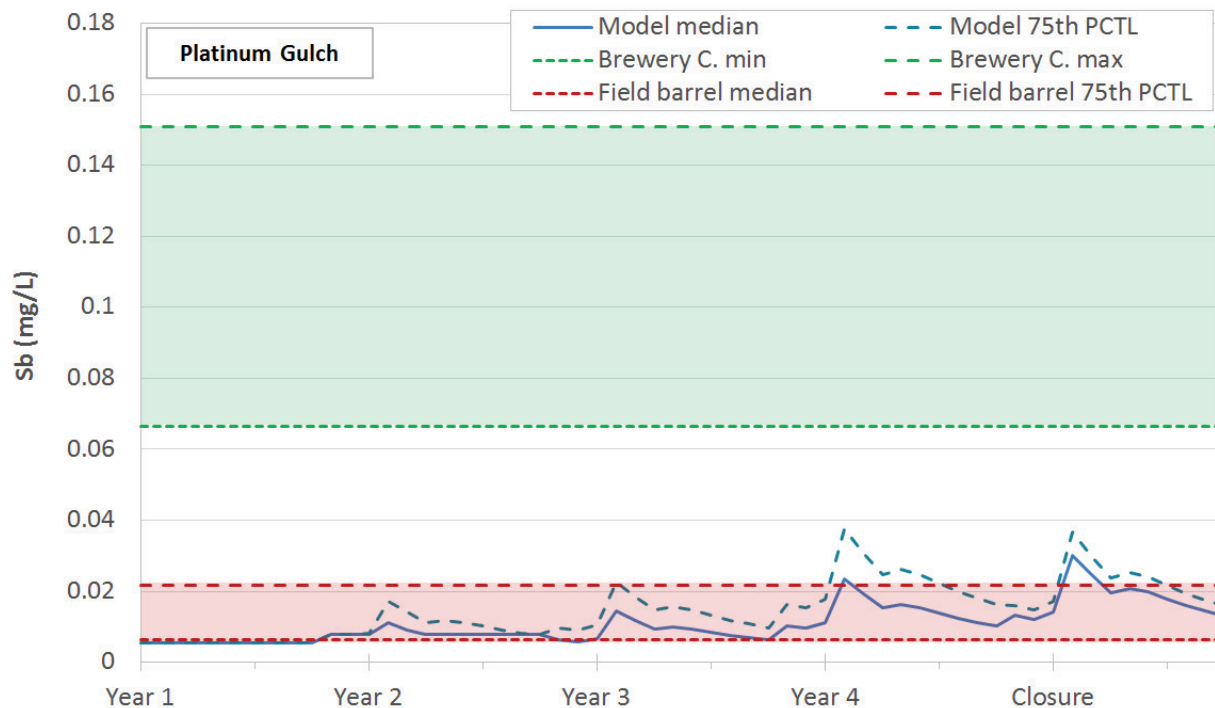


Figure 5-5: Predicted antimony concentrations for Platinum Gulch drainage in comparison with Brewery Creek and field barrel data

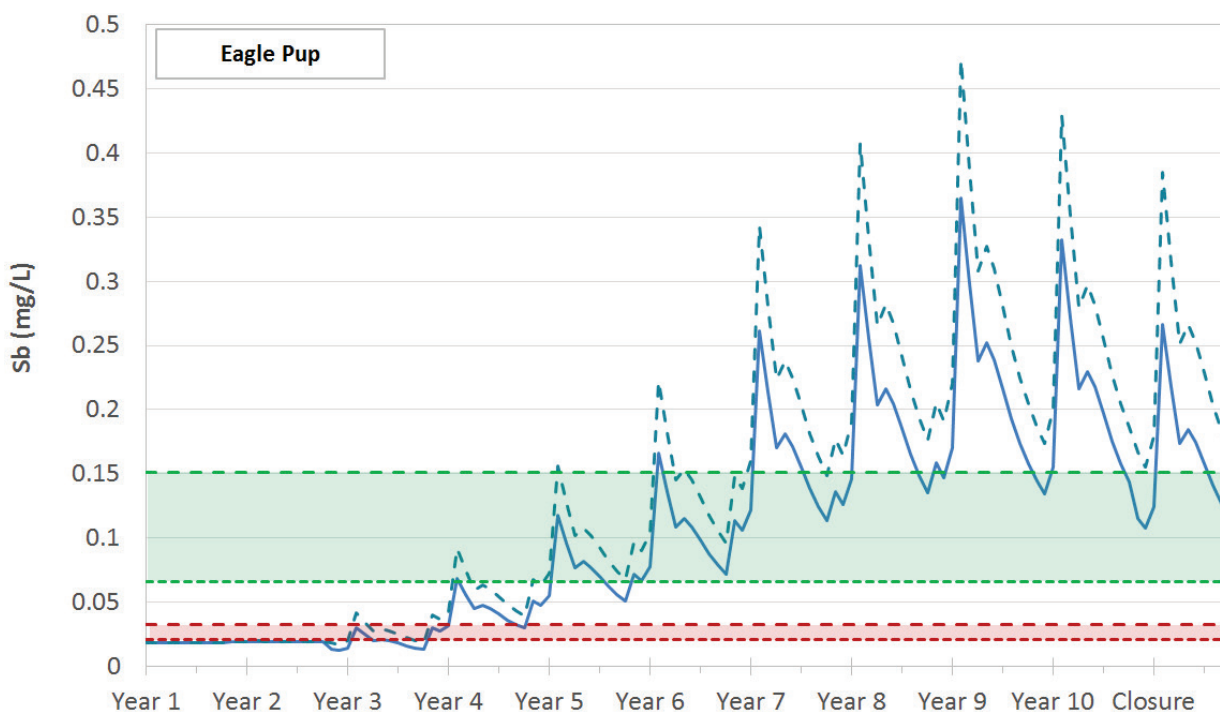


Figure 5-6: Predicted antimony concentrations for Eagle Pup drainage in comparison with Brewery Creek and field barrel data

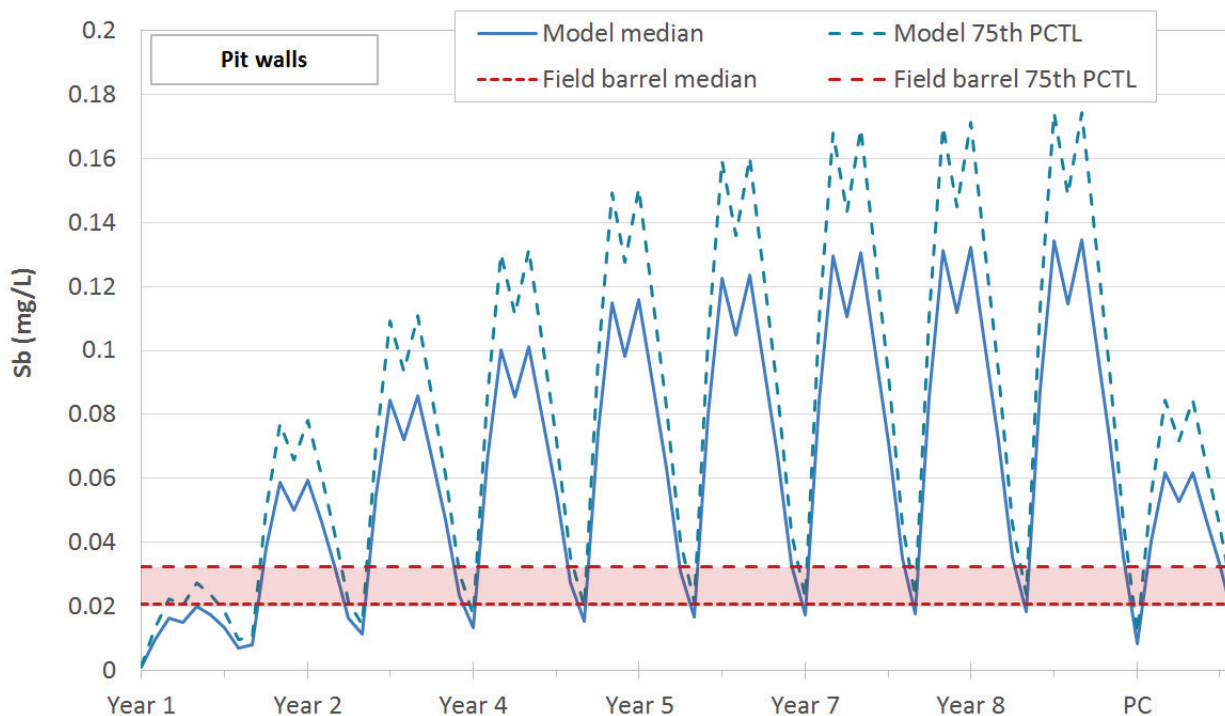


Figure 5-7: Predicted antimony concentrations for pit wall runoff in comparison with field barrel data

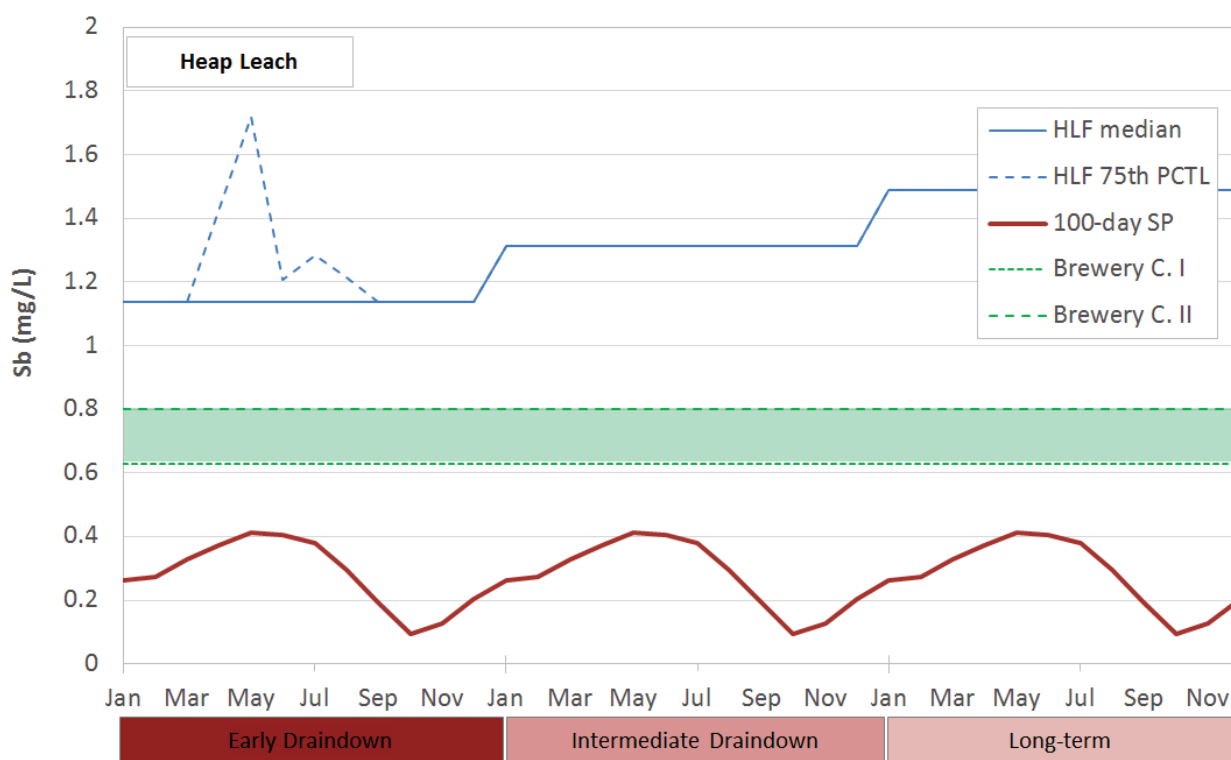


Figure 5-8: Predicted antimony concentrations for heap leach facility and ore stockpile seepage in comparison with Brewery Creek data

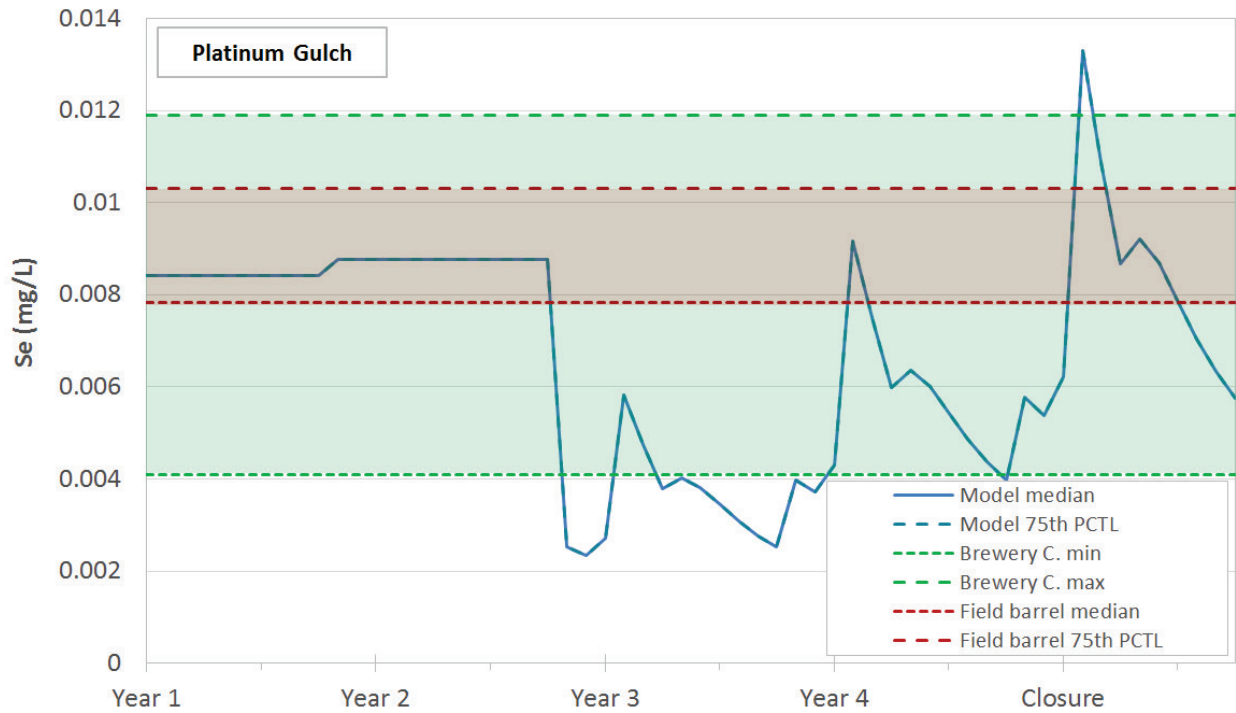


Figure 5-9: Predicted selenium concentrations for Platinum Gulch drainage in comparison with Brewery Creek and field barrel data

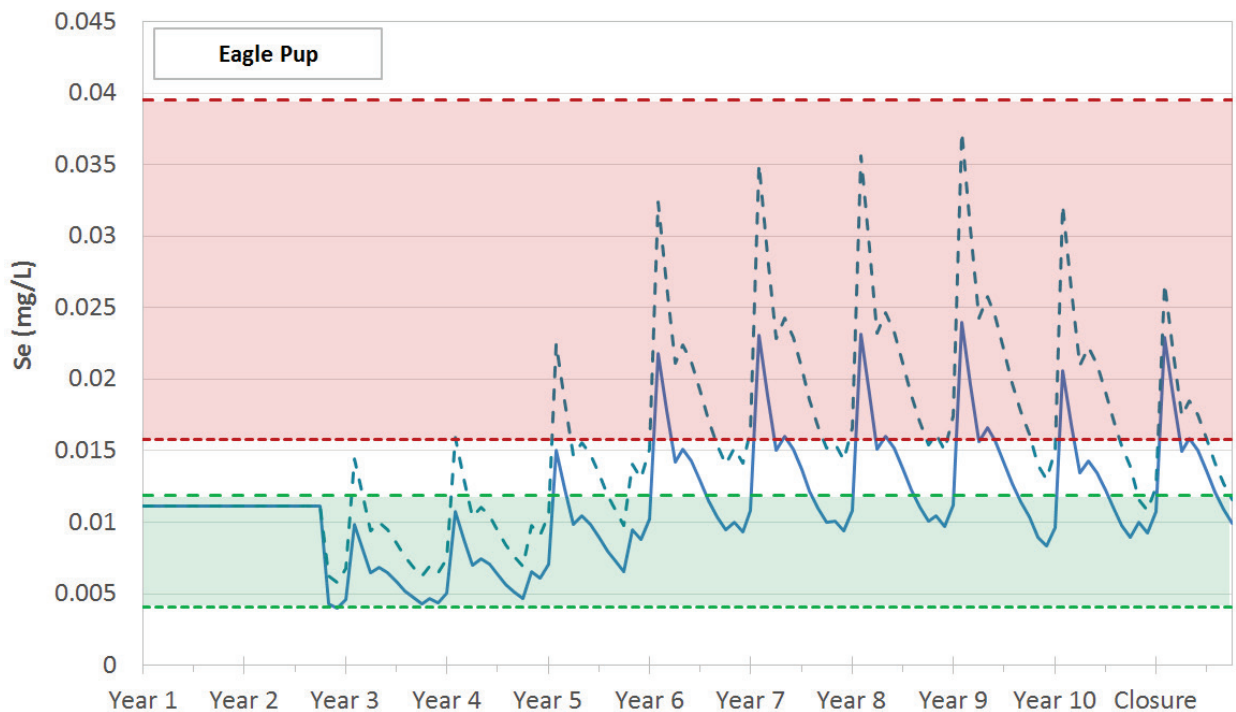


Figure 5-10: Predicted selenium concentrations for Eagle Pup drainage in comparison with Brewery Creek and field barrel data

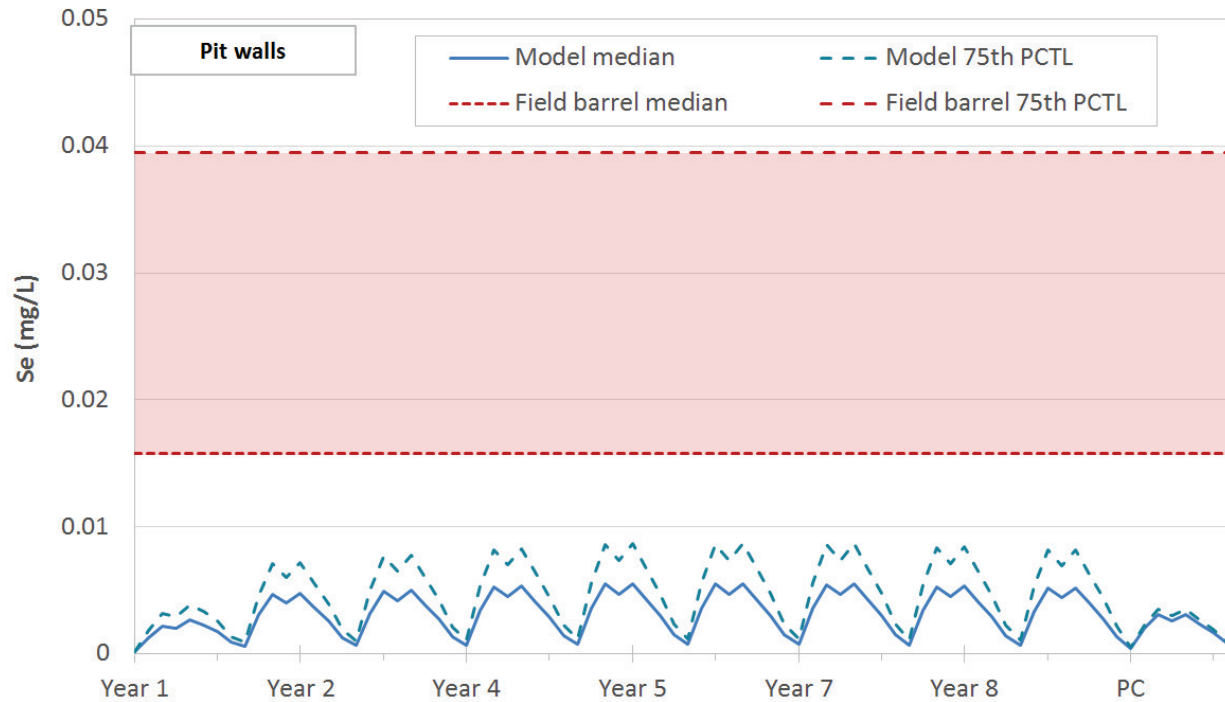


Figure 5-11: Predicted selenium concentrations for pit wall runoff in comparison with field barrel data

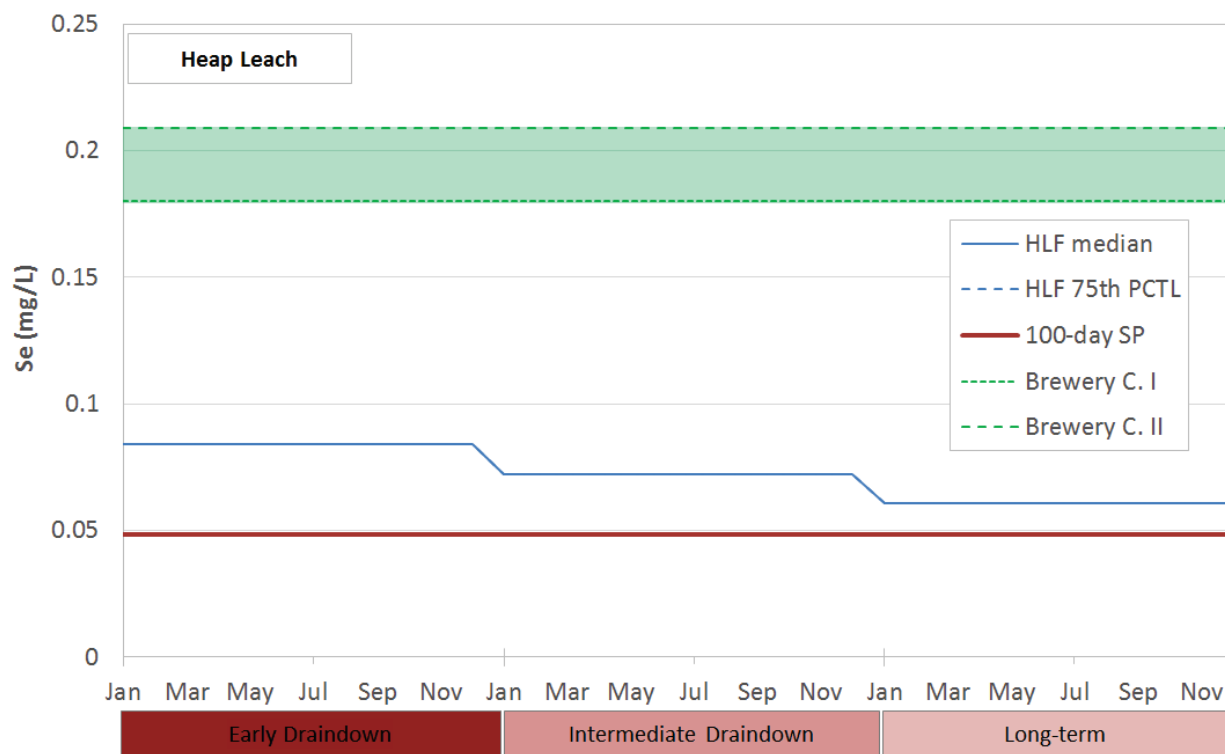


Figure 5-12: Predicted selenium concentrations for heap leach facility and ore stockpile seepage in comparison with Brewery Creek data

References

- Alexco, data transfer via personal communication (e-mail) with Jim Harrington on May 6, 2014.
- Baily B.L., Smith L.J.D., Blowes D.W., Ptacek C.J., Smith L., Sego D.C., 2013. The Diavik Waste Rock Project: Persistence of contaminants from blasting agents in waste rock effluent. *Applied Geochemistry*. Volume 36, September 2013, pp 256-270.
- BGC Engineering Inc., 2012. Eagle Gold Project Feasibility Study Dublin Gulch, Yukon. Geotechnical Assessment and Design of the Waste Rock Storage Areas (Final). Prepared by BGC Engineering Inc. for Victoria Gold Corporation. February 23, 2012.
- Cameron A., Corkery D., MacDonald G., Forsyth B., Gong T., 2007. An Investigation of Ammonium Nitrate Loss to Mine Discharge Water at Diavik Diamond Mines. EXPLO Conference. Wollongong, NSW, September 3 to 4, 2007.
- Cheng, H., Hu, Y., Luo, J., Xu, B., & Zhao, J. (2009). Geochemical processes controlling fate and transport of arsenic in acid mine drainage (AMD) and natural systems. *Journal of Hazardous Materials*, 165(1-3), 13–26.
- Dawson R.F. (1994) Mine Waste Geotechniques. Ph.D. Thesis University of Alberta Faculty of Civil Engineering.
- Ferguson K. and Leask S. M., 1988. The Export of Nutrients from Surface Coal Mines. Regional Program Report 87-12. Environmental Protection, Conservation and Protection, Pacific and Yukon Region, Environment Canada, West Vancouver, B.C., 127 pp.
- Forsyth B., Cameron A., Miller S., 1995. Explosives and Water Quality. Sudbury '99 Mining and the Environment. Sudbury, Canada, May 28 to June 1, 1995. Volume II of Conference Proceedings pp 795-803.
- Fretz N., Momeyer S., Neuner M., Smith L., Blowes D., Sego D., Amos R., 2011. Diavik Waste Rock Project: Unsaturated Water Flow. Proceedings Tailings and Mine Waste 2011. Vancouver, BC, November 6 to 9, 2011.
- Golder Associates (1987) Regional Study of Coal Mine Waste Dumps Canmet Report #23440-6-9188/01FQ
- Hustrulid, William A., 1999. Blasting principles for open pit mining: general design concepts. Balkema Publishing, Rotterdam, Netherlands.

- Kempton, H., & Atkins, D. (2000). Delayed environmental impacts from mining in semi-arid climates. In Proceedings of the 5th International Conference on Acid Rock Drainage, ICARD, 1, 21-24.
- Kempton, H. (2012). A review of scale factors. In Proceedings of the 9th International Conference on Acid Rock Drainage (ICARD), Ottawa, ON, Canada.
- Knight Piesold (2013). Hydrometeorology Report, Eagle Gold Project, prepared for Victoria Gold by Knight Piesold Consulting (VA101-290/6-8 Rev 0), August 30, 2013.
- Malmström, M. E., Destouni, G., Banwart, S. A., & Strömberg, B. H. (2000). Resolving the scale-dependence of mineral weathering rates. *Environmental science & technology*, 34(7), 1375-1378.
- Marcoline, J.R. (2008). Investigations of water and tracer movement in covered and uncovered unsaturated waste rock. *Ph.D. thesis*, University of British Columbia, 304 pp.
- Marcoline, J. R., & Leslie Smith, R. D. B. (2006). Water migration in covered waste rock, investigations using deuterium as a tracer. In Proceedings of the 7th International Conference on Acid Rock Drainage (ICARD), ASMR, Lexington, KY, USA.
- Parkhurst, D. L., & Appelo, C. A. J. (1999). User's guide to PHREEQC (Version 2): A computer program for speciation, batch-reaction, one-dimensional transport, and inverse geochemical calculations.
- Pommen, L.W., 1983. The Effect on Water Quality of Explosives Use in Surface Mining – Volume 1: Nitrogen Sources, Water Quality and Prediction and Management of Impacts. Ministry of the Environment, Water Management Branch, Victoria B.C. May 1983.
- Plante, B., Benzaazoua, M., & Bussière, B. (2014). Lab to field scale effects on contaminated neutral drainage prediction from the Tio mine waste rocks. *Journal of Geochemical Exploration*, 137(1), 37-47.
- Revy G.F., 1996. Practical methods to control explosives losses and reduce ammonia and nitrate levels in mine water. Mining Engineering. July 1996
- Sapsford, D. J., Bowell, R. J., Dey, M., & Williams, K. P. (2009). Humidity cell tests for the prediction of acid rock drainage. *Minerals Engineering*, 22(1), 25-36.
- Smith L.J.D., Moncur M.C., Neuner M., Gupton M., Blowes D.W., Smith L., Sego D.C., 2013. The Diavik Waste Rock Project: Design, construction, and instrumentation of field-scale experimental waste-rock piles. *Applied Geochemistry*. Volume 36, September 2013, pp 187-199.
- SNC, 2006. Diavik Diamonds Project Ammonia Balance. Prepared by SNC Lavalin for Diavik Diamond Mines Inc. May 2006

- SRK (2014). Geochemical Characterization – Eagle Gold Project; prepared for Victoria Gold Corp., by SRK Consulting, Vancouver, BC, March 2014..
- Stockwell, J., Smith, L., Jambor, J. L., & Beckie, R. (2006). The relationship between fluid flow and mineral weathering in heterogeneous unsaturated porous media: A physical and geochemical characterization of a waste-rock pile. *Applied Geochemistry*, 21(8), 1347-1361.
- Stromberg B. and Banwart S.A. (1999). Experimental study of acidity-consuming processes in mining waste rock: some influences of mineralogy and particle size. *Applied Geochemistry*. (14) 1-16.
- Wickland B. E., and Wilson G. W. (2005) *Self-weight consolidation of mixtures of mine waste rock and tailings. Can. Geotech. J.* (42) 327-339.

Appendix A:
Raw Laboratory Leachate Data

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
HC 1																
2-Jul-09	0	750	385	7.71	369	326	2.14	29.28	133	3.9	0.12	126	0.0238	0.0012	0.00188	0.00725
9-Jul-09	1	500	380	7.58	324	323	2.28	23.38	188	13	0.17	185	0.0587	0.00688	0.0106	0.00657
16-Jul-09	2	500	380	7.53	367	190	2.69	22.46	77	1.3	0.13	83.7	0.081	0.00721	0.00772	0.00349
23-Jul-09	3	500	425	7.60	379	148	2.61	22.44	53	0.6	0.13	58.8	0.104	0.00312	0.00735	0.00221
30-Jul-09	4	500	425	7.53	342	125	4.38	22.61	37	--	--	--	--	--	--	--
6-Aug-09	5	500	450	8.04	210	100	1.75	24.63	38	0.9	0.09	49.5	0.12	0.0028	0.00788	0.00146
13-Aug-09	6	500	440	7.40	328	106	4.76	24.59	27	--	--	--	--	--	--	--
20-Aug-09	7	500	450	7.50	332	92	2.5	23.49	26	0.5	0.06	40.9	0.126	0.00292	0.0087	0.00115
27-Aug-09	8	500	450	7.74	308	87	2.77	23.72	19	--	--	--	--	--	--	--
3-Sep-09	9	500	460	8.15	106	90	2.36	25.22	21	0.5	0.05	40.2	0.121	0.00282	0.00868	0.00133
10-Sep-09	10	500	420	7.82	332	100	1.24	23.55	25	--	--	--	--	--	--	--
17-Sep-09	11	500	435	7.69	342	109	2.95	25.53	29	0.7	0.07	47.7	0.117	0.00247	0.0096	0.00167
24-Sep-09	12	500	450	7.68	342	99	2.19	25.26	33	--	--	--	--	--	--	--
1-Oct-09	13	500	435	7.63	347	95	2.45	25.28	26	0.5	0.04	43.5	0.0965	0.00177	0.00746	0.00191
8-Oct-09	14	500	445	7.50	332	88	3.88	25.45	24	--	--	--	--	--	--	--
15-Oct-09	15	500	440	7.53	348	83	2.83	23.39	28	0.5	0.04	42.4	0.106	0.00181	0.00789	0.00145
22-Oct-09	16	500	450	7.42	373	78	2.99	21.71	17	--	--	--	--	--	--	--
29-Oct-09	17	500	445	7.65	341	72	2.14	17.33	18	0.5	0.03	28.5	0.0742	0.00133	0.00512	0.00097
5-Nov-09	18	500	475	7.54	336	68	3.95	20.42	16	--	--	--	--	--	--	--
12-Nov-09	19	500	465	7.47	332	71	4.52	23.19	12	0.5	0.03	30.1	0.0992	0.00139	0.00676	0.00103
19-Nov-09	20	500	455	7.49	345	79	4.54	23.14	15	--	--	--	--	--	--	--
26-Nov-09	21	500	460	7.41	230	86	1.88	28.46	18	0.5	0.04	34	0.111	0.00153	0.00812	0.00121
3-Dec-09	22	500	485	7.35	336	75	4.97	24.63	15	--	--	--	--	--	--	--
10-Dec-09	23	500	470	7.17	378	64	4.93	17.75	21	0.5	0.02	27.7	0.068	0.00108	0.00434	0.00085
17-Dec-09	24	500	475	7.17	357	68	2.94	21.77	13	--	--	--	--	--	--	--
24-Dec-09	25	500	470	7.70	367	69	2.38	25.25	14	0.5	0.02	31.7	0.0663	0.00132	0.00576	0.00096
31-Dec-09	26	500	470	7.55	392	80	2.68	23.91	16	--	--	--	--	--	--	--
7-Jan-10	27	500	500	7.57	379	76	2.62	22.91	15	0.5	0.03	31.5	0.0709	0.00126	0.00506	0.00091
14-Jan-10	28	500	480	7.26	350	73	--	21.92	15	--	--	--	--	--	--	--
21-Jan-10	29	500	500	7.72	344	70	2.17	23.26	15	0.5	0.01	32.7	0.0677	0.0012	0.00515	0.00086
28-Jan-10	30	500	480	7.26	359	61	4.1	22.2	18	--	--	--	--	--	--	--
4-Feb-10	31	500	510	7.19	299	56	3.5	21.87	14	0.5	0.02	33.3	0.0658	0.00122	0.00542	0.00088
11-Feb-10	32	500	475	7.32	347	72	3.07	21.15	15	--	--	--	--	--	--	--
18-Feb-10	33	500	440	7.23	231	69	3.99	17.85	16	--	--	--	--	--	--	--
25-Feb-10	34	500	480	7.26	375	54	3.36	15.8	15	--	0.02	25.7	0.0488	0.00081	0.00382	0.00086
4-Mar-10	35	500	480	7.31	373	66	3.01	16.97	14	--	--	--	--	--	--	--
11-Mar-10	36	500	445	7.26	391	60	3.27	15.48	14	--	--	--	--	--	--	--
18-Mar-10	37	500	465	7.32	339	65	3.42	16.8	12	--	0.02	26.6	0.0699	0.00078	0.00463	0.00086
25-Mar-10	38	500	470	7.30	371	54	3.23	14.96	11	--	--	--	--	--	--	--
1-Apr-10	39	500	445	7.39	378	59	2.89	14.59	17	--	--	--	--	--	--	--
8-Apr-10	40	500	470	7.28	359	55	3.24	15.27	9	--	0.02	24.3	0.0683	0.00068	0.00469	0.00168
15-Apr-10	41	500	485	7.33	300	67	3.51	17.06	15	--	--	--	--	--	--	--
22-Apr-10	42	500	450	7.28	355	54	4.06	13.85	14	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
HC 1																
2-Jul-09	0	0.00001	0.000005	0.05	0.000005	45.3	0.0001	0.00103	0.00132	0.002	0.000024	0.0145	3.21	0.0514	0.00002	0.00176
9-Jul-09	1	0.00001	0.000005	0.05	0.000054	64.8	0.0001	0.000747	0.00519	0.012	0.000321	0.0111	5.55	0.0463	0.00002	0.00217
16-Jul-09	2	0.00001	0.000005	0.05	0.00001	29.5	0.0001	0.000183	0.00144	0.003	0.00017	0.0101	2.42	0.0218	0.00001	0.00262
23-Jul-09	3	0.00001	0.000005	0.05	0.000018	21.5	0.0001	0.000072	0.00082	0.002	0.000094	0.0066	1.26	0.0154	0.00001	0.00135
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	0.00001	0.000005	0.05	0.000005	18.2	0.0001	0.000049	0.00069	0.006	0.000018	0.0046	0.99	0.0105	0.00001	0.00096
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	0.00001	0.000012	0.05	0.000006	15	0.0001	0.000046	0.00049	0.006	0.000058	0.0043	0.84	0.00921	0.00001	0.00086
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	0.00001	0.000005	0.05	0.000006	14.8	0.0001	0.00004	0.0006	0.005	0.000074	0.0038	0.79	0.00909	0.00001	0.00073
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	0.00001	0.000005	0.05	0.000011	17.6	0.0001	0.000071	0.00066	0.006	0.000015	0.0049	0.91	0.00827	0.00001	0.00067
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.00001	0.000005	0.05	0.000005	16.1	0.0001	0.000072	0.00077	0.01	0.000011	0.0037	0.8	0.00891	0.00001	0.00054
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.00001	0.000005	0.05	0.000011	15.8	0.0001	0.000063	0.00109	0.006	0.000027	0.0034	0.73	0.0088	0.00001	0.00049
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.00001	0.000005	0.05	0.000005	10.6	0.0001	0.000047	0.00087	0.007	0.000919	0.0027	0.49	0.00663	0.00001	0.00036
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.00001	0.000005	0.05	0.000007	11.2	0.0001	0.000038	0.00023	0.006	0.000019	0.0027	0.51	0.00678	0.00001	0.00042
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.00001	0.000011	0.05	0.000005	12.7	0.0001	0.000052	0.00025	0.007	0.000018	0.0032	0.58	0.00484	0.00001	0.00045
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00001	0.000006	0.05	0.000005	10.4	0.0001	0.000049	0.00027	0.011	0.00007	0.0023	0.44	0.00565	0.00001	0.00032
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00001	0.000005	0.05	0.000005	11.9	0.0001	0.000049	0.00032	0.005	0.000014	0.0026	0.46	0.00729	0.00001	0.00028
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00001	0.000005	0.05	0.000005	11.8	0.0001	0.000051	0.00019	0.01	0.000039	0.0023	0.47	0.00623	0.00001	0.00028
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00001	0.000005	0.05	0.000005	12.3	0.0001	0.00005	--	0.004	0.000009	0.0022	0.46	0.00527	0.00001	0.00031
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00001	0.000005	0.05	0.000005	12.6	0.0001	0.000041	0.00038	0.004	0.00005	0.0023	0.45	0.0046	0.00001	0.0003
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.00001	0.000005	0.05	0.000005	9.76	0.0001	0.000065	0.00053	0.002	0.000051	0.0018	0.32	0.00571	0.00001	0.0002
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.00001	0.000005	0.05	0.000005	10.1	0.0001	0.000044	0.00029	0.006	0.000021	0.0019	0.33	0.00468	0.00001	0.00023
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.00001	0.000005	0.05	0.000005	9.22	0.0001	0.000042	0.00048	0.007	0.000019	0.0017	0.3	0.00313	0.00001	0.0002
15-Apr-10	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
HC 1																	
2-Jul-09	0	0.0122	0.007	9.19	0.00522	1.02	0.000005	4.77	0.141	44	0.000018	0.00001	0.0005	0.00182	0.0002	0.0005	0.0001
9-Jul-09	1	0.00474	0.004	7.9	0.0112	1.4	0.000013	6.63	0.18	71	0.000017	0.00001	0.0005	0.00186	0.0003	0.0038	0.0001
16-Jul-09	2	0.00128	0.002	5.76	0.00465	1.21	0.000005	3.28	0.0937	26	0.000012	0.00003	0.0005	0.00198	0.0002	0.0031	0.0001
23-Jul-09	3	0.0004	0.002	3.81	0.00198	1.16	0.000005	1.39	0.0678	15	0.000012	0.00001	0.0005	0.000975	0.0002	0.0006	0.0001
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	0.00035	0.002	3.02	0.00124	1.18	0.000005	0.9	0.0532	12	0.000005	0.00001	0.0005	0.000897	0.0002	0.0004	0.0001
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	0.00029	0.002	2.96	0.00085	1.33	0.000005	0.56	0.041	8	0.000007	0.00001	0.0005	0.000897	0.0003	0.0008	0.0001
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	0.00023	0.003	2.81	0.00082	1.3	0.000005	0.43	0.0412	9	0.000007	0.00002	0.0005	0.00103	0.0003	0.0004	0.0001
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	0.00026	0.002	3.2	0.0009	1.55	0.000005	0.45	0.0506	11	0.000007	0.00008	0.0005	0.00106	0.0003	0.0011	0.0001
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.00029	0.002	2.58	0.0007	1.21	0.000005	0.32	0.0436	10	0.000006	0.00001	0.0005	0.000971	0.0002	0.0006	0.0001
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.00032	0.002	2.46	0.00067	1.15	0.000005	0.32	0.0416	10	0.000006	0.00002	0.0005	0.0011	0.0002	0.0008	0.0001
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.00035	0.003	1.78	0.00044	0.802	0.000005	0.27	0.0318	7	0.000005	0.00009	0.0005	0.000872	0.0002	0.0008	0.0001
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.0002	0.004	1.95	0.00043	1.01	0.000005	0.21	0.0314	6	0.000004	0.00002	0.0005	0.000896	0.0002	0.0004	0.0001
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.00024	0.002	2.26	0.00047	1.21	0.000005	0.24	0.0349	7	0.000007	0.00003	0.0006	0.000848	0.0003	0.0007	0.0001
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00014	0.002	1.51	0.00037	0.949	0.000025	0.16	0.027	4	0.000012	0.00002	0.0006	0.000875	0.0002	0.0002	0.0001
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00023	0.002	1.82	0.00043	1.05	0.000005	0.16	0.0313	6	0.000005	0.00001	0.0005	0.000983	0.0002	0.0003	0.0001
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00019	0.002	1.58	0.00034	1	0.000005	0.12	0.0314	7	0.000002	0.00009	0.0006	0.00129	0.0002	0.0003	0.0001
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.0002	0.002	1.74	0.00035	0.905	0.000005	0.16	0.0298	6	0.000004	0.00001	0.0005	0.00102	0.0002	0.0004	0.0001
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00026	0.002	1.58	0.00036	1.02	0.000005	0.15	0.0327	6	0.000009	--	0.0005	0.00144	0.0002	0.0006	0.0001
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.00027	0.002	1.16	0.00029	0.749	0.000005	0.13	0.026	5	0.000006	0.00001	0.0005	0.000944	0.0002	0.0006	0.0001
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.00028	0.002	1.29	0.00032	0.799	0.000005	0.15	0.0272	10	0.000006	0.00001	0.0005	0.000695	0.0002	0.0003	0.0001
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.00026	0.002	1.3	0.00029	0.801	0.000005	0.2	0.0244	5	0.000002	0.00002	0.0005	0.000648	0.0002	0.001	0.0001
15-Apr-10	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
29-Apr-10	43	500	515	7.38	357	58	2.3	16.14	14	--	0.02	24.1	0.0415	0.00076	0.00364	0.00084
6-May-10	44	500	410	7.31	297	66	4.45	17.81	14	--	--	--	--	--	--	--
13-May-10	45	500	505	7.35	293	73	3.64	16.84	13	--	--	--	--	--	--	--
20-May-10	46	500	475	7.56	352	64	4.19	17.5	12	--	0.01	26.7	0.0476	0.00074	0.00515	0.00077
27-May-10	47	500	495	7.36	379	65	6.07	23	8	--	--	--	--	--	--	--
3-Jun-10	48	500	485	7.35	364	58	3.16	16.42	8	--	--	--	--	--	--	--
10-Jun-10	49	500	480	7.42	272	66	4.6	23.34	8	--	0.01	25.8	0.0625	0.00077	0.00596	0.0007
17-Jun-10	50	500	465	7.37	339	53	4.45	15.74	5	--	--	--	--	--	--	--
24-Jun-10	51	500	480	7.45	405	55	2.85	17.07	11	--	--	--	--	--	--	--
1-Jul-10	52	500	480	7.42	409	57	2.87	16.42	8	--	0.07	23	0.0508	0.0006	0.00438	0.00088
8-Jul-10	53	500	465	7.28	274	52	2.45	14.31	9	--	--	--	--	--	--	--
15-Jul-10	54	500	475	7.21	345	55	4.42	15.57	12	--	--	--	--	--	--	--
22-Jul-10	55	500	510	7.01	360	55	4.35	15.81	5	--	--	--	--	--	--	--
29-Jul-10	56	500	500	7.27	345	45	4.7	14.07	9	--	0.01	17.6	0.0454	0.00054	0.00335	0.00072
5-Aug-10	57	500	495	7.38	227	47	2.52	12.91	8	--	--	--	--	--	--	--
12-Aug-10	58	500	475	7.36	397	51	4.68	16.29	9	--	--	--	--	--	--	--
19-Aug-10	59	500	475	6.94	361	53	5.58	15.78	8	--	--	--	--	--	--	--
26-Aug-10	60	500	455	7.29	368	52	2.97	14.7	9	--	0.03	23.8	0.0472	0.0005	0.00332	0.00206
2-Sep-10	61	500	475	7.35	250	48	4.08	15.57	16	--	--	--	--	--	--	--
9-Sep-10	62	500	440	7.02	380	50	5.2	14.64	11	--	--	--	--	--	--	--
16-Sep-10	63	500	465	7.11	354	51	3.19	16.92	11	--	--	--	--	--	--	--

HC 2

2-Jul-09	0	750	390	7.05	274	765	7.93	62.89	386	6.2	0.2	387	0.0121	0.00041	0.00102	0.0292
9-Jul-09	1	500	385	7.53	326	582	2.86	27.31	284	20	0.4	277	0.0338	0.00075	0.0164	0.0154
16-Jul-09	2	500	400	7.46	360	511	3.48	25.4	192	13	0.35	260	0.0394	0.00104	0.0231	0.0134
23-Jul-09	3	500	440	7.43	380	408	3.33	21.61	165	0.5	0.35	182	0.0425	0.00062	0.0334	0.00935
30-Jul-09	4	500	430	7.29	366	320	4.97	21.88	112	--	--	--	--	--	--	--
6-Aug-09	5	500	445	7.56	268	248	2.5	20.47	116	0.7	0.29	125	0.0519	0.00052	0.0319	0.00484
13-Aug-09	6	500	450	7.38	331	250	5.07	16.3	109	--	--	--	--	--	--	--
20-Aug-09	7	500	475	7.28	351	218	3.13	15.32	80	0.5	0.28	107	0.0547	0.00054	0.0316	0.0044
27-Aug-09	8	500	455	7.40	323	230	3.87	16.16	86	--	--	--	--	--	--	--
3-Sep-09	9	500	505	7.47	189	247	3.95	21.34	100	2.2	0.29	122	0.0593	0.00063	0.0422	0.00468
10-Sep-09	10	500	500	7.71	342	246	1.51	21.67	100	--	--	--	--	--	--	--
17-Sep-09	11	500	490	7.53	347	242	3.68	20.74	95	0.7	0.29	111	0.0427	0.00067	0.0319	0.00464
24-Sep-09	12	500	505	7.45	352	217	2.69	23.05	91	--	--	--	--	--	--	--
1-Oct-09	13	500	505	7.49	355	204	2.95	21.63	83	0.5	0.31	99.6	0.0474	0.00055	0.0348	0.00441
8-Oct-09	14	500	490	7.44	341	197	4.61	23.86	79	--	--	--	--	--	--	--
15-Oct-09	15	500	500	7.46	354	158	3.05	20.07	67	0.5	0.3	77.6	0.0438	0.00056	0.0342	0.00365
22-Oct-09	16	500	495	7.47	364	156	3.25	21.54	62	--	--	--	--	--	--	--
29-Oct-09	17	500	490	7.54	350	144	2.37	17.15	57	0.5	0.29	59.3	0.0331	0.00045	0.0271	0.00267
5-Nov-09	18	500	515	7.57	343	137	4.78	20.53	46	--	--	--	--	--	--	--
12-Nov-09	19	500	490	7.38	340	125	4.91	20.82	42	0.5	0.31	54.4	0.0386	0.00046	0.0313	0.00238
19-Nov-09	20	500	510	7.46	351	129	5.35	22.01	39	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

[illegible]

HC 2

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

[illegible]

HC 2

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
26-Nov-09	21	500	505	7.66	311	126	2.51	24.77	45	0.5	0.33	52.1	0.0474	0.00048	0.0338	0.00231
3-Dec-09	22	500	505	7.34	343	119	5.07	21.19	34	--	--	--	--	--	--	--
10-Dec-09	23	500	510	7.18	385	110	5.11	15.88	39	0.5	0.28	48.9	0.0329	0.00035	0.0258	0.00218
17-Dec-09	24	500	505	7.48	364	113	2.93	21.25	27	--	--	--	--	--	--	--
24-Dec-09	25	500	500	7.44	373	97	2.92	20.26	28	0.5	0.28	45	0.0304	0.00042	0.0292	0.002
31-Dec-09	26	500	500	7.39	394	92	2.58	15.24	26	--	--	--	--	--	--	--
7-Jan-10	27	500	505	7.41	378	102	2.82	21.4	28	0.5	0.28	42.8	0.0448	0.00037	0.0303	0.00198
14-Jan-10	28	500	505	7.17	353	97	--	17	29	--	--	--	--	--	--	--
21-Jan-10	29	500	505	7.31	361	93	2.89	16.61	28	0.5	--	44.8	0.0367	0.0004	0.0311	0.00199
28-Jan-10	30	500	515	7.17	361	78	4.34	15.14	30	--	--	--	--	--	--	--
4-Feb-10	31	500	510	7.01	282	79	3.99	15.06	22	0.5	0.26	39.3	0.0389	0.00033	0.0313	0.00176

HC 3																
2-Jul-09	0	750	385	8.26	233	273	0.73	46.2	79	9.2	0.67	73.3	0.0695	0.0316	0.00541	0.0181
9-Jul-09	1	500	395	7.94	304	243	1.59	34.67	86	7.6	0.68	58.8	0.1	0.063	0.00868	0.0107
16-Jul-09	2	500	395	8.18	327	144	1.19	33.29	44	0.7	0.79	34.1	0.154	0.0877	0.00866	0.00645
23-Jul-09	3	500	455	8.34	337	92	0.76	35.35	15	0.5	0.62	22.5	0.129	0.0763	0.00739	0.00443
30-Jul-09	4	500	430	7.88	336	78	3.1	31.1	9	--	--	--	--	--	--	--
6-Aug-09	5	500	440	8.15	268	88	1.09	32.52	30	0.9	0.48	34.5	0.119	0.0664	0.00564	0.0049
13-Aug-09	6	500	460	7.85	310	114	3.83	28.39	24	--	--	--	--	--	--	--
20-Aug-09	7	500	475	7.73	342	124	2.13	25.37	40	0.5	0.38	54.9	0.104	0.058	0.00303	0.0083
27-Aug-09	8	500	465	7.99	304	133	2.48	27.81	40	--	--	--	--	--	--	--
3-Sep-09	9	500	455	7.78	225	128	3.09	27.95	37	0.5	0.42	62.5	0.119	0.0522	0.0026	0.00823
10-Sep-09	10	500	430	8.05	330	134	0.8	26.82	38	--	--	--	--	--	--	--
17-Sep-09	11	500	425	7.96	338	116	2.22	27.68	31	0.7	0.43	55.8	0.101	0.0422	0.00231	0.00697
24-Sep-09	12	500	440	7.88	342	121	1.74	30.58	37	--	--	--	--	--	--	--
1-Oct-09	13	500	435	8.04	341	91	1.5	26.94	22	0.5	0.35	46.3	0.111	0.0332	0.00197	0.00506
8-Oct-09	14	500	440	7.65	333	89	3.7	25.63	30	--	--	--	--	--	--	--
15-Oct-09	15	500	450	7.80	348	94	2.23	26.27	27	0.5	0.39	53	0.0861	0.0364	0.00155	0.00597
22-Oct-09	16	500	460	7.68	348	78	2.52	23.32	18	--	--	--	--	--	--	--
29-Oct-09	17	500	445	7.79	342	75	1.88	22.04	21	0.5	0.28	37.1	0.0732	0.0276	0.001	0.00404
5-Nov-09	18	500	475	8.01	331	86	3.12	26.91	18	--	--	--	--	--	--	--
12-Nov-09	19	500	465	7.73	329	90	3.84	27.32	20	0.5	0.34	43.1	0.0971	0.0351	0.0013	0.00434
19-Nov-09	20	500	450	7.70	343	85	4.33	25.81	16	--	--	--	--	--	--	--
26-Nov-09	21	500	450	8.02	328	86	1.64	29.4	19	0.5	0.35	42.1	0.0979	0.0311	0.00128	0.00388
3-Dec-09	22	500	465	7.62	341	84	4.25	26.22	18	--	--	--	--	--	--	--
10-Dec-09	23	500	475	7.47	380	76	4.5	21.23	16	0.5	0.3	39.4	0.0674	0.0273	0.00092	0.00385
17-Dec-09	24	500	485	7.67	361	81	2.65	24.89	12	--	--	--	--	--	--	--
24-Dec-09	25	500	490	7.88	369	103	2.08	35.65	21	0.5	0.55	58.9	0.072	0.0481	0.00173	0.00603
31-Dec-09	26	500	500	7.78	390	65	2.05	24.85	11	--	--	--	--	--	--	--
7-Jan-10	27	500	480	7.61	377	83	2.26	26.16	15	0.5	0.36	43	0.0706	0.0318	0.00132	0.00405
14-Jan-10	28	500	480	7.46	349	79	--	23.15	15	--	--	--	--	--	--	--
21-Jan-10	29	500	485	7.55	361	79	2.38	26.01	15	0.5	0.41	45.7	0.0731	0.0356	0.00114	0.00417
28-Jan-10	30	500	500	7.37	358	64	3.94	24.38	15	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
26-Nov-09	21	0.00001	0.000007	0.05	0.000038	19.8	0.0001	0.000109	0.00033	0.007	0.00227	0.0027	0.62	0.0075	0.00001	0.00019
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00001	0.000026	0.05	0.000005	18.6	0.0001	0.000129	0.00043	0.006	0.00001	0.0022	0.58	0.00755	0.00001	0.00015
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00001	0.000005	0.05	0.00002	17.2	0.0001	0.000105	0.00031	0.003	0.00145	0.0024	0.5	0.00706	0.00001	0.00012
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00001	0.000005	0.05	0.000005	16.3	0.0001	0.000112	0.00024	0.011	0.000022	0.0021	0.49	0.00707	0.00001	0.00013
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00001	0.000005	0.05	0.000005	17.1	0.0001	0.000099	--	0.01	0.000005	0.0021	0.51	0.00684	0.00001	0.00007
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00001	0.000008	0.05	0.000005	15	0.0001	0.000056	0.0015	0.004	0.000058	0.002	0.43	0.00541	0.00001	0.00012

HC 3

2-Jul-09	0	0.00001	0.000007	0.05	0.00001	24.1	0.0001	0.000059	0.00133	0.002	0.000036	0.0101	3.19	0.00517	0.00001	0.0233
9-Jul-09	1	0.00001	0.000008	0.05	0.000016	19	0.0001	0.000069	0.00117	0.003	0.00004	0.0072	2.75	0.00429	0.00001	0.0529
16-Jul-09	2	0.00001	0.000011	0.05	0.00001	11.1	0.0004	0.000071	0.002	0.016	0.00011	0.0059	1.57	0.00299	0.00001	0.0361
23-Jul-09	3	0.00001	0.000008	0.05	0.000005	7.37	0.0001	0.000027	0.00102	0.003	0.000042	0.0048	1	0.0042	0.00001	0.0141
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	0.00001	0.00001	0.05	0.000005	11.5	0.0001	0.000027	0.00093	0.011	0.000051	0.0043	1.43	0.00514	0.00001	0.00865
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	0.00001	0.000023	0.05	0.000005	17.8	0.0001	0.000032	0.00071	0.004	0.000059	0.0052	2.52	0.00743	0.00001	0.00486
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	0.00001	0.000011	0.05	0.000011	20.5	0.0001	0.000037	0.0007	0.003	0.00004	0.0051	2.74	0.0073	0.00001	0.00389
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	0.00001	0.00001	0.05	0.000011	18.6	0.0001	0.00004	0.00133	0.003	0.000031	0.0042	2.29	0.00821	0.00001	0.00318
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.00001	0.00001	0.05	0.000007	15.4	0.0001	0.000031	0.00081	0.007	0.00005	0.0031	1.91	0.00743	0.00001	0.00271
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.00001	0.00001	0.05	0.000012	17.8	0.0001	0.000114	0.00088	0.004	0.000366	0.0036	2.11	0.0089	0.00001	0.0028
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.00001	0.000009	0.05	0.000006	12.4	0.0001	0.000029	0.00072	0.006	0.000077	0.0025	1.46	0.00769	0.00001	0.00203
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.00001	0.000008	0.05	0.000013	14.2	0.0001	0.000026	0.00034	0.003	0.000056	0.0028	1.86	0.00636	0.00001	0.00232
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.00001	0.000017	0.05	0.000005	14.1	0.0001	0.000026	0.00048	0.004	0.00004	0.0023	1.66	0.00681	0.00001	0.00206
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00001	0.000009	0.05	0.000005	13.2	0.0001	0.000044	0.00031	0.005	0.00003	0.0021	1.58	0.00721	0.00001	0.00188
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00001	0.000005	0.05	0.000007	19.9	0.0001	0.000046	0.00041	0.002	0.000435	0.0037	2.21	0.00837	0.00001	0.00249
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00001	0.000006	0.05	0.000007	14.5	0.0001	0.000037	0.00103	0.006	0.00014	0.0023	1.67	0.00948	0.00001	0.00161
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00001	0.000005	0.05	0.000008	15.3	0.0001	0.000031	--	0.003	0.000019	0.0023	1.8	0.0083	0.00001	0.00165
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
26-Nov-09	21	0.00041	0.002	1.44	0.00121	2.09	0.000005	0.28	0.0414	13	0.000005	0.00003	0.0005	0.000473	0.0002	0.0036	0.0001
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00045	0.002	1.22	0.00099	1.76	0.000007	0.19	0.037	12	0.000006	0.00001	0.0005	0.000478	0.0002	0.0006	0.0001
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.0004	0.002	1.29	0.00112	1.91	0.000005	0.19	0.0354	10	0.000005	0.00001	0.0005	0.000436	0.0002	0.0023	0.0001
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00032	0.002	1.2	0.00104	1.97	0.000005	0.15	0.0327	11	0.000002	0.00007	0.0005	0.000446	0.0002	0.0003	0.0001
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00041	0.002	1.31	0.00117	1.95	0.000005	0.19	0.0324	10	0.000003	0.00001	0.0005	0.000438	0.0002	0.0004	0.0001
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00031	0.002	1.08	0.00101	1.78	0.000005	0.21	0.0303	9	0.000005	0.00014	0.0005	0.00045	0.0002	0.0007	0.0001

HC 3

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
4-Feb-10	31	500	480	7.37	273	62	3.23	24.89	14	0.5	0.39	41	0.0639	0.031	0.00091	0.00406
11-Feb-10	32	500	480	7.36	342	79	2.83	24.92	15	--	--	--	--	--	--	--
18-Feb-10	33	500	490	7.32	258	90	3.69	27.68	17	--	--	--	--	--	--	--
25-Feb-10	34	500	460	7.42	360	59	2.91	20.49	15	--	0.34	32.7	0.068	0.0225	0.00092	0.00332
4-Mar-10	35	500	475	7.35	364	69	2.69	17.86	16	--	--	--	--	--	--	--
11-Mar-10	36	500	475	7.34	385	69	3.01	20.41	15	--	--	--	--	--	--	--
18-Mar-10	37	500	485	7.27	363	67	3.3	17.31	11	--	0.28	30.4	0.0605	0.0174	0.00067	0.00314
25-Mar-10	38	500	475	7.50	364	70	3.03	21.12	16	--	--	--	--	--	--	--
1-Apr-10	39	500	515	7.56	375	58	2.47	17.28	14	--	--	--	--	--	--	--
8-Apr-10	40	500	485	7.43	359	70	2.66	21	14	--	0.29	33	0.061	0.0183	0.00067	0.00558

HC 4

2-Jul-09	0	750	350	8.22	252	259	0.89	52.72	80	4.9	0.39	106	0.0355	0.0247	0.0374	0.0226
9-Jul-09	1	500	435	7.93	306	305	2.01	40.8	113	5.6	0.52	134	0.0449	0.0615	0.0937	0.022
16-Jul-09	2	500	395	8.03	329	179	2.04	42.19	55	1.1	0.62	72.6	0.0662	0.0869	0.125	0.0136
23-Jul-09	3	500	455	8.12	346	134	1.58	42.09	28	0.5	0.42	49	0.0707	0.0791	0.111	0.0103
30-Jul-09	4	500	450	7.98	343	117	4.12	39.03	22	--	--	--	--	--	--	--
6-Aug-09	5	500	475	8.05	279	116	1.63	44.07	32	0.9	0.29	63.3	0.0636	0.0831	0.0953	0.0111
13-Aug-09	6	500	465	7.78	317	157	4.53	46.27	34	--	--	--	--	--	--	--
20-Aug-09	7	500	480	7.81	345	163	2.39	39.77	45	2.3	0.24	83	0.065	0.104	0.0948	0.0165
27-Aug-09	8	500	470	7.96	305	165	2.84	41.97	46	--	--	--	--	--	--	--
3-Sep-09	9	500	480	7.86	257	168	3.46	41.21	48	0.5	0.19	88.9	0.0625	0.117	0.0914	0.0161
10-Sep-09	10	500	440	8.04	331	152	0.9	36.8	41	--	--	--	--	--	--	--
17-Sep-09	11	500	465	7.94	340	174	2.62	41.94	46	0.5	0.16	92.3	0.069	0.101	0.0796	0.0146
24-Sep-09	12	500	460	7.92	342	158	2.01	45.29	47	--	--	--	--	--	--	--
1-Oct-09	13	500	440	7.92	346	165	2.03	46.42	42	0.5	0.12	89.1	0.0545	0.0866	0.0628	0.014
8-Oct-09	14	500	445	7.71	337	157	3.7	42.57	48	--	--	--	--	--	--	--
15-Oct-09	15	500	435	7.88	348	144	2.33	47.87	37	0.5	0.11	85.1	0.0574	0.0845	0.0718	0.012
22-Oct-09	16	500	445	7.81	344	130	2.33	38.69	34	--	--	--	--	--	--	--
29-Oct-09	17	500	455	7.90	345	139	2.01	44.07	34	0.5	0.08	73.1	0.0544	0.0756	0.0551	0.0103
5-Nov-09	18	500	480	7.90	336	125	3.77	43	24	--	--	--	--	--	--	--
12-Nov-09	19	500	465	7.71	331	122	4.65	44.35	26	0.5	0.07	64.4	0.0646	0.0729	0.0534	0.00879
19-Nov-09	20	500	470	7.72	345	118	4.69	39.6	19	--	--	--	--	--	--	--
26-Nov-09	21	500	460	7.97	345	130	2.23	49.17	26	0.5	0.08	70.6	0.0611	0.0768	0.0598	0.00904
3-Dec-09	22	500	470	7.69	345	132	4.72	51.95	22	--	--	--	--	--	--	--
10-Dec-09	23	500	470	7.66	380	126	4.99	47.09	23	0.5	0.06	70.6	0.0651	0.0561	0.0466	0.00889
17-Dec-09	24	500	490	7.88	361	143	2.67	53.72	23	--	--	--	--	--	--	--
24-Dec-09	25	500	475	7.89	368	124	2.35	49.41	26	0.5	0.05	78.6	0.0536	0.068	0.0531	0.00932
31-Dec-09	26	500	465	7.85	392	135	2.44	46.68	24	--	--	--	--	--	--	--
7-Jan-10	27	500	500	7.81	379	138	2.19	46.91	26	0.5	0.05	75.6	0.0528	0.0533	0.0429	0.00883
14-Jan-10	28	500	485	7.63	349	140	--	50.27	22	--	--	--	--	--	--	--
21-Jan-10	29	500	475	7.77	361	120	2.48	43.94	21	0.5	0.05	71.4	0.0596	0.0531	0.045	0.00808
28-Jan-10	30	500	490	7.60	354	101	4.16	42.11	26	--	--	--	--	--	--	--
4-Feb-10	31	500	470	7.59	271	96	3.51	46.07	18	0.5	0.05	63.8	0.0513	0.0485	0.0439	0.00776

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
4-Feb-10	31	0.00001	0.000005	0.05	0.000005	13.7	0.0001	0.000036	0.00077	0.003	0.000063	0.0023	1.63	0.00776	0.00001	0.00152
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.00001	0.00001	0.05	0.000005	11.1	0.0001	0.000045	0.00038	0.001	0.000019	0.0019	1.19	0.00769	0.00001	0.001
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.00001	0.000005	0.05	0.000033	10.3	0.0001	0.00003	0.00032	0.003	0.000219	0.0016	1.16	0.00792	0.00001	0.00092
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.00001	0.000005	0.05	0.000005	11.1	0.0001	0.000038	0.00094	0.003	0.000023	0.0016	1.27	0.00798	0.00001	0.00097

HC 4

2-Jul-09	0	0.00001	0.000052	0.05	0.000007	35.7	0.0001	0.00033	0.00326	0.002	0.000056	0.0096	4.19	0.00533	0.00001	0.0146
9-Jul-09	1	0.00001	0.000045	0.05	0.000014	45	0.0001	0.000306	0.00321	0.002	0.000163	0.0132	5.2	0.00506	0.00001	0.0295
16-Jul-09	2	0.00001	0.000041	0.05	0.000012	23.7	0.0001	0.000195	0.00216	0.003	0.000125	0.0114	3.26	0.0037	0.00001	0.0296
23-Jul-09	3	0.00001	0.000025	0.05	0.000014	16	0.0001	0.000074	0.00183	0.002	0.000118	0.0085	2.22	0.00422	0.00001	0.0148
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	0.00001	0.000033	0.05	0.000007	20.9	0.0001	0.000068	0.00108	0.003	0.00652	0.0069	2.66	0.0053	0.00001	0.00812
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	0.00001	0.000032	0.05	0.000011	27.3	0.0001	0.000108	0.00068	0.004	0.000315	0.0073	3.62	0.00636	0.00001	0.00547
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	0.00001	0.000041	0.05	0.000019	29.2	0.0001	0.000104	0.0008	0.002	0.000141	0.0066	3.89	0.00704	0.00001	0.00425
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	0.00001	0.000032	0.05	0.000021	30.4	0.0001	0.000101	0.0018	0.004	0.000133	0.0062	3.96	0.00612	0.00001	0.00365
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.00001	0.00002	0.05	0.000051	29.2	0.0001	0.000122	0.00125	0.003	0.000496	0.0053	3.95	0.00842	0.00001	0.00306
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.00001	0.000025	0.05	0.000024	28	0.0001	0.000112	0.00186	0.003	0.000123	0.0051	3.67	0.00671	0.00001	0.00253
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.00001	0.000026	0.05	0.000012	24.3	0.0001	0.000093	0.00116	0.004	0.000137	0.0042	3.05	0.00719	0.00001	0.00218
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.00001	0.000023	0.05	0.000011	21	0.0003	0.000091	0.00044	0.003	0.000134	0.0035	2.9	0.00659	0.00001	0.00188
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.00001	0.000031	0.05	0.000016	23.3	0.0001	0.00008	0.00057	0.002	0.00088	0.0035	3	0.00599	0.00001	0.00179
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00001	0.000036	0.05	0.000005	23.3	0.0001	0.000112	0.00046	0.004	0.000142	0.0031	3.04	0.00621	0.00001	0.0015
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00001	0.000015	0.05	0.000006	26.4	0.0001	0.000107	0.00058	0.002	0.000135	0.0033	3.09	0.00758	0.00001	0.00143
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00001	0.000016	0.05	0.000006	25	0.0001	0.000099	0.00036	0.002	0.000072	0.0029	3.2	0.00758	0.00001	0.0013
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00001	0.000017	0.05	0.000009	23.6	0.0001	0.000085	--	0.003	0.000068	0.0026	3.02	0.00714	0.00001	0.00128
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00001	0.000016	0.05	0.000007	21	0.0001	0.000075	0.00099	0.003	0.000105	0.0026	2.76	0.00609	0.00001	0.00126

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
4-Feb-10	31	0.00025	0.002	1.22	0.00082	0.945	0.000005	0.4	0.408	6	0.000009	0.00016	0.0005	0.0219	0.0002	0.0006	0.0001
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.00018	0.002	0.92	0.00075	0.793	0.000005	0.26	0.315	5	0.000008	0.00001	0.0005	0.0129	0.0002	0.0009	0.0001
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.00023	0.002	0.86	0.00068	0.669	0.000005	0.24	0.294	10	0.000007	0.00001	0.0005	0.0119	0.0002	0.0028	0.0001
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.0002	0.002	0.9	0.00071	0.663	0.000005	0.26	0.304	5	0.000004	0.00002	0.0005	0.0126	0.0002	0.0005	0.0001

HC 4

2-Jul-09	0	0.00172	0.007	6.01	0.0117	1.46	0.000005	10.6	1.11	23	0.000224	0.00001	0.0005	0.0232	0.0003	0.0003	0.0001
9-Jul-09	1	0.00769	0.003	6.68	0.0181	2.25	0.000005	14.2	1.34	37	0.000236	0.00002	0.0005	0.0437	0.0005	0.0007	0.0001
16-Jul-09	2	0.0046	0.003	5.84	0.00939	2.33	0.000005	10.4	0.78	19	0.000226	0.00005	0.0005	0.0521	0.0007	0.001	0.0001
23-Jul-09	3	0.0014	0.002	4.44	0.00585	2.14	0.000005	5.28	0.57	9	0.000197	0.00001	0.0005	0.0393	0.0005	0.0007	0.0001
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	0.00055	0.003	4.48	0.00486	2.1	0.000005	2.98	0.622	11	0.000215	0.00001	0.0005	0.0491	0.0005	0.0004	0.0001
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	0.00088	0.002	5.07	0.00441	2.34	0.000005	1.76	0.848	16	0.000281	0.00002	0.0005	0.0478	0.0005	0.0026	0.0001
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	0.00035	0.003	4.6	0.00475	2.41	0.000005	1.05	0.903	17	0.000293	0.00001	0.0005	0.0412	0.0004	0.0006	0.0001
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	0.00036	0.002	3.88	0.00405	2.21	0.000005	0.81	0.935	16	0.00028	0.00009	0.0005	0.0368	0.0003	0.0012	0.0001
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.00039	0.002	3.43	0.00317	1.87	0.000005	0.62	0.875	16	0.000236	0.00001	0.0005	0.0345	0.0002	0.0028	0.0001
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.00028	0.002	3.19	0.00329	1.83	0.000005	0.56	0.79	13	0.000216	0.00001	0.0005	0.0293	0.0002	0.0016	0.0001
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.00043	0.003	2.43	0.0027	1.42	0.000005	0.44	0.724	11	0.000196	0.00006	0.0005	0.0295	0.0002	0.0009	0.0001
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.00029	0.002	2.11	0.00246	1.5	0.000005	0.37	0.625	8	0.000195	0.00002	0.0005	0.0251	0.0002	0.001	0.0001
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.00027	0.002	2.08	0.00271	1.6	0.000005	0.35	0.632	9	0.000205	0.00002	0.0005	0.0221	0.0002	0.0014	0.0001
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00021	0.002	1.76	0.00206	1.36	0.000005	0.25	0.624	9	0.000171	0.00001	0.0005	0.0261	0.0002	0.0008	0.0001
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00025	0.002	1.92	0.0025	1.47	0.000005	0.24	0.673	10	0.000202	0.00001	0.0005	0.0234	0.0002	0.0008	0.0001
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00018	0.002	1.61	0.00214	1.33	0.000005	0.21	0.65	10	0.000169	0.00008	0.0005	0.0213	0.0002	0.0005	0.0001
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00023	0.002	1.58	0.00217	1.19	0.000011	0.22	0.576	9	0.000175	0.00001	0.0005	0.0171	0.0002	0.0008	0.0001
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00029	0.002	1.34	0.0022	1.21	0.000005	0.24	0.575	7	0.000169	0.00017	0.0005	0.0162	0.0002	0.0007	0.0001

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
11-Feb-10	32	500	480	7.61	341	122	3.26	47.02	22	--	--	--	--	--	--	--
18-Feb-10	33	500	475	7.57	268	118	3.87	45.88	18	--	--	--	--	--	--	--
25-Feb-10	34	500	460	7.67	354	109	3.08	46.12	15	--	0.04	65.6	0.0567	0.0457	0.0537	0.00822
4-Mar-10	35	500	455	7.72	359	116	2.87	43.84	20	--	--	--	--	--	--	--
11-Mar-10	36	500	475	7.64	378	108	3.07	43.06	17	--	--	--	--	--	--	--
18-Mar-10	37	500	475	7.52	368	107	3.7	38.16	15	--	0.03	50.5	0.0479	0.0305	0.0297	0.00627
25-Mar-10	38	500	475	7.69	363	105	3.25	38.11	18	--	--	--	--	--	--	--
1-Apr-10	39	500	445	7.77	375	116	2.45	45.26	21	--	--	--	--	--	--	--
8-Apr-10	40	500	470	7.68	356	108	2.57	39.3	19	--	0.04	56.2	0.0524	0.0323	0.0358	0.0126
15-Apr-10	41	500	490	7.61	319	133	4.02	49.3	22	--	--	--	--	--	--	--
22-Apr-10	42	500	490	7.63	351	119	4.35	40.4	25	--	--	--	--	--	--	--
29-Apr-10	43	500	495	7.75	355	136	2.41	50.43	25	--	0.06	72.3	0.046	0.0415	0.0409	0.00828
6-May-10	44	500	460	7.58	317	123	4.93	47.49	22	--	--	--	--	--	--	--
13-May-10	45	500	475	7.55	316	101	3.56	30.84	21	--	--	--	--	--	--	--
20-May-10	46	500	465	7.65	358	110	4.14	35.27	22	--	0.03	56.9	0.0669	0.0256	0.0451	0.00646
27-May-10	47	500	475	7.58	377	100	5.81	34.16	13	--	--	--	--	--	--	--
3-Jun-10	48	500	465	7.62	362	119	3.42	36.77	21	--	--	--	--	--	--	--
10-Jun-10	49	500	470	7.53	292	118	5.33	39.66	19	--	0.03	50.2	0.0553	0.0292	0.0466	0.00682
17-Jun-10	50	500	455	7.63	338	113	4.13	36.67	12	--	--	--	--	--	--	--
24-Jun-10	51	500	470	7.75	407	119	2.81	38.78	19	--	--	--	--	--	--	--
1-Jul-10	52	500	470	7.72	414	120	2.86	41.78	18	--	0.05	53.9	0.0506	0.025	0.0398	0.006
8-Jul-10	53	500	480	7.68	308	117	2.43	41.5	18	--	--	--	--	--	--	--
15-Jul-10	54	500	480	7.53	341	114	4.22	37.72	17	--	--	--	--	--	--	--
22-Jul-10	55	500	490	7.51	364	116	4.19	39.06	17	--	--	--	--	--	--	--
29-Jul-10	56	500	490	7.55	342	114	4.8	38.83	21	--	0.03	55.5	0.0624	0.0211	0.0377	0.00618
5-Aug-10	57	500	480	7.75	272	117	2.7	41.52	16	--	--	--	--	--	--	--
12-Aug-10	58	500	480	7.63	396	123	5.19	42.32	20	--	--	--	--	--	--	--
19-Aug-10	59	500	465	7.59	360	117	5.67	40.84	17	--	--	--	--	--	--	--
26-Aug-10	60	500	480	7.61	364	116	3.13	41.84	19	--	0.05	57.5	0.055	0.0204	0.0374	0.007
2-Sep-10	61	500	465	7.59	305	113	4.46	46.68	35	--	--	--	--	--	--	--
9-Sep-10	62	500	490	7.39	376	129	6	45.54	24	--	--	--	--	--	--	--
16-Sep-10	63	500	485	7.53	367	110	3.59	41.48	23	--	--	--	--	--	--	--

HC 5

2-Jul-09	0	750	395	7.76	279	575	2.94	43.05	278	7	0.1	274	0.016	0.00026	0.0023	0.0366
9-Jul-09	1	500	425	7.59	312	402	2.42	26.62	185	15	0.09	191	0.0372	0.00024	0.00972	0.0176
16-Jul-09	2	500	405	7.49	339	354	3.24	24.4	152	2.3	0.11	181	0.0481	0.00028	0.0115	0.0165
23-Jul-09	3	500	450	7.58	354	267	2.88	26.47	113	0.5	0.08	108	0.0615	0.00022	0.0121	0.0119
30-Jul-09	4	500	440	7.47	350	207	4.68	25.57	71	--	--	--	--	--	--	--
6-Aug-09	5	500	460	7.71	296	201	2.2	27.48	93	1	0.08	95.2	0.0592	0.00018	0.0121	0.0106
13-Aug-09	6	500	465	7.52	319	179	4.7	23.86	51	--	--	--	--	--	--	--
20-Aug-09	7	500	455	7.53	348	163	2.62	23.04	52	0.5	0.06	70.3	0.0628	0.00019	0.0113	0.00893
27-Aug-09	8	500	460	7.62	313	167	3.38	24.91	49	--	--	--	--	--	--	--
3-Sep-09	9	500	490	7.46	275	144	3.9	22.46	46	0.5	0.05	59	0.0624	0.00019	0.0103	0.00778

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.00001	0.000011	0.05	0.000005	21.6	0.0001	0.000154	0.00059	0.001	0.00007	0.0028	2.82	0.00699	0.00001	0.00105
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.00001	0.000014	0.05	0.000013	16.5	0.0001	0.000074	0.00047	0.002	0.000146	0.002	2.23	0.00672	0.00001	0.00083
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.00001	0.000011	0.05	0.00001	18.4	0.0001	0.000079	0.00064	0.002	0.000067	0.0022	2.51	0.00677	0.00001	0.00079
15-Apr-10	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	43	0.00001	0.000011	0.05	0.000012	24.2	0.0001	0.000081	0.00059	0.005	0.000067	0.0028	2.9	0.00722	0.00001	0.00099
6-May-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-May-10	46	0.00001	0.00001	0.05	0.000037	18.7	0.0001	0.000054	0.00047	0.002	0.000674	0.0022	2.45	0.00542	0.00001	0.0008
27-May-10	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	49	0.00001	0.000008	0.05	0.000006	15.6	0.0001	0.000047	0.00038	0.002	0.00004	0.0026	2.73	0.00544	0.00001	0.00074
17-Jun-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Jul-10	52	0.00001	0.000005	0.05	0.000005	17	0.0001	0.000052	0.00039	0.001	0.000057	0.0022	2.75	0.00647	0.00001	0.0007
8-Jul-10	53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Jul-10	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Jul-10	56	0.00001	0.000009	0.05	0.000006	17.7	0.0001	0.000062	0.00046	0.003	0.00004	0.0021	2.78	0.00497	0.00001	0.00057
5-Aug-10	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Aug-10	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Aug-10	60	0.00001	0.000006	0.05	0.000008	18.2	0.0001	0.000048	0.0007	0.003	0.00004	0.0023	2.93	0.00455	0.00001	0.00053
2-Sep-10	61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Sep-10	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

HC 5

2-Jul-09	0	0.00001	0.000005	0.05	0.000018	101	0.0001	0.00298	0.00061	0.001	0.00001	0.0221	5.21	0.131	0.00001	0.00155
9-Jul-09	1	0.00001	0.000005	0.05	0.000013	69.4	0.0001	0.000377	0.00087	0.002	0.00001	0.0138	4.37	0.0507	0.00002	0.00225
16-Jul-09	2	0.00001	0.000005	0.05	0.000018	66.3	0.0001	0.000316	0.0022	0.005	0.000068	0.0147	3.67	0.0442	0.00001	0.00238
23-Jul-09	3	0.00001	0.000005	0.05	0.000005	40.3	0.0001	0.000164	0.00138	0.002	0.000009	0.0115	1.79	0.0292	0.00001	0.00159
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	0.00001	0.000005	0.05	0.000006	35.6	0.0001	0.000098	0.00125	0.006	0.000028	0.0106	1.53	0.0258	0.00001	0.00149
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	0.00001	0.000005	0.05	0.000005	26.4	0.0001	0.000073	0.0007	0.006	0.000019	0.0084	1.05	0.0195	0.00001	0.00107
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	0.00001	0.000005	0.05	0.000005	22.1	0.0001	0.00006	0.00067	0.009	0.000038	0.0079	0.89	0.0173	0.00001	0.00094

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.00029	0.002	1.35	0.00243	1.2	0.000005	0.22	0.565	8	0.000178	0.00001	0.0005	0.0132	0.0002	0.0011	0.0001
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.00024	0.002	0.94	0.0018	0.845	0.000005	0.17	0.454	10	0.00014	0.00001	0.0005	0.0117	0.0002	0.0008	0.0001
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.00021	0.002	1.07	0.00199	0.91	0.000005	0.2	0.455	7	0.000131	0.00002	0.0005	0.00997	0.0002	0.0008	0.0001
15-Apr-10	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	43	0.00025	0.002	1.19	0.00244	1.12	0.000005	0.2	0.597	10	0.000176	0.00001	0.0005	0.0136	0.0002	0.0008	0.0001
6-May-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-May-10	46	0.00026	0.002	0.97	0.00233	0.915	0.000005	0.2	0.436	10	0.000156	0.00004	0.0005	0.00581	0.0002	0.003	0.0001
27-May-10	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	49	0.00019	0.002	1.1	0.0027	0.65	0.000005	0.22	0.475	10	0.000182	0.00002	0.0005	0.00662	0.0002	0.0006	0.0001
17-Jun-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Jul-10	52	0.00014	0.002	0.98	0.00229	0.817	0.000005	0.18	0.458	10	0.000172	0.00002	0.0005	0.00689	0.0002	0.0005	0.0001
8-Jul-10	53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Jul-10	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Jul-10	56	0.00019	0.002	0.87	0.00207	0.767	0.000008	0.18	0.435	10	0.00016	0.00001	0.0005	0.00585	0.0002	0.0004	0.0001
5-Aug-10	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Aug-10	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Aug-10	60	0.00022	0.002	0.89	0.00205	0.745	0.000005	0.19	0.426	10	0.00018	0.00044	0.0005	0.00482	0.0002	0.0004	0.0001
2-Sep-10	61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Sep-10	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

HC 5

2-Jul-09	0	0.00717	0.004	8.78	0.00544	1.39	0.00001	5.46	0.535	86	0.000025	0.00001	0.0005	0.0165	0.0002	0.0006	0.0001
9-Jul-09	1	0.00084	0.002	9.3	0.00747	1.45	0.000005	5.75	0.361	74	0.000013	0.00001	0.0005	0.00562	0.0002	0.0008	0.0001
16-Jul-09	2	0.00079	0.002	8.61	0.00545	1.63	0.000005	4.53	0.365	60	0.00001	0.00001	0.0005	0.00567	0.0004	0.0014	0.0001
23-Jul-09	3	0.00033	0.002	7.41	0.00208	1.54	0.000005	2.37	0.237	31	0.000008	0.00001	0.0005	0.00481	0.0002	0.0005	0.0001
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	0.00029	0.003	7.76	0.00148	1.66	0.000005	1.95	0.195	29	0.000007	0.00001	0.0005	0.0045	0.0003	0.0004	0.0001
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	0.00018	0.002	6.65	0.00094	1.68	0.000005	1.17	0.14	20	0.000006	0.00001	0.0005	0.00379	0.0004	0.0006	0.0001
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	0.00018	0.002	6.19	0.00081	1.44	0.000005	0.86	0.122	17	0.000007	0.00001	0.0005	0.00387	0.0004	0.0005	0.0001

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
10-Sep-09	10	500	435	7.81	337	160	1.27	26.27	58	--	--	--	--	--	--	--
17-Sep-09	11	500	445	7.74	343	141	2.67	25.23	44	0.7	0.05	56.4	0.0684	0.00019	0.0112	0.00739
24-Sep-09	12	500	470	7.57	348	150	2.49	28.42	48	--	--	--	--	--	--	--
1-Oct-09	13	500	450	7.61	355	117	2.45	21.51	39	0.5	0.04	48.8	0.0708	0.00013	0.00911	0.00646
8-Oct-09	14	500	455	7.60	342	133	3.91	24	51	--	--	--	--	--	--	--
15-Oct-09	15	500	460	7.57	353	133	2.78	24.56	42	0.5	0.05	53.6	0.0755	0.00016	0.0113	0.00659
22-Oct-09	16	500	480	7.70	347	145	2.8	28.17	47	--	--	--	--	--	--	--
29-Oct-09	17	500	455	7.70	350	113	2.25	21.74	34	0.5	0.04	40.9	0.0659	0.00013	0.00857	0.0059
5-Nov-09	18	500	470	7.78	345	118	3.78	23.4	36	--	--	--	--	--	--	--
12-Nov-09	19	500	465	7.51	339	111	4.67	24.26	24	0.5	0.04	37	0.083	0.00011	0.0101	0.00446
19-Nov-09	20	500	465	7.60	352	109	4.49	22.39	27	--	--	--	--	--	--	--
26-Nov-09	21	500	460	7.88	353	126	2.02	30.43	38	0.5	0.05	44.8	0.0831	0.00021	0.011	0.00621
3-Dec-09	22	500	480	7.52	351	130	4.93	27.21	39	--	--	--	--	--	--	--
10-Dec-09	23	500	485	7.45	383	120	4.65	23.3	40	0.5	0.04	47.1	0.0645	0.00015	0.00811	0.00619
17-Dec-09	24	500	490	7.68	368	109	2.8	25.5	26	--	--	--	--	--	--	--
24-Dec-09	25	500	485	7.67	375	118	2.61	27.32	34	0.5	0.04	49.7	0.0565	0.00022	0.0103	0.0069
31-Dec-09	26	500	475	7.64	398	120	2.57	25.88	35	--	--	--	--	--	--	--
7-Jan-10	27	500	480	7.49	380	94	2.78	21.71	21	0.5	0.05	34.1	0.0577	0.00009	0.00644	0.00496
14-Jan-10	28	500	485	7.33	354	100	--	18.04	28	--	--	--	--	--	--	--
21-Jan-10	29	500	480	7.48	367	119	2.87	24.48	35	0.5	0.04	50.7	0.0609	0.00019	0.00959	0.00692
28-Jan-10	30	500	485	7.28	363	85	4.44	18.3	30	--	--	--	--	--	--	--
4-Feb-10	31	500	465	7.06	286	78	3.96	15.81	24	0.5	0.02	34.2	0.0489	0.00012	0.00664	0.00475
11-Feb-10	32	500	480	7.16	353	97	3.22	15.81	27	--	--	--	--	--	--	--
18-Feb-10	33	500	465	7.20	298	99	3.85	17.35	27	--	--	--	--	--	--	--
25-Feb-10	34	500	455	7.37	361	108	3.24	22.15	35	--	0.03	47.1	0.0501	0.00015	0.0076	0.00794
4-Mar-10	35	500	455	7.29	367	98	3.15	17.3	30	--	--	--	--	--	--	--
11-Mar-10	36	500	460	7.25	383	86	3.61	14.78	24	--	--	--	--	--	--	--
18-Mar-10	37	500	490	7.21	374	91	3.41	15.28	22	--	0.02	30.2	0.0439	0.0001	0.00494	0.00465
25-Mar-10	38	500	475	7.42	365	93	3.67	16.32	30	--	--	--	--	--	--	--
1-Apr-10	39	500	475	7.40	376	91	2.86	14.75	31	--	--	--	--	--	--	--
8-Apr-10	40	500	460	7.33	361	95	2.92	16.3	29	--	0.02	35.2	0.0479	0.0001	0.00551	0.00554

HC 6

2-Jul-09	0	750	380	8.03	284	271	1.53	63.34	53	3.1	0.63	107	0.0453	0.0262	0.00673	0.0209
9-Jul-09	1	500	445	8.05	296	184	1.2	37.62	48	6.5	0.48	95	0.101	0.075	0.0134	0.0147
16-Jul-09	2	500	415	8.15	328	124	1.27	32.21	38	2.3	0.58	59.9	0.108	0.113	0.0142	0.00993
23-Jul-09	3	500	455	8.31	329	80	0.93	34.2	10	0.5	0.33	32	0.109	0.06	0.00814	0.00515
30-Jul-09	4	500	435	7.78	337	82	3.67	29.99	16	--	--	--	--	--	--	--
6-Aug-09	5	500	460	8.19	285	74	1.03	32.59	16	0.8	0.24	41	0.124	0.053	0.00656	0.00531
13-Aug-09	6	500	460	8.11	297	80	2.73	32.88	10	--	--	--	--	--	--	--
20-Aug-09	7	500	460	8.01	333	79	1.46	29.4	10	0.5	0.2	39.5	0.132	0.0523	0.00608	0.0051
27-Aug-09	8	500	460	8.29	287	78	1.37	31.38	13	--	--	--	--	--	--	--
3-Sep-09	9	500	485	7.88	279	90	2.65	30.31	21	0.5	0.19	42.8	0.135	0.0615	0.00624	0.00533
10-Sep-09	10	500	430	8.24	319	87	0.06	29.71	18	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	0.00001	0.000005	0.05	0.000006	21.2	0.0001	0.000058	0.00067	0.007	0.000014	0.0078	0.83	0.0139	0.00001	0.00087
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.00001	0.000005	0.05	0.000005	18.3	0.0001	0.00006	0.00149	0.013	0.000013	0.0065	0.72	0.0126	0.00001	0.00061
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.00001	0.000005	0.05	0.000005	20.3	0.0001	0.000078	0.00114	0.009	0.000402	0.007	0.69	0.0133	0.00001	0.0006
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.00001	0.000005	0.05	0.000005	15.5	0.0002	0.000057	0.00087	0.015	0.00139	0.0064	0.55	0.012	0.00001	0.00055
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.00001	0.000005	0.05	0.000005	14	0.0006	0.000051	0.00066	0.017	0.000082	0.0058	0.51	0.00918	0.00001	0.00051
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.00001	0.000017	0.05	0.000006	16.9	0.0001	0.000056	0.00037	0.018	0.00015	0.0067	0.64	0.0121	0.00001	0.00059
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00001	0.000005	0.05	0.000005	17.8	0.0001	0.000058	0.0003	0.012	0.000008	0.0067	0.66	0.0129	0.00001	0.00053
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00001	0.000005	0.05	0.000005	18.9	0.0001	0.000059	0.00041	0.006	0.000005	0.0077	0.63	0.0141	0.00001	0.0006
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00001	0.000005	0.05	0.000005	12.9	0.0001	0.000052	0.00031	0.012	0.000048	0.0054	0.44	0.0124	0.00001	0.00034
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00001	0.000005	0.05	0.000005	19.2	0.0001	0.000051	--	0.005	0.000019	0.0074	0.66	0.0137	0.00001	0.00051
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00001	0.000005	0.05	0.000005	13	0.0002	0.000044	0.0009	0.006	0.000039	0.0053	0.43	0.00896	0.00001	0.00036
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.00001	0.000005	0.05	0.000005	17.9	0.0001	0.000115	0.00055	0.005	0.000019	0.007	0.6	0.0122	0.00001	0.00051
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.00001	0.000005	0.05	0.000005	11.4	0.0001	0.000047	0.00037	0.006	0.000005	0.005	0.4	0.00934	0.00001	0.00031
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.00001	0.000005	0.05	0.000005	13.4	0.0001	0.000039	0.0017	0.006	0.000028	0.0051	0.43	0.00896	0.00001	0.00032

HC 6

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	0.00016	0.002	6.16	0.00083	1.43	0.000005	0.75	0.121	15	0.000006	0.00005	0.0005	0.00327	0.0004	0.0007	0.0001
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.00018	0.002	5.37	0.00066	1.09	0.000005	0.68	0.1	14	0.000005	0.00001	0.0005	0.00287	0.0002	0.0004	0.0001
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.00013	0.002	6.04	0.00075	1.31	0.000005	0.59	0.111	14	0.000004	0.00001	0.0005	0.00329	0.0004	0.0007	0.0001
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.00031	0.003	5.14	0.00059	0.997	0.000005	0.48	0.0925	11	0.000005	0.00008	0.0008	0.00299	0.0003	0.0004	0.0001
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.00023	0.004	5	0.00052	1.11	0.000005	0.51	0.0785	9	0.000002	0.00002	0.0007	0.0028	0.0005	0.0009	0.0001
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.00019	0.002	5.79	0.00057	1.26	0.000005	0.51	0.0954	11	0.000005	0.00002	0.0013	0.00322	0.0005	0.0008	0.0001
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00007	0.002	5.72	0.0005	1.21	0.000006	0.36	0.0987	12	0.000005	0.00001	0.0011	0.00465	0.0004	0.0002	0.0001
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00014	0.002	6.7	0.00058	1.53	0.000005	0.36	0.107	13	0.000005	0.00001	0.0005	0.00452	0.0004	0.0002	0.0001
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00014	0.002	4.66	0.00038	1.04	0.000005	0.23	0.0715	9	0.000002	0.00008	0.001	0.00311	0.0003	0.0002	0.0001
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00019	0.002	6.82	0.00061	1.34	0.000005	0.34	0.0987	13	0.000006	0.00002	0.0005	0.00393	0.0003	0.0004	0.0001
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00022	0.002	4.57	0.00042	0.906	0.000005	0.25	0.0707	8	0.000004	0.00021	0.0005	0.00279	0.0003	0.0005	0.0001
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.00017	0.002	5.68	0.00059	1.21	0.000005	0.31	0.101	12	0.000004	0.00001	0.0005	0.00332	0.0003	0.0004	0.0001
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.0002	0.002	4.21	0.00039	0.786	0.000005	0.21	0.0663	10	0.000004	0.00001	0.0005	0.00228	0.0002	0.0003	0.0001
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.00016	0.002	4.88	0.00045	1.01	0.000005	0.26	0.0708	10	0.000003	0.00001	0.0005	0.00225	0.0003	0.0007	0.0001

HC 6

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
17-Sep-09	11	500	445	8.18	331	89	1.41	32.14	15	0.9	0.16	45	0.118	0.0555	0.00556	0.00556
24-Sep-09	12	500	450	8.13	324	89	0.8	35.75	24	--	--	--	--	--	--	--
1-Oct-09	13	500	470	7.87	343	83	1.9	31.09	14	0.5	0.13	44.8	0.109	0.0534	0.00419	0.00541
8-Oct-09	14	500	450	7.78	333	86	3.07	31.06	20	--	--	--	--	--	--	--
15-Oct-09	15	500	465	8.12	334	77	1.43	32.11	17	0.5	0.12	43.8	0.122	0.047	0.00462	0.00515
22-Oct-09	16	500	450	7.89	333	87	2.09	31.14	14	--	--	--	--	--	--	--
29-Oct-09	17	500	460	7.94	341	83	1.54	29.61	18	0.5	0.1	41.6	0.0946	0.0497	0.00325	0.00467
5-Nov-09	18	500	460	8.15	331	84	2.53	31.3	15	--	--	--	--	--	--	--
12-Nov-09	19	500	465	7.73	323	83	4.04	29.64	16	0.5	0.08	42.1	0.116	0.0514	0.00335	0.00425
19-Nov-09	20	500	455	7.84	341	89	3.45	29.24	17	--	--	--	--	--	--	--
26-Nov-09	21	500	440	8.15	350	90	1.35	33.14	21	0.5	0.08	44.5	0.0996	0.0517	0.00288	0.00414
3-Dec-09	22	500	470	7.77	343	87	4.16	30.74	15	--	--	--	--	--	--	--
10-Dec-09	23	500	480	7.69	376	85	3.87	27.27	16	0.5	0.07	45.5	0.0797	0.0454	0.00232	0.00421
17-Dec-09	24	500	495	7.81	360	80	2.31	27.69	10	--	--	--	--	--	--	--
24-Dec-09	25	500	475	7.77	368	76	2.34	28.83	14	0.5	0.06	44.5	0.0697	0.0502	0.00232	0.00397
31-Dec-09	26	500	470	7.84	390	81	2.01	29.47	15	--	--	--	--	--	--	--
7-Jan-10	27	500	475	7.68	378	90	2.2	29.63	16	0.5	0.06	47.7	0.0796	0.0469	0.00232	0.00423
14-Jan-10	28	500	485	7.54	348	78	--	26.02	11	--	--	--	--	--	--	--
21-Jan-10	29	500	490	7.64	361	80	2.28	28.09	17	0.5	0.05	44.3	0.0766	0.0428	0.00217	0.00406
28-Jan-10	30	500	485	7.46	356	67	3.7	25.88	21	--	--	--	--	--	--	--
4-Feb-10	31	500	470	7.54	273	77	2.89	30.64	19	0.5	0.06	50.2	0.0771	0.0446	0.00282	0.00483

HC 7

24-Dec-09	0	750	320	7.43	410	542	2.06	23.04	393	12	0.22	409	0.0483	0.0465	0.00987	0.0334
31-Dec-09	1	500	445	7.43	410	542	2.06	23.04	249	4.1	0.17	260	0.0425	0.0261	0.00846	0.0191
7-Jan-10	2	500	455	7.62	395	495	2.54	28.2	238	0.6	0.22	259	0.0502	0.0326	0.012	0.017
14-Jan-10	3	500	470	7.49	364	391	6.2	30.15	165	0.5	0.21	199	0.0646	0.0423	0.0143	0.0133
21-Jan-10	4	500	465	7.63	375	261	2.79	28.34	102	--	--	--	--	--	--	--
28-Jan-10	5	500	470	7.45	369	225	4.06	29.24	121	0.9	0.17	128	0.0679	0.0375	0.0134	0.00947
4-Feb-10	6	500	460	7.58	272	174	2.72	29.9	82	--	--	--	--	--	--	--
11-Feb-10	7	500	480	7.48	349	173	2.75	26.39	57	0.5	0.21	87.4	0.0679	0.0388	0.0116	0.00936
18-Feb-10	8	500	450	7.49	312	166	3.38	29.98	58	--	--	--	--	--	--	--
25-Feb-10	9	500	440	7.64	359	166	2.84	30.72	51	0.5	0.23	84.5	0.0675	0.0574	0.0173	0.00955
4-Mar-10	10	500	455	7.62	368	135	2.48	29.58	45	--	--	--	--	--	--	--
11-Mar-10	11	500	440	7.67	377	152	3.15	40.19	38	0.5	0.18	79	0.0607	0.0678	0.0208	0.00894
18-Mar-10	12	500	485	7.58	376	139	3.49	35.96	30	--	--	--	--	--	--	--
25-Mar-10	13	500	475	7.75	363	121	3.06	37.92	27	0.5	0.21	56.8	0.0744	0.0716	0.0219	0.00806
1-Apr-10	14	500	460	7.74	377	106	2.58	34.74	21	--	--	--	--	--	--	--
8-Apr-10	15	500	460	7.80	360	114	2.34	37.18	23	0.5	0.18	52.3	0.0672	0.0625	0.0214	0.00794
15-Apr-10	16	500	460	7.67	325	117	3.25	39.23	28	--	--	--	--	--	--	--
22-Apr-10	17	500	490	7.70	346	102	4.13	35.78	17	0.5	0.14	48	0.0718	0.0563	0.0204	0.00625
29-Apr-10	18	500	475	7.71	354	97	2.69	34.65	18	--	--	--	--	--	--	--
6-May-10	19	500	465	7.66	320	99	4.57	38.83	13	0.5	0.1	48.6	0.0705	0.0582	0.0227	0.00641
13-May-10	20	500	470	7.68	326	99	3.51	35.25	16	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
17-Sep-09	11	0.00001	0.000058	0.05	0.000005	13.5	0.0001	0.000076	0.00072	0.003	0.000069	0.0019	2.77	0.00366	0.00001	0.00063
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.00001	0.000065	0.05	0.000007	13	0.0001	0.000088	0.00101	0.008	0.000095	0.0017	2.98	0.00495	0.00001	0.00063
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.00001	0.00006	0.05	0.000009	12.9	0.0001	0.000066	0.00129	0.006	0.000061	0.0016	2.81	0.00399	0.00001	0.00059
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.00001	0.000098	0.05	0.000005	12.2	0.0001	0.000079	0.00173	0.006	0.000109	0.0016	2.69	0.0044	0.00001	0.00076
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.00001	0.000083	0.05	0.000009	12.1	0.0001	0.000066	0.00039	0.004	0.000079	0.0013	2.88	0.00409	0.00001	0.001
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.00001	0.000077	0.05	0.000005	13.1	0.0001	0.000074	0.00056	0.007	0.00007	0.0013	2.89	0.00503	0.00001	0.00111
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00001	0.000097	0.05	0.000005	13.2	0.0001	0.000074	0.00032	0.005	0.000111	0.0011	3.02	0.00397	0.00001	0.00115
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00001	0.000049	0.05	0.000005	13.2	0.0001	0.000082	0.00032	0.003	0.00021	0.0011	2.79	0.00512	0.00001	0.00102
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00001	0.000053	0.05	0.000005	13.8	0.0001	0.000071	0.00049	0.004	0.000064	0.0012	3.23	0.00598	0.00001	0.00114
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00001	0.000045	0.05	0.000005	12.8	0.0001	0.000074	--	0.003	0.00004	0.0012	2.99	0.00528	0.00001	0.00098
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00001	0.000048	0.05	0.000005	14.3	0.0001	0.000085	0.00114	0.003	0.000088	0.0013	3.52	0.00415	0.00001	0.00116

HC 7

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
17-Sep-09	11	0.00011	0.002	1.98	0.00317	0.912	0.000005	1.04	0.511	7	0.000008	0.00008	0.0005	0.0364	0.0003	0.0003	0.0001
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.00028	0.002	1.97	0.00279	0.941	0.000005	0.89	0.462	7	0.000009	0.00004	0.0005	0.038	0.0002	0.0007	0.0001
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.00012	0.002	1.82	0.00286	0.979	0.000005	0.7	0.452	5	0.00001	0.00002	0.0005	0.0288	0.0002	0.0006	0.0001
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.00035	0.003	1.61	0.00234	0.729	0.000005	0.58	0.434	6	0.000005	0.00007	0.0005	0.032	0.0002	0.0008	0.0001
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.00032	0.003	1.45	0.00202	0.801	0.000005	0.51	0.416	6	0.000003	0.00002	0.0005	0.0277	0.0002	0.0004	0.0001
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.00014	0.002	1.31	0.00198	0.713	0.000005	0.44	0.398	6	0.000005	0.00003	0.0005	0.0236	0.0002	0.0003	0.0001
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.00008	0.002	1.22	0.00181	0.69	0.000005	0.33	0.418	6	0.000006	0.00002	0.0005	0.0277	0.0002	0.0003	0.0001
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.00011	0.002	1.24	0.00194	0.69	0.000005	0.3	0.391	6	0.000007	0.00001	0.0005	0.0252	0.0002	0.0003	0.0001
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.00011	0.002	1.17	0.00192	0.729	0.000005	0.33	0.405	7	0.000002	0.00015	0.0005	0.0242	0.0002	0.001	0.0001
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.00019	0.002	1.19	0.00186	0.656	0.000008	0.29	0.367	6	0.000006	0.00001	0.0005	0.0208	0.0002	0.0004	0.0001
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.00021	0.002	1.31	0.00219	0.811	0.000005	0.38	0.476	7	0.000003	0.00019	0.0005	0.0252	0.0002	0.0005	0.0001

HC 7

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
20-May-10	21	500	440	7.73	356	82	3.66	31.16	15	0.5	0.06	39.6	0.0823	0.0423	0.022	0.00519
27-May-10	22	500	455	7.73	369	82	5.22	34.8	8	--	--	--	--	--	--	--
3-Jun-10	23	500	440	7.72	354	89	2.86	35.84	14	0.5	0.07	39.9	0.0845	0.0455	0.0244	0.00643
10-Jun-10	24	500	450	7.59	304	95	5.11	37.07	11	--	--	--	--	--	--	--
17-Jun-10	25	500	460	7.74	335	85	3.85	35.4	4	0.5	0.05	37.5	0.0861	0.0478	0.0273	0.0112
24-Jun-10	26	500	460	7.83	407	90	2.43	36.68	9	--	--	--	--	--	--	--
1-Jul-10	27	500	450	7.77	414	89	2.59	37.26	11	0.5	0.06	36.5	0.0696	0.0431	0.0239	0.00583
8-Jul-10	28	500	440	7.72	314	85	2.22	33.15	8	--	--	--	--	--	--	--
15-Jul-10	29	500	470	7.63	338	90	3.95	35.88	8	0.5	0.06	40.8	0.0695	0.0455	0.032	0.00611
22-Jul-10	30	500	475	7.60	355	88	3.64	37.39	6	--	--	--	--	--	--	--
29-Jul-10	31	500	465	7.64	339	87	4.68	37.53	7	0.5	0.04	40.5	0.078	0.0424	0.0255	0.00598
5-Aug-10	32	500	460	7.78	304	88	2.53	37.28	9	--	--	--	--	--	--	--
12-Aug-10	33	500	470	7.70	396	87	4.94	38.38	11	0.5	0.04	39.8	0.0853	0.0389	0.0255	0.00601
19-Aug-10	34	500	420	7.75	368	84	5.43	34.77	10	--	--	--	--	--	--	--
26-Aug-10	35	500	450	7.69	354	88	2.81	36.43	12	0.5	0.03	40.2	0.0763	0.0384	0.0242	0.00706
2-Sep-10	36	500	460	7.71	344	79	4.1	38.65	18	--	--	--	--	--	--	--
9-Sep-10	37	500	460	7.45	365	94	5.19	39.45	12	0.5	0.07	41.1	0.0781	0.0384	0.0253	0.00655
16-Sep-10	38	500	435	7.59	358	93	3.57	42.16	15	--	--	--	--	--	--	--
23-Sep-10	39	500	465	7.65	371	74	2.6	35.55	17	0.5	0.04	40	0.0899	0.0406	0.0236	0.00604
30-Sep-10	40	500	430	7.60	310	74	3.02	36.55	20	--	--	--	--	--	--	--
7-Oct-10	41	500	415	7.48	351	115	4.24	44.18	20	0.5	0.09	50.9	0.0632	0.0554	0.0267	0.00751
14-Oct-10	42	500	455	7.40	308	98	4.18	41.64	17	--	--	--	--	--	--	--
21-Oct-10	43	500	455	7.47	449	98	3.89	42.42	15	0.5	0.04	46	0.0813	0.0369	0.0235	0.00677
28-Oct-10	44	500	450	7.51	244	100	3.68	41.04	17	--	--	--	--	--	--	--
4-Nov-10	45	500	445	7.68	378	91	2.93	39.09	15	0.5	0.04	44	0.0819	0.0338	0.0235	0.00662
11-Nov-10	46	500	490	7.64	383	104	2.88	42.13	13	--	--	--	--	--	--	--
18-Nov-10	47	500	445	7.68	354	103	3.32	42.14	14	0.5	0.03	46.6	0.0803	0.0338	0.0219	0.00665
25-Nov-10	48	500	445	7.51	219	105	4	47.05	13	--	--	--	--	--	--	--
2-Dec-10	49	500	465	7.45	374	100	4.22	44.35	10	0.5	0.02	47.1	0.0737	0.0312	0.0197	0.00653
9-Dec-10	50	500	450	7.45	343	100	3.98	42.44	10	--	--	--	--	--	--	--
16-Dec-10	51	500	455	7.41	368	102	5.78	42.79	17	0.5	0.02	49.1	0.0743	0.033	0.0215	0.0068
23-Dec-10	52	500	450	7.51	251	96	5.64	41.83	13	--	--	--	--	--	--	--
30-Dec-10	53	500	460	7.41	335	87	7.16	40.36	16	0.5	0.07	44.3	0.0849	0.0298	0.0211	0.00634
6-Jan-11	54	500	460	7.23	328	82	6.68	46.85	13	--	--	--	--	--	--	--
13-Jan-11	55	500	465	7.40	308	82	4.81	43.39	14	0.5	0.02	46.7	0.0613	0.0293	0.0174	0.00677
20-Jan-11	56	500	470	7.48	278	91	4.02	43.62	12	--	--	--	--	--	--	--
27-Jan-11	57	500	440	7.41	333	77	4.94	37.91	12	--	--	--	--	--	--	--
3-Feb-11	58	500	470	7.38	318	71	3.62	38.32	13	--	--	--	--	--	--	--
10-Feb-11	59	500	460	7.50	352	71	3.6	35.42	11	0.5	0.01	42.4	0.0687	0.0217	0.0145	0.00513
17-Feb-11	60	500	445	7.57	248	86	3.91	40.09	9	--	--	--	--	--	--	--
24-Feb-11	61	500	455	7.45	366	108	5	43.16	19	--	--	--	--	--	--	--
3-Mar-11	62	500	460	7.35	307	98	4.23	39.1	18	--	--	--	--	--	--	--
10-Mar-11	63	500	450	7.50	364	97	3.63	39.39	12	0.5	0.01	41.5	0.0872	0.0217	0.0157	0.00558
17-Mar-11	64	500	450	7.58	223	96	3.29	37.07	15	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
20-May-10	21	0.00001	0.000018	0.05	0.00001	14.6	0.0001	0.000027	0.00047	0.004	0.000114	0.0031	0.76	0.00241	0.00001	0.00447
27-May-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-10	23	0.00001	0.000018	0.05	0.00001	14.5	0.0001	0.000044	0.0004	0.004	0.000052	0.0036	0.91	0.00319	0.00001	0.00492
10-Jun-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jun-10	25	0.00001	0.000011	0.05	0.000005	13.6	0.0001	0.000035	0.00072	0.005	0.000038	0.0033	0.86	0.00233	0.00001	0.00456
24-Jun-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Jul-10	27	0.00001	0.000009	0.05	0.000005	13.3	0.0001	0.000025	0.00027	0.002	0.000036	0.0028	0.8	0.00217	0.00001	0.00387
8-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Jul-10	29	0.00001	0.000008	0.05	0.000006	14.9	0.0001	0.000029	0.00045	0.002	0.000035	0.0032	0.89	0.00231	0.00001	0.0038
22-Jul-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Jul-10	31	0.00001	0.000014	0.05	0.000008	14.8	0.0001	0.000029	0.00046	0.004	0.000038	0.0031	0.89	0.00239	0.00001	0.00301
5-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Aug-10	33	0.00001	0.000018	0.05	0.000008	14.6	0.0001	0.000039	0.00082	0.005	0.000083	0.003	0.84	0.00227	0.00001	0.00269
19-Aug-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Aug-10	35	0.00001	0.000011	0.05	0.000005	14.7	0.0001	0.000035	0.00072	0.004	0.000037	0.0032	0.88	0.00238	0.00001	0.00278
2-Sep-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Sep-10	37	0.00001	0.000017	0.05	0.000006	15	0.0002	0.000027	0.0004	0.005	0.000041	0.0031	0.9	0.00199	0.00001	0.00258
16-Sep-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Sep-10	39	0.00001	0.000011	0.05	0.000007	14.7	0.0002	0.00003	0.00046	0.003	0.000038	0.0029	0.81	0.00203	0.00001	0.00255
30-Sep-10	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Oct-10	41	0.00001	0.000005	0.05	0.000005	18.6	0.0001	0.000028	0.00033	0.003	0.000025	0.0034	1.07	0.00229	0.00001	0.00324
14-Oct-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Oct-10	43	0.00001	0.000007	0.05	0.000007	16.9	0.0001	0.000029	0.00033	0.005	0.000043	0.003	0.9	0.00185	0.00001	0.00219
28-Oct-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Nov-10	45	0.00001	0.000007	0.05	0.000008	16.2	0.0001	0.000037	0.00138	0.005	0.000081	0.003	0.87	0.00202	0.00001	0.00222
11-Nov-10	46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Nov-10	47	0.00001	0.000008	0.05	0.000008	17.2	0.0001	0.00003	0.00054	0.004	0.000038	0.0029	0.89	0.00164	0.00001	0.

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
20-May-10	21	0.00017	0.002	2	0.00133	1.56	0.000005	0.38	0.344	10	0.000015	0.00001	0.0005	0.00717	0.0002	0.0004	0.0001
27-May-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-10	23	0.00018	0.002	2.37	0.00137	1.82	0.000005	0.44	0.381	10	0.000013	0.00001	0.0005	0.00818	0.0004	0.0005	0.0001
10-Jun-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jun-10	25	0.00013	0.002	2.31	0.00151	1.71	0.000005	0.44	0.378	10	0.000015	0.00003	0.0005	0.00793	0.0003	0.0006	0.0001
24-Jun-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Jul-10	27	0.00016	0.002	2.02	0.00134	1.65	0.000005	0.34	0.373	10	0.000013	0.00002	0.0005	0.00836	0.0003	0.0002	0.0001
8-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Jul-10	29	0.00009	0.002	2.16	0.00161	1.87	0.000005	0.37	0.414	10	0.00001	0.00007	0.0005	0.0093	0.0004	0.0002	0.0001
22-Jul-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Jul-10	31	0.00016	0.002	2.05	0.00136	1.85	0.000006	0.33	0.387	10	0.000011	0.00001	0.0005	0.00817	0.0003	0.0004	0.0001
5-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Aug-10	33	0.00024	0.002	2.01	0.00129	1.64	0.000005	0.33	0.376	10	0.000013	0.00002	0.0005	0.00898	0.0003	0.0009	0.0001
19-Aug-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Aug-10	35	0.00023	0.002	2.1	0.00129	1.54	0.000005	0.32	0.385	10	0.000013	0.00023	0.0005	0.00653	0.0002	0.0005	0.0001
2-Sep-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Sep-10	37	0.00022	0.002	2.18	0.00144	1.77	0.000005	0.33	0.395	10	0.000013	0.00002	0.0005	0.0076	0.0002	0.0001	0.0001
16-Sep-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Sep-10	39	0.0002	0.002	1.99	0.00143	1.76	0.000005	0.28	0.372	10	0.000015	0.00003	0.0005	0.00719	0.0003	0.0005	0.0001
30-Sep-10	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Oct-10	41	0.00012	0.002	2.55	0.00149	2.17	0.000005	0.37	0.491	10	0.000013	0.00001	0.0005	0.00907	0.0002	0.0001	0.0001
14-Oct-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Oct-10	43	0.00034	0.002	2.22	0.00134	1.89	0.000005	0.31	0.43	10	0.000018	0.00001	0.0005	0.00759	0.0002	0.0002	0.0001
28-Oct-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Nov-10	45	0.00021	0.002	2.14	0.00132	1.74	0.000005	0.27	0.41	10	0.000012	0.00001	0.0005	0.00709	0.0002	0.0004	0.0001
11-Nov-10	46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Nov-10	47	0.00007	0.002	2.03	0.00129	1.71	0.000005	0.23	0.429	10	0.000014	0.00001	0.0005	0.00775	0.0002	0.0001	0.0001
25-Nov-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Dec-10	49	0.00035	0.002	1.96	0.00116	1.63	0.000005	0.26	0.419	10	0.000014	0.00001	0.0005	0.00768	0.0002	0.0004	0.0001
9-Dec-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Dec-10	51	0.00024	0.002	1.84	0.00138	1.64	0.000005	0.22	0.426	10	0.000015	0.00003	0.0005	0.0077	0.0002	0.0005	0.0001
23-Dec-10	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Dec-10	53	0.00018	0.002	1.82	0.00118	1.44	0.000005	0.24	0.405	10	0.000013	0.00002	0.0006	0.00726	0.0002	0.0003	0.0001
6-Jan-11	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Jan-11	55	0.00007	0.002	1.64	0.00102	1.5	0.000005	0.24	0.41	10	0.00001	0.00001	0.0005	0.00688	0.0002	0.0005	0.0001
20-Jan-11	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Jan-11	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Feb-11	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Feb-11	59	0.00015	0.002	1.44	0.00078	1.19	0.000005	0.16	0.329	10	0.000011	0.00001	0.0005	0.00564	0.0002	0.0005	0.0001
17-Feb-11	60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Feb-11	61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Mar-11	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Mar-11	63	0.0002	0.002	1.53	0.00088	1.04	0.000005	0.19	0.354	10	0.000011	0.00002	0.0005	0.00625	0.0002	0.0003	0.0001
17-Mar-11	64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
24-Mar-11	65	500	445	7.55	349	103	6.37	41.69	13	--	--	--	--	--	--	--
31-Mar-11	66	500	435	7.31	312	100	5.22	40.06	11	--	--	--	--	--	--	--
7-Apr-11	67	500	455	7.41	319	100	6.28	42.57	12	0.5	0.03	44.7	0.0656	0.0239	0.0167	0.00746
14-Apr-11	68	500	445	7.64	198	105	7.23	45.79	13	--	--	--	--	--	--	--
21-Apr-11	69	500	460	7.54	302	90	3.32	35.34	13	--	--	--	--	--	--	--
28-Apr-11	70	500	430	7.42	332	94	3.76	37.86	13	--	--	--	--	--	--	--
5-May-11	71	500	445	7.39	360	98	3.88	37.92	14	0.5	0.05	45.7	0.0806	0.0223	0.0154	0.0057
12-May-11	72	500	465	7.28	356	98	4.94	41.01	12	--	--	--	--	--	--	--
19-May-11	73	500	470	7.85	231	107	--	34	14	--	--	--	--	--	--	--
26-May-11	74	500	440	7.28	265	102	5.19	36.58	11	--	--	--	--	--	--	--
2-Jun-11	75	500	435	7.31	237	117	6.78	48.57	12	0.5	0.06	51	0.0591	0.0256	0.0181	0.00668
9-Jun-11	76	500	465	7.30	274	92	4.26	36	10	--	--	--	--	--	--	--
16-Jun-11	77	500	480	7.41	307	103	4.44	44.32	11	--	--	--	--	--	--	--
23-Jun-11	78	500	460	7.43	292	97	4.77	41.05	14	--	--	--	--	--	--	--
30-Jun-11	79	500	465	7.40	305	97	4.77	40.99	15	0.5	0.01	45.5	0.0769	0.0208	0.0154	0.00684
7-Jul-11	80	500	470	7.39	314	87	5.26	34.26	15	--	--	--	--	--	--	--
14-Jul-11	81	500	465	7.09	295	90	5.72	33.13	12	--	--	--	--	--	--	--
21-Jul-11	82	500	470	7.23	276	83	4.25	29.65	14	--	--	--	--	--	--	--
28-Jul-11	83	500	480	7.16	291	94	5.3	35.39	15	0.9	0.03	45.2	0.0661	0.0179	0.0124	0.00519
4-Aug-11	84	500	440	7.20	312	96	4.23	34.54	13	--	--	--	--	--	--	--
11-Aug-11	85	500	490	7.21	221	84	5.39	34.43	11	--	--	--	--	--	--	--
18-Aug-11	86	500	475	7.62	279	77	3.49	30.14	12	--	--	--	--	--	--	--
25-Aug-11	87	500	440	7.01	246	62	6.07	23.27	9	0.5	0.01	25.5	0.0734	0.0095	0.00743	0.00324
1-Sep-11	88	500	445	7.33	309	80	6.26	26.33	19	--	--	--	--	--	--	--
8-Sep-11	89	500	460	7.32	249	83	4.42	29.16	18	--	--	--	--	--	--	--
15-Sep-11	90	500	470	7.58	255	81	4.17	36.17	15	--	--	--	--	--	--	--
22-Sep-11	91	500	475	7.19	253	77	4.67	28.13	13	0.5	0.02	34	0.0782	0.0129	0.0096	0.0046

HC 8

14-Jan-10	0	500	395	7.36	351	107	5.46	20.11	21	1.2	0.16	35.9	0.0848	0.00169	0.0643	0.00053
21-Jan-10	1	500	505	7.48	366	66	2.41	20.07	14	0.7	0.1	28.9	0.0603	0.00177	0.0476	0.00065
28-Jan-10	2	500	505	7.40	355	41	3.96	21.88	7	0.5	0.1	20.7	0.0512	0.00152	0.0445	0.00042
4-Feb-10	3	500	470	7.02	288	29	3.67	13.75	2	0.5	0.08	13	0.0477	0.00114	0.0417	0.0004
11-Feb-10	4	500	470	6.99	353	24	2.85	10.84	3	--	--	--	--	--	--	--
18-Feb-10	5	500	460	7.09	327	24	3.62	11.99	1	0.5	0.05	10.9	0.0488	0.00086	0.0353	0.00038
25-Feb-10	6	500	440	7.17	355	19	3.24	10.04	5	--	--	--	--	--	--	--
4-Mar-10	7	500	445	7.09	370	19	2.99	9.21	2	0.5	0.04	9.1	0.0457	0.00076	0.0385	0.00055
11-Mar-10	8	500	470	7.05	376	16	3.63	8.6	1	--	--	--	--	--	--	--
18-Mar-10	9	500	475	7.18	369	19	3.24	10.13	1	0.5	0.04	8.2	0.0312	0.00075	0.0293	0.00045
25-Mar-10	10	500	480	7.36	359	19	3.83	10.43	1	--	--	--	--	--	--	--
1-Apr-10	11	500	455	7.28	374	16	3.15	9.28	2	--	0.02	7.5	0.0363	0.00071	0.0286	0.00046
8-Apr-10	12	500	475	7.20	351	17	3.27	9.04	3	--	--	--	--	--	--	--
15-Apr-10	13	500	485	7.11	333	18	3.42	9.94	2	0.5	0.04	8.1	0.0328	0.00074	0.0275	0.00034
22-Apr-10	14	500	490	7.40	340	15	4.24	9.2	3	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
24-Mar-11	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Mar-11	66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Apr-11	67	0.00001	0.000005	0.05	0.000005	16.6	0.0005	0.000021	0.00045	0.002	0.000024	0.0022	0.76	0.00088	0.00001	0.00256
14-Apr-11	68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Apr-11	69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Apr-11	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-May-11	71	0.00001	0.000006	0.05	0.000007	17.2	0.0001	0.000012	0.00032	0.003	0.000033	0.002	0.67	0.00076	0.00001	0.00194
12-May-11	72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-May-11	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-May-11	74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Jun-11	75	0.00001	0.000005	0.05	0.00001	19.1	0.0001	0.000008	0.00029	0.002	0.000069	0.0024	0.79	0.0004	0.00001	0.00191
9-Jun-11	76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Jun-11	77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Jun-11	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Jun-11	79	0.00001	0.000005	0.05	0.00001	17.2	0.0001	0.000018	0.00041	0.006	0.000035	0.0019	0.64	0.00106	0.00001	0.00175
7-Jul-11	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jul-11	81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jul-11	82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jul-11	83	0.00001	0.000009	0.05	0.000005	17.2	0.0001	0.000015	0.00036	0.003	0.000046	0.0018	0.55	0.00081	0.00001	0.00201
4-Aug-11	84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Aug-11	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Aug-11	86	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Aug-11	87	0.00001	0.000009	0.05	0.000005	9.72	0.0001	0.000021	0.00103	0.004	0.000042	0.0009	0.31	0.00147	0.00001	0.00161
1-Sep-11	88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Sep-11	89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Sep-11	90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Sep-11	91	0.00001	0.000008	0.05	0.000022	12.9	0.0001	0.000029	0.00241	0.004	0.000041	0.0013	0.41	0.0015	0.00001	0.0015

HC 8

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
24-Mar-11	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Mar-11	66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Apr-11	67	0.00015	0.002	1.58	0.00094	1.19	0.000005	0.23	0.365	10	0.000012	0.00002	0.0005	0.00595	0.0002	0.0003	0.0001
14-Apr-11	68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Apr-11	69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Apr-11	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-May-11	71	0.00007	0.002	1.4	0.00103	1.25	0.000005	0.15	0.335	10	0.000008	0.00002	0.0005	0.00508	0.0002	0.0001	0.0001
12-May-11	72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-May-11	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-May-11	74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Jun-11	75	0.00011	0.002	1.66	0.00109	1.38	0.000005	0.16	0.406	10	0.000019	0.00004	0.0005	0.00599	0.0002	0.0004	0.0001
9-Jun-11	76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Jun-11	77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Jun-11	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Jun-11	79	0.00022	0.002	1.36	0.00096	1.16	0.000005	0.17	0.322	10	0.000016	0.00003	0.0005	0.00497	0.0002	0.0012	0.0001
7-Jul-11	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jul-11	81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jul-11	82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jul-11	83	0.00006	0.002	1.11	0.00084	1.05	0.000005	0.14	0.3	10	0.000011	0.0001	0.0005	0.00477	0.0002	0.0004	0.0001
4-Aug-11	84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Aug-11	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Aug-11	86	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Aug-11	87	0.00023	0.002	0.64	0.00052	0.538	0.000005	0.15	0.16	10	0.000008	0.00006	0.0005	0.00234	0.0002	0.0004	0.0001
1-Sep-11	88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Sep-11	89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Sep-11	90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Sep-11	91	0.00025	0.002	0.9	0.00067	0.733	0.000005	0.15	0.212	10	0.000012	0.00012	0.0005	0.00338	0.0005	0.0006	0.0001

HC 8

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
29-Apr-10	15	500	480	7.29	343	17	2.28	8.86	5	0.5	0.05	7.4	0.0273	0.00066	0.0256	0.00032
6-May-10	16	500	490	7.28	321	16	4.46	9.46	1	--	--	--	--	--	--	--
13-May-10	17	500	475	7.27	331	17	3.38	8.89	2	0.5	0.04	7.5	0.0257	0.00065	0.0271	0.00025
20-May-10	18	500	455	7.50	348	13	3.66	7.84	2	--	--	--	--	--	--	--
27-May-10	19	500	465	7.53	358	14	4.75	10.51	1	0.5	0.03	6.9	0.028	0.00053	0.0233	0.00035
3-Jun-10	20	500	495	7.25	343	14	2.74	8.33	4	--	--	--	--	--	--	--
10-Jun-10	21	500	460	7.42	305	17	3.96	12.13	1	0.5	0.02	7.2	0.0453	0.0005	0.0302	0.00031
17-Jun-10	22	500	475	7.48	330	17	3.53	11.06	1	--	--	--	--	--	--	--
24-Jun-10	23	500	480	7.40	408	18	2.61	11.43	5	0.5	0.1	8.1	0.0341	0.00063	0.0328	0.00035
1-Jul-10	24	500	475	7.38	417	17	2.62	10.61	1	--	--	--	--	--	--	--
8-Jul-10	25	500	480	7.15	317	17	2.49	9.65	4	0.5	0.02	8	0.0425	0.00054	0.0335	0.00034
15-Jul-10	26	500	475	7.37	328	16	3.56	9.75	2	--	--	--	--	--	--	--
22-Jul-10	27	500	485	7.15	345	16	3.75	10.17	1	0.5	0.02	7.7	0.0291	0.00048	0.0284	0.00033
29-Jul-10	28	500	520	7.23	327	14	4.01	9.09	3	--	--	--	--	--	--	--
5-Aug-10	29	500	480	7.32	329	16	2.32	9.59	3	0.5	0.02	7.9	0.0254	0.00046	0.0303	0.00074
12-Aug-10	30	500	470	7.44	402	15	4.3	10.19	2	--	--	--	--	--	--	--
19-Aug-10	31	500	455	7.51	379	13	4.62	9.41	1	0.5	0.05	6.3	0.0379	0.00037	0.0252	0.00068
26-Aug-10	32	500	475	7.08	350	14	3.16	8.19	2	--	--	--	--	--	--	--
2-Sep-10	33	500	455	7.42	375	14	3.53	9.49	5	0.5	0.06	7.4	0.0266	0.00039	0.0247	0.00044
9-Sep-10	34	500	475	7.04	354	14	4.54	9.15	2	--	--	--	--	--	--	--
16-Sep-10	35	500	465	6.99	349	11	2.92	8.14	3	0.5	0.01	6.4	0.0262	0.00037	0.0225	0.00049

HC 9

14-Jan-10	0	500	375	7.77	349	225	4.14	34.62	56	11	0.54	74.9	0.0865	0.00849	0.00411	0.0223
21-Jan-10	1	500	510	7.81	375	195	2.33	43.81	57	3	0.49	72.3	0.0844	0.0354	0.00507	0.0185
28-Jan-10	2	500	490	7.64	361	83	3.42	35.22	13	0.7	0.37	33.3	0.101	0.0288	0.00349	0.00758
4-Feb-10	3	500	495	7.55	264	79	2.85	36.36	8	0.5	0.33	36.1	0.0901	0.0332	0.0034	0.00791
11-Feb-10	4	500	505	7.55	331	99	2.57	33.36	23	--	--	--	--	--	--	--
18-Feb-10	5	500	480	7.41	331	105	3.44	27.5	27	0.5	0.19	48	0.101	0.0198	0.00186	0.00976
25-Feb-10	6	500	495	7.63	358	112	2.64	31.62	33	--	--	--	--	--	--	--
4-Mar-10	7	500	500	7.64	373	108	2.35	29.32	30	0.5	0.2	55.9	0.0885	0.0226	0.00193	0.0107
11-Mar-10	8	500	505	7.51	385	103	3.29	29.45	20	--	--	--	--	--	--	--
18-Mar-10	9	500	505	7.48	387	98	2.98	29.48	15	0.5	0.19	43.4	0.0937	0.0204	0.00214	0.0082
25-Mar-10	10	500	520	7.61	371	89	3.35	28.91	19	--	--	--	--	--	--	--
1-Apr-10	11	500	510	7.66	385	92	2.53	30.98	20	0.5	0.15	43.9	0.0996	0.0186	0.00183	0.00801
8-Apr-10	12	500	495	7.72	366	96	2.35	33.03	18	--	--	--	--	--	--	--
15-Apr-10	13	500	510	7.55	347	101	3.54	32.42	22	0.5	0.15	44.9	0.103	0.0179	0.00175	0.00837
22-Apr-10	14	500	515	7.61	352	103	4.29	32.18	22	--	--	--	--	--	--	--
29-Apr-10	15	500	495	7.60	357	90	2.7	29.82	17	0.5	0.17	50.7	0.0823	0.0158	0.00189	0.00655
6-May-10	16	500	520	7.52	345	82	4.44	30.99	13	--	--	--	--	--	--	--
13-May-10	17	500	500	7.52	348	82	3.23	26.92	15	0.5	0.09	41.4	0.105	0.0112	0.00145	0.00553
20-May-10	18	500	465	7.55	372	72	3.81	24.12	14	--	--	--	--	--	--	--
27-May-10	19	500	470	7.49	383	64	5.36	24.94	8	0.5	0.07	33.8	0.0984	0.00751	0.00115	0.00451
3-Jun-10	20	500	465	7.57	359	74	2.7	24.32	10	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
29-Apr-10	15	0.00001	0.000016	0.05	0.000005	2.69	0.0001	0.000037	0.00026	0.007	0.000011	0.0005	0.15	0.00136	0.00001	0.00066
6-May-10	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	17	0.00001	0.000005	0.05	0.000005	2.74	0.0001	0.000025	0.00017	0.005	0.000027	0.0007	0.16	0.00126	0.00001	0.00068
20-May-10	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-10	19	0.00001	0.000005	0.05	0.000005	2.52	0.0001	0.00005	0.00028	0.008	0.00019	0.0005	0.14	0.00116	0.00001	0.00068
3-Jun-10	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	0.00001	0.000005	0.05	0.000005	2.63	0.0002	0.000028	0.00027	0.007	0.000015	0.0005	0.16	0.00103	0.00001	0.00077
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	0.00001	0.000005	0.05	0.000005	2.94	0.0001	0.000026	0.00032	0.007	0.000006	0.0005	0.18	0.00103	0.00001	0.00094
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	0.00001	0.000007	0.05	0.000005	2.9	0.0001	0.000019	0.00014	0.006	0.000005	0.0005	0.18	0.00112	0.00001	0.00079
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	0.00001	0.000005	0.05	0.000005	2.82	0.0001	0.000016	0.00015	0.006	0.000007	0.0005	0.17	0.00082	0.00001	0.00061
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	0.00001	0.000005	0.05	0.000005	2.87	0.0002	0.000029	0.00045	0.003	0.000014	0.0005	0.17	0.00088	0.00001	0.00053
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.00001	0.000005	0.05	0.000005	2.31	0.0001	0.000089	0.00049	0.012	0.000007	0.0005	0.14	0.00197	0.00001	0.00044
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	0.00001	0.000005	0.05	0.000005	2.69	0.0001	0.000028	0.00043	0.007	0.000005	0.0005	0.16	0.00113	0.00001	0.00061
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	0.00001	0.000005	0.05	0.000005	2.35	0.0002	0.000028	0.00024	0.005	0.000011	0.0005	0.13	0.00087	0.00001	0.00038

HC 9

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
29-Apr-10	15	0.00023	0.002	0.64	0.00017	0.746	0.000005	0.19	0.0211	10	0.000003	0.00001	0.0005	0.00147	0.0002	0.0005	0.0001
6-May-10	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	17	0.00016	0.002	0.67	0.00017	0.948	0.000005	0.18	0.0202	10	0.000012	0.00002	0.0005	0.00143	0.0002	0.0003	0.0001
20-May-10	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-10	19	0.00014	0.002	0.62	0.00015	0.841	0.000005	0.14	0.0194	10	0.000003	0.00001	0.0005	0.00118	0.0002	0.0001	0.0001
3-Jun-10	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	0.00017	0.002	0.72	0.00023	0.66	0.000005	0.18	0.0215	10	0.000005	0.00001	0.0005	0.00115	0.0002	0.0002	0.0001
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	0.00018	0.002	0.83	0.0003	0.899	0.000005	0.19	0.0243	10	0.000002	0.00001	0.0005	0.00141	0.0002	0.0004	0.0001
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	0.0002	0.002	0.76	0.00022	0.918	0.000005	0.19	0.0209	10	0.000005	0.00001	0.0005	0.00127	0.0002	0.0001	0.0001
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	0.00016	0.002	0.71	0.00018	0.792	0.000005	0.16	0.0213	10	0.000004	0.00001	0.0005	0.00141	0.0002	0.0001	0.0001
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	0.00049	0.002	0.74	0.00016	0.84	0.000005	0.16	0.0205	10	0.000003	0.00001	0.0005	0.00154	0.0002	0.0003	0.0001
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.00043	0.002	0.63	0.00017	0.669	0.000005	0.18	0.0183	10	0.000003	0.00001	0.0005	0.000977	0.0002	0.0002	0.0001
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	0.00023	0.002	0.65	0.00021	0.778	0.000005	0.14	0.0186	10	0.000004	0.00004	0.0005	0.00107	0.0002	0.0003	0.0001
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	0.00028	0.002	0.62	0.00013	0.684	0.000005	0.16	0.0178	10	0.000002	0.00001	0.0005	0.000848	0.0002	0.0001	0.0001

HC 9

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
10-Jun-10	21	500	465	7.46	333	81	4.4	28.97	9	0.5	0.11	31.1	0.113	0.0105	0.00179	0.00529
17-Jun-10	22	500	475	7.58	345	72	3.38	26.89	5	--	--	--	--	--	--	--
24-Jun-10	23	500	460	7.70	408	73	2.29	29.02	8	0.5	0.1	32.2	0.119	0.0102	0.00161	0.00511
1-Jul-10	24	500	480	7.63	418	65	2.33	26.22	7	--	--	--	--	--	--	--
8-Jul-10	25	500	455	7.55	339	64	2.26	24.7	8	0.5	0.07	27.9	0.095	0.00774	0.00136	0.00419
15-Jul-10	26	500	470	7.42	342	57	3.35	22.01	6	--	--	--	--	--	--	--
22-Jul-10	27	500	480	7.40	361	62	3.6	23.31	7	0.5	0.06	27.4	0.0843	0.00742	0.00127	0.00409
29-Jul-10	28	500	520	7.52	340	58	3.96	23.28	9	--	--	--	--	--	--	--
5-Aug-10	29	500	475	7.52	349	54	2.4	21.83	4	0.5	0.05	25.4	0.0762	0.00628	0.00093	0.00428
12-Aug-10	30	500	485	7.46	400	62	4.4	24.74	5	--	--	--	--	--	--	--
19-Aug-10	31	500	455	7.48	376	67	5.5	27.23	8	0.5	0.07	31.9	0.107	0.00595	0.00117	0.00511
26-Aug-10	32	500	465	7.51	365	64	2.86	26.01	11	--	--	--	--	--	--	--
2-Sep-10	33	500	465	7.45	399	56	3.82	26.75	12	0.5	0.06	29.3	0.0978	0.00565	0.00106	0.0042
9-Sep-10	34	500	445	7.19	375	63	4.66	23.33	13	--	--	--	--	--	--	--
16-Sep-10	35	500	450	7.43	366	64	2.88	25.24	13	0.5	0.06	32	0.0938	0.00615	0.0011	0.00523

HC 10

14-Jan-10	0	500	360	7.65	319	190	5.71	54.53	7	5.9	0.49	68.8	0.0243	0.00033	0.00462	0.0257
21-Jan-10	1	500	480	7.94	360	94	1.98	41.96	7	1.4	0.41	36	0.0415	0.00027	0.00778	0.0127
28-Jan-10	2	500	470	7.67	356	65	3.19	37.79	5	0.6	0.35	30.6	0.0446	0.00021	0.00713	0.0104
4-Feb-10	3	500	480	7.65	261	56	2.52	38	1	0.5	0.35	29.9	0.0401	0.00023	0.00672	0.0111
11-Feb-10	4	500	480	7.61	322	72	2.46	38.54	2	--	--	--	--	--	--	--
18-Feb-10	5	500	480	7.77	320	80	2.89	45.65	1	0.5	0.42	34.2	0.0402	0.00026	0.00673	0.0135
25-Feb-10	6	500	465	7.77	347	58	2.41	38.49	3	--	--	--	--	--	--	--
4-Mar-10	7	500	465	7.80	359	59	1.81	37.28	1	0.5	0.27	28.4	0.0353	0.0002	0.00579	0.0115
11-Mar-10	8	500	465	7.70	372	59	2.76	35.76	1	--	--	--	--	--	--	--
18-Mar-10	9	500	475	7.64	373	56	2.65	33.14	1	0.5	0.22	24.8	0.0409	0.00018	0.00575	0.01
25-Mar-10	10	500	475	7.74	360	52	2.9	34.22	1	--	--	--	--	--	--	--
1-Apr-10	11	500	465	7.81	370	52	2.16	32.53	2	0.5	0.2	25.4	0.0315	0.0002	0.00503	0.0104
8-Apr-10	12	500	460	7.71	352	72	2.49	36.61	2	--	--	--	--	--	--	--
15-Apr-10	13	500	460	7.61	340	73	3.4	37.74	1	0.5	0.2	28.8	0.0362	0.00022	0.00648	0.0125
22-Apr-10	14	500	475	7.79	340	59	3.58	35.9	1	--	--	--	--	--	--	--
29-Apr-10	15	500	480	7.77	348	59	2.21	34.41	3	0.5	0.25	27.9	0.0312	0.00021	0.00573	0.0111
6-May-10	16	500	455	7.65	337	60	4.01	37.4	1	--	--	--	--	--	--	--
13-May-10	17	500	470	7.70	341	57	3.08	34.63	2	0.5	0.16	28	0.0309	0.00022	0.00606	0.0114
20-May-10	18	500	455	7.82	357	51	3.11	32.86	2	--	--	--	--	--	--	--
27-May-10	19	500	480	7.80	369	54	4.87	37.44	1	0.5	0.16	28.4	0.0264	0.00018	0.00526	0.0113
3-Jun-10	20	500	465	7.75	350	50	2.45	32.13	4	--	--	--	--	--	--	--
10-Jun-10	21	500	480	7.63	330	53	4.2	34.89	3	0.5	0.15	25	0.0276	0.00018	0.0059	0.0109
17-Jun-10	22	500	475	7.74	336	50	3.32	33.89	1	--	--	--	--	--	--	--
24-Jun-10	23	500	480	7.82	406	52	2.14	35.15	3	0.5	0.1	26.2	0.0432	0.0002	0.00578	0.0122
1-Jul-10	24	500	470	7.78	421	48	2.14	32.73	1	--	--	--	--	--	--	--
8-Jul-10	25	500	470	7.63	337	48	2.17	31.18	1	0.5	0.1	24.6	0.027	0.00019	0.00455	0.0104
15-Jul-10	26	500	490	7.59	337	51	3.46	34.34	2	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
10-Jun-10	21	0.00001	0.000021	0.05	0.000009	10.6	0.0004	0.000036	--	0.003	0.000027	0.0026	1.11	0.00633	0.00001	0.00029
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	0.00001	0.000015	0.05	0.000005	11.2	0.0001	0.000022	0.00033	0.005	0.000016	0.0026	1.05	0.00664	0.00001	0.00031
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	0.00001	0.000016	0.05	0.000005	9.68	0.0001	0.000023	0.00043	0.003	0.000035	0.0019	0.9	0.00549	0.00001	0.0003
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	0.00001	0.00001	0.05	0.000005	9.56	0.0001	0.000026	0.0004	0.003	0.000016	0.0019	0.86	0.00517	0.00001	0.00024
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	0.00001	0.000007	0.05	0.000005	8.91	0.0001	0.000022	0.00023	0.002	0.000011	0.0016	0.76	0.0033	0.00001	0.00021
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.00001	0.000015	0.05	0.000005	11.2	0.0002	0.000022	0.00053	0.005	0.00003	0.0019	0.97	0.00584	0.00001	0.00025
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	0.00001	0.000011	0.05	0.000005	10.2	0.0001	0.000018	0.00068	0.004	0.000021	0.0017	0.93	0.00418	0.00001	0.00034
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	0.00001	0.000006	0.05	0.000008	11.2	0.0002	0.000022	0.00039	0.002	0.000034	0.0019	1	0.00413	0.00001	0.00028

HC 10

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
10-Jun-10	21	0.00015	0.002	1.64	0.0008	1.29	0.000005	0.43	0.369	10	0.000006	0.00001	0.0005	0.024	0.0004	0.001	0.0001
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	0.00011	0.002	1.52	0.00079	1.5	0.000005	0.39	0.347	10	0.000008	0.00001	0.0005	0.0236	0.0003	0.0003	0.0001
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	0.00012	0.002	1.17	0.00059	1.28	0.000005	0.31	0.276	10	0.000006	0.00001	0.0005	0.0208	0.0002	0.0002	0.0001
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	0.00018	0.002	1.03	0.0006	1.15	0.000005	0.28	0.28	10	0.000005	0.00002	0.0005	0.0213	0.0003	0.0004	0.0001
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	0.00021	0.002	0.92	0.00051	1.13	0.000005	0.26	0.234	10	0.000005	0.00002	0.0005	0.0184	0.0002	0.0001	0.0001
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.00019	0.002	1.06	0.00068	1.32	0.000005	0.33	0.309	10	0.000005	0.00001	0.0005	0.0164	0.0003	0.0004	0.0001
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	0.00014	0.002	1.04	0.00064	1.11	0.000005	0.28	0.27	10	0.000007	0.00003	0.0005	0.0144	0.0002	0.0003	0.0001
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	0.0002	0.002	1.12	0.0006	1.36	0.000005	0.28	0.312	10	0.000006	0.00001	0.0005	0.0154	0.0004	0.0006	0.0001

HC 10

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
22-Jul-10	27	500	475	7.64	354	49	3.29	31.82	1	0.5	0.11	24.8	0.0267	0.00016	0.00459	0.0107
29-Jul-10	28	500	495	7.65	335	48	4.07	32.48	2	--	--	--	--	--	--	--
5-Aug-10	29	500	515	7.85	362	50	2.05	34.62	5	0.5	0.1	26.3	0.0313	0.00016	0.00558	0.0105
12-Aug-10	30	500	490	7.70	401	56	4.1	37.37	2	--	--	--	--	--	--	--
19-Aug-10	31	500	465	7.79	377	47	4.61	33.76	1	0.5	0.09	25.2	0.0336	0.00016	0.00447	0.00997
26-Aug-10	32	500	460	7.74	360	53	2.54	37.18	4	--	--	--	--	--	--	--
2-Sep-10	33	500	470	7.72	392	47	3.25	36.85	5	0.5	0.09	25.9	0.0278	0.00017	0.005	0.012
9-Sep-10	34	500	465	7.43	369	55	4.63	37.96	1	--	--	--	--	--	--	--
16-Sep-10	35	500	480	7.57	358	46	2.71	32.3	3	0.8	0.09	26.2	0.0263	0.00016	0.00426	0.0114

HC 11

14-Jan-10	0	500	350	7.25	298	514	6.54	29.52	196	6.1	0.48	231	0.0099	0.01	0.0934	0.00329
21-Jan-10	1	500	470	7.47	380	368	3.14	28.57	165	2.2	0.48	189	0.0118	0.0102	0.119	0.00243
28-Jan-10	2	500	480	7.34	369	218	4.29	29.12	93	0.8	0.49	109	0.0148	0.00925	0.125	0.00133
4-Feb-10	3	500	480	7.32	266	119	3.1	24.83	45	0.5	0.38	64.9	0.0194	0.00785	0.119	0.00086
11-Feb-10	4	500	485	7.31	338	121	3.19	26.79	32	--	--	--	--	--	--	--
18-Feb-10	5	500	440	7.45	333	114	3.47	31.5	30	0.5	0.51	53.6	0.0245	0.0116	0.184	0.00083
25-Feb-10	6	500	455	7.40	355	59	2.87	20.96	13	--	--	--	--	--	--	--
4-Mar-10	7	500	455	7.40	368	64	2.31	20.26	10	0.5	0.25	30.7	0.0256	0.00626	0.11	0.00052
11-Mar-10	8	500	455	7.36	380	67	3.47	22.9	11	--	--	--	--	--	--	--
18-Mar-10	9	500	480	7.33	382	60	3.06	21.28	5	0.5	0.26	24.7	0.0289	0.00622	0.117	0.00073
25-Mar-10	10	500	490	7.41	370	49	3.59	17.71	7	--	--	--	--	--	--	--
1-Apr-10	11	500	465	7.46	381	54	2.84	20.6	11	0.5	0.21	24.3	0.0225	0.00613	0.104	0.00051
8-Apr-10	12	500	465	7.37	351	68	2.89	20.98	9	--	--	--	--	--	--	--
15-Apr-10	13	500	490	7.32	349	75	3.62	24.25	12	0.5	0.32	26.9	0.0269	0.00861	0.137	0.00054
22-Apr-10	14	500	465	7.49	349	62	4.32	25.58	8	--	--	--	--	--	--	--
29-Apr-10	15	500	485	7.48	356	61	2.51	25.35	7	0.5	0.45	26.4	0.0259	0.00885	0.147	0.00057
6-May-10	16	500	470	7.42	346	58	4.45	26.48	9	--	--	--	--	--	--	--
13-May-10	17	500	465	7.51	350	58	3.23	24.64	6	0.5	0.25	27	0.0282	0.00842	0.145	0.00138
20-May-10	18	500	465	7.57	364	53	3.94	23.43	5	--	--	--	--	--	--	--
27-May-10	19	500	455	7.60	372	54	5.8	29.22	2	0.5	0.27	26	0.0216	0.00785	0.138	0.00051
3-Jun-10	20	500	470	7.54	354	55	2.94	26.18	5	--	--	--	--	--	--	--
10-Jun-10	21	500	455	7.43	339	50	4.47	24.38	5	0.5	0.22	23.3	0.0255	0.00743	0.138	0.00062
17-Jun-10	22	500	460	7.57	344	59	3.77	29.79	2	--	--	--	--	--	--	--
24-Jun-10	23	500	460	7.65	406	57	2.67	29.51	7	0.5	0.2	25.8	0.0237	0.00936	0.168	0.00058
1-Jul-10	24	500	455	7.59	418	52	2.61	27.07	6	--	--	--	--	--	--	--
8-Jul-10	25	500	445	7.40	345	46	2.35	21.11	2	0.5	0.2	20.5	0.0267	0.00653	0.128	0.00066
15-Jul-10	26	500	465	7.38	339	41	4.09	20.64	4	--	--	--	--	--	--	--
22-Jul-10	27	500	480	7.35	359	50	3.68	24.68	4	0.5	0.21	22.3	0.0209	0.00652	0.128	0.00053
29-Jul-10	28	500	460	7.46	340	43	4.29	22.75	2	--	--	--	--	--	--	--
5-Aug-10	29	500	450	7.54	373	43	2.4	22.08	2	0.5	0.18	20.8	0.0222	0.00569	0.115	0.00119
12-Aug-10	30	500	465	7.49	403	44	4.55	23.77	2	--	--	--	--	--	--	--
19-Aug-10	31	500	435	7.54	374	42	5.23	22.94	2	0.5	0.18	20.8	0.031	0.00594	0.114	0.00084
26-Aug-10	32	500	450	7.45	366	45	2.91	23.17	5	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
22-Jul-10	27	0.00001	0.000005	0.05	0.000005	5.96	0.0001	0.000011	0.00024	0.006	0.000012	0.0014	2.41	0.00127	0.00001	0.0103
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	0.00001	0.000005	0.05	0.000005	6.36	0.0001	0.00001	0.00023	0.004	0.00001	0.0014	2.53	0.00104	0.00001	0.0103
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.00001	0.000005	0.05	0.000005	6.14	0.0002	0.000008	0.00027	0.006	0.000065	0.0012	2.41	0.001	0.00001	0.00978
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	0.00001	0.000005	0.05	0.000014	6.06	0.0001	0.000008	0.00028	0.004	0.000007	0.0014	2.61	0.00094	0.00001	0.0101
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	0.00001	0.000005	0.05	0.000005	6.46	0.0002	0.000009	0.00012	0.004	0.000009	0.0012	2.44	0.00103	0.00001	0.00831

HC 11

14-Jan-10	0	0.00001	0.000005	0.05	0.000296	78.8	0.0001	0.000642	0.00337	0.004	0.000018	0.0077	8.28	0.142	0.00012	0.0255
21-Jan-10	1	0.00001	0.000005	0.05	0.000208	64.9	0.0001	0.000347	0.00584	0.006	0.000026	0.0068	6.54	0.0952	0.00002	0.0305
28-Jan-10	2	0.00001	0.000007	0.05	0.000117	37.5	0.0001	0.0002	0.00129	0.005	0.000086	0.0051	3.67	0.0563	0.00002	0.0296
4-Feb-10	3	0.00001	0.000008	0.05	0.000066	22.3	0.0002	0.000122	0.00079	0.007	0.000156	0.0035	2.2	0.0334	0.00001	0.0251
11-Feb-10	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	5	0.00001	0.000011	0.05	0.000061	18.1	0.0001	0.000096	0.00108	0.01	0.000137	0.0039	2.03	0.0252	0.00001	0.0342
25-Feb-10	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Mar-10	7	0.00001	0.000017	0.05	0.000039	10.6	0.0003	0.00005	0.00075	0.009	0.000129	0.0025	1.02	0.0158	0.00001	0.0192
11-Mar-10	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	9	0.00001	0.000025	0.05	0.000041	8.49	0.0001	0.000054	0.0007	0.015	0.000215	0.0023	0.86	0.0137	0.00001	0.0178
25-Mar-10	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	11	0.00001	0.000023	0.05	0.000044	8.39	0.0001	0.000048	0.00084	0.012	0.000193	0.0022	0.82	0.0132	0.00001	0.0186
8-Apr-10	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Apr-10	13	0.00001	0.000014	0.05	0.000048	9.17	0.0002	0.000052	0.00051	0.01	0.000133	0.0026	0.96	0.0134	0.00001	0.0235
22-Apr-10	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	15	0.00001	0.000054	0.05	0.000032	9.14	0.0003	0.00005	0.00044	0.013	0.000251	0.0027	0.86	0.0117	0.00001	0.0211
6-May-10	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	17	0.00001	0.000019	0.05	0.000034	9.39	0.0002	0.00004	0.00047	0.013	0.00021	0.0026	0.86	0.0145	0.00001	0.0201
20-May-10	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-10	19	0.00001	0.00001	0.05	0.000033	9.06	0.0001	0.000035	0.0004	0.006	0.000069	0.0025	0.83	0.0112	0.00001	0.0189
3-Jun-10	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	0.00001	0.000026	0.05	0.000042	8	0.0002	0.000041	0.00051	0.01	0.000175	0.0023	0.81	0.00936	0.00001	0.0172
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	0.00001	0.000013	0.05	0.000029	8.84	0.0001	0.000032	0.00044	0.01	0.000089	0.0027	0.9	0.00858	0.00001	0.0217
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	0.00001	0.000023	0.05	0.000026	6.97	0.0001	0.000037	0.00041	0.013	0.000214	0.0021	0.75	0.00681	0.00001	0.0148
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	0.00001	0.000013	0.05	0.000028	7.68	0.0001	0.000033	0.00046	0.008	0.000087	0.0022	0.77	0.00597	0.00001	0.0164
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	0.00001	0.000013	0.05	0.000025	7.17	0.0001	0.000032	0.00104	0.012	0.000126	0.0019	0.7	0.00566	0.00001	0.0147
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.00001	0.000033	0.05	0.000033	7.15	0.0001	0.000035	0.00039	0.022	0.000241	0.0019	0.7	0.006	0.00001	0.0156
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
22-Jul-10	27	0.00019	0.002	1.13	0.00017	1.19	0.000005	0.3	0.0803	10	0.000018	0.00001	0.0005	0.00219	0.0002	0.0001	0.0001
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	0.00017	0.002	1.16	0.00018	1.26	0.000005	0.32	0.0777	10	0.000015	0.00002	0.0005	0.00228	0.0002	0.0004	0.0001
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.00018	0.002	0.98	0.0002	1.14	0.000011	0.31	0.0809	10	0.000018	0.00001	0.0005	0.0019	0.0003	0.0002	0.0001
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	0.00014	0.002	1.14	0.0002	1.15	0.000005	0.26	0.0882	10	0.000019	0.00003	0.0005	0.00241	0.0002	0.0002	0.0001
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	0.00015	0.002	1.04	0.00015	1.23	0.000005	0.25	0.0812	10	0.000015	0.00001	0.0005	0.0022	0.0003	0.0001	0.0001

HC 11

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
2-Sep-10	33	500	450	7.38	396	35	3.32	21.75	6	0.5	0.15	17.3	0.0252	0.00513	0.114	0.0006
9-Sep-10	34	500	460	7.19	368	37	4.66	17.73	4	--	--	--	--	--	--	--
16-Sep-10	35	500	450	7.25	362	38	3.17	21.58	5	0.5	0.16	19.5	0.0223	0.00523	0.111	0.00054
23-Sep-10	36	500	470	7.46	356	31	2.39	17.54	7	--	--	--	--	--	--	--
30-Sep-10	37	500	470	7.32	325	29	2.8	20.65	5	0.5	0.24	16	0.0232	0.00527	0.109	0.0006
7-Oct-10	38	500	435	7.47	338	53	3.46	27.6	7	--	--	--	--	--	--	--
14-Oct-10	39	500	510	7.25	261	34	3.56	17.39	6	0.6	0.11	16.1	0.0172	0.00423	0.0868	0.00046
21-Oct-10	40	500	475	7.25	412	35	3.55	17.4	5	--	--	--	--	--	--	--
28-Oct-10	41	500	450	7.20	279	33	3.65	17.59	7	0.5	0.09	16	0.0289	0.00432	0.087	0.00067
4-Nov-10	42	500	450	7.33	390	33	2.39	16.54	5	--	--	--	--	--	--	--
11-Nov-10	43	500	485	7.51	379	48	2.66	23.59	2	0.5	0.12	21	0.0228	0.00504	0.0981	0.00062
18-Nov-10	44	500	450	7.62	355	46	3.17	22.46	2	--	--	--	--	--	--	--
25-Nov-10	45	500	460	7.23	254	41	3.34	21.92	3	0.5	0.11	19.1	0.0189	0.00432	0.0994	0.00108
2-Dec-10	46	500	475	7.26	368	38	3.63	21.66	2	--	--	--	--	--	--	--
9-Dec-10	47	500	460	7.32	352	41	3.42	22.04	2	0.5	0.12	19.1	0.0176	0.00512	0.11	0.00098
16-Dec-10	48	500	465	7.26	355	38	4.85	21.36	5	--	--	--	--	--	--	--
23-Dec-10	49	500	480	7.47	290	31	4.68	18.49	2	0.5	0.08	14.4	0.0227	0.00439	0.0947	0.00054
30-Dec-10	50	500	480	7.30	329	26	5.6	16.26	3	--	--	--	--	--	--	--
6-Jan-11	51	500	470	7.45	337	29	5.94	21.55	3	0.5	0.12	16.3	0.0241	0.00427	0.0928	0.00058
13-Jan-11	52	500	455	7.37	328	29	4.28	20.7	3	--	--	--	--	--	--	--
20-Jan-11	53	500	480	7.38	300	31	2.97	21.58	3	--	--	--	--	--	--	--
27-Jan-11	54	500	445	7.35	320	32	4.6	21.52	2	--	--	--	--	--	--	--
3-Feb-11	55	500	480	7.28	328	31	3.24	22.11	7	0.5	0.1	19.2	0.0217	0.00469	0.0992	0.0005
10-Feb-11	56	500	465	7.37	344	33	3.29	21.91	2	--	--	--	--	--	--	--
17-Feb-11	57	500	480	7.34	276	34	3.62	22.04	2	--	--	--	--	--	--	--
24-Feb-11	58	500	455	7.38	351	51	4.35	27.72	8	--	--	--	--	--	--	--
3-Mar-11	59	500	455	7.24	312	37	3.85	20.29	7	0.5	0.07	16.6	0.0183	0.0042	0.0913	0.00054
10-Mar-11	60	500	460	7.33	342	37	3.27	17.73	6	--	--	--	--	--	--	--
17-Mar-11	61	500	465	7.36	249	40	3.14	22.1	5	--	--	--	--	--	--	--
24-Mar-11	62	500	455	7.51	335	34	4.81	21.64	6	--	--	--	--	--	--	--
31-Mar-11	63	500	465	7.37	300	34	4.33	20.52	4	0.5	0.07	15.3	0.0187	0.00387	0.0815	0.00037
7-Apr-11	64	500	475	7.48	308	35	4.61	21.04	4	--	--	--	--	--	--	--
14-Apr-11	65	500	460	7.39	218	37	5.56	26.62	4	--	--	--	--	--	--	--
21-Apr-11	66	500	460	7.35	306	39	2.95	22.17	4	--	--	--	--	--	--	--
28-Apr-11	67	500	475	7.42	344	36	3.27	21.38	5	0.5	0.1	15.7	0.0219	0.00417	0.0879	0.00051
5-May-11	68	500	450	7.28	349	36	3.48	20.81	4	--	--	--	--	--	--	--
12-May-11	69	500	460	7.44	359	37	3.84	22.74	4	--	--	--	--	--	--	--
19-May-11	70	500	465	7.53	317	42	--	15	4	--	--	--	--	--	--	--
26-May-11	71	500	450	7.34	268	39	4.52	20.31	3	0.5	0.07	18.6	0.0223	0.00563	0.0988	0.00061
2-Jun-11	72	500	440	7.50	250	35	5.48	20.48	3	--	--	--	--	--	--	--
9-Jun-11	73	500	465	7.34	306	37	3.34	20.66	3	--	--	--	--	--	--	--
16-Jun-11	74	500	460	7.57	308	35	3.74	21.9	2	--	--	--	--	--	--	--
23-Jun-11	75	500	460	7.58	328	31	2.16	15.96	4	0.5	0.06	15.3	0.0274	0.0047	0.0861	0.00049
30-Jun-11	76	500	490	7.56	313	31	4.1	16.75	4	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
7-Jul-11	77	500	470	7.42	325	39	4.04	23.6	4	--	--	--	--	--	--	--
14-Jul-11	78	500	470	7.52	294	40	5.06	22.76	3	--	--	--	--	--	--	--
21-Jul-11	79	500	485	7.44	280	35	3.95	16.95	2	0.5	0.06	15.4	0.0209	0.00475	0.0916	0.00038
28-Jul-11	80	500	470	7.58	298	35	4.69	21.09	2	--	--	--	--	--	--	--
4-Aug-11	81	500	460	7.44	303	31	4.01	15.91	2	--	--	--	--	--	--	--
11-Aug-11	82	500	490	7.66	225	42	4.23	24.2	2	--	--	--	--	--	--	--
18-Aug-11	83	500	460	7.54	272	32	2.92	16.86	2	0.8	0.05	13.5	0.0209	0.0043	0.0793	0.00053
25-Aug-11	84	500	455	7.55	252	33	5.38	21.36	2	--	--	--	--	--	--	--
1-Sep-11	85	500	445	7.47	307	32	4.55	20.13	3	--	--	--	--	--	--	--
8-Sep-11	86	500	445	7.57	301	30	4.15	15.49	3	--	--	--	--	--	--	--
15-Sep-11	87	500	440	7.77	271	34	3.99	23.32	2	0.5	0.04	16.1	0.0299	0.00473	0.0855	0.00111

HC 12

26-Jul-12	0	500	375	7.18	1	501	7.87	31.97	172	9.5	0.42	143	0.0939	0.0316	0.092	0.0269
2-Aug-12	1	500	450	7.73	349	312	4.02	28.55	107	3.4	0.32	87.2	0.0473	0.0336	0.115	0.0139
9-Aug-12	2	500	430	7.65	152	234	5.37	36.54	78	0.93	0.37	68.9	0.0492	--	0.153	0.0101
16-Aug-12	3	500	440	7.69	316	120	3.65	25.62	34	0.5	0.25	35.2	0.0545	0.0339	0.111	0.00686
23-Aug-12	4	500	425	7.8	172	97	5.79	24.38	23	--	--	--	--	--	--	--
30-Aug-12	5	500	455	7.5	358	90	4.69	24.14	19	0.5	0.2	27.6	0.0332	0.0385	0.0918	0.00387
6-Sep-12	6	500	445	7.61	321	77	3.77	21.63	13	--	--	--	--	--	--	--
13-Sep-12	7	500	420	7.59	352	84	3.18	23.56	16	0.5	0.2	27.8	0.064	0.0382	0.0994	0.00374
20-Sep-12	8	500	420	7.67	329	77	4.64	25.97	17	--	--	--	--	--	--	--
27-Sep-12	9	500	420	7.63	351	64	3.11	22.74	10	0.5	0.15	22.1	0.0434	0.0343	0.0764	0.00311
4-Oct-12	10	500	450	7.67	343	58	3.84	20.94	11	--	--	--	--	--	--	--
11-Oct-12	11	500	480	7.61	292	57	5.58	22.97	10	0.5	0.11	21.8	0.0194	0.0336	0.0533	0.00346
18-Oct-12	12	500	465	7.65	347	68	3.58	23.83	10	--	--	--	--	--	--	--
25-Oct-12	13	500	465	7.63	344	70	3.17	24	13	0.5	0.14	27	0.0313	0.0373	0.0687	0.00349
1-Nov-12	14	500	475	7.52	372	70	5.73	26.92	13	--	--	--	--	--	--	--
8-Nov-12	15	500	460	7.15	432	66	4.62	20.11	13	0.5	0.11	28.2	0.0392	0.0303	0.0606	0.0037
15-Nov-12	16	500	455	7.87	370	77	8.89	26.91	18	--	--	--	--	--	--	--
22-Nov-12	17	500	490	7.69	355	95	4.15	34.2	13	0.5	0.22	40.4	0.0396	0.0634	0.113	0.0062
29-Nov-12	18	500	505	7.47	412	95	8.82	37.8	13	--	--	--	--	--	--	--
6-Dec-12	19	500	455	7	417	56	5.9	17.58	10	0.5	0.087	24.9	0.0473	0.0288	0.0502	0.00287
13-Dec-12	20	500	490	7.88	328	82	6.67	31.61	14	--	--	--	--	--	--	--
20-Dec-12	21	500	485	7.48	386	86	4.65	33.17	16	0.5	0.19	41.7	0.0436	0.06	0.101	0.00539
27-Dec-12	22	500	460	7.81	251	62	6.64	26.79	8	--	--	--	--	--	--	--
3-Jan-13	23	500	465	7.16	361	58	4.68	21.68	8	0.53	0.096	24.7	0.0448	0.0304	0.0538	0.00292
10-Jan-13	24	500	480	7.82	309	75	6.14	27.89	15	--	--	--	--	--	--	--
17-Jan-13	25	500	475	7.65	360	71	3.09	27.61	16	0.5	0.12	31.4	0.046	0.038	0.0562	0.00387
24-Jan-13	26	500	480	7.82	289	71	5.18	25.74	13	--	--	--	--	--	--	--
31-Jan-13	27	500	420	7.24	424	76	3.85	23.41	17	0.5	0.13	34.7	0.0517	0.038	0.0589	0.00389
7-Feb-13	28	500	475	7.85	373	66	6.15	24.71	12	--	--	--	--	--	--	--
14-Feb-13	29	500	445	6.77	400	61	5.63	16.98	12	0.5	0.12	26.2	0.0419	0.029	0.0466	0.00304
21-Feb-13	30	500	455	7.76	388	56	5.23	21.34	12	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
7-Jul-11	77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jul-11	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jul-11	79	0.00001	0.000005	0.05	0.000013	5.47	0.0001	0.000006	0.00018	0.007	0.000041	0.0015	0.41	0.00054	0.00001	0.00742
28-Jul-11	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Aug-11	81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Aug-11	82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Aug-11	83	0.00001	0.000009	0.05	0.000005	4.86	0.0001	0.000012	0.00035	0.01	0.000079	0.0013	0.32	0.00065	0.00001	0.00617
25-Aug-11	84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Sep-11	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Sep-11	86	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Sep-11	87	0.00001	0.000027	0.05	0.000023	5.76	0.0002	0.00002	0.00036	0.022	0.000154	0.0016	0.41	0.00114	0.00001	0.00743

HC 12

26-Jul-12	0	0.00001	0.000009	0.05	0.00003	48.2	0.00017	0.000451	0.00602	0.0035	0.000227	0.0111	5.39	0.0286	0.00001	0.0094
2-Aug-12	1	0.00001	0.000011	0.05	0.000017	29.9	0.0001	0.0002	0.00262	0.0045	0.000311	0.00666	3.02	0.0191	0.00001	0.0088
9-Aug-12	2	0.00001	0.000012	0.05	0.000011	23.9	0.0001	0.000123	0.00129	0.002	0.000127	0.00548	2.27	0.0138	0.00001	--
16-Aug-12	3	0.00001	0.000012	0.05	--	12.1	0.0001	0.000087	0.00484	--	--	0.00344	1.23	0.00905	0.00001	0.0061
23-Aug-12	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Aug-12	5	0.00001	--	0.05	0.000005	9.37	0.0001	0.000043	0.000587	0.001	0.000062	0.00284	1.03	0.00715	0.00001	0.0056
6-Sep-12	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Sep-12	7	0.00001	0.00001	0.05	0.000005	9.47	0.0001	0.000047	0.00239	0.0061	0.000119	0.00281	1.01	0.00703	0.00001	0.0038
20-Sep-12	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-12	9	0.00001	0.000009	0.05	--	7.44	0.0001	0.000028	0.00102	0.0018	0.000211	0.00274	0.859	0.00542	0.00001	0.0033
4-Oct-12	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Oct-12	11	0.00001	0.000007	0.05	0.000007	7.22	0.0001	0.000044	0.000697	0.001	0.000039	0.00225	0.904	0.00533	0.00001	0.0020
18-Oct-12	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-12	13	0.00001	0.000007	0.05	0.000005	9.11	0.0001	0.000029	0.000779	0.0032	0.000091	0.00245	1.02	0.00552	0.00001	0.0023
1-Nov-12	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Nov-12	15	0.00001	0.000009	0.05	0.000007	9.61	0.0001	0.000031	0.000493	0.0014	0.000075	0.00206	1.01	0.0061	0.00001	0.0018
15-Nov-12	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-12	17	0.00001	0.000006	0.05	0.000008	13.6	0.0001	0.000032	0.000615	0.0026	0.000082	0.00393	1.59	0.00502	0.00001	0.0023
29-Nov-12	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Dec-12	19	0.00001	0.000008	0.05	0.000012	8.47	0.0001	0.000025	0.00111	0.0189	0.000094	0.00169	0.913	0.00385	0.00001	0.0013
13-Dec-12	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-12	21	0.00001	0.000013	0.05	0.000005	13.9	0.0001	0.000029	0.000455	0.001	0.000055	0.00334	1.7	0.00532	0.00001	0.0021
27-Dec-12	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jan-13	23	0.00001	0.000005	0.05	0.000029	8.17	0.0001	0.000019	0.000371	0.001	0.000083	0.00163	1.05	0.0038	0.00001	0.0010
10-Jan-13	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-13	25	0.00001	0.00001	0.05	0.000022	10.5	0.0001	0.000021	0.000883	0.0015	--	0.00184	1.25	0.00309	0.00001	0.0016
24-Jan-13	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Jan-13	27	0.00001	0.00001	0.05	0.000007	11.8	0.0001	0.000019	0.000289	0.0037	0.000055	0.00216	1.26	0.00228	0.00001	0.0017
7-Feb-13	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Feb-13	29	0.00001	0.000007	0.05	0.000007	8.9	0.0001	0.000014	0.000973	0.0024	0.00008	0.00166	0.961	0.00174	0.00001	0.0014
21-Feb-13	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
7-Jul-11	77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jul-11	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jul-11	79	0.00002	0.007	0.85	0.00302	0.993	0.000005	0.07	0.0587	10	0.000006	0.00004	0.0005	0.000607	0.0002	0.0005	0.0001
28-Jul-11	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Aug-11	81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Aug-11	82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Aug-11	83	0.00009	0.007	0.74	0.0024	0.752	0.000006	0.06	0.0525	10	0.000009	0.00001	0.0005	0.000466	0.0002	0.0011	0.0001
25-Aug-11	84	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Sep-11	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Sep-11	86	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Sep-11	87	0.00007	0.008	0.88	0.00259	0.847	0.000005	0.13	0.0621	10	0.000005	0.00016	0.0005	0.000571	0.0002	0.0012	0.0001

HC 12

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
28-Feb-13	31	500	460	7.02	423	60	6.45	20.81	14	0.5	0.096	24.6	0.0467	0.0239	0.0405	0.0025
7-Mar-13	32	500	475	7.88	360	64	7.26	23.56	14	--	--	--	--	--	--	--
14-Mar-13	33	500	460	7.43	355	52	5.54	15.31	11	0.5	0.083	22.1	0.0336	0.0216	0.03	0.00253
21-Mar-13	34	500	470	7.85	373	60	6.52	18.07	13	--	--	--	--	--	--	--
28-Mar-13	35	500	490	7.21	447	70	4.35	17.58	13	0.5	0.14	32.5	0.0382	0.0334	0.0439	0.00345
4-Apr-13	36	500	465	7.86	380	72	7.1	26.47	15	--	--	--	--	--	--	--
11-Apr-13	37	500	460	7.74	396	69	4.77	24.15	15	0.5	0.16	28.8	0.0496	0.0375	0.0562	0.00337
18-Apr-13	38	500	475	7.82	379	79	5.89	29.36	12	--	--	--	--	--	--	--
25-Apr-13	39	500	455	7.21	342	70	4.46	23.21	12	0.5	0.19	29.9	0.0435	0.0425	0.0623	0.00369
2-May-13	40	500	470	7.86	385	71	6.1	28.1	11	--	--	--	--	--	--	--
9-May-13	41	500	460	7.71	408	70	5.53	27.01	11	0.63	0.15	30.8	0.0517	0.0393	0.0591	0.00354
16-May-13	42	500	455	7.84	410	74	7.67	27.56	10	--	--	--	--	--	--	--
23-May-13	43	500	465	7.41	441	61	5.14	21.02	14	0.53	0.11	27.3	0.0471	0.0307	0.043	0.00315

HC 13

10-Aug-12	0	500	290	7.76	311	2344	15.1	155.06	1157	42	0.29	1300	0.0271	0.0198	0.0229	0.108
17-Aug-12	1	500	465	7.32	290	714	10.99	75.67	267	1.3	0.57	287	0.024	0.0598	0.0577	0.0423
24-Aug-12	2	500	430	7.95	276	646	8.46	86.56	222	0.67	0.55	286	0.0432	0.0405	0.047	0.0396
31-Aug-12	3	500	465	7.83	385	364	5.8	89.66	69	0.5	0.52	145	0.0559	0.0333	0.0428	0.021
7-Sep-12	4	500	435	7.95	364	390	6.51	79.39	93	--	--	--	--	--	--	--
14-Sep-12	5	500	420	7.83	325	371	5.1	71.29	105	0.5	0.44	158	0.0681	0.0291	0.0375	0.02
21-Sep-12	6	500	390	7.86	362	331	6.22	75.79	89	--	--	--	--	--	--	--
27-Sep-12	7	500	485	7.83	379	301	4.55	98.3	62	0.5	0.48	121	0.0387	0.0304	0.0354	0.017
4-Oct-12	8	500	425	7.7	368	197	5.08	71.31	33	--	--	--	--	--	--	--
11-Oct-12	9	500	405	7.86	330	311	7.75	77.29	90	0.5	0.39	122	0.0403	0.0229	0.0317	0.0194
18-Oct-12	10	500	440	7.69	401	249	7.35	73.59	45	--	--	--	--	--	--	--
25-Oct-12	11	500	425	7.77	363	242	4.31	73.66	59	0.5	0.3	101	0.0552	0.0211	0.0315	0.012
1-Nov-12	12	500	475	7.66	385	282	8.08	90.18	54	--	--	--	--	--	--	--
8-Nov-12	13	500	480	7.68	397	244	6.16	85.44	53	0.5	0.23	108	0.0419	0.0198	0.0302	0.0132
15-Nov-12	14	500	480	7.72	386	229	12.03	85.86	54	--	--	--	--	--	--	--
22-Nov-12	15	500	495	7.79	365	202	5.43	81.43	31	0.5	0.2	87.3	0.0292	0.0184	0.027	0.0108
29-Nov-12	16	500	495	7.7	396	186	11.53	78.9	29	--	--	--	--	--	--	--
6-Dec-12	17	500	465	7.74	371	67	5.12	21.54	6	0.5	0.02	19.8	0.291	0.00175	0.0141	0.00266
13-Dec-12	18	500	475	7.75	341	258	8.07	59.43	65	--	--	--	--	--	--	--
20-Dec-12	19	500	480	7.66	374	71	3.6	25.84	14	0.5	0.022	31.7	0.196	0.00318	0.0137	0.00346
27-Dec-12	20	500	475	7.78	270	137	7.78	35.83	43	--	--	--	--	--	--	--
3-Jan-13	21	500	455	7.96	320	264	6.53	59.28	65	4	0.054	120	0.0777	0.0114	0.0185	0.0127
10-Jan-13	22	500	475	7.68	325	145	6.7	41.9	40	--	--	--	--	--	--	--
17-Jan-13	23	500	470	7.62	367	149	3.59	38.93	46	0.55	0.028	66.6	0.111	0.00581	0.012	0.00687
24-Jan-13	24	500	475	7.72	307	93	5.9	25.75	25	--	--	--	--	--	--	--
31-Jan-13	25	500	460	7.65	400	238	5.05	39.41	86	0.5	0.04	107	0.101	0.00739	0.0138	0.0108
7-Feb-13	26	500	440	7.65	384	205	7.22	37.59	65	--	--	--	--	--	--	--
14-Feb-13	27	500	440	7.47	366	213	7.62	40.94	70	0.51	0.052	92.8	0.0984	0.00974	0.0143	0.0096
21-Feb-13	28	500	455	7.65	401	113	6.38	29.42	37	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
28-Feb-13	31	0.00001	0.000016	0.05	0.000005	8.38	0.0001	0.000013	0.000234	0.0024	0.000055	0.00147	0.882	0.00167	0.00001	0.0016
7-Mar-13	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Mar-13	33	0.00001	0.000008	0.05	0.000005	7.53	0.0001	0.000011	0.000209	0.0017	0.000054	0.00119	0.793	0.00134	0.00001	0.0017
21-Mar-13	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Mar-13	35	0.00001	0.000009	0.05	0.000007	11.2	0.0001	0.00001	0.000335	0.0012	0.000039	0.00185	1.12	0.00174	0.00001	0.0035
4-Apr-13	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Apr-13	37	0.00001	0.000013	0.05	0.00001	9.67	0.0001	0.000014	0.00112	0.0015	0.000084	0.00201	1.13	0.000968	0.00001	0.0042
18-Apr-13	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Apr-13	39	0.00001	0.000009	0.05	0.000005	10	0.0001	0.000024	0.00035	0.001	0.00003	0.00223	1.17	0.000506	0.00001	0.0042
2-May-13	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-May-13	41	0.00001	0.000016	0.05	0.000007	10.3	0.0001	0.000009	0.000368	0.0032	0.000099	0.0021	1.25	0.000499	0.00001	0.0041
16-May-13	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-May-13	43	0.00001	0.000011	0.05	0.000007	9.12	0.0001	0.000009	0.000534	0.0033	0.000068	0.00167	1.11	0.000311	0.00001	0.0035

HC 13

10-Aug-12	0	0.00005	0.000025	0.25	0.000043	406	0.0005	0.011	0.00262	0.0087	0.00367	0.117	68.7	0.427	0.00008	0.0041
17-Aug-12	1	0.00001	0.000005	0.061	0.000016	91	0.0003	0.000965	0.00115	0.0082	0.00283	0.0435	14.6	0.111	0.00001	0.0064
24-Aug-12	2	0.00001	0.000005	0.05	0.000005	91	0.0001	0.000801	0.000648	0.003	0.000009	0.036	14.2	0.115	0.00001	0.0038
31-Aug-12	3	0.00001	0.000005	0.05	0.000011	45.9	0.0001	0.000399	--	0.0036	0.000114	0.0242	7.45	0.0583	0.00001	0.0024
7-Sep-12	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Sep-12	5	0.00001	0.000005	0.05	0.000005	50.2	0.00013	0.000297	0.000912	0.0048	0.000016	0.0204	7.83	0.0607	0.00001	0.0016
21-Sep-12	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-12	7	0.00001	0.000005	0.05	0.000011	37.4	0.0001	0.000296	0.000388	0.0016	0.000128	0.0215	6.8	0.0559	0.00001	0.0011
4-Oct-12	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Oct-12	9	0.00001	0.000005	0.05	0.000005	37.4	0.0001	0.000248	0.00189	0.0093	0.000009	0.0178	6.96	0.0565	0.00001	0.0007
18-Oct-12	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-12	11	0.00001	0.000005	0.05	0.000011	31.2	0.0001	0.000204	0.000305	0.007	0.000329	0.0152	5.61	0.0466	0.00001	0.0005
1-Nov-12	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Nov-12	13	0.00001	0.000047	0.05	0.000009	33.6	0.0001	0.000193	0.000925	0.0027	0.000119	0.0157	5.94	0.0491	0.00001	--
15-Nov-12	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-12	15	0.00001	0.000005	0.05	0.000005	26.9	0.0001	0.000188	0.00046	0.0073	0.000136	0.0142	4.9	0.0452	0.00001	0.0004
29-Nov-12	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Dec-12	17	0.00001	0.000005	0.05	0.000005	6.73	0.00024	0.000132	0.00163	0.125	0.000192	0.00389	0.738	0.00834	0.00001	0.0001
13-Dec-12	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-12	19	0.00001	0.000005	0.05	0.000015	10.2	0.00017	0.000118	0.000326	0.0733	0.0001	0.00566	1.47	0.0165	0.00001	0.0001
27-Dec-12	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jan-13	21	0.00001	0.000005	0.05	0.000009	38.2	0.0001	0.000146	0.000292	0.0097	0.00002	0.0117	5.97	0.0497	0.00001	0.0003
10-Jan-13	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-13	23	0.00001	0.000005	0.05	0.000005	21	0.0001	0.000107	0.000221	0.0211	0.000027	0.0071	3.47	0.0319	0.00001	0.0003
24-Jan-13	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Jan-13	25	0.00001	0.000005	0.05	0.000005	33.7	0.0001	0.000107	0.000297	0.0054	0.000006	0.0101	5.52	0.0454	0.00001	0.0003
7-Feb-13	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Feb-13	27	0.00001	0.000005	0.05	0.000016	29.1	0.0001	0.000111	0.000251	0.0111	--	0.011	4.86	0.0396	0.00001	0.0004
21-Feb-13	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
28-Feb-13	31	0.00006	0.0022	0.952	0.000816	0.618	0.000005	0.188	0.182	3.9	0.000006	0.00037	0.0005	0.00367	0.00027	0.00011	0.0001
7-Mar-13	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Mar-13	33	0.00013	0.002	0.808	0.000742	0.475	0.000005	0.156	0.161	3.4	0.000003	0.0002	0.0005	0.00325	0.00044	0.00023	0.0001
21-Mar-13	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Mar-13	35	0.000097	0.002	1.11	0.0012	0.909	0.000005	0.225	0.22	5.3	0.000003	0.0002	0.0005	0.00462	0.0002	0.00032	0.0001
4-Apr-13	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Apr-13	37	0.000129	0.002	1.21	0.00141	0.856	0.000005	0.217	0.218	4	0.000018	0.0002	0.00117	0.00534	0.00083	--	0.0001
18-Apr-13	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Apr-13	39	0.000174	0.002	1.35	0.00141	0.946	0.000006	0.205	0.225	3.6	0.000006	0.0002	0.0005	0.00589	0.0002	0.00015	0.0001
2-May-13	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-May-13	41	0.000112	0.002	1.29	0.00123	0.946	0.000012	0.174	0.221	3.9	0.000005	0.0002	0.0005	0.006	0.0002	0.00032	0.0001
16-May-13	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-May-13	43	0.000145	0.002	1.02	0.000912	0.708	0.000011	0.138	0.196	3.2	0.000005	0.0002	0.0005	0.00507	0.00055	0.00033	0.0001

HC 13

10-Aug-12	0	0.0779	0.01	68.9	0.0216	6.35	0.00009	34.6	4.92	460	0.000101	0.001	0.0025	0.00967	0.001	0.00823	0.0005
17-Aug-12	1	0.00661	0.002	28.4	0.00573	5.39	0.000005	6.52	1.18	96	0.000022	0.00171	0.0005	0.00308	0.00081	0.00372	0.0001
24-Aug-12	2	0.00375	0.0027	23.4	0.00454	5.13	0.000005	3.63	1.14	84	0.000016	0.0012	0.0005	0.00248	0.00082	0.0005	0.0001
31-Aug-12	3	0.0016	0.002	16.7	0.00256	4.64	0.000005	1.83	0.551	34	0.00001	0.00069	0.0005	0.00139	0.00079	--	0.0001
7-Sep-12	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Sep-12	5	0.000898	0.002	14.2	0.00202	5.02	0.000005	1.22	0.521	36	0.000007	0.00049	0.0005	0.00116	0.00106	0.00063	0.0001
21-Sep-12	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-12	7	0.000887	0.002	12.8	0.00147	4.58	0.000005	0.913	0.445	21	0.000007	0.00257	0.0005	0.0011	0.00096	0.00082	0.0001
4-Oct-12	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Oct-12	9	0.000921	0.002	11	0.00127	3.58	0.000005	0.705	0.443	29	0.000007	0.00048	0.0005	0.000923	0.00066	0.00071	0.0001
18-Oct-12	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-12	11	0.000446	0.002	9.6	0.000864	3.5	0.000005	0.566	0.345	19	0.000011	0.00069	0.0005	0.00062	0.00084	0.00067	0.0001
1-Nov-12	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Nov-12	13	0.000493	0.002	10.2	0.000931	3.96	0.000005	0.648	0.353	18.4	0.000007	0.00088	0.0005	0.000759	0.00099	--	0.0001
15-Nov-12	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-12	15	0.000548	0.0021	8.26	0.000737	3.73	0.000005	0.46	0.29	10.4	0.000005	0.00086	0.0005	0.000472	0.00068	0.00093	0.0001
29-Nov-12	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Dec-12	17	0.000661	0.002	1.79	0.00016	0.906	0.000005	0.124	0.0448	3	0.000004	0.00104	0.00479	0.000039	0.00057	0.00151	0.0001
13-Dec-12	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-12	19	0.000274	0.002	2.97	0.000255	1.14	0.000005	0.166	0.0793	5.6	0.000004	0.0002	0.0031	0.000095	0.00049	0.00224	0.0001
27-Dec-12	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jan-13	21	0.000244	0.002	7.4	0.000538	2.66	0.000005	0.519	0.331	26.8	0.000009	0.00034	0.00056	0.000576	0.0005	0.00099	0.0001
10-Jan-13	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-13	23	0.000371	0.002	4.61	0.000391	1.56	0.000005	0.33	0.185	15.7	0.000006	0.0002	0.00065	0.000424	0.00035	0.00036	0.0001
24-Jan-13	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Jan-13	25	0.000248	0.002	6.15	0.000383	1.89	0.000005	0.504	0.305	27.7	0.000007	0.0002	0.0005	0.000487	0.00046	0.00038	0.0001
7-Feb-13	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Feb-13	27	0.00019	0.002	6.27	0.000363	1.98	0.000005	0.438	0.257	23.9	0.00001	0.00024	0.0008	0.000442	0.00038	0.00126	0.0001
21-Feb-13	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
28-Feb-13	29	500	450	7.54	400	183	7.44	34.68	57	0.66	0.024	71.8	0.107	0.00487	0.00932	0.00721
7-Mar-13	30	500	455	7.66	386	246	9.47	45.55	82	--	--	--	--	--	--	--
14-Mar-13	31	500	460	7.47	388	157	7.14	30.55	50	0.5	0.03	64.1	0.084	0.0052	0.0079	0.00607
21-Mar-13	32	500	445	7.66	391	201	9.01	36.45	66	--	--	--	--	--	--	--
28-Mar-13	33	500	450	7.51	417	197	5.97	36.27	60	0.5	0.046	89	0.0832	0.00768	0.00951	0.00866
4-Apr-13	34	500	460	7.67	369	70	7.29	13.71	24	--	--	--	--	--	--	--
11-Apr-13	35	500	450	7.54	408	215	6.14	25.62	86	0.61	0.037	92.9	0.0784	0.00537	0.00734	0.00918
18-Apr-13	36	500	460	7.62	387	174	7.95	25.33	64	--	--	--	--	--	--	--
25-Apr-13	37	500	430	7.46	335	221	6.04	29.08	86	0.5	0.042	92.3	0.073	0.006	0.00807	0.00898
2-May-13	38	500	450	7.6	398	192	7.54	30.64	65	--	--	--	--	--	--	--
9-May-13	39	500	450	7.53	411	205	6.77	34.94	88	0.67	0.048	91.9	0.0838	0.00736	0.00915	0.00841
16-May-13	40	500	445	7.64	422	138	7.92	25.14	43	--	--	--	--	--	--	--
23-May-13	41	500	445	7.55	416	110	5.6	15.1	42	0.5	0.017	44.6	0.0818	0.00214	0.00416	0.00402

HC 14

25-Oct-12	0	500	385	8.2	358.39	165.41	2.15	52.22	19	3.6	0.47	20.5	0.218	0.0644	0.0534	0.00486
1-Nov-12	1	500	495	7.96	356.44	173.91	4.79	39.36	47	1.9	0.48	27.4	0.171	0.223	0.0715	0.00751
8-Nov-12	2	500	460	8.01	364.25	143.11	3.42	32.87	39	0.5	0.38	28.4	0.149	0.134	0.0524	0.0051
15-Nov-12	3	500	420	8.04	360.83	139.36	8.03	45.5	34	0.71	0.5	31.9	0.179	0.215	0.0653	0.00494
22-Nov-12	4	500	500	7.97	350.09	88.52	3.38	38.31	9	--	--	--	--	--	--	--
29-Nov-12	5	500	505	8.07	368.65	88.62	8.78	37.86	11	0.5	0.27	29.1	0.112	0.148	0.0297	0.00407
6-Dec-12	6	500	435	8	347.16	94.16	5.81	31.27	15	--	--	--	--	--	--	--
13-Dec-12	7	500	485	8.01	318.35	83.03	6.37	37.78	12	0.5	0.31	29.2	0.139	0.179	0.031	0.00419
20-Dec-12	8	500	465	7.74	362.79	81.53	3.72	31.83	8	--	--	--	--	--	--	--
27-Dec-12	9	500	460	7.94	267.57	80.12	7.03	36.26	11	0.55	0.27	29.8	0.104	0.162	0.0194	0.00384
3-Jan-13	10	500	465	7.94	325.68	74.14	4.06	30.89	8	--	--	--	--	--	--	--
10-Jan-13	11	500	460	8.09	303.22	73.98	5.32	31.05	11	0.72	0.24	29.1	0.121	0.136	0.0161	0.00399
17-Jan-13	12	500	485	7.75	351.56	76.77	2.95	33.88	13	--	--	--	--	--	--	--
24-Jan-13	13	500	470	7.92	299.31	71.1	5.14	27.21	11	0.6	0.2	29.5	0.0724	0.114	0.00925	0.00353
31-Jan-13	14	500	455	8.02	369.62	70.37	3.1	24.89	14	--	--	--	--	--	--	--
7-Feb-13	15	500	445	7.97	357.42	69.58	5.27	25.23	13	0.5	0.22	29.2	0.0677	0.0963	0.00877	0.00361
14-Feb-13	16	500	440	7.75	335.93	71.85	5.25	24.79	14	--	--	--	--	--	--	--
21-Feb-13	17	500	465	7.77	379.88	67.56	5.73	26.97	12	0.57	0.22	29.6	0.073	0.103	0.00739	0.00357
28-Feb-13	18	500	455	7.87	371.58	66.25	5.52	26.62	13	--	--	--	--	--	--	--
7-Mar-13	19	500	475	7.99	356.44	72.81	7.14	31.71	12	0.5	0.23	30.1	0.0758	0.113	0.00738	0.00362
14-Mar-13	20	500	475	7.9	356.93	70.24	5.1	27.37	12	--	--	--	--	--	--	--
21-Mar-13	21	500	460	8.01	348.63	68.78	5.47	28.01	9	0.5	0.22	28.5	0.0809	0.0965	0.00718	0.00347
28-Mar-13	22	500	490	7.95	374.51	74.8	3.54	28.94	8	--	--	--	--	--	--	--
4-Apr-13	23	500	455	7.87	354	67.4	6.84	27.44	8	0.5	0.22	32.6	0.0741	0.0834	0.00568	0.0037
11-Apr-13	24	500	455	7.83	369.62	62.43	4.42	23.31	14	--	--	--	--	--	--	--
18-Apr-13	25	500	450	7.99	362.3	62.61	5.66	24.07	10	0.63	0.18	26.1	0.0553	0.066	0.00423	0.00266
25-Apr-13	26	500	445	7.86	312.5	64.43	3.72	22.01	13	--	--	--	--	--	--	--
2-May-13	27	500	445	7.93	363.28	63.16	5.72	24.34	10	0.57	0.17	27.1	0.0503	0.0623	0.00356	0.0028
9-May-13	28	500	470	7.76	375.48	61.67	4.67	23.59	10	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Be mg/L	Bi mg/L	B mg/L	Cd mg/L	Ca mg/L	Cr mg/L	Co mg/L	Cu mg/L	Fe mg/L	Pb mg/L	Li mg/L	Mg mg/L	Mn mg/L	Hg mg/L	Mo mg/L
28-Feb-13	29	0.00001	0.000005	0.05	0.000005	22.7	0.0001	0.000077	0.000185	0.007	0.000008	0.0082	3.68	0.0323	0.00001	0.0002
7-Mar-13	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Mar-13	31	0.00001	0.000005	0.05	0.000005	20	0.0001	0.000077	0.000129	0.0031	0.000005	0.00739	3.43	0.0339	0.00001	0.0002
21-Mar-13	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Mar-13	33	0.00001	0.000005	0.05	0.000005	28.2	0.0001	0.00011	0.000225	0.0033	0.000007	0.0104	4.53	0.0435	0.00001	0.0002
4-Apr-13	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Apr-13	35	0.00001	0.000005	0.05	0.000008	29.3	0.0001	0.00013	0.000279	0.0016	0.000006	0.00898	4.8	0.0474	0.00001	0.0002
18-Apr-13	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Apr-13	37	0.00001	0.000005	0.05	0.000005	29	0.0001	0.000142	0.00015	0.001	0.000005	0.00906	4.81	0.0436	0.00001	0.0002
2-May-13	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-May-13	39	0.00001	0.000005	0.05	0.000005	28.7	0.0001	0.000102	0.000202	0.0073	0.000067	0.0102	4.91	0.0413	0.00001	0.0002
16-May-13	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-May-13	41	0.00001	0.000005	0.05	0.000005	14.1	0.0001	0.000062	0.000129	0.0049	0.000011	0.00473	2.28	0.0251	0.00001	0.0001

HC 14

25-Oct-12	0	0.00001	0.000006	0.05	0.000005	6.3	0.0001	0.000027	0.0011	0.0031	0.000021	0.00299	1.17	0.00306	0.00001	0.0103
1-Nov-12	1	0.00001	0.000009	0.05	0.000005	8.11	0.0001	0.000048	0.000742	0.0041	0.000038	0.00383	1.73	0.00596	0.00001	0.0282
8-Nov-12	2	0.00001	0.000016	0.05	0.000005	8.4	0.0001	0.000034	0.000716	0.006	0.000085	0.00314	1.8	0.00772	0.00001	0.0168
15-Nov-12	3	0.00001	0.000007	0.05	0.000005	9.79	0.0001	0.000049	0.00108	0.0066	0.00007	0.00378	1.81	0.00546	0.000039	0.0129
22-Nov-12	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-12	5	0.00001	0.00001	0.05	0.000005	8.09	0.0001	0.000052	0.000321	0.0063	0.000133	0.00266	2.16	0.00875	0.00001	0.00413
6-Dec-12	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Dec-12	7	0.00001	0.000014	0.05	0.000005	7.98	0.0001	0.000041	0.000185	0.0077	0.000143	0.00269	2.25	0.00727	0.00001	0.00375
20-Dec-12	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Dec-12	9	0.00001	0.000005	0.05	0.000006	8.22	0.0001	0.000038	0.000366	0.0042	0.000094	0.00235	2.25	0.00929	0.00001	0.00321
3-Jan-13	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jan-13	11	0.00001	0.000013	0.05	0.000005	7.83	0.0001	0.000046	0.000227	0.0071	0.000179	0.00226	2.33	0.00832	0.00001	0.00352
17-Jan-13	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jan-13	13	0.00001	0.000008	0.05	0.000006	8.07	0.0001	0.000046	0.000146	0.0032	0.000138	0.00179	2.27	0.0111	0.00001	0.00294
31-Jan-13	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Feb-13	15	0.00001	0.000005	0.05	0.00001	7.83	0.0001	0.000047	0.000164	0.0027	0.000072	0.00184	2.35	0.0107	0.00001	0.00271
14-Feb-13	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Feb-13	17	0.00001	0.000012	0.05	0.000007	7.75	0.0001	0.000048	0.000261	0.0047	0.000137	0.00164	2.48	0.0104	0.00001	0.00216
28-Feb-13	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Mar-13	19	0.00001	0.000011	0.05	0.000005	7.98	0.0001	0.000053	0.000053	0.0043	0.000099	0.00186	2.48	0.0093	0.00001	0.00226
14-Mar-13	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Mar-13	21	0.00001	0.000008	0.05	0.000006	7.48	0.0001	0.000046	0.000316	0.0024	0.000089	0.00158	2.38	0.00955	0.00001	0.002
28-Mar-13	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Apr-13	23	0.00001	0.000005	0.05	0.000005	8.92	0.0001	0.000048	0.000159	0.0026	0.000065	0.00143	2.52	0.0109	0.00001	0.00182
11-Apr-13	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Apr-13	25	0.00001	0.000005	0.05	0.000005	6.68	0.0001	0.000034	0.000065	0.002	0.000055	0.00132	2.3	0.0102	0.00001	0.0015
25-Apr-13	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-May-13	27	0.00001	0.000005	0.05	0.000006	7	0.0001	0.000037	0.000331	0.0025	0.00007	0.0013	2.33	0.0113	0.00001	0.00132
9-May-13	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Ni mg/L	P mg/L	K mg/L	Se mg/L	Si mg/L	Ag mg/L	Na mg/L	Sr mg/L	S mg/L	Tl mg/L	Sn mg/L	Ti mg/L	U mg/L	V mg/L	Zn mg/L	Zr mg/L
28-Feb-13	29	0.000112	0.002	4.36	0.000368	1.32	0.000005	0.302	0.195	19	0.000005	0.00052	0.0005	0.000258	0.00047	0.00033	0.0001
7-Mar-13	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Mar-13	31	0.000128	0.002	4.21	0.000502	1.16	0.000005	0.298	0.171	14.5	0.000005	0.0002	0.0005	0.000257	0.00065	0.00012	0.0001
21-Mar-13	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Mar-13	33	0.000157	0.002	5.33	0.000502	1.99	0.000005	0.361	0.236	22.3	0.000005	0.0002	0.0005	0.00033	0.00023	0.0003	0.0001
4-Apr-13	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Apr-13	35	0.000182	0.002	4.68	0.000663	1.31	0.000005	0.331	0.249	27	0.00001	0.00022	0.00129	0.000246	0.00067	0.00066	0.0001
18-Apr-13	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Apr-13	37	0.000182	0.002	4.76	0.000653	1.43	0.000005	0.347	0.238	24.9	0.000007	0.0002	0.0005	0.000246	0.0002	0.00016	0.0001
2-May-13	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-May-13	39	0.000176	0.002	5.15	0.000553	1.72	0.000014	0.382	0.229	24	0.000006	0.0002	0.0005	0.000276	0.00041	0.00018	0.0001
16-May-13	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-May-13	41	0.000238	0.002	2.39	0.000211	0.639	0.000005	0.168	0.112	12.3	0.000005	0.0002	0.0005	0.000069	0.00035	0.00022	0.0001

HC 14

25-Oct-12	0	0.000992	0.004	4.06	0.00304	1.17	0.000005	19.4	0.303	11	0.000011	0.0002	0.0005	0.0103	0.00052	0.0001	0.0001
1-Nov-12	1	0.00103	0.002	2.84	0.00489	1.43	0.000005	20.2	0.434	15.8	0.000011	0.0271	0.0005	0.037	0.00048	0.00027	0.0001
8-Nov-12	2	0.000613	0.002	2.59	0.00315	0.9	0.000005	15.8	0.436	13.8	0.000008	0.0209	0.0005	0.0302	0.00047	0.00044	0.0001
15-Nov-12	3	0.000559	0.002	2.76	0.0042	1.5	0.000005	15	0.408	9.6	0.000008	0.00153	0.0005	0.0371	0.00062	0.00209	0.0001
22-Nov-12	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-12	5	0.000377	0.002	2.11	0.00219	0.877	0.000005	5.45	0.365	4.1	0.000005	0.00028	0.00072	0.0298	0.0002	0.00029	0.0001
6-Dec-12	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Dec-12	7	0.00029	0.002	2.11	0.00266	0.937	0.000005	3.69	0.402	4.2	0.000008	0.00066	0.0005	0.0243	0.00031	0.00026	0.0001
20-Dec-12	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Dec-12	9	0.000286	0.002	1.68	0.00257	0.733	0.000005	2.27	0.4	4.2	0.000006	0.0006	0.0005	0.0196	0.0002	0.00037	0.0001
3-Jan-13	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jan-13	11	0.0004	0.002	1.56	0.00202	0.651	0.000005	1.65	0.406	3.9	0.000007	0.00111	0.0005	0.0181	0.0002	0.00112	0.0001
17-Jan-13	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jan-13	13	0.000262	0.002	1.29	0.00187	0.53	0.000005	1.06	0.37	4.2	0.000004	0.00207	0.0005	0.0164	0.0002	0.00017	0.0001
31-Jan-13	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Feb-13	15	0.00028	0.002	1.3	0.00153	0.508	0.000005	0.914	0.377	5.6	0.000004	0.00243	0.0005	0.0142	0.0002	0.00028	0.0001
14-Feb-13	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Feb-13	17	0.000297	0.002	1.35	0.00158	0.533	0.000005	0.736	0.366	3.6	0.000004	0.0026	0.0005	0.0151	0.00028	0.00048	0.0001
28-Feb-13	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Mar-13	19	0.000253	0.002	1.37	0.00156	0.527	0.000005	0.569	0.379	3.8	0.000022	0.00343	0.0005	0.0156	0.00057	0.00026	0.0001
14-Mar-13	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Mar-13	21	0.000206	0.002	1.17	0.00141	0.467	0.000005	0.471	0.371	3.6	0.000011	0.00142	0.0005	0.0118	0.00026	0.00022	0.0001
28-Mar-13	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Apr-13	23	0.000215	0.002	1.24	0.00141	0.562	0.000005	0.389	0.37	4.8	0.000003	0.00022	0.0005	0.0118	0.0002	0.00015	0.0001
11-Apr-13	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Apr-13	25	0.000189	0.002	0.974	0.000916	0.367	0.000008	0.319	0.297	3.6	0.000017	0.0002	0.0005	0.0088	0.0002	0.00023	0.0001
25-Apr-13	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-May-13	27	0.000231	0.002	0.877	0.000773	0.37	0.000005	0.295	0.305	3.6	0.000002	0.00073	0.0005	0.00908	0.00071	0.00047	0.0001
9-May-13	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

Date	Cycle	Volume mL		pH	ORP mV	Cond. umhos/cm	Acidity mgCaCO3/L	Alkalinity mgCaCO3/L	Sulphate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Hardness mg CaCO3/L	Al mg/L	Sb mg/L	As mg/L	Ba mg/L
		Input	Output													
16-May-13	29	500	445	7.92	387.69	67.09	5.66	23.49	12	0.5	0.17	27.4	0.0522	0.0627	0.00305	0.00295
23-May-13	30	500	445	7.73	394.04	67.04	5.29	22.2	14	--	--	--	--	--	--	--
30-May-13	31	500	420	8.01	395.5	71.81	9.58	29.37	15	0.5	0.2	32.5	0.0586	0.0657	0.00377	0.00319
6-Jun-13	32	500	475	7.71	417.48	65.26	5.69	24.17	14	--	--	--	--	--	--	--
13-Jun-13	33	500	455	7.61	397.94	81.5	9.88	28.83	16	0.5	0.19	33.6	0.0639	0.0651	0.00375	0.00366
20-Jun-13	34	500	460	7.61	373.53	70.17	6.17	23.54	12	--	--	--	--	--	--	--
27-Jun-13	35	500	435	7.74	438.47	73.36	4.06	23.77	13	0.63	0.17	33.4	0.0668	0.0581	0.00346	0.00313
4-Jul-13	36	500	445	7.64	439.94	67.36	3.91	24.14	13	--	--	--	--	--	--	--
11-Jul-13	37	500	450	7.79	422.36	61.28	6.9	23.15	11	0.5	0.13	26.4	0.0548	0.0437	0.00239	0.00259
18-Jul-13	38	500	470	7.49	412.59	58.61	3.76	17.75	9	--	--	--	--	--	--	--
25-Jul-13	39	500	430	7.76	436.03	67.42	7.13	25.53	12	0.9	0.17	31	0.0731	0.0535	0.00359	0.00336
1-Aug-13	40	500	440	8.04	314.45	68.62	10.14	33.25	12	--	--	--	--	--	--	--

Appendix A.1a: HCT humidity cell raw data - concentrations

[illegible]

Appendix A.1a: HCT humidity cell raw data - concentrations

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
HC 1														
2-Jul-09	0	0.82	11	51	1.5	0.046	0.0092	0.00046	0.00072	0.0028	0.0000039	0.00000096	0.0096	0.00000096
9-Jul-09	1	0.87	8.9	71	4.9	0.065	0.022	0.0026	0.0040	0.0025	0.0000038	0.00000095	0.0095	0.000021
16-Jul-09	2	1.0	8.5	29	0.49	0.031	0.0027	0.0013	0.0029	0.0013	0.0000038	0.00000095	0.0095	0.0000038
23-Jul-09	3	1.1	9.5	23	0.26	0.055	0.044	0.0013	0.0031	0.00094	0.0000043	0.0000011	0.011	0.0000077
30-Jul-09	4	1.9	9.6	16	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	0.79	11	17	0.41	0.041	0.054	0.0013	0.0035	0.00066	0.0000045	0.0000011	0.011	0.0000011
13-Aug-09	6	2.1	11	12	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	1.1	11	12	0.11	0.027	0.057	0.0013	0.0039	0.00052	0.0000045	0.0000054	0.011	0.0000027
27-Aug-09	8	1.2	11	8.6	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	1.1	12	9.7	0.12	0.023	0.056	0.0013	0.0040	0.00061	0.0000046	0.0000012	0.012	0.0000028
10-Sep-09	10	0.52	9.9	11	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	1.3	11	13	0.30	0.030	0.051	0.0011	0.0042	0.00073	0.0000044	0.0000011	0.011	0.0000048
24-Sep-09	12	0.99	11	15	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	1.1	11	11	0.11	0.017	0.042	0.00077	0.0032	0.00083	0.0000044	0.0000011	0.011	0.0000011
8-Oct-09	14	1.7	11	11	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	1.2	10	12	0.11	0.018	0.047	0.00080	0.0035	0.00064	0.0000044	0.0000011	0.011	0.0000048
22-Oct-09	16	1.3	9.8	7.7	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.95	7.7	8.0	0.11	0.013	0.033	0.00059	0.0023	0.00043	0.0000045	0.0000011	0.011	0.0000011
5-Nov-09	18	1.9	9.7	7.6	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	2.1	11	5.6	0.12	0.014	0.046	0.00065	0.0031	0.00048	0.0000047	0.0000012	0.012	0.0000033
19-Nov-09	20	2.1	11	6.8	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.86	13	8.3	0.12	0.018	0.051	0.00070	0.0037	0.00056	0.0000046	0.0000051	0.012	0.0000012
3-Dec-09	22	2.4	12	7.3	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	2.3	8.3	9.9	0.12	0.0094	0.032	0.00051	0.0020	0.00040	0.0000047	0.0000028	0.012	0.0000012
17-Dec-09	24	1.4	10	6.2	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	1.1	12	6.6	0.12	0.0094	0.031	0.00062	0.0027	0.00045	0.0000047	0.0000012	0.012	0.0000012
31-Dec-09	26	1.3	11	7.5	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	1.3	11	7.5	0.13	0.015	0.035	0.00063	0.0025	0.00046	0.0000050	0.0000013	0.013	0.0000013
14-Jan-10	28	--	11	7.2	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	1.1	12	7.5	0.13	0.0050	0.034	0.00060	0.0026	0.00043	0.0000050	0.0000013	0.013	0.0000013
28-Jan-10	30	2.0	11	8.6	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	1.8	11	7.1	0.13	0.010	0.034	0.00062	0.0028	0.00045	0.0000051	0.0000013	0.013	0.0000013
11-Feb-10	32	1.5	10	7.1	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	1.8	7.9	7.0	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	1.6	7.6	7.2	--	0.0096	0.023	0.00039	0.0018	0.00041	0.0000048	0.0000012	0.012	0.0000012
4-Mar-10	35	1.4	8.1	6.7	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	1.5	6.9	6.2	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	1.6	7.8	5.6	--	0.0093	0.033	0.00036	0.0022	0.00040	0.0000047	0.0000012	0.012	0.0000012
25-Mar-10	38	1.5	7.0	5.2	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	1.3	6.5	7.6	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	1.5	7.2	4.2	--	0.0094	0.032	0.00032	0.0022	0.00079	0.0000047	0.0000012	0.012	0.0000012
15-Apr-10	41	1.7	8.3	7.3	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	1.8	6.2	6.3	--	--	--	--	--	--	--	--	--	--
29-Apr-10	43	1.2	8.3	7.2	--	0.010	0.021	0.00039	0.0019	0.00043	0.0000052	0.0000013	0.013	0.0000013
6-May-10	44	1.8	7.3	5.7	--	--	--	--	--	--	--	--	--	--
13-May-10	45	1.8	8.5	6.6	--	--	--	--	--	--	--	--	--	--
20-May-10	46	2.0	8.3	5.7	--	0.0048	0.023	0.00035	0.0024	0.00037	0.0000048	0.0000012	0.012	0.0000012
27-May-10	47	3.0	11	4.0	--	--	--	--	--	--	--	--	--	--
3-Jun-10	48	1.5	8.0	3.9	--	--	--	--	--	--	--	--	--	--
10-Jun-10	49	2.2	11	3.8	--	0.0048	0.030	0.00037	0.0029	0.00034	0.0000048	0.0000012	0.012	0.0000048
17-Jun-10	50	2.1	7.3	2.3	--	--	--	--	--	--	--	--	--	--
24-Jun-10	51	1.4	8.2	5.3	--	--	--	--	--	--	--	--	--	--
1-Jul-10	52	1.4	7.9	3.8	--	0.034	0.024	0.00029	0.0021	0.00042	0.0000048	0.0000012	0.012	0.0000012
8-Jul-10	53	1.1	6.7	4.2	--	--	--	--	--	--	--	--	--	--
15-Jul-10	54	2.1	7.4	5.7	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
HC 1														
2-Jul-09	0	17	0.000019	0.00040	0.00051	0.00077	0.0000092	0.0056	1.2	0.020	0.0000077	0.00068	0.0047	0.0027
9-Jul-09	1	25	0.000019	0.00028	0.0020	0.0046	0.00012	0.0042	2.1	0.018	0.0000076	0.00082	0.0018	0.0015
16-Jul-09	2	11	0.000019	0.000070	0.00055	0.0011	0.000065	0.0038	0.92	0.0083	0.0000019	0.00100	0.00049	0.00038
23-Jul-09	3	9.1	0.000021	0.000031	0.00035	0.00085	0.000040	0.0028	0.54	0.0065	0.0000021	0.00057	0.00017	0.00043
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	8.2	0.000023	0.000022	0.00031	0.0027	0.0000081	0.0021	0.45	0.0047	0.0000023	0.00043	0.00016	0.00045
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	6.8	0.000023	0.000021	0.00022	0.0027	0.000026	0.0019	0.38	0.0041	0.0000023	0.00039	0.00013	0.00045
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	6.8	0.000023	0.000018	0.00028	0.0023	0.000034	0.0017	0.36	0.0042	0.0000023	0.00034	0.00011	0.0014
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	7.7	0.000022	0.000031	0.00029	0.0026	0.0000065	0.0021	0.40	0.0036	0.0000022	0.00029	0.00011	0.00044
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	7.0	0.000022	0.000031	0.00033	0.0044	0.0000048	0.0016	0.35	0.0039	0.0000022	0.00023	0.00013	0.00044
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	7.0	0.000022	0.000028	0.00048	0.0026	0.000012	0.0015	0.32	0.0039	0.0000022	0.00022	0.00014	0.00044
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	4.7	0.000022	0.000021	0.00039	0.0031	0.00041	0.0012	0.22	0.0030	0.0000022	0.00016	0.00016	0.0013
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	5.2	0.000023	0.000018	0.00011	0.0028	0.0000088	0.0013	0.24	0.0032	0.0000023	0.00020	0.000093	0.0019
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	5.8	0.000023	0.000024	0.00012	0.0032	0.0000083	0.0015	0.27	0.0022	0.0000023	0.00021	0.00011	0.00046
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	4.9	0.000024	0.000023	0.00013	0.0052	0.000033	0.0011	0.21	0.0027	0.0000024	0.00015	0.000066	0.00047
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	5.6	0.000024	0.000023	0.00015	0.0024	0.0000066	0.0012	0.22	0.0034	0.0000024	0.00013	0.00011	0.00047
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	5.9	0.000025	0.000026	0.000095	0.0050	0.000020	0.0012	0.24	0.0031	0.0000025	0.00014	0.000095	0.00050
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	6.2	0.000025	0.000025	--	0.0020	0.0000045	0.0011	0.23	0.0026	0.0000025	0.00016	0.00010	0.00050
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	6.4	0.000026	0.000021	0.00019	0.0020	0.000026	0.0012	0.23	0.0023	0.0000026	0.00015	0.00013	0.00051
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	4.7	0.000024	0.000031	0.00025	0.00096	0.000024	0.00086	0.15	0.0027	0.0000024	0.000096	0.00013	0.00048
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	4.7	0.000023	0.000020	0.00013	0.0028	0.0000098	0.00088	0.15	0.0022	0.0000023	0.00011	0.00013	0.00047
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	4.3	0.000024	0.000020	0.00023	0.0033	0.0000089	0.00080	0.14	0.0015	0.0000024	0.000094	0.00012	0.00047
15-Apr-10	41	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	43	4.7	0.000026	0.000016	0.00016	0.0015	0.000028	0.00088	0.14	0.0020	0.0000026	0.000093	0.00012	0.00052
6-May-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	45	--	--	--	--	--	--	--	--	--	--	--	--	--
20-May-10	46	4.8	0.000024	0.000013	0.00018	0.0014	0.0000057	0.00090	0.14	0.0018	0.0000024	0.000043	0.000081	0.00048
27-May-10	47	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	49	4.7	0.000096	0.000013	0.00021	0.00096	0.0000077	0.00086	0.13	0.0016	0.0000024	0.00012	0.00023	0.00048
17-Jun-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	51	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Jul-10	52	4.2	0.000024	0.000016	0.00013	0.00096	0.000011	0.00067	0.12	0.0020	0.0000024	0.000043	0.000091	0.00048
8-Jul-10	53	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Jul-10	54	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K	Se	Si	Ag	Na	Sr	S	Ti	Sn	Ti	U	V	Zn	Zr
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
HC 1															
2-Jul-09	0	3.5	0.0020	0.39	0.00000096	1.8	0.054	17	0.0000069	0.0000019	0.000096	0.00070	0.000039	0.00019	0.000039
9-Jul-09	1	3.0	0.0043	0.53	0.0000049	2.5	0.068	27	0.0000065	0.0000019	0.000095	0.00071	0.00011	0.0014	0.000038
16-Jul-09	2	2.2	0.0018	0.46	0.00000095	1.2	0.036	9.9	0.0000046	0.000011	0.000095	0.00075	0.000038	0.0012	0.000038
23-Jul-09	3	1.6	0.00084	0.49	0.0000011	0.59	0.029	6.4	0.0000051	0.0000021	0.00011	0.00041	0.000043	0.00026	0.000043
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	1.4	0.00056	0.53	0.0000011	0.41	0.024	5.4	0.0000023	0.0000023	0.00011	0.00040	0.000045	0.00018	0.000045
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	1.3	0.00038	0.60	0.0000011	0.25	0.018	3.6	0.0000032	0.0000023	0.00011	0.00040	0.00014	0.00036	0.000045
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	1.3	0.00038	0.60	0.0000012	0.20	0.019	4.1	0.0000032	0.0000092	0.00012	0.00047	0.00014	0.00018	0.000046
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	1.4	0.00039	0.67	0.0000011	0.20	0.022	4.8	0.0000030	0.0000035	0.00011	0.00046	0.00013	0.00048	0.000044
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	1.1	0.00030	0.53	0.0000011	0.14	0.019	4.4	0.0000026	0.0000022	0.00011	0.00042	0.000044	0.00026	0.000044
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	1.1	0.00029	0.51	0.0000011	0.14	0.018	4.4	0.0000026	0.0000088	0.00011	0.00048	0.000044	0.00035	0.000044
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.79	0.00020	0.36	0.0000011	0.12	0.014	3.1	0.0000022	0.0000040	0.00011	0.00039	0.000045	0.00036	0.000045
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.91	0.00020	0.47	0.0000012	0.098	0.015	2.8	0.0000019	0.0000093	0.00012	0.00042	0.000047	0.00019	0.000047
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	1.0	0.00022	0.56	0.0000012	0.11	0.016	3.2	0.0000032	0.000014	0.00028	0.00039	0.00014	0.00032	0.000046
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.71	0.00017	0.45	0.000012	0.075	0.013	1.9	0.0000056	0.0000094	0.00028	0.00041	0.000047	0.000094	0.000047
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.86	0.00020	0.49	0.0000012	0.075	0.015	2.8	0.0000024	0.0000024	0.00012	0.00046	0.000047	0.00014	0.000047
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.79	0.00017	0.50	0.0000013	0.060	0.016	3.5	0.00000050	0.0000045	0.00030	0.00065	0.000050	0.00015	0.000050
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.87	0.00018	0.45	0.0000013	0.080	0.015	3.0	0.0000020	0.0000025	0.00013	0.00051	0.000050	0.00020	0.000050
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.81	0.00018	0.52	0.0000013	0.077	0.017	3.1	0.0000046	--	0.00013	0.00073	0.000051	0.00031	0.000051
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.56	0.00014	0.36	0.0000012	0.062	0.012	2.4	0.0000029	0.0000024	0.00012	0.00045	0.000048	0.00029	0.000048
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.60	0.00015	0.37	0.0000012	0.070	0.013	4.7	0.0000028	0.0000023	0.00012	0.00032	0.000047	0.00014	0.000047
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.61	0.00014	0.38	0.0000012	0.094	0.011	2.4	0.00000047	0.0000094	0.00012	0.00030	0.000047	0.00047	0.000047
15-Apr-10	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	43	0.57	0.00014	0.37	0.0000013	0.057	0.013	5.2	0.000014	0.0000026	0.00013	0.00044	0.000052	0.00036	0.000052
6-May-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-May-10	46	0.69	0.00024	0.44	0.0000012	0.071	0.012	4.8	0.0000024	0.000019	0.00012	0.00030	0.000048	0.00024	0.000048
27-May-10	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	49	0.72	0.00021	0.45	0.0000012	0.072	0.012	4.8	0.0000024	0.0000024	0.00012	0.00027	0.000048	0.00014	0.000048
17-Jun-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	51	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Jul-10	52	0.58	0.00017	0.36	0.0000012	0.072	0.012	4.8	0.0000034	0.0000024	0.00012	0.00041	0.000048	0.00019	0.000048
8-Jul-10	53	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Jul-10	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

[illegible]

HC 2

2-Jul-09	0	3.1	25	151	2.4	0.078	0.0047	0.00016	0.00040	0.011	0.0000039	0.00000098	0.0098	0.000019
9-Jul-09	1	1.1	11	109	7.7	0.15	0.013	0.00029	0.0063	0.0059	0.0000039	0.00000096	0.0096	0.000010
16-Jul-09	2	1.4	10	77	5.2	0.14	0.016	0.00042	0.0092	0.0054	0.0000040	0.0000010	0.010	0.000012
23-Jul-09	3	1.5	9.5	73	0.11	0.15	0.019	0.00027	0.015	0.0041	0.0000044	0.0000011	0.011	0.0000048
30-Jul-09	4	2.1	9.4	48	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	1.1	9.1	52	0.31	0.13	0.023	0.00023	0.014	0.0022	0.0000045	0.0000011	0.011	0.0000011
13-Aug-09	6	2.3	7.3	49	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	1.5	7.3	38	0.12	0.13	0.026	0.00026	0.015	0.0021	0.0000048	0.0000052	0.012	0.0000033
27-Aug-09	8	1.8	7.4	39	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	2.0	11	51	1.1	0.15	0.030	0.00032	0.021	0.0024	0.0000051	0.0000013	0.013	0.0000013
10-Sep-09	10	0.76	11	50	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	1.8	10	47	0.34	0.14	0.021	0.00033	0.016	0.0023	0.0000049	0.0000012	0.012	0.0000069
24-Sep-09	12	1.4	12	46	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	1.5	11	42	0.13	0.16	0.024	0.00028	0.018	0.0022	0.0000051	0.0000013	0.013	0.0000045
8-Oct-09	14	2.3	12	39	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	1.5	10	34	0.13	0.15	0.022	0.00028	0.017	0.0018	0.0000050	0.0000013	0.013	0.0000060
22-Oct-09	16	1.6	11	31	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	1.2	8.4	28	0.12	0.14	0.016	0.00022	0.013	0.0013	0.0000049	0.0000012	0.012	0.0000012
5-Nov-09	18	2.5	11	24	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	2.4	10	21	0.12	0.15	0.019	0.00023	0.015	0.0012	0.0000049	0.0000012	0.012	0.0000012
19-Nov-09	20	2.7	11	20	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	1.3	13	23	0.13	0.17	0.024	0.00024	0.017	0.0012	0.0000051	0.0000035	0.013	0.000019
3-Dec-09	22	2.6	11	17	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	2.6	8.1	20	0.13	0.14	0.017	0.00018	0.013	0.0011	0.0000051	0.0000013	0.013	0.0000013
17-Dec-09	24	1.5	11	14	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	1.5	10	14	0.13	0.14	0.015	0.00021	0.015	0.0010	0.0000050	0.0000013	0.013	0.000010
31-Dec-09	26	1.3	7.6	13	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	1.4	11	14	0.13	0.14	0.023	0.00019	0.015	0.00100	0.0000051	0.0000013	0.013	0.0000013
14-Jan-10	28	--	8.6	15	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	1.5	8.4	14	0.13	--	0.019	0.00020	0.016	0.0010	0.0000051	0.0000013	0.013	0.0000013
28-Jan-10	30	2.2	7.8	15	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	2.0	7.7	11	0.13	0.13	0.020	0.00017	0.016	0.00090	0.0000051	0.0000041	0.013	0.0000013

HC 3

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

[illegible]

HC 2

[illegible]

HC 3

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

[illegible]

HC 2

2-Jul-09	0	3.0	0.0032	0.46	0.00000098	2.6	0.14	46	0.0000082	0.0000020	0.000098	0.00100	0.000039	0.00055	0.000039
9-Jul-09	1	2.3	0.0053	0.62	0.00000050	3.6	0.090	40	0.0000073	0.0000077	0.000096	0.00039	0.000039	0.0012	0.000039
16-Jul-09	2	2.4	0.0043	0.76	0.0000010	2.4	0.087	37	0.0000072	0.0000020	0.00010	0.00051	0.000040	0.00084	0.000040
23-Jul-09	3	1.8	0.0033	0.83	0.0000011	1.2	0.074	25	0.0000044	0.0000022	0.00011	0.00028	0.000044	0.00035	0.000044
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	1.3	0.0020	0.74	0.0000011	0.66	0.048	18	0.0000027	0.0000022	0.00011	0.00018	0.000045	0.00022	0.000045
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	1.2	0.0019	0.92	0.0000012	0.49	0.040	15	0.0000033	0.0000024	0.00012	0.00019	0.000048	0.00033	0.000048
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	1.4	0.0019	1.3	0.0000013	0.38	0.049	20	0.0000030	0.0000025	0.00013	0.00032	0.000051	0.00030	0.000051
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	1.1	0.0015	1.1	0.0000012	0.29	0.045	17	0.0000034	0.0000020	0.00012	0.00031	0.000049	0.00039	0.000049
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	1.1	0.0011	1.1	0.0000056	0.28	0.038	15	0.0000030	0.000066	0.00013	0.00031	0.000051	0.00045	0.000051
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	1.0	0.00092	1.1	0.0000013	0.22	0.031	11	0.0000030	0.0000025	0.00013	0.00028	0.000050	0.0013	0.000050
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.77	0.00064	0.84	0.0000012	0.17	0.025	7.4	0.0000025	0.000044	0.00012	0.00026	0.000049	0.00025	0.000049
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.74	0.00061	1.0	0.0000012	0.14	0.022	6.4	0.0000015	0.000020	0.00012	0.00025	0.000049	0.00020	0.000049
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.73	0.00061	1.1	0.0000013	0.14	0.021	6.6	0.0000025	0.000015	0.00013	0.00024	0.000051	0.0018	0.000051
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.62	0.00050	0.90	0.0000036	0.097	0.019	6.1	0.0000031	0.0000026	0.00013	0.00024	0.000051	0.00031	0.000051
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.65	0.00056	0.96	0.0000013	0.095	0.018	5.0	0.0000025	0.0000025	0.00013	0.00022	0.000050	0.0012	0.000050
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.61	0.00053	0.99	0.0000013	0.076	0.017	5.6	0.00000051	0.000035	0.00013	0.00023	0.000051	0.00015	0.000051
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.66	0.00059	0.98	0.0000013	0.096	0.016	5.1	0.0000015	0.0000025	0.00013	0.00022	0.000051	0.00020	0.000051
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.55	0.00052	0.91	0.0000013	0.11	0.015	4.6	0.0000026	0.000071	0.00013	0.00023	0.000051	0.00036	0.000051

HC 3

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
17-Sep-09	11	0.94	12	13	0.30	0.18	0.043	0.018	0.00098	0.0030	0.0000043	0.0000043	0.011	0.0000047
24-Sep-09	12	0.77	13	16	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.65	12	9.6	0.11	0.15	0.048	0.014	0.00086	0.0022	0.0000044	0.0000044	0.011	0.0000030
8-Oct-09	14	1.6	11	13	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	1.0	12	12	0.11	0.18	0.039	0.016	0.00070	0.0027	0.0000045	0.0000045	0.011	0.0000054
22-Oct-09	16	1.2	11	8.3	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.84	9.8	9.3	0.11	0.12	0.033	0.012	0.00045	0.0018	0.0000045	0.0000040	0.011	0.0000027
5-Nov-09	18	1.5	13	8.6	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	1.8	13	9.3	0.12	0.16	0.045	0.016	0.00060	0.0020	0.0000047	0.0000037	0.012	0.0000060
19-Nov-09	20	1.9	12	7.2	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.74	13	8.6	0.11	0.16	0.044	0.014	0.00058	0.0017	0.0000045	0.0000077	0.011	0.0000011
3-Dec-09	22	2.0	12	8.4	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	2.1	10	7.6	0.12	0.14	0.032	0.013	0.00044	0.0018	0.0000048	0.0000043	0.012	0.0000012
17-Dec-09	24	1.3	12	5.8	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	1.0	17	10	0.12	0.27	0.035	0.024	0.00085	0.0030	0.0000049	0.0000012	0.012	0.0000034
31-Dec-09	26	1.0	12	5.5	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	1.1	13	7.2	0.12	0.17	0.034	0.015	0.00063	0.0019	0.0000048	0.0000029	0.012	0.0000034
14-Jan-10	28	--	11	7.2	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	1.2	13	7.3	0.12	0.20	0.035	0.017	0.00055	0.0020	0.0000049	0.0000012	0.012	0.0000039
28-Jan-10	30	2.0	12	7.5	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	1.6	12	6.7	0.12	0.19	0.031	0.015	0.00044	0.0019	0.0000048	0.0000012	0.012	0.0000012
11-Feb-10	32	1.4	12	7.2	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	1.8	14	8.3	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	1.3	9.4	6.9	--	0.16	0.031	0.010	0.00042	0.0015	0.0000046	0.0000046	0.012	0.0000012
4-Mar-10	35	1.3	8.5	7.6	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	1.4	9.7	7.1	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	1.6	8.4	5.3	--	0.14	0.029	0.0084	0.00032	0.0015	0.0000049	0.0000012	0.012	0.0000016
25-Mar-10	38	1.4	10	7.6	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	1.3	8.9	7.2	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	1.3	10	6.8	--	0.14	0.030	0.0089	0.00032	0.0027	0.0000049	0.0000012	0.012	0.0000012

HC 4

2-Jul-09	0	0.31	18	28	1.7	0.14	0.012	0.0086	0.013	0.0079	0.0000035	0.0000018	0.0088	0.0000025
9-Jul-09	1	0.87	18	49	2.4	0.23	0.020	0.027	0.041	0.0096	0.0000044	0.0000020	0.011	0.0000061
16-Jul-09	2	0.81	17	22	0.43	0.24	0.026	0.034	0.049	0.0054	0.0000040	0.0000016	0.0099	0.0000047
23-Jul-09	3	0.72	19	13	0.11	0.19	0.032	0.036	0.051	0.0047	0.0000046	0.0000011	0.011	0.0000064
30-Jul-09	4	1.9	18	9.9	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	0.77	21	15	0.43	0.14	0.030	0.039	0.045	0.0053	0.0000048	0.0000016	0.012	0.0000033
13-Aug-09	6	2.1	22	16	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	1.1	19	22	1.1	0.12	0.031	0.050	0.046	0.0079	0.0000048	0.0000015	0.012	0.0000053
27-Aug-09	8	1.3	20	22	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	1.7	20	23	0.12	0.091	0.030	0.056	0.044	0.0077	0.0000048	0.0000020	0.012	0.0000091
10-Sep-09	10	0.40	16	18	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	1.2	20	21	0.12	0.074	0.032	0.047	0.037	0.0068	0.0000047	0.0000015	0.012	0.0000098
24-Sep-09	12	0.92	21	22	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.89	20	18	0.11	0.053	0.024	0.038	0.028	0.0062	0.0000044	0.0000088	0.011	0.0000022
8-Oct-09	14	1.6	19	21	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	1.0	21	16	0.11	0.048	0.025	0.037	0.031	0.0052	0.0000044	0.0000011	0.011	0.0000010
22-Oct-09	16	1.0	17	15	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.91	20	15	0.11	0.036	0.025	0.034	0.025	0.0047	0.0000046	0.0000012	0.011	0.0000055
5-Nov-09	18	1.8	21	12	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	2.2	21	12	0.12	0.033	0.030	0.034	0.025	0.0041	0.0000047	0.0000011	0.012	0.0000051
19-Nov-09	20	2.2	19	8.9	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	1.0	23	12	0.12	0.037	0.028	0.035	0.028	0.0042	0.0000046	0.0000014	0.012	0.0000074
3-Dec-09	22	2.2	24	10	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	2.3	22	11	0.12	0.028	0.031	0.026	0.022	0.0042	0.0000047	0.0000017	0.012	0.0000012

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
17-Sep-09	11	7.9	0.000021	0.000017	0.00057	0.0013	0.000013	0.0018	0.97	0.0035	0.0000021	0.0014	0.00011	0.00043
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	6.7	0.000022	0.000013	0.00035	0.0030	0.000022	0.0013	0.83	0.0032	0.0000022	0.0012	0.00010	0.0022
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	8.0	0.000023	0.000051	0.00040	0.0018	0.00016	0.0016	0.95	0.0040	0.0000023	0.0013	0.00010	0.00045
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	5.5	0.000022	0.000013	0.00032	0.0027	0.000034	0.0011	0.65	0.0034	0.0000022	0.00090	0.00012	0.0013
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	6.6	0.000023	0.000012	0.00016	0.0014	0.000026	0.0013	0.86	0.0030	0.0000023	0.0011	0.00010	0.0019
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	6.3	0.000023	0.000012	0.00022	0.0018	0.000018	0.0010	0.75	0.0031	0.0000023	0.00093	0.000081	0.00045
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	6.3	0.000024	0.000021	0.00015	0.0024	0.000014	0.00100	0.75	0.0034	0.0000024	0.00089	0.000057	0.00048
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	9.8	0.000025	0.000023	0.00020	0.00098	0.00021	0.0018	1.1	0.0041	0.0000025	0.0012	0.00014	0.00049
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	7.0	0.000024	0.000018	0.00049	0.0029	0.000067	0.0011	0.80	0.0046	0.0000024	0.00077	0.000072	0.00048
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	7.4	0.000024	0.000015	--	0.0015	0.0000092	0.0011	0.87	0.0040	0.0000024	0.00080	0.00010	0.00049
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	6.6	0.000024	0.000017	0.00037	0.0014	0.000030	0.0011	0.78	0.0037	0.0000024	0.00073	0.00012	0.00048
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	5.1	0.000023	0.000021	0.00017	0.00046	0.0000087	0.00087	0.55	0.0035	0.0000023	0.00046	0.000083	0.00046
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	5.0	0.000024	0.000015	0.00016	0.0015	0.00011	0.00078	0.56	0.0038	0.0000024	0.00045	0.00011	0.00049
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	5.4	0.000024	0.000018	0.00046	0.0015	0.000011	0.00078	0.62	0.0039	0.0000024	0.00047	0.000097	0.00049

HC 4

2-Jul-09	0	12	0.000018	0.00012	0.0011	0.00070	0.000020	0.0034	1.5	0.0019	0.0000018	0.0051	0.00060	0.0025
9-Jul-09	1	20	0.000022	0.00013	0.0014	0.00087	0.000071	0.0057	2.3	0.0022	0.0000022	0.013	0.0033	0.0013
16-Jul-09	2	9.4	0.000020	0.000077	0.00085	0.0012	0.000049	0.0045	1.3	0.0015	0.0000020	0.012	0.0018	0.0012
23-Jul-09	3	7.3	0.000023	0.000034	0.00083	0.00091	0.000054	0.0039	1.0	0.0019	0.0000023	0.0067	0.00064	0.00046
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	9.9	0.000024	0.000032	0.00051	0.0014	0.0031	0.0033	1.3	0.0025	0.0000024	0.0039	0.00026	0.0014
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	13	0.000024	0.000052	0.00033	0.0019	0.00015	0.0035	1.7	0.0031	0.0000024	0.0026	0.00042	0.00048
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	14	0.000024	0.000050	0.00038	0.00096	0.000068	0.0032	1.9	0.0034	0.0000024	0.0020	0.00017	0.0014
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	14	0.000023	0.000047	0.00084	0.0019	0.000062	0.0029	1.8	0.0028	0.0000023	0.0017	0.00017	0.00047
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	13	0.000022	0.000054	0.00055	0.0013	0.00022	0.0023	1.7	0.0037	0.0000022	0.0013	0.00017	0.00044
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	12	0.000022	0.000049	0.00081	0.0013	0.000054	0.0022	1.6	0.0029	0.0000022	0.0011	0.00012	0.00044
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	11	0.000023	0.000042	0.00053	0.0018	0.000062	0.0019	1.4	0.0033	0.0000023	0.00099	0.00020	0.0014
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	9.8	0.00014	0.000042	0.00020	0.0014	0.000062	0.0016	1.3	0.0031	0.0000023	0.00087	0.00013	0.00047
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	11	0.000023	0.000037	0.00026	0.00092	0.00040	0.0016	1.4	0.0028	0.0000023	0.00082	0.00012	0.00046
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	11	0.000024	0.000053	0.00022	0.0019	0.000067	0.0015	1.4	0.0029	0.0000024	0.00071	0.000099	0.00047

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K mg/kg/wk	Se mg/kg/wk	Si mg/kg/wk	Ag mg/kg/wk	Na mg/kg/wk	Sr mg/kg/wk	S mg/kg/wk	Tl mg/kg/wk	Sn mg/kg/wk	Ti mg/kg/wk	U mg/kg/wk	V mg/kg/wk	Zn mg/kg/wk	Zr mg/kg/wk
17-Sep-09	11	0.83	0.00050	0.48	0.0000011	1.0	0.27	4.7	0.0000034	0.000038	0.00011	0.014	0.000043	0.00026	0.000043
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	0.72	0.00045	0.41	0.0000011	0.67	0.21	3.5	0.0000030	0.0000087	0.00011	0.011	0.000044	0.00017	0.000044
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	0.81	0.00050	0.45	0.0000011	0.59	0.25	4.5	0.0000032	0.0000090	0.00011	0.015	0.000045	0.00036	0.000045
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	0.55	0.00037	0.28	0.0000011	0.33	0.18	3.1	0.0000031	0.000040	0.00011	0.011	0.000045	0.00022	0.000045
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.66	0.00037	0.39	0.0000012	0.37	0.22	3.3	0.0000023	0.0000093	0.00012	0.012	0.000047	0.00028	0.000047
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.59	0.00037	0.37	0.0000011	0.29	0.18	2.7	0.0000027	0.000018	0.00011	0.0084	0.000045	0.00014	0.000045
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.52	0.00030	0.34	0.0000033	0.23	0.18	2.9	0.0000038	0.0000095	0.00033	0.011	0.000048	0.00019	0.000048
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.89	0.00056	0.68	0.0000012	0.32	0.29	3.9	0.0000044	0.0000025	0.00012	0.016	0.000049	0.00034	0.000049
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.58	0.00036	0.42	0.0000012	0.19	0.19	2.9	0.0000014	0.000043	0.00012	0.012	0.000048	0.00053	0.000048
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.69	0.00040	0.46	0.000011	0.21	0.20	2.9	0.0000049	0.0000024	0.00012	0.011	0.000049	0.00024	0.000049
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.59	0.00039	0.45	0.0000012	0.19	0.20	2.9	0.0000043	0.000077	0.00012	0.011	0.000048	0.00029	0.000048
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.42	0.00035	0.36	0.0000012	0.12	0.14	2.3	0.0000037	0.0000023	0.00012	0.0059	0.000046	0.00041	0.000046
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.42	0.00033	0.32	0.0000012	0.12	0.14	4.9	0.0000034	0.0000024	0.00012	0.0058	0.000049	0.0014	0.000049
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.44	0.00034	0.32	0.0000012	0.13	0.15	2.4	0.0000019	0.0000097	0.00012	0.0061	0.000049	0.00024	0.000049

HC 4

2-Jul-09	0	2.1	0.0041	0.51	0.0000088	3.7	0.39	8.1	0.000078	0.0000018	0.000088	0.0081	0.00011	0.00011	0.000035
9-Jul-09	1	2.9	0.0079	0.98	0.0000011	6.2	0.58	16	0.00010	0.0000087	0.00011	0.019	0.00022	0.00030	0.000044
16-Jul-09	2	2.3	0.0037	0.92	0.0000099	4.1	0.31	7.5	0.000089	0.000020	0.000099	0.021	0.00028	0.00040	0.000040
23-Jul-09	3	2.0	0.0027	0.97	0.0000011	2.4	0.26	4.1	0.000090	0.0000023	0.00011	0.018	0.00023	0.00032	0.000046
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	2.1	0.0023	1.00	0.0000012	1.4	0.30	5.2	0.00010	0.0000024	0.00012	0.023	0.00024	0.00019	0.000048
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	2.4	0.0021	1.1	0.0000012	0.84	0.41	7.7	0.00013	0.0000096	0.00012	0.023	0.00024	0.0012	0.000048
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	2.2	0.0023	1.2	0.0000012	0.50	0.43	8.2	0.00014	0.0000024	0.00012	0.020	0.00019	0.00029	0.000048
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	1.8	0.0019	1.0	0.0000012	0.38	0.43	7.4	0.00013	0.000042	0.00012	0.017	0.00014	0.00056	0.000047
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	1.5	0.0014	0.82	0.0000011	0.27	0.39	7.0	0.00010	0.0000022	0.00011	0.015	0.000044	0.0012	0.000044
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	1.4	0.0014	0.80	0.0000011	0.24	0.34	5.7	0.000094	0.0000022	0.00011	0.013	0.000044	0.00070	0.000044
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	1.1	0.0012	0.65	0.0000011	0.20	0.33	5.0	0.000089	0.000027	0.00011	0.013	0.000046	0.00041	0.000046
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	0.98	0.0011	0.70	0.0000012	0.17	0.29	3.7	0.000091	0.0000093	0.00012	0.012	0.000047	0.00047	0.000047
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.96	0.0012	0.74	0.0000012	0.16	0.29	4.1	0.000094	0.0000092	0.00012	0.010	0.000046	0.00064	0.000046
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	0.83	0.00097	0.64	0.0000012	0.12	0.29	4.2	0.000080	0.0000024	0.00012	0.012	0.000047	0.00038	0.000047

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
17-Dec-09	24	1.3	26	11	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	1.1	23	12	0.12	0.024	0.025	0.032	0.025	0.0044	0.0000048	0.0000071	0.012	0.0000029
31-Dec-09	26	1.1	22	11	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	1.1	23	13	0.13	0.025	0.026	0.027	0.021	0.0044	0.0000050	0.0000080	0.013	0.0000030
14-Jan-10	28	--	24	11	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	1.2	21	10.0	0.12	0.024	0.028	0.025	0.021	0.0038	0.0000048	0.0000081	0.012	0.0000043
28-Jan-10	30	2.0	21	13	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	1.6	22	8.5	0.12	0.024	0.024	0.023	0.021	0.0036	0.0000047	0.0000075	0.012	0.0000033
11-Feb-10	32	1.6	23	11	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	1.8	22	8.6	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	1.4	21	6.9	--	0.018	0.026	0.021	0.025	0.0038	0.0000046	0.0000051	0.012	0.0000012
4-Mar-10	35	1.3	20	9.1	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	1.5	20	8.1	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	1.8	18	7.1	--	0.014	0.023	0.014	0.014	0.0030	0.0000048	0.0000067	0.012	0.0000062
25-Mar-10	38	1.5	18	8.6	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	1.1	20	9.3	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	1.2	18	8.9	--	0.019	0.025	0.015	0.017	0.0059	0.0000047	0.0000052	0.012	0.0000047
15-Apr-10	41	2.0	24	11	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	2.1	20	12	--	--	--	--	--	--	--	--	--	--
29-Apr-10	43	1.2	25	12	--	0.030	0.023	0.021	0.020	0.0041	0.0000050	0.0000054	0.012	0.0000059
6-May-10	44	2.3	22	10	--	--	--	--	--	--	--	--	--	--
13-May-10	45	1.7	15	10.0	--	--	--	--	--	--	--	--	--	--
20-May-10	46	1.9	16	10	--	0.014	0.031	0.012	0.021	0.0030	0.0000047	0.0000047	0.012	0.000017
27-May-10	47	2.8	16	6.2	--	--	--	--	--	--	--	--	--	--
3-Jun-10	48	1.6	17	9.8	--	--	--	--	--	--	--	--	--	--
10-Jun-10	49	2.5	19	8.9	--	0.014	0.026	0.014	0.022	0.0032	0.0000047	0.0000038	0.012	0.0000028
17-Jun-10	50	1.9	17	5.5	--	--	--	--	--	--	--	--	--	--
24-Jun-10	51	1.3	18	8.9	--	--	--	--	--	--	--	--	--	--
1-Jul-10	52	1.3	20	8.5	--	0.024	0.024	0.012	0.019	0.0028	0.0000047	0.0000012	0.012	0.0000012
8-Jul-10	53	1.2	20	8.6	--	--	--	--	--	--	--	--	--	--
15-Jul-10	54	2.0	18	8.2	--	--	--	--	--	--	--	--	--	--
22-Jul-10	55	2.1	19	8.3	--	--	--	--	--	--	--	--	--	--
29-Jul-10	56	2.4	19	10	--	0.015	0.031	0.010	0.018	0.0030	0.0000049	0.0000044	0.012	0.0000029
5-Aug-10	57	1.3	20	7.7	--	--	--	--	--	--	--	--	--	--
12-Aug-10	58	2.5	20	9.6	--	--	--	--	--	--	--	--	--	--
19-Aug-10	59	2.6	19	7.9	--	--	--	--	--	--	--	--	--	--
26-Aug-10	60	1.5	20	9.1	--	0.024	0.026	0.0098	0.018	0.0034	0.0000048	0.0000029	0.012	0.0000038
2-Sep-10	61	2.1	22	16	--	--	--	--	--	--	--	--	--	--
9-Sep-10	62	2.9	22	12	--	--	--	--	--	--	--	--	--	--
16-Sep-10	63	1.7	20	11	--	--	--	--	--	--	--	--	--	--

HC 5

2-Jul-09	0	1.2	17	110	2.8	0.040	0.0063	0.00010	0.00091	0.014	0.0000040	0.00000099	0.0099	0.0000071
9-Jul-09	1	1.0	11	79	6.4	0.038	0.016	0.00010	0.0041	0.0075	0.0000043	0.0000011	0.011	0.0000055
16-Jul-09	2	1.3	9.9	62	0.93	0.045	0.019	0.00011	0.0047	0.0067	0.0000041	0.0000010	0.010	0.0000073
23-Jul-09	3	1.3	12	51	0.11	0.036	0.028	0.000099	0.0054	0.0054	0.0000045	0.0000011	0.011	0.0000011
30-Jul-09	4	2.1	11	31	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	1.0	13	43	0.46	0.037	0.027	0.000083	0.0056	0.0049	0.0000046	0.0000012	0.012	0.0000028
13-Aug-09	6	2.2	11	24	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	1.2	10	24	0.11	0.027	0.029	0.000086	0.0051	0.0041	0.0000046	0.0000011	0.011	0.0000011
27-Aug-09	8	1.6	11	23	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	1.9	11	23	0.12	0.025	0.031	0.000093	0.0050	0.0038	0.0000049	0.0000012	0.012	0.0000012
10-Sep-09	10	0.55	11	25	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	1.2	11	20	0.31	0.022	0.030	0.000085	0.0050	0.0033	0.0000045	0.0000011	0.011	0.0000027
24-Sep-09	12	1.2	13	23	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	1.1	9.7	18	0.11	0.018	0.032	0.000059	0.0041	0.0029	0.0000045	0.0000011	0.011	0.0000011

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	13	0.000024	0.000051	0.00028	0.00095	0.000064	0.0016	1.5	0.0036	0.0000024	0.00068	0.00012	0.00048
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	13	0.000025	0.000050	0.00018	0.0010	0.000036	0.0015	1.6	0.0038	0.0000025	0.00065	0.000090	0.00050
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	11	0.000024	0.000040	--	0.0014	0.000032	0.0012	1.4	0.0034	0.0000024	0.00061	0.00011	0.00048
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	9.9	0.000024	0.000035	0.00047	0.0014	0.000049	0.0012	1.3	0.0029	0.0000024	0.00059	0.00014	0.00047
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	9.9	0.000023	0.000071	0.00027	0.00046	0.000032	0.0013	1.3	0.0032	0.0000023	0.00048	0.00013	0.00046
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	7.8	0.000024	0.000035	0.00022	0.00095	0.000069	0.00095	1.1	0.0032	0.0000024	0.00039	0.00011	0.00048
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	8.6	0.000024	0.000037	0.00030	0.00094	0.000031	0.0010	1.2	0.0032	0.0000024	0.00037	0.000099	0.00047
15-Apr-10	41	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	43	12	0.000025	0.000040	0.00029	0.0025	0.000033	0.0014	1.4	0.0036	0.0000025	0.00049	0.00012	0.00050
6-May-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	45	--	--	--	--	--	--	--	--	--	--	--	--	--
20-May-10	46	8.7	0.000023	0.000025	0.00022	0.00093	0.00031	0.0010	1.1	0.0025	0.0000023	0.00037	0.00012	0.00047
27-May-10	47	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	49	7.3	0.000024	0.000022	0.00018	0.00094	0.000019	0.0012	1.3	0.0026	0.0000024	0.00035	0.000089	0.00047
17-Jun-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	51	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Jul-10	52	8.0	0.000024	0.000024	0.00018	0.00047	0.000027	0.0010	1.3	0.0030	0.0000024	0.00033	0.000066	0.00047
8-Jul-10	53	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Jul-10	54	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	55	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Jul-10	56	8.7	0.000025	0.000030	0.00023	0.0015	0.000020	0.0010	1.4	0.0024	0.0000025	0.00028	0.000093	0.00049
5-Aug-10	57	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Aug-10	58	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	59	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Aug-10	60	8.7	0.000024	0.000023	0.00034	0.0014	0.000019	0.0011	1.4	0.0022	0.0000024	0.00025	0.00011	0.00048
2-Sep-10	61	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Sep-10	62	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	63	--	--	--	--	--	--	--	--	--	--	--	--	--

HC 5

2-Jul-09	0	40	0.000020	0.0012	0.00024	0.00040	0.0000040	0.0087	2.1	0.052	0.0000020	0.00061	0.0028	0.0016
9-Jul-09	1	29	0.000021	0.00016	0.00037	0.00085	0.0000043	0.0059	1.9	0.022	0.0000085	0.00096	0.00036	0.00043
16-Jul-09	2	27	0.000020	0.00013	0.00089	0.0020	0.000028	0.0060	1.5	0.018	0.0000020	0.00096	0.00032	0.00041
23-Jul-09	3	18	0.000023	0.000074	0.00062	0.00090	0.0000041	0.0052	0.81	0.013	0.0000023	0.00072	0.00015	0.00045
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	16	0.000023	0.000045	0.00058	0.0028	0.000013	0.0049	0.70	0.012	0.0000023	0.00069	0.00013	0.0014
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	12	0.000023	0.000033	0.00032	0.0027	0.0000086	0.0038	0.48	0.0089	0.0000023	0.00049	0.000082	0.00046
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	11	0.000025	0.000029	0.00033	0.0044	0.000019	0.0039	0.44	0.0085	0.0000025	0.00046	0.000088	0.00049
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	9.4	0.000022	0.000026	0.00030	0.0031	0.0000062	0.0035	0.37	0.0062	0.0000022	0.00039	0.000071	0.00045
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	8.2	0.000023	0.000027	0.00067	0.0059	0.0000059	0.0029	0.32	0.0057	0.0000023	0.00027	0.000081	0.00045

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K mg/kg/wk	Se mg/kg/wk	Si mg/kg/wk	Ag mg/kg/wk	Na mg/kg/wk	Sr mg/kg/wk	S mg/kg/wk	Tl mg/kg/wk	Sn mg/kg/wk	Ti mg/kg/wk	U mg/kg/wk	V mg/kg/wk	Zn mg/kg/wk	Zr mg/kg/wk
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	0.91	0.0012	0.70	0.0000012	0.11	0.32	4.8	0.000096	0.0000024	0.00012	0.011	0.000048	0.00038	0.000048
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	0.81	0.0011	0.67	0.0000013	0.11	0.33	5.0	0.000085	0.000040	0.00013	0.011	0.000050	0.00025	0.000050
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.75	0.0010	0.57	0.0000052	0.10	0.27	4.3	0.000083	0.0000024	0.00012	0.0081	0.000048	0.00038	0.000048
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.63	0.0010	0.57	0.0000012	0.11	0.27	3.3	0.000079	0.000080	0.00012	0.0076	0.000047	0.00033	0.000047
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	0.62	0.0011	0.55	0.0000012	0.10	0.26	3.7	0.000082	0.0000023	0.00012	0.0061	0.000046	0.00051	0.000046
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	0.45	0.00086	0.40	0.0000012	0.081	0.22	4.8	0.000067	0.0000024	0.00012	0.0056	0.000048	0.00038	0.000048
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	0.50	0.00094	0.43	0.0000012	0.094	0.21	3.3	0.000062	0.0000094	0.00012	0.0047	0.000047	0.00038	0.000047
15-Apr-10	41	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	43	0.59	0.0012	0.55	0.0000012	0.099	0.30	5.0	0.000087	0.0000025	0.00012	0.0067	0.000050	0.00040	0.000050
6-May-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-May-10	46	0.45	0.0011	0.43	0.0000012	0.093	0.20	4.7	0.000073	0.000019	0.00012	0.0027	0.000047	0.0014	0.000047
27-May-10	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	49	0.52	0.0013	0.31	0.0000012	0.10	0.22	4.7	0.000086	0.0000094	0.00012	0.0031	0.000047	0.00028	0.000047
17-Jun-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	51	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Jul-10	52	0.46	0.0011	0.38	0.0000012	0.085	0.22	4.7	0.000081	0.0000094	0.00012	0.0032	0.000047	0.00024	0.000047
8-Jul-10	53	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Jul-10	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	55	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Jul-10	56	0.43	0.0010	0.38	0.0000039	0.088	0.21	4.9	0.000078	0.0000025	0.00012	0.0029	0.000049	0.00020	0.000049
5-Aug-10	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Aug-10	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	59	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Aug-10	60	0.43	0.00098	0.36	0.0000012	0.091	0.20	4.8	0.000086	0.00021	0.00012	0.0023	0.000048	0.00019	0.000048
2-Sep-10	61	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Sep-10	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	63	--	--	--	--	--	--	--	--	--	--	--	--	--	--

HC 5															
2-Jul-09	0	3.5	0.0021	0.55	0.0000040	2.2	0.21	34	0.0000099	0.0000020	0.000099	0.0065	0.000040	0.00024	0.000040
9-Jul-09	1	4.0	0.0032	0.62	0.0000011	2.4	0.15	31	0.0000055	0.0000021	0.00011	0.0024	0.000043	0.00034	0.000043
16-Jul-09	2	3.5	0.0022	0.66	0.0000010	1.8	0.15	24	0.0000041	0.0000020	0.00010	0.0023	0.00016	0.00057	0.000041
23-Jul-09	3	3.3	0.00094	0.69	0.0000011	1.1	0.11	14	0.0000036	0.0000023	0.00011	0.0022	0.000045	0.00023	0.000045
30-Jul-09	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Aug-09	5	3.6	0.00068	0.76	0.0000012	0.90	0.090	13	0.0000032	0.0000023	0.00012	0.0021	0.00014	0.00018	0.000046
13-Aug-09	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Aug-09	7	3.0	0.00043	0.76	0.0000011	0.53	0.064	9.1	0.0000027	0.0000023	0.00011	0.0017	0.00018	0.00027	0.000046
27-Aug-09	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Sep-09	9	3.0	0.00040	0.71	0.0000012	0.42	0.060	8.3	0.0000034	0.0000025	0.00012	0.0019	0.00020	0.00025	0.000049
10-Sep-09	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Sep-09	11	2.7	0.00037	0.64	0.0000011	0.33	0.054	6.7	0.0000027	0.000022	0.00011	0.0015	0.00018	0.00031	0.000045
24-Sep-09	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Oct-09	13	2.4	0.00030	0.49	0.0000011	0.31	0.045	6.3	0.0000023	0.0000023	0.00011	0.0013	0.000045	0.00018	0.000045

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
8-Oct-09	14	1.8	11	23	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	1.3	11	19	0.12	0.023	0.035	0.000074	0.0052	0.0030	0.0000046	0.0000012	0.012	0.0000012
22-Oct-09	16	1.3	14	23	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	1.0	9.9	15	0.11	0.018	0.030	0.000059	0.0039	0.0027	0.0000046	0.0000011	0.011	0.0000011
5-Nov-09	18	1.8	11	17	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	2.2	11	11	0.12	0.019	0.039	0.000051	0.0047	0.0021	0.0000047	0.0000012	0.012	0.0000012
19-Nov-09	20	2.1	10	13	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	0.93	14	17	0.12	0.023	0.038	0.000097	0.0051	0.0029	0.0000046	0.0000078	0.012	0.0000028
3-Dec-09	22	2.4	13	19	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	2.3	11	19	0.12	0.019	0.031	0.000073	0.0039	0.0030	0.0000049	0.0000012	0.012	0.0000012
17-Dec-09	24	1.4	12	13	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	1.3	13	16	0.12	0.019	0.027	0.00011	0.0050	0.0033	0.0000049	0.0000012	0.012	0.0000012
31-Dec-09	26	1.2	12	17	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	1.3	10	10	0.12	0.024	0.028	0.000043	0.0031	0.0024	0.0000048	0.0000012	0.012	0.0000012
14-Jan-10	28	--	8.7	14	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	1.4	12	17	0.12	0.019	0.029	0.000091	0.0046	0.0033	0.0000048	0.0000012	0.012	0.0000012
28-Jan-10	30	2.2	8.9	15	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	1.8	7.4	11	0.12	0.0093	0.023	0.000056	0.0031	0.0022	0.0000047	0.0000012	0.012	0.0000012
11-Feb-10	32	1.5	7.6	13	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	1.8	8.1	13	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	1.5	10	16	--	0.014	0.023	0.000068	0.0035	0.0036	0.0000046	0.0000011	0.011	0.0000011
4-Mar-10	35	1.4	7.9	14	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	1.7	6.8	11	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	1.7	7.5	11	--	0.0098	0.022	0.000049	0.0024	0.0023	0.0000049	0.0000012	0.012	0.0000012
25-Mar-10	38	1.7	7.8	14	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	1.4	7.0	15	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	1.3	7.5	13	--	0.0092	0.022	0.000046	0.0025	0.0025	0.0000046	0.0000012	0.012	0.0000012

HC 6

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	9.3	0.00023	0.00036	0.00052	0.0041	0.00018	0.0032	0.32	0.0061	0.0000023	0.00028	0.000060	0.00046
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	7.1	0.000091	0.000026	0.00040	0.0068	0.00063	0.0029	0.25	0.0055	0.0000023	0.00025	0.00014	0.0014
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	6.5	0.00028	0.000024	0.00031	0.0079	0.000038	0.0027	0.24	0.0043	0.0000023	0.00024	0.00011	0.0019
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	7.8	0.000023	0.000026	0.00017	0.0083	0.000069	0.0031	0.29	0.0056	0.0000023	0.00027	0.000087	0.00046
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	8.6	0.000024	0.000028	0.00015	0.0058	0.0000039	0.0032	0.32	0.0063	0.0000024	0.00026	0.000034	0.00049
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	9.2	0.000024	0.000029	0.00020	0.0029	0.0000024	0.0037	0.31	0.0068	0.0000024	0.00029	0.000068	0.00049
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	6.2	0.000024	0.000025	0.00015	0.0058	0.000023	0.0026	0.21	0.0060	0.0000024	0.00016	0.000067	0.00048
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	9.2	0.000024	0.000024	--	0.0024	0.0000091	0.0036	0.32	0.0066	0.0000024	0.00024	0.000091	0.00048
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	6.0	0.000093	0.000020	0.00042	0.0028	0.000018	0.0025	0.20	0.0042	0.0000023	0.00017	0.00010	0.00047
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	8.1	0.000023	0.000052	0.00025	0.0023	0.0000086	0.0032	0.27	0.0056	0.0000023	0.00023	0.000077	0.00046
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	5.6	0.000025	0.000023	0.00018	0.0029	0.0000025	0.0025	0.20	0.0046	0.0000025	0.00015	0.000098	0.00049
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	6.2	0.000023	0.000018	0.00078	0.0028	0.000013	0.0023	0.20	0.0041	0.0000023	0.00015	0.000074	0.00046

HC 6

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K	Se	Si	Ag	Na	Sr	S	Tl	Sn	Ti	U	V	Zn	Zr
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
8-Oct-09	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Oct-09	15	2.8	0.00035	0.60	0.0000012	0.27	0.051	6.4	0.0000018	0.0000023	0.00012	0.0015	0.00018	0.00032	0.000046
22-Oct-09	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Oct-09	17	2.3	0.00027	0.45	0.0000011	0.22	0.042	5.0	0.0000023	0.000036	0.00036	0.0014	0.00014	0.00018	0.000046
5-Nov-09	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-09	19	2.3	0.00024	0.52	0.0000012	0.24	0.037	4.2	0.00000047	0.0000093	0.00033	0.0013	0.00023	0.00042	0.000047
19-Nov-09	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-Nov-09	21	2.7	0.00026	0.58	0.0000012	0.23	0.044	5.1	0.0000023	0.0000092	0.00060	0.0015	0.00023	0.00037	0.000046
3-Dec-09	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-09	23	2.8	0.00024	0.59	0.0000029	0.17	0.048	5.8	0.0000024	0.0000024	0.00053	0.0023	0.00019	0.000097	0.000049
17-Dec-09	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-09	25	3.2	0.00028	0.74	0.0000012	0.17	0.052	6.3	0.0000024	0.0000024	0.00012	0.0022	0.00019	0.000097	0.000049
31-Dec-09	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jan-10	27	2.2	0.00018	0.50	0.0000012	0.11	0.034	4.3	0.00000048	0.000038	0.00048	0.0015	0.00014	0.000096	0.000048
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	3.3	0.00029	0.64	0.0000012	0.16	0.047	6.2	0.0000029	0.0000096	0.00012	0.0019	0.00014	0.00019	0.000048
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	2.1	0.00020	0.42	0.0000012	0.12	0.033	3.7	0.0000019	0.000098	0.00012	0.0013	0.00014	0.00023	0.000047
11-Feb-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-10	34	2.6	0.00027	0.55	0.0000011	0.14	0.046	5.5	0.0000018	0.0000023	0.00011	0.0015	0.00014	0.00018	0.000046
4-Mar-10	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	37	2.1	0.00019	0.39	0.0000012	0.10	0.032	4.9	0.0000020	0.0000025	0.00012	0.0011	0.000049	0.00015	0.000049
25-Mar-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-10	40	2.2	0.00021	0.46	0.0000012	0.12	0.033	4.6	0.0000014	0.0000023	0.00012	0.0010	0.00014	0.00032	0.000046

HC 6

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mg CaCO3 /kg/wk	Alkalinity mg CaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
7-Jan-10	27	1.0	14	7.6	0.12	0.029	0.038	0.022	0.0011	0.0020	0.0000048	0.000025	0.012	0.0000012
14-Jan-10	28	--	13	5.3	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	1.1	14	8.3	0.12	0.025	0.038	0.021	0.0011	0.0020	0.0000049	0.000022	0.012	0.0000012
28-Jan-10	30	1.8	13	10	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	1.4	14	8.9	0.12	0.028	0.036	0.021	0.0013	0.0023	0.0000047	0.000023	0.012	0.0000012

HC 7

24-Dec-09	0	0.66	7.4	126	3.8	0.070	0.015	0.015	0.0032	0.011	0.0000032	0.0000032	0.0080	0.000016
31-Dec-09	1	0.92	10	111	1.8	0.076	0.019	0.012	0.0038	0.0085	0.0000045	0.0000076	0.011	0.0000011
7-Jan-10	2	1.2	13	108	0.27	0.10	0.023	0.015	0.0055	0.0077	0.0000046	0.0000050	0.011	0.0000068
14-Jan-10	3	2.9	14	78	0.12	0.099	0.030	0.020	0.0067	0.0063	0.0000047	0.0000056	0.012	0.0000085
21-Jan-10	4	1.3	13	47	--	--	--	--	--	--	--	--	--	--
28-Jan-10	5	1.9	14	57	0.42	0.080	0.032	0.018	0.0063	0.0045	0.0000047	0.0000061	0.012	0.0000038
4-Feb-10	6	1.3	14	38	--	--	--	--	--	--	--	--	--	--
11-Feb-10	7	1.3	13	27	0.12	0.10	0.033	0.019	0.0056	0.0045	0.0000048	0.0000086	0.012	0.0000038
18-Feb-10	8	1.5	13	26	--	--	--	--	--	--	--	--	--	--
25-Feb-10	9	1.2	14	22	0.11	0.10	0.030	0.025	0.0076	0.0042	0.0000044	0.0000062	0.011	0.0000031
4-Mar-10	10	1.1	13	20	--	--	--	--	--	--	--	--	--	--
11-Mar-10	11	1.4	18	17	0.11	0.079	0.027	0.030	0.0092	0.0039	0.0000044	0.0000057	0.011	0.0000040
18-Mar-10	12	1.7	17	15	--	--	--	--	--	--	--	--	--	--
25-Mar-10	13	1.5	18	13	0.12	0.100	0.035	0.034	0.010	0.0038	0.0000048	0.000011	0.012	0.0000038
1-Apr-10	14	1.2	16	9.7	--	--	--	--	--	--	--	--	--	--
8-Apr-10	15	1.1	17	11	0.12	0.083	0.031	0.029	0.0098	0.0037	0.0000046	0.0000083	0.012	0.0000032
15-Apr-10	16	1.5	18	13	--	--	--	--	--	--	--	--	--	--
22-Apr-10	17	2.0	18	8.3	0.12	0.069	0.035	0.028	0.0100	0.0031	0.0000049	0.000047	0.012	0.0000054
29-Apr-10	18	1.3	16	8.6	--	--	--	--	--	--	--	--	--	--
6-May-10	19	2.1	18	6.0	0.12	0.047	0.033	0.027	0.011	0.0030	0.0000047	0.0000079	0.012	0.0000037
13-May-10	20	1.6	17	7.5	--	--	--	--	--	--	--	--	--	--
20-May-10	21	1.6	14	6.6	0.11	0.026	0.036	0.019	0.0097	0.0023	0.0000044	0.0000079	0.011	0.0000044
27-May-10	22	2.4	16	3.6	--	--	--	--	--	--	--	--	--	--
3-Jun-10	23	1.3	16	6.2	0.11	0.031	0.037	0.020	0.011	0.0028	0.0000044	0.0000079	0.011	0.0000044
10-Jun-10	24	2.3	17	5.0	--	--	--	--	--	--	--	--	--	--
17-Jun-10	25	1.8	16	1.8	0.12	0.023	0.040	0.022	0.013	0.0052	0.0000046	0.0000051	0.012	0.0000012
24-Jun-10	26	1.1	17	4.1	--	--	--	--	--	--	--	--	--	--
1-Jul-10	27	1.2	17	5.0	0.11	0.027	0.031	0.019	0.011	0.0026	0.0000045	0.0000041	0.011	0.0000011
8-Jul-10	28	0.98	15	3.5	--	--	--	--	--	--	--	--	--	--
15-Jul-10	29	1.9	17	3.8	0.12	0.028	0.033	0.021	0.015	0.0029	0.0000047	0.0000038	0.012	0.0000028
22-Jul-10	30	1.7	18	2.9	--	--	--	--	--	--	--	--	--	--
29-Jul-10	31	2.2	17	3.3	0.12	0.019	0.036	0.020	0.012	0.0028	0.0000047	0.0000065	0.012	0.0000037
5-Aug-10	32	1.2	17	4.1	--	--	--	--	--	--	--	--	--	--
12-Aug-10	33	2.3	18	5.2	0.12	0.019	0.040	0.018	0.012	0.0028	0.0000047	0.0000085	0.012	0.0000038
19-Aug-10	34	2.3	15	4.2	--	--	--	--	--	--	--	--	--	--
26-Aug-10	35	1.3	16	5.4	0.11	0.014	0.034	0.017	0.011	0.0032	0.0000045	0.0000050	0.011	0.0000011
2-Sep-10	36	1.9	18	8.3	--	--	--	--	--	--	--	--	--	--
9-Sep-10	37	2.4	18	5.5	0.12	0.032	0.036	0.018	0.012	0.0030	0.0000046	0.0000078	0.012	0.0000028
16-Sep-10	38	1.6	18	6.5	--	--	--	--	--	--	--	--	--	--
23-Sep-10	39	1.2	17	7.9	0.12	0.019	0.042	0.019	0.011	0.0028	0.0000047	0.0000051	0.012	0.0000033
30-Sep-10	40	1.3	16	8.6	--	--	--	--	--	--	--	--	--	--
7-Oct-10	41	1.8	18	8.3	0.10	0.037	0.026	0.023	0.011	0.0031	0.0000042	0.0000010	0.010	0.0000010
14-Oct-10	42	1.9	19	7.7	--	--	--	--	--	--	--	--	--	--
21-Oct-10	43	1.8	19	6.8	0.11	0.018	0.037	0.017	0.011	0.0031	0.0000046	0.0000032	0.011	0.0000032
28-Oct-10	44	1.7	18	7.7	--	--	--	--	--	--	--	--	--	--
4-Nov-10	45	1.3	17	6.7	0.11	0.018	0.036	0.015	0.010	0.0029	0.0000045	0.0000031	0.011	0.0000036
11-Nov-10	46	1.4	21	6.4	--	--	--	--	--	--	--	--	--	--
18-Nov-10	47	1.5	19	6.2	0.11	0.013	0.036	0.015	0.0097	0.0030	0.0000045	0.0000036	0.011	0.0000036
25-Nov-10	48	1.8	21	5.8	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
7-Jan-10	27	6.6	0.000024	0.000034	0.00023	0.0019	0.000030	0.00057	1.5	0.0028	0.0000024	0.00054	0.000052	0.00048
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	6.3	0.000025	0.000036	--	0.0015	0.000020	0.00059	1.5	0.0026	0.0000025	0.00048	0.000093	0.00049
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	6.7	0.000024	0.000040	0.00054	0.0014	0.000041	0.00061	1.7	0.0020	0.0000024	0.00055	0.000099	0.00047

HC 7

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K	Se	Si	Ag	Na	Sr	S	Tl	Sn	Ti	U	V	Zn	Zr
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
7-Jan-10	27	0.56	0.00091	0.35	0.0000012	0.16	0.19	3.3	0.00000048	0.000071	0.00012	0.011	0.000048	0.00048	0.000048
14-Jan-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-10	29	0.58	0.00091	0.32	0.0000039	0.14	0.18	2.9	0.0000029	0.0000025	0.00012	0.010	0.000049	0.00020	0.000049
28-Jan-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-10	31	0.62	0.0010	0.38	0.0000012	0.18	0.22	3.3	0.0000014	0.000089	0.00012	0.012	0.000047	0.00024	0.000047

HC 7																
24-Dec-09	0	2.4	0.0077	0.48	0.000029	5.9	1.1	45	0.000012	0.000016	0.000080	0.012	0.000032	0.00032	0.000032	
31-Dec-09	1	2.1	0.0074	0.49	0.0000011	6.4	0.94	35	0.0000071	0.000013	0.000013	0.013	0.000045	0.00018	0.000045	
7-Jan-10	2	2.2	0.0042	0.72	0.0000011	4.4	1.0	36	0.0000073	0.000050	0.00011	0.010	0.000046	0.00027	0.000046	
14-Jan-10	3	2.1	0.0023	0.88	0.0000012	2.6	0.79	27	0.0000085	0.0000094	0.00012	0.0095	0.000047	0.00028	0.000047	
21-Jan-10	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
28-Jan-10	5	1.6	0.0010	0.70	0.0000012	1.1	0.53	16	0.0000066	0.000080	0.00033	0.0070	0.000047	0.00014	0.000047	
4-Feb-10	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
11-Feb-10	7	1.2	0.00060	0.65	0.0000012	0.70	0.36	11	0.0000058	0.0000024	0.00012	0.0050	0.000048	0.00034	0.000048	
18-Feb-10	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
25-Feb-10	9	1.3	0.00063	0.78	0.0000011	0.55	0.34	8.8	0.0000066	0.0000022	0.00011	0.0047	0.000044	0.00044	0.000044	
4-Mar-10	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
11-Mar-10	11	1.4	0.00062	0.87	0.0000011	0.44	0.32	6.6	0.0000084	0.0000022	0.00011	0.0059	0.00013	0.00013	0.000044	
18-Mar-10	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
25-Mar-10	13	1.4	0.00067	1.0	0.0000012	0.39	0.27	4.8	0.0000067	0.0000024	0.00012	0.0049	0.00014	0.00019	0.000048	
1-Apr-10	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
8-Apr-10	15	1.2	0.00061	0.87	0.0000012	0.29	0.22	3.2	0.000011	0.000018	0.00012	0.0045	0.00014	0.00051	0.000046	
15-Apr-10	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
22-Apr-10	17	1.2	0.00065	0.95	0.0000012	0.25	0.21	4.9	0.0000064	0.0000025	0.00012	0.0046	0.000049	0.00049	0.000049	
29-Apr-10	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
6-May-10	19	1.1	0.00064	0.88	0.0000051	0.22	0.20	4.7	0.000016	0.0000023	0.00012	0.0044	0.00014	0.00019	0.000047	
13-May-10	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
20-May-10	21	0.88	0.00059	0.69	0.0000011	0.17	0.15	4.4	0.0000066	0.0000022	0.00011	0.0032	0.000044	0.00018	0.000044	
27-May-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
3-Jun-10	23	1.0	0.00060	0.80	0.0000011	0.19	0.17	4.4	0.0000057	0.0000022	0.00011	0.0036	0.00018	0.00022	0.000044	
10-Jun-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
17-Jun-10	25	1.1	0.00069	0.79	0.0000012	0.20	0.17	4.6	0.0000069	0.000014	0.00012	0.0036	0.00014	0.00028	0.000046	
24-Jun-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1-Jul-10	27	0.91	0.00060	0.74	0.0000011	0.15	0.17	4.5	0.0000059	0.0000090	0.00011	0.0038	0.00014	0.000090	0.000045	
8-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
15-Jul-10	29	1.0	0.00076	0.88	0.0000012	0.17	0.19	4.7	0.0000047	0.000033	0.00012	0.0044	0.00019	0.000094	0.000047	
22-Jul-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
29-Jul-10	31	0.95	0.00063	0.86	0.0000028	0.15	0.18	4.7	0.0000051	0.0000023	0.00012	0.0038	0.00014	0.00019	0.000047	
5-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12-Aug-10	33	0.94	0.00061	0.77	0.0000012	0.16	0.18	4.7	0.0000061	0.0000094	0.00012	0.0042	0.00014	0.00042	0.000047	
19-Aug-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
26-Aug-10	35	0.95	0.00058	0.69	0.0000011	0.14	0.17	4.5	0.0000059	0.00010	0.00011	0.0029	0.000045	0.00023	0.000045	
2-Sep-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
9-Sep-10	37	1.0	0.00066	0.81	0.0000012	0.15	0.18	4.6	0.0000060	0.0000092	0.00012	0.0035	0.000046	0.000046	0.000046	
16-Sep-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
23-Sep-10	39	0.93	0.00066	0.82	0.0000012	0.13	0.17	4.7	0.0000070	0.000014	0.00012	0.0033	0.00014	0.00023	0.000047	
30-Sep-10	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
7-Oct-10	41	1.1	0.00062	0.90	0.0000010	0.15	0.20	4.2	0.0000054	0.0000021	0.00010	0.0038	0.000042	0.000042	0.000042	
14-Oct-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
21-Oct-10	43	1.0	0.00061	0.86	0.0000011	0.14	0.20	4.6	0.0000082	0.0000023	0.00011	0.0035	0.000046	0.000091	0.000046	
28-Oct-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
4-Nov-10	45	0.95	0.00059	0.77	0.0000011	0.12	0.18	4.5	0.0000053	0.0000022	0.00011	0.0032	0.000045	0.00018	0.000045	
11-Nov-10	46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
18-Nov-10	47	0.90	0.00057	0.76	0.0000011	0.10	0.19	4.5	0.0000062	0.0000022	0.00011	0.0034	0.000045	0.000045	0.000045	
25-Nov-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
2-Dec-10	49	2.0	21	4.7	0.12	0.0093	0.034	0.015	0.0092	0.0030	0.0000047	0.0000047	0.012	0.0000012
9-Dec-10	50	1.8	19	4.5	--	--	--	--	--	--	--	--	--	--
16-Dec-10	51	2.6	19	7.7	0.11	0.0091	0.034	0.015	0.0098	0.0031	0.0000046	0.0000055	0.011	0.0000011
23-Dec-10	52	2.5	19	5.9	--	--	--	--	--	--	--	--	--	--
30-Dec-10	53	3.3	19	7.4	0.12	0.032	0.039	0.014	0.0097	0.0029	0.0000046	0.0000060	0.012	0.0000032
6-Jan-11	54	3.1	22	6.0	--	--	--	--	--	--	--	--	--	--
13-Jan-11	55	2.2	20	6.5	0.12	0.0093	0.029	0.014	0.0081	0.0031	0.0000047	0.0000037	0.012	0.0000042
20-Jan-11	56	1.9	21	5.6	--	--	--	--	--	--	--	--	--	--
27-Jan-11	57	2.2	17	5.3	--	--	--	--	--	--	--	--	--	--
3-Feb-11	58	1.7	18	6.1	--	--	--	--	--	--	--	--	--	--
10-Feb-11	59	1.7	16	5.1	0.12	0.0046	0.032	0.0100	0.0067	0.0024	0.0000046	0.0000028	0.012	0.0000012
17-Feb-11	60	1.7	18	4.0	--	--	--	--	--	--	--	--	--	--
24-Feb-11	61	2.3	20	8.6	--	--	--	--	--	--	--	--	--	--
3-Mar-11	62	1.9	18	8.3	--	--	--	--	--	--	--	--	--	--
10-Mar-11	63	1.6	18	5.4	0.11	0.0045	0.039	0.0098	0.0071	0.0025	0.0000045	0.0000050	0.011	0.0000011
17-Mar-11	64	1.5	17	6.8	--	--	--	--	--	--	--	--	--	--
24-Mar-11	65	2.8	19	5.8	--	--	--	--	--	--	--	--	--	--
31-Mar-11	66	2.3	17	4.8	--	--	--	--	--	--	--	--	--	--
7-Apr-11	67	2.9	19	5.5	0.11	0.014	0.030	0.011	0.0076	0.0034	0.0000046	0.0000011	0.011	0.0000011
14-Apr-11	68	3.2	20	5.8	--	--	--	--	--	--	--	--	--	--
21-Apr-11	69	1.5	16	6.0	--	--	--	--	--	--	--	--	--	--
28-Apr-11	70	1.6	16	5.6	--	--	--	--	--	--	--	--	--	--
5-May-11	71	1.7	17	6.2	0.11	0.022	0.036	0.0099	0.0069	0.0025	0.0000045	0.0000027	0.011	0.0000031
12-May-11	72	2.3	19	5.6	--	--	--	--	--	--	--	--	--	--
19-May-11	73	--	16	6.6	--	--	--	--	--	--	--	--	--	--
26-May-11	74	2.3	16	4.8	--	--	--	--	--	--	--	--	--	--
2-Jun-11	75	2.9	21	5.2	0.11	0.026	0.026	0.011	0.0079	0.0029	0.0000044	0.0000011	0.011	0.0000044
9-Jun-11	76	2.0	17	4.7	--	--	--	--	--	--	--	--	--	--
16-Jun-11	77	2.1	21	5.3	--	--	--	--	--	--	--	--	--	--
23-Jun-11	78	2.2	19	6.4	--	--	--	--	--	--	--	--	--	--
30-Jun-11	79	2.2	19	7.0	0.12	0.0047	0.036	0.0097	0.0072	0.0032	0.0000047	0.0000012	0.012	0.0000047
7-Jul-11	80	2.5	16	7.1	--	--	--	--	--	--	--	--	--	--
14-Jul-11	81	2.7	15	5.6	--	--	--	--	--	--	--	--	--	--
21-Jul-11	82	2.0	14	6.6	--	--	--	--	--	--	--	--	--	--
28-Jul-11	83	2.5	17	7.2	0.43	0.014	0.032	0.0086	0.0060	0.0025	0.0000048	0.0000043	0.012	0.0000012
4-Aug-11	84	1.9	15	5.7	--	--	--	--	--	--	--	--	--	--
11-Aug-11	85	2.6	17	5.4	--	--	--	--	--	--	--	--	--	--
18-Aug-11	86	1.7	14	5.7	--	--	--	--	--	--	--	--	--	--
25-Aug-11	87	2.7	10	4.0	0.11	0.0044	0.032	0.0042	0.0033	0.0014	0.0000044	0.0000040	0.011	0.0000011
1-Sep-11	88	2.8	12	8.5	--	--	--	--	--	--	--	--	--	--
8-Sep-11	89	2.0	13	8.3	--	--	--	--	--	--	--	--	--	--
15-Sep-11	90	2.0	17	7.1	--	--	--	--	--	--	--	--	--	--
22-Sep-11	91	2.2	13	6.2	0.12	0.0095	0.037	0.0061	0.0046	0.0022	0.0000048	0.0000038	0.012	0.000010

HC 8

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
2-Dec-10	49	8.1	0.000023	0.000011	0.00033	0.0023	0.000021	0.0013	0.41	0.00089	0.0000023	0.00094	0.00016	0.00047
9-Dec-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Dec-10	51	8.2	0.000023	0.000010	0.00071	0.0014	0.000062	0.0013	0.42	0.00070	0.0000023	0.0021	0.00011	0.00046
23-Dec-10	52	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Dec-10	53	7.5	0.000023	0.000010	0.00029	0.0023	0.000029	0.0012	0.39	0.00054	0.0000023	0.0010	0.000083	0.00046
6-Jan-11	54	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Jan-11	55	8.0	0.000023	0.0000088	0.00021	0.0028	0.000047	0.0013	0.40	0.00063	0.0000023	0.00090	0.000033	0.00047
20-Jan-11	56	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Jan-11	57	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Feb-11	58	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Feb-11	59	7.3	0.000023	0.000013	0.00065	0.00092	--	0.00097	0.32	0.0011	0.0000023	0.00081	0.000069	0.00046
17-Feb-11	60	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Feb-11	61	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Mar-11	62	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Mar-11	63	6.9	0.000023	0.0000099	0.00042	0.0018	0.000017	0.00099	0.35	0.00059	0.0000023	0.00081	0.000090	0.00045
17-Mar-11	64	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Mar-11	65	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Mar-11	66	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Apr-11	67	7.6	0.00023	0.0000096	0.00020	0.00091	0.000011	0.0010	0.35	0.00040	0.0000023	0.0012	0.000068	0.00046
14-Apr-11	68	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Apr-11	69	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Apr-11	70	--	--	--	--	--	--	--	--	--	--	--	--	--
5-May-11	71	7.7	0.000022	0.0000053	0.00014	0.0013	0.000015	0.00089	0.30	0.00034	0.0000022	0.00086	0.000031	0.00045
12-May-11	72	--	--	--	--	--	--	--	--	--	--	--	--	--
19-May-11	73	--	--	--	--	--	--	--	--	--	--	--	--	--
26-May-11	74	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Jun-11	75	8.3	0.000022	0.0000035	0.00013	0.00087	0.000030	0.0010	0.34	0.00017	0.0000022	0.00083	0.000048	0.00044
9-Jun-11	76	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Jun-11	77	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Jun-11	78	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Jun-11	79	8.0	0.000023	0.0000084	0.00019	0.0028	0.000016	0.00088	0.30	0.00049	0.0000023	0.00081	0.00010	0.00047
7-Jul-11	80	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jul-11	81	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jul-11	82	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jul-11	83	8.3	0.000024	0.0000072	0.00017	0.0014	0.000022	0.00086	0.26	0.00039	0.0000024	0.00096	0.000029	0.00048
4-Aug-11	84	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Aug-11	85	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Aug-11	86	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Aug-11	87	4.3	0.000022	0.0000092	0.00045	0.0018	0.000018	0.00040	0.14	0.00065	0.0000022	0.00071	0.00010	0.00044
1-Sep-11	88	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Sep-11	89	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Sep-11	90	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Sep-11	91	6.1	0.000024	0.000014	0.0011	0.0019	0.000019	0.00062	0.19	0.00071	0.0000024	0.00071	0.00012	0.00048

HC 8

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

[illegible]

HC 8

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
1-Apr-10	11	1.4	4.2	0.91	--	0.0091	0.017	0.00032	0.013	0.00021	0.0000046	0.0000011	0.011	0.0000011
8-Apr-10	12	1.6	4.3	1.4	--	--	--	--	--	--	--	--	--	--
15-Apr-10	13	1.7	4.8	0.97	0.12	0.019	0.016	0.00036	0.013	0.00016	0.0000049	0.0000012	0.012	0.0000012
22-Apr-10	14	2.1	4.5	1.5	--	--	--	--	--	--	--	--	--	--
29-Apr-10	15	1.1	4.3	2.4	0.12	0.024	0.013	0.00032	0.012	0.00015	0.0000048	0.0000077	0.012	0.0000012
6-May-10	16	2.2	4.6	0.49	--	--	--	--	--	--	--	--	--	--
13-May-10	17	1.6	4.2	0.95	0.12	0.019	0.012	0.00031	0.013	0.00012	0.0000048	0.0000012	0.012	0.0000012
20-May-10	18	1.7	3.6	0.91	--	--	--	--	--	--	--	--	--	--
27-May-10	19	2.2	4.9	0.47	0.12	0.014	0.013	0.00025	0.011	0.00016	0.0000047	0.0000012	0.012	0.0000012
3-Jun-10	20	1.4	4.1	2.0	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	1.8	5.6	0.46	0.12	0.0092	0.021	0.00023	0.014	0.00014	0.0000046	0.0000012	0.012	0.0000012
17-Jun-10	22	1.7	5.3	0.48	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	1.3	5.5	2.4	0.12	0.048	0.016	0.00030	0.016	0.00017	0.0000048	0.0000012	0.012	0.0000012
1-Jul-10	24	1.2	5.0	0.48	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	1.2	4.6	1.9	0.12	0.0096	0.020	0.00026	0.016	0.00016	0.0000048	0.0000034	0.012	0.0000012
15-Jul-10	26	1.7	4.6	0.95	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	1.8	4.9	0.49	0.12	0.0097	0.014	0.00023	0.014	0.00016	0.0000049	0.0000012	0.012	0.0000012
29-Jul-10	28	2.1	4.7	1.6	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	1.1	4.6	1.4	0.12	0.0096	0.012	0.00022	0.015	0.00036	0.0000048	0.0000012	0.012	0.0000012
12-Aug-10	30	2.0	4.8	0.94	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	2.1	4.3	0.46	0.11	0.023	0.017	0.00017	0.011	0.00031	0.0000046	0.0000011	0.011	0.0000011
26-Aug-10	32	1.5	3.9	0.95	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	1.6	4.3	2.3	0.11	0.027	0.012	0.00018	0.011	0.00020	0.0000046	0.0000011	0.011	0.0000011
9-Sep-10	34	2.2	4.3	0.95	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	1.4	3.8	1.4	0.12	0.0047	0.012	0.00017	0.010	0.00023	0.0000047	0.0000012	0.012	0.0000012

HC 9

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
1-Apr-10	11	1.2	0.000023	0.000017	0.00033	0.0046	0.000055	0.00027	0.082	0.00070	0.0000023	0.00024	0.00012	0.00046
8-Apr-10	12	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Apr-10	13	1.4	0.000097	0.000016	0.00031	0.0039	0.000029	0.00024	0.087	0.00066	0.0000024	0.00032	0.00011	0.00049
22-Apr-10	14	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	15	1.3	0.000024	0.000018	0.00012	0.0034	0.0000053	0.00024	0.072	0.00065	0.0000024	0.00032	0.00011	0.00048
6-May-10	16	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	17	1.3	0.000024	0.000012	0.000081	0.0024	0.000013	0.00033	0.076	0.00060	0.0000024	0.00032	0.000076	0.00048
20-May-10	18	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-10	19	1.2	0.000023	0.000023	0.00013	0.0037	0.000088	0.00023	0.065	0.00054	0.0000023	0.00032	0.000065	0.00047
3-Jun-10	20	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	1.2	0.000092	0.000013	0.00012	0.0032	0.0000069	0.00023	0.074	0.00047	0.0000023	0.00035	0.000078	0.00046
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	1.4	0.000024	0.000012	0.00015	0.0034	0.0000029	0.00024	0.086	0.00049	0.0000024	0.00045	0.000086	0.00048
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	1.4	0.000024	0.0000091	0.000067	0.0029	0.0000024	0.00024	0.086	0.00054	0.0000024	0.00038	0.000096	0.00048
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	1.4	0.000024	0.0000078	0.000073	0.0029	0.0000034	0.00024	0.082	0.00040	0.0000024	0.00030	0.000078	0.00049
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	1.4	0.000096	0.000014	0.00022	0.0014	0.0000067	0.00024	0.082	0.00042	0.0000024	0.00025	0.00024	0.00048
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	1.1	0.000023	0.000040	0.00022	0.0055	0.0000032	0.00023	0.064	0.00090	0.0000023	0.00020	0.00020	0.00046
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	1.2	0.000023	0.000013	0.00020	0.0032	0.0000023	0.00023	0.073	0.00051	0.0000023	0.00028	0.00010	0.00046
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	1.1	0.000093	0.000013	0.00011	0.0023	0.0000051	0.00023	0.060	0.00040	0.0000023	0.00018	0.00013	0.00047

HC 9

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K	Se	Si	Ag	Na	Sr	S	Tl	Sn	Ti	U	V	Zn	Zr
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
1-Apr-10	11	0.33	0.000073	0.37	0.000010	0.11	0.0098	0.91	0.0000018	0.0000023	0.00036	0.00071	0.000046	0.00064	0.000046
8-Apr-10	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Apr-10	13	0.34	0.000082	0.38	0.0000029	0.12	0.011	4.9	0.0000019	0.000039	0.00012	0.00084	0.000049	0.00049	0.000049
22-Apr-10	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	15	0.31	0.000082	0.36	0.0000012	0.091	0.010	4.8	0.0000014	0.0000024	0.00012	0.00071	0.000048	0.00024	0.000048
6-May-10	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	17	0.32	0.000081	0.45	0.0000012	0.086	0.0096	4.8	0.0000057	0.0000095	0.00012	0.00068	0.000048	0.00014	0.000048
20-May-10	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-10	19	0.29	0.000070	0.39	0.0000012	0.065	0.0090	4.7	0.0000014	0.0000023	0.00012	0.00055	0.000047	0.000047	0.000047
3-Jun-10	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	0.33	0.00011	0.30	0.0000012	0.083	0.0099	4.6	0.0000023	0.0000023	0.00012	0.00053	0.000046	0.000092	0.000046
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	0.40	0.00014	0.43	0.0000012	0.091	0.012	4.8	0.00000048	0.0000024	0.00012	0.00068	0.000048	0.00019	0.000048
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	0.36	0.00011	0.44	0.0000012	0.091	0.010	4.8	0.0000024	0.0000024	0.00012	0.00061	0.000048	0.000048	0.000048
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	0.34	0.000087	0.38	0.0000012	0.078	0.010	4.9	0.0000019	0.0000024	0.00012	0.00068	0.000049	0.000049	0.000049
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	0.36	0.000077	0.40	0.0000012	0.077	0.0098	4.8	0.0000014	0.0000024	0.00012	0.00074	0.000048	0.00014	0.000048
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.29	0.000077	0.30	0.0000011	0.082	0.0083	4.6	0.0000014	0.0000023	0.00011	0.00044	0.000046	0.000091	0.000046
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	0.30	0.000096	0.35	0.0000011	0.064	0.0085	4.6	0.0000018	0.000018	0.00011	0.00049	0.000046	0.00014	0.000046
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	0.29	0.000060	0.32	0.0000012	0.074	0.0083	4.7	0.00000047	0.0000023	0.00012	0.00039	0.000047	0.000047	0.000047

HC 9

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
5-Aug-10	29	1.1	10	1.9	0.12	0.024	0.036	0.0030	0.00044	0.0020	0.0000048	0.0000033	0.012	0.0000012
12-Aug-10	30	2.1	12	2.4	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	2.5	12	3.6	0.11	0.032	0.049	0.0027	0.00053	0.0023	0.0000046	0.0000068	0.011	0.0000011
26-Aug-10	32	1.3	12	5.1	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	1.8	12	5.6	0.12	0.028	0.045	0.0026	0.00049	0.0020	0.0000047	0.0000051	0.012	0.0000012
9-Sep-10	34	2.1	10	5.8	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	1.3	11	5.9	0.11	0.027	0.042	0.0028	0.00050	0.0024	0.0000045	0.0000027	0.011	0.0000036

HC 10

14-Jan-10	0	2.1	20	2.5	2.1	0.18	0.0087	0.00012	0.0017	0.0093	0.0000036	0.00000090	0.0090	0.0000054
21-Jan-10	1	0.95	20	3.4	0.67	0.20	0.020	0.00013	0.0037	0.0061	0.0000048	0.0000012	0.012	0.000010
28-Jan-10	2	1.5	18	2.4	0.28	0.16	0.021	0.000099	0.0034	0.0049	0.0000047	0.0000012	0.012	0.0000042
4-Feb-10	3	1.2	18	0.48	0.12	0.17	0.019	0.00011	0.0032	0.0053	0.0000048	0.0000012	0.012	0.0000034
11-Feb-10	4	1.2	18	0.96	--	--	--	--	--	--	--	--	--	--
18-Feb-10	5	1.4	22	0.48	0.12	0.20	0.019	0.00012	0.0032	0.0065	0.0000048	0.0000012	0.012	0.0000043
25-Feb-10	6	1.1	18	1.4	--	--	--	--	--	--	--	--	--	--
4-Mar-10	7	0.84	17	0.47	0.12	0.13	0.016	0.000093	0.0027	0.0053	0.0000047	0.0000012	0.012	0.0000047
11-Mar-10	8	1.3	17	0.47	--	--	--	--	--	--	--	--	--	--
18-Mar-10	9	1.3	16	0.48	0.12	0.10	0.019	0.000086	0.0027	0.0048	0.0000048	0.0000012	0.012	0.0000057
25-Mar-10	10	1.4	16	0.48	--	--	--	--	--	--	--	--	--	--
1-Apr-10	11	1.0	15	0.93	0.12	0.093	0.015	0.000093	0.0023	0.0048	0.0000047	0.0000028	0.012	0.0000056
8-Apr-10	12	1.1	17	0.92	--	--	--	--	--	--	--	--	--	--
15-Apr-10	13	1.6	17	0.46	0.12	0.092	0.017	0.00010	0.0030	0.0058	0.0000046	0.0000012	0.012	0.0000037
22-Apr-10	14	1.7	17	0.48	--	--	--	--	--	--	--	--	--	--
29-Apr-10	15	1.1	17	1.4	0.12	0.12	0.015	0.00010	0.0028	0.0053	0.0000048	0.0000012	0.012	0.0000062
6-May-10	16	1.8	17	0.46	--	--	--	--	--	--	--	--	--	--
13-May-10	17	1.4	16	0.94	0.12	0.075	0.015	0.00010	0.0028	0.0054	0.0000047	0.0000012	0.012	0.0000042
20-May-10	18	1.4	15	0.91	--	--	--	--	--	--	--	--	--	--
27-May-10	19	2.3	18	0.48	0.12	0.077	0.013	0.000086	0.0025	0.0054	0.0000048	0.0000012	0.012	0.0000012
3-Jun-10	20	1.1	15	1.9	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	2.0	17	1.4	0.12	0.072	0.013	0.000086	0.0028	0.0052	0.0000048	0.0000012	0.012	0.0000012
17-Jun-10	22	1.6	16	0.48	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	1.0	17	1.4	0.12	0.048	0.021	0.000096	0.0028	0.0059	0.0000048	0.0000012	0.012	0.0000012
1-Jul-10	24	1.0	15	0.47	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	1.0	15	0.47	0.12	0.047	0.013	0.000089	0.0021	0.0049	0.0000047	0.0000012	0.012	0.0000012
15-Jul-10	26	1.7	17	0.98	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	1.6	15	0.48	0.12	0.052	0.013	0.000076	0.0022	0.0051	0.0000048	0.0000012	0.012	0.0000012
29-Jul-10	28	2.0	16	0.99	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	1.1	18	2.6	0.13	0.052	0.016	0.000082	0.0029	0.0054	0.0000052	0.0000013	0.013	0.0000013
12-Aug-10	30	2.0	18	0.98	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	2.1	16	0.47	0.12	0.042	0.016	0.000074	0.0021	0.0046	0.0000047	0.0000012	0.012	0.0000012
26-Aug-10	32	1.2	17	1.8	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	1.5	17	2.4	0.12	0.042	0.013	0.000080	0.0024	0.0056	0.0000047	0.0000012	0.012	0.0000066
9-Sep-10	34	2.2	18	0.47	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	1.3	16	1.4	0.38	0.043	0.013	0.000077	0.0020	0.0055	0.0000048	0.0000012	0.012	0.0000012

HC 11

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
5-Aug-10	29	4.2	0.000024	0.000010	0.00011	0.00095	0.0000052	0.00076	0.36	0.0016	0.0000024	0.000100	0.000100	0.00048
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	5.1	0.000091	0.000010	0.00024	0.0023	0.000014	0.00086	0.44	0.0027	0.0000023	0.00011	0.000086	0.00046
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	4.7	0.000023	0.0000084	0.00032	0.0019	0.0000098	0.00079	0.43	0.0019	0.0000023	0.00016	0.000065	0.00047
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	5.0	0.000090	0.0000099	0.00018	0.00090	0.000015	0.00086	0.45	0.0019	0.0000023	0.00013	0.000090	0.00045

HC 10

14-Jan-10	0	5.6	0.000018	0.000015	0.00026	0.00072	0.0000047	0.0022	2.6	0.00073	0.0000018	0.012	0.00014	0.0018
21-Jan-10	1	3.9	0.000024	0.000012	0.0011	0.0034	0.0000062	0.0019	1.8	0.00075	0.0000024	0.016	0.00016	0.016
28-Jan-10	2	3.4	0.000094	0.0000071	0.00017	0.0033	0.000013	0.0014	1.4	0.00074	0.0000024	0.013	0.00012	0.0019
4-Feb-10	3	3.3	0.000024	0.0000067	0.00015	0.0038	0.0018	0.0014	1.5	0.00072	0.0000024	0.014	0.00016	0.00048
11-Feb-10	4	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-10	5	3.8	0.000024	0.0000091	0.00023	0.0038	0.0000082	0.0015	1.7	0.0011	0.0000024	0.016	0.00011	0.0014
25-Feb-10	6	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Mar-10	7	3.2	0.000023	0.0000033	0.00012	0.0028	0.000038	0.0011	1.3	0.00067	0.0000023	0.011	0.000088	0.00047
11-Mar-10	8	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-10	9	2.8	0.000024	0.0000071	0.00020	0.0062	0.00062	0.00090	1.1	0.00068	0.0000024	0.0091	0.00012	0.00048
25-Mar-10	10	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	11	2.9	0.000023	0.0000070	0.00017	0.0047	0.000097	0.00084	1.1	0.00073	0.0000023	0.0080	0.00014	0.0019
8-Apr-10	12	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Apr-10	13	3.1	0.000092	0.0000037	0.00011	0.0023	0.000012	0.00087	1.3	0.00060	0.0000023	0.0089	0.000097	0.00046
22-Apr-10	14	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	15	3.3	0.000024	0.0000053	0.00013	0.0024	0.0000067	0.00091	1.2	0.00073	0.0000024	0.0081	0.000077	0.00048
6-May-10	16	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	17	3.2	0.000024	0.0000071	0.00019	0.0028	0.000029	0.00094	1.3	0.00082	0.0000024	0.0076	0.000080	0.00047
20-May-10	18	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-10	19	3.4	0.000024	0.0000034	0.000077	0.00096	0.000072	0.00082	1.2	0.00065	0.0000024	0.0073	0.000029	0.00048
3-Jun-10	20	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	2.8	0.000024	0.0000062	0.000082	0.0019	0.000013	0.00077	1.2	0.00059	0.0000024	0.0070	0.000096	0.00048
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	3.0	0.000024	0.0000077	0.00012	--	0.0000096	0.00082	1.2	0.00058	0.0000024	0.0070	0.00013	0.00048
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	2.7	0.000024	0.0000033	0.000066	0.0024	0.0000033	0.00066	1.2	0.00072	0.0000024	0.0054	0.000066	0.00047
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	2.8	0.000024	0.0000052	0.00011	0.0029	0.0000057	0.00067	1.1	0.00060	0.0000024	0.0049	0.000090	0.00048
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	3.3	0.000026	0.0000052	0.00012	0.0021	0.0000052	0.00072	1.3	0.00054	0.0000026	0.0053	0.000088	0.00052
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	2.9	0.000093	0.0000037	0.00013	0.0028	0.000030	0.00056	1.1	0.00047	0.0000023	0.0045	0.000084	0.00047
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	2.8	0.000024	0.0000038	0.00013	0.0019	0.0000033	0.00066	1.2	0.00044	0.0000024	0.0047	0.000066	0.00047
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	3.1	0.000096	0.0000043	0.000058	0.0019	0.0000043	0.00058	1.2	0.00049	0.0000024	0.0040	0.000072	0.00048

HC 11[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K	Se	Si	Ag	Na	Sr	S	Tl	Sn	Ti	U	V	Zn	Zr
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
5-Aug-10	29	0.44	0.00024	0.54	0.0000012	0.12	0.11	4.8	0.0000024	0.0000095	0.00012	0.0087	0.000048	0.000048	0.000048
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.48	0.00031	0.60	0.0000011	0.15	0.14	4.6	0.0000023	0.0000023	0.00011	0.0075	0.00014	0.00018	0.000046
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	0.48	0.00030	0.52	0.0000012	0.13	0.13	4.7	0.0000033	0.000014	0.00012	0.0067	0.000047	0.00014	0.000047
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	0.50	0.00027	0.61	0.0000011	0.13	0.14	4.5	0.0000027	0.0000023	0.00011	0.0069	0.00018	0.00027	0.000045

HC 10

[illegible]

HC 11

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
18-Mar-10	9	1.5	10	2.4	0.12	0.12	0.014	0.0030	0.056	0.00035	0.0000048	0.000012	0.012	0.000020
25-Mar-10	10	1.8	8.7	3.4	--	--	--	--	--	--	--	--	--	--
1-Apr-10	11	1.3	9.6	5.1	0.12	0.098	0.010	0.0029	0.048	0.00024	0.0000047	0.000011	0.012	0.000020
8-Apr-10	12	1.3	9.8	4.2	--	--	--	--	--	--	--	--	--	--
15-Apr-10	13	1.8	12	5.9	0.12	0.16	0.013	0.0042	0.067	0.00026	0.0000049	0.0000069	0.012	0.000024
22-Apr-10	14	2.0	12	3.7	--	--	--	--	--	--	--	--	--	--
29-Apr-10	15	1.2	12	3.4	0.12	0.22	0.013	0.0043	0.071	0.00028	0.0000049	0.000026	0.012	0.000016
6-May-10	16	2.1	12	4.2	--	--	--	--	--	--	--	--	--	--
13-May-10	17	1.5	11	2.8	0.12	0.12	0.013	0.0039	0.067	0.00064	0.0000047	0.0000088	0.012	0.000016
20-May-10	18	1.8	11	2.3	--	--	--	--	--	--	--	--	--	--
27-May-10	19	2.6	13	0.91	0.11	0.12	0.0098	0.0036	0.063	0.00023	0.0000046	0.0000046	0.011	0.000015
3-Jun-10	20	1.4	12	2.4	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	2.0	11	2.3	0.11	0.10	0.012	0.0034	0.063	0.00028	0.0000046	0.000012	0.011	0.000019
17-Jun-10	22	1.7	14	0.92	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	1.2	14	3.2	0.12	0.092	0.011	0.0043	0.077	0.00027	0.0000046	0.0000060	0.012	0.000013
1-Jul-10	24	1.2	12	2.7	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	1.0	9.4	0.89	0.11	0.089	0.012	0.0029	0.057	0.00029	0.0000045	0.000010	0.011	0.000012
15-Jul-10	26	1.9	9.6	1.9	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	1.8	12	1.9	0.12	0.10	0.010	0.0031	0.061	0.00025	0.0000048	0.0000062	0.012	0.000013
29-Jul-10	28	2.0	10	0.92	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	1.1	9.9	0.90	0.11	0.081	0.0100	0.0026	0.052	0.00054	0.0000045	0.0000059	0.011	0.000011
12-Aug-10	30	2.1	11	0.93	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	2.3	10.0	0.87	0.11	0.078	0.013	0.0026	0.050	0.00037	0.0000044	0.000014	0.011	0.000014
26-Aug-10	32	1.3	10	2.3	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	1.5	9.8	2.7	0.11	0.068	0.011	0.0023	0.051	0.00027	0.0000045	0.0000099	0.011	0.000012
9-Sep-10	34	2.1	8.2	1.8	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	1.4	9.7	2.3	0.11	0.072	0.010	0.0024	0.050	0.00024	0.0000045	0.0000050	0.011	0.000013
23-Sep-10	36	1.1	8.2	3.3	--	--	--	--	--	--	--	--	--	--
30-Sep-10	37	1.3	9.7	2.4	0.12	0.11	0.011	0.0025	0.051	0.00028	0.0000047	0.0000056	0.012	0.000012
7-Oct-10	38	1.5	12	3.0	--	--	--	--	--	--	--	--	--	--
14-Oct-10	39	1.8	8.9	3.1	0.31	0.056	0.0088	0.0022	0.044	0.00023	0.0000051	0.0000013	0.013	0.0000097
21-Oct-10	40	1.7	8.3	2.4	--	--	--	--	--	--	--	--	--	--
28-Oct-10	41	1.6	7.9	3.2	0.11	0.041	0.013	0.0019	0.039	0.00030	0.0000045	0.0000095	0.011	0.000010
4-Nov-10	42	1.1	7.4	2.3	--	--	--	--	--	--	--	--	--	--
11-Nov-10	43	1.3	11	0.97	0.12	0.058	0.011	0.0024	0.048	0.00030	0.0000049	0.0000044	0.012	0.000012
18-Nov-10	44	1.4	10	0.90	--	--	--	--	--	--	--	--	--	--
25-Nov-10	45	1.5	10	1.4	0.12	0.051	0.0087	0.0020	0.046	0.00050	0.0000046	0.0000074	0.012	0.000011
2-Dec-10	46	1.7	10	0.95	--	--	--	--	--	--	--	--	--	--
9-Dec-10	47	1.6	10	0.92	0.12	0.055	0.0081	0.0024	0.051	0.00045	0.0000046	0.0000046	0.012	0.0000083
16-Dec-10	48	2.3	9.9	2.3	--	--	--	--	--	--	--	--	--	--
23-Dec-10	49	2.2	8.9	0.96	0.12	0.038	0.011	0.0021	0.045	0.00026	0.0000048	0.0000034	0.012	0.0000077
30-Dec-10	50	2.7	7.8	1.4	--	--	--	--	--	--	--	--	--	--
6-Jan-11	51	2.8	10	1.4	0.12	0.056	0.011	0.0020	0.044	0.00027	0.0000047	0.0000056	0.012	0.0000075
13-Jan-11	52	1.9	9.4	1.4	--	--	--	--	--	--	--	--	--	--
20-Jan-11	53	1.4	10	1.4	--	--	--	--	--	--	--	--	--	--
27-Jan-11	54	2.0	9.6	0.89	--	--	--	--	--	--	--	--	--	--
3-Feb-11	55	1.6	11	3.4	0.12	0.048	0.010	0.0023	0.048	0.00024	0.0000048	0.0000062	0.012	0.000014
10-Feb-11	56	1.5	10	0.93	--	--	--	--	--	--	--	--	--	--
17-Feb-11	57	1.7	11	0.96	--	--	--	--	--	--	--	--	--	--
24-Feb-11	58	2.0	13	3.6	--	--	--	--	--	--	--	--	--	--
3-Mar-11	59	1.8	9.2	3.2	0.11	0.032	0.0083	0.0019	0.042	0.00025	0.0000046	0.0000041	0.011	0.0000086
10-Mar-11	60	1.5	8.2	2.8	--	--	--	--	--	--	--	--	--	--
17-Mar-11	61	1.5	10	2.3	--	--	--	--	--	--	--	--	--	--
24-Mar-11	62	2.2	9.8	2.7	--	--	--	--	--	--	--	--	--	--
31-Mar-11	63	2.0	9.5	1.9	0.12	0.033	0.0087	0.0018	0.038	0.00017	0.0000047	0.0000033	0.012	0.0000079
7-Apr-11	64	2.2	10.0	1.9	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
18-Mar-10	9	4.1	0.000024	0.000026	0.00034	0.0072	0.00010	0.0011	0.41	0.0066	0.0000024	0.0085	0.00012	0.0053
25-Mar-10	10	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	11	3.9	0.000023	0.000022	0.00039	0.0056	0.000090	0.0010	0.38	0.0061	0.0000023	0.0086	0.000084	0.0051
8-Apr-10	12	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Apr-10	13	4.5	0.000098	0.000025	0.00025	0.0049	0.000065	0.0013	0.47	0.0066	0.0000025	0.012	0.00011	0.0074
22-Apr-10	14	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	15	4.4	0.00015	0.000024	0.00021	0.0063	0.00012	0.0013	0.42	0.0057	0.0000024	0.010	0.00011	0.0058
6-May-10	16	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	17	4.4	0.000093	0.000019	0.00022	0.0060	0.000098	0.0012	0.40	0.0067	0.0000023	0.0093	0.000084	0.0070
20-May-10	18	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-10	19	4.1	0.000023	0.000016	0.00018	0.0027	0.000031	0.0011	0.38	0.0051	0.0000023	0.0086	0.000041	0.0059
3-Jun-10	20	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	3.6	0.000091	0.000019	0.00023	0.0046	0.000080	0.0010	0.37	0.0043	0.0000023	0.0078	0.000068	0.0059
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	4.1	0.000023	0.000015	0.00020	0.0046	0.000041	0.0012	0.41	0.0039	0.0000023	0.0100	0.000064	0.0074
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	3.1	0.000022	0.000016	0.00018	0.0058	0.000095	0.00093	0.33	0.0030	0.0000022	0.0066	0.000062	0.0062
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	3.7	0.000024	0.000016	0.00022	0.0038	0.000042	0.0011	0.37	0.0029	0.0000024	0.0079	0.00013	0.0062
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	3.2	0.000023	0.000014	0.00047	0.0054	0.000057	0.00086	0.32	0.0025	0.0000023	0.0066	0.000068	0.0050
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	3.1	0.000022	0.000015	0.00017	0.0096	0.00010	0.00083	0.30	0.0026	0.0000022	0.0068	0.000070	0.0044
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	2.6	0.000090	0.0000099	0.00026	0.0050	0.000068	0.00086	0.29	0.0020	0.0000023	0.0056	0.000090	0.0045
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	3.0	0.000090	0.000011	0.00017	0.0045	0.00014	0.00081	0.30	0.0020	0.0000023	0.0059	0.000081	0.0050
23-Sep-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Sep-10	37	2.6	0.000024	0.000014	0.00026	0.0042	0.000040	0.00085	0.24	0.0016	0.0000024	0.0053	0.000075	0.0047
7-Oct-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Oct-10	39	2.9	0.000026	0.000013	0.00022	0.0026	0.000037	0.00082	0.24	0.0018	0.0000026	0.0045	0.000061	0.0041
21-Oct-10	40	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Oct-10	41	2.5	0.000023	0.000012	0.00017	0.0077	0.00010	0.00068	0.21	0.0017	0.0000023	0.0041	0.000036	0.0041
4-Nov-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Nov-10	43	3.6	0.000024	0.000014	0.00016	0.0073	0.000095	0.00092	0.29	0.0020	0.0000024	0.0059	0.000029	0.0053
18-Nov-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Nov-10	45	3.1	0.000023	0.000012	0.00075	0.0055	0.000057	0.00078	0.27	0.0014	0.0000023	0.0056	0.00015	0.0046
2-Dec-10	46	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Dec-10	47	3.1	0.000023	0.0000069	0.00019	0.0041	0.00018	0.0011	0.28	0.0030	0.0000092	0.0056	0.000069	0.0037
16-Dec-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Dec-10	49	2.4	0.000024	0.000013	0.00013	0.0048	0.000042	0.00072	0.22	0.00076	0.0000024	0.0041	0.000067	0.0034
30-Dec-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Jan-11	51	2.7	0.000024	0.0000085	0.00016	0.0056	0.000061	0.00085	0.23	0.0010	0.0000024	0.0032	0.000085	0.0033
13-Jan-11	52	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Jan-11	53	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Jan-11	54	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Feb-11	55	3.2	0.000024	0.000010	0.00030	0.0048	0.000035	0.00086	0.26	0.00089	0.0000024	0.0047	0.000077	0.0043
10-Feb-11	56	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Feb-11	57	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Feb-11	58	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Mar-11	59	2.6	0.000023	0.0000050	0.00030	0.0050	0.000033	0.00077	0.23	0.00057	0.0000023	0.0037	0.000082	0.0027
10-Mar-11	60	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Mar-11	61	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Mar-11	62	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Mar-11	63	2.5	0.000023	0.0000056	0.00019	0.0033	0.000030	0.00065	0.20	0.00043	0.0000023	0.0040	0.000051	0.0042
7-Apr-11	64	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K	Se	Si	Ag	Na	Sr	S	Tl	Sn	Ti	U	V	Zn	Zr
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
18-Mar-10	9	0.55	0.0027	0.60	0.0000012	0.36	0.048	4.8	0.0000024	0.0000096	0.00012	0.00053	0.000048	0.00048	0.000048
25-Mar-10	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-10	11	0.54	0.0024	0.57	0.0000012	0.31	0.045	1.4	0.0000037	0.000037	0.00012	0.00045	0.000047	0.0012	0.000047
8-Apr-10	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Apr-10	13	0.74	0.0031	0.79	0.0000012	0.35	0.056	4.9	0.0000034	0.000039	0.00012	0.00064	0.000049	0.00044	0.000049
22-Apr-10	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-10	15	0.67	0.0029	0.77	0.0000012	0.28	0.052	4.9	0.0000024	0.0000097	0.00012	0.00060	0.000049	0.00049	0.000049
6-May-10	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-10	17	0.68	0.0025	0.91	0.0000012	0.21	0.046	4.7	0.0000042	0.0000023	0.00012	0.00054	0.000047	0.00051	0.000047
20-May-10	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-10	19	0.65	0.0024	0.76	0.0000011	0.16	0.047	4.6	0.0000027	0.0000023	0.00011	0.00050	0.000046	0.00023	0.000046
3-Jun-10	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jun-10	21	0.66	0.0023	0.71	0.0000032	0.15	0.041	4.6	0.0000064	0.0000023	0.00011	0.00042	0.000046	0.00041	0.000046
17-Jun-10	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jun-10	23	0.75	0.0027	0.84	0.0000012	0.16	0.052	4.6	0.0000023	0.0000023	0.00012	0.00062	0.000046	0.00018	0.000046
1-Jul-10	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Jul-10	25	0.59	0.0019	0.59	0.0000011	0.12	0.037	4.5	0.0000018	0.0000022	0.00011	0.00042	0.000045	0.00031	0.000045
15-Jul-10	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Jul-10	27	0.62	0.0023	0.69	0.0000012	0.11	0.045	4.8	0.0000024	0.0000024	0.00012	0.00060	0.000048	0.00038	0.000048
29-Jul-10	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Aug-10	29	0.57	0.0019	0.59	0.0000011	0.095	0.036	4.5	0.0000023	0.0000023	0.00011	0.00039	0.000045	0.00032	0.000045
12-Aug-10	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Aug-10	31	0.51	0.0019	0.54	0.0000030	0.10	0.037	4.4	0.0000030	0.0000022	0.00011	0.00032	0.000044	0.00044	0.000044
26-Aug-10	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Sep-10	33	0.54	0.0017	0.45	0.0000011	0.090	0.033	4.5	0.0000027	0.000014	0.00011	0.00034	0.000045	0.00032	0.000045
9-Sep-10	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Sep-10	35	0.55	0.0016	0.53	0.0000011	0.086	0.036	4.5	0.0000023	0.0000023	0.00011	0.00038	0.000045	0.00023	0.000045
23-Sep-10	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Sep-10	37	0.51	0.0018	0.47	0.0000012	0.066	0.034	4.7	0.0000019	0.0000024	0.00012	0.00033	0.000047	0.00038	0.000047
7-Oct-10	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Oct-10	39	0.52	0.0015	0.50	0.0000013	0.071	0.033	5.1	0.0000020	0.0000026	0.00013	0.00027	0.000051	0.00020	0.000051
21-Oct-10	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Oct-10	41	0.45	0.0014	0.45	0.0000011	0.054	0.028	4.5	0.0000023	0.0000023	0.00011	0.00025	0.000045	0.00050	0.000045
4-Nov-10	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Nov-10	43	0.50	0.0018	0.63	0.0000012	0.11	0.040	4.9	0.0000015	0.0000024	0.00012	0.00037	0.000049	0.00034	0.000049
18-Nov-10	44	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Nov-10	45	0.52	0.0015	0.48	0.0000012	0.083	0.036	4.6	0.0000018	0.0000092	0.00012	0.00037	0.000046	0.00051	0.000046
2-Dec-10	46	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Dec-10	47	0.54	0.0016	0.52	0.0000012	0.060	0.036	4.6	0.0000014	0.0000023	0.00012	0.00038	0.000046	0.00028	0.000046
16-Dec-10	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Dec-10	49	0.47	0.0014	0.43	0.0000012	0.053	0.030	4.8	0.0000038	0.0000024	0.00012	0.00028	0.000048	0.00029	0.000048
30-Dec-10	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Jan-11	51	0.47	0.0014	0.49	0.0000012	0.061	0.033	4.7	0.0000028	0.0000024	0.00012	0.00029	0.000047	0.00028	0.000047
13-Jan-11	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Jan-11	53	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Jan-11	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Feb-11	55	0.53	0.0015	0.54	0.0000038	0.053	0.035	4.8	0.0000034	0.0000024	0.00012	0.00038	0.000048	0.00034	0.000048
10-Feb-11	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Feb-11	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Feb-11	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Mar-11	59	0.47	0.0012	0.42	0.0000011	0.046	0.031	4.6	0.0000018	0.0000023	0.00011	0.00029	0.000046	0.00036	0.000046
10-Mar-11	60	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Mar-11	61	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Mar-11	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Mar-11	63	0.41	0.0011	0.38	0.0000012	0.051	0.029	4.7	0.0000023	0.0000023	0.00012	0.00028	0.000047	0.00014	0.000047
7-Apr-11	64	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
14-Apr-11	65	2.6	12	1.8	--	--	--	--	--	--	--	--	--	--
21-Apr-11	66	1.4	10	1.8	--	--	--	--	--	--	--	--	--	--
28-Apr-11	67	1.6	10	2.4	0.12	0.048	0.010	0.0020	0.042	0.00024	0.0000048	0.0000043	0.012	0.000014
5-May-11	68	1.6	9.4	1.8	--	--	--	--	--	--	--	--	--	--
12-May-11	69	1.8	10	1.8	--	--	--	--	--	--	--	--	--	--
19-May-11	70	--	7.0	1.9	--	--	--	--	--	--	--	--	--	--
26-May-11	71	2.0	9.1	1.4	0.11	0.032	0.010	0.0025	0.044	0.00027	0.0000045	0.0000027	0.011	0.0000068
2-Jun-11	72	2.4	9.0	1.3	--	--	--	--	--	--	--	--	--	--
9-Jun-11	73	1.6	9.6	1.4	--	--	--	--	--	--	--	--	--	--
16-Jun-11	74	1.7	10	0.92	--	--	--	--	--	--	--	--	--	--
23-Jun-11	75	0.99	7.3	1.8	0.12	0.028	0.013	0.0022	0.040	0.00023	0.0000046	0.0000051	0.012	0.0000060
30-Jun-11	76	2.0	8.2	2.0	--	--	--	--	--	--	--	--	--	--
7-Jul-11	77	1.9	11	1.9	--	--	--	--	--	--	--	--	--	--
14-Jul-11	78	2.4	11	1.4	--	--	--	--	--	--	--	--	--	--
21-Jul-11	79	1.9	8.2	0.97	0.12	0.029	0.010	0.0023	0.044	0.00018	0.0000049	0.0000012	0.012	0.0000063
28-Jul-11	80	2.2	9.9	0.94	--	--	--	--	--	--	--	--	--	--
4-Aug-11	81	1.8	7.3	0.92	--	--	--	--	--	--	--	--	--	--
11-Aug-11	82	2.1	12	0.98	--	--	--	--	--	--	--	--	--	--
18-Aug-11	83	1.3	7.8	0.92	0.37	0.023	0.0096	0.0020	0.036	0.00024	0.0000046	0.0000041	0.012	0.0000012
25-Aug-11	84	2.4	9.7	0.91	--	--	--	--	--	--	--	--	--	--
1-Sep-11	85	2.0	9.0	1.3	--	--	--	--	--	--	--	--	--	--
8-Sep-11	86	1.8	6.9	1.3	--	--	--	--	--	--	--	--	--	--
15-Sep-11	87	1.8	10	0.88	0.11	0.018	0.013	0.0021	0.038	0.00049	0.0000044	0.000012	0.011	0.000010

HC 12

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca	Cr	Co	Cu	Fe	Pb	Li	Mg	Mn	Hg	Mo	Ni	P
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
14-Apr-11	65	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Apr-11	66	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Apr-11	67	2.6	0.000024	0.000018	0.00027	0.0057	0.000040	0.00071	0.22	0.00054	0.0000024	0.0046	0.00013	0.0033
5-May-11	68	--	--	--	--	--	--	--	--	--	--	--	--	--
12-May-11	69	--	--	--	--	--	--	--	--	--	--	--	--	--
19-May-11	70	--	--	--	--	--	--	--	--	--	--	--	--	--
26-May-11	71	3.0	0.000023	0.0000050	0.00013	0.0036	0.000022	0.00081	0.23	0.00035	0.0000023	0.0045	0.0000090	0.0041
2-Jun-11	72	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Jun-11	73	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Jun-11	74	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Jun-11	75	2.5	0.000023	0.0000046	0.00025	0.0078	0.000067	0.00064	0.17	0.00041	0.0000023	0.0036	0.000051	0.0032
30-Jun-11	76	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jul-11	77	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jul-11	78	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jul-11	79	2.7	0.000024	0.0000029	0.000087	0.0034	0.000020	0.00073	0.20	0.00026	0.0000024	0.0036	0.0000097	0.0034
28-Jul-11	80	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Aug-11	81	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Aug-11	82	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Aug-11	83	2.2	0.000023	0.0000055	0.00016	0.0046	0.000036	0.00060	0.15	0.00030	0.0000023	0.0028	0.000041	0.0032
25-Aug-11	84	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Sep-11	85	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Sep-11	86	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Sep-11	87	2.5	0.000088	0.0000088	0.00016	0.0097	0.000068	0.00070	0.18	0.00050	0.0000022	0.0033	0.000031	0.0035

HC 12

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K	Se	Si	Ag	Na	Sr	S	Tl	Sn	Ti	U	V	Zn	Zr
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
14-Apr-11	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Apr-11	66	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Apr-11	67	0.45	0.0013	0.41	0.0000012	0.067	0.030	4.8	0.0000024	0.0000024	0.00012	0.00032	0.000048	0.00052	0.000048
5-May-11	68	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-May-11	69	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-May-11	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26-May-11	71	0.46	0.0014	0.50	0.0000011	0.050	0.033	4.5	0.0000023	0.0000099	0.00011	0.00029	0.000045	0.00018	0.000045
2-Jun-11	72	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-Jun-11	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-Jun-11	74	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-Jun-11	75	0.37	0.0014	0.44	0.0000012	0.046	0.025	4.6	0.0000023	0.0000092	0.00012	0.00024	0.000046	0.00051	0.000046
30-Jun-11	76	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Jul-11	77	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jul-11	78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jul-11	79	0.41	0.0015	0.48	0.0000012	0.034	0.028	4.9	0.0000029	0.000019	0.00012	0.00029	0.000049	0.00024	0.000049
28-Jul-11	80	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Aug-11	81	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Aug-11	82	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Aug-11	83	0.34	0.0011	0.35	0.0000028	0.028	0.024	4.6	0.0000041	0.0000023	0.00012	0.00021	0.000046	0.00051	0.000046
25-Aug-11	84	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Sep-11	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Sep-11	86	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Sep-11	87	0.39	0.0011	0.37	0.0000011	0.057	0.027	4.4	0.0000022	0.0000070	0.00011	0.00025	0.000044	0.00053	0.000044

HC 12

26-Jul-12	0	1.8	0.0048	0.64	0.000034	13	0.44	24	0.0000083	0.000075	0.000094	0.0046	0.00027	0.0010	0.000038
2-Aug-12	1	1.4	0.0042	0.63	0.0000011	9.0	0.35	17	0.0000059	0.000049	0.00011	0.0045	0.000045	0.0012	0.000045
9-Aug-12	2	1.3	0.0022	0.83	0.0000011	6.2	0.26	10	0.0000069	0.000086	0.00011	0.0065	0.000095	0.00015	0.000043
16-Aug-12	3	1.00	0.0011	0.48	--	3.4	0.13	5.3	0.0000040	0.000088	0.00011	0.0033	0.000092	0.0017	0.000044
23-Aug-12	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30-Aug-12	5	0.78	0.00084	0.46	0.0000011	2.3	0.098	4.6	0.0000032	0.000091	0.00011	0.0034	0.00014	0.00019	0.000046
6-Sep-12	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Sep-12	7	0.68	0.00059	0.52	0.0000011	1.5	0.091	4.2	0.0000021	0.000084	0.00026	0.0028	0.000042	0.00089	0.000042
20-Sep-12	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-12	9	0.56	0.00054	0.37	0.0000011	0.91	0.075	4.2	0.0000034	0.000084	0.00011	0.0027	0.00016	0.00061	0.000042
4-Oct-12	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Oct-12	11	0.58	0.00060	0.40	0.0000012	0.61	0.084	4.8	0.0000014	0.000096	0.00012	0.0041	0.000048	0.00017	0.000048
18-Oct-12	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-12	13	0.65	0.00048	0.44	0.0000012	0.58	0.100	4.7	0.0000028	0.00017	0.00012	0.0031	0.000047	0.00026	0.000047
1-Nov-12	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Nov-12	15	0.60	0.00041	0.40	0.0000012	0.35	0.098	2.3	0.0000028	0.00034	0.00012	0.0024	0.00011	0.00020	0.000046
15-Nov-12	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-12	17	1.1	0.00084	0.85	0.0000012	0.52	0.15	2.8	0.0000044	0.00015	0.00012	0.0057	0.000049	0.00024	0.000049
29-Nov-12	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Dec-12	19	0.49	0.00030	0.33	0.0000011	0.14	0.081	1.6	0.0000023	0.00090	0.00011	0.0021	0.000046	--	0.000046
13-Dec-12	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-12	21	0.96	0.00070	0.72	0.0000012	0.25	0.16	3.0	0.0000039	0.000097	0.00012	0.0044	0.000049	0.00044	0.000049
27-Dec-12	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jan-13	23	0.51	0.00033	0.32	0.0000012	0.12	0.090	1.9	0.0000056	0.000093	0.00012	0.0018	0.000047	0.0022	0.000047
10-Jan-13	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-13	25	0.61	0.00056	0.42	0.0000012	0.14	0.11	2.6	0.0000029	0.000095	0.00012	0.0030	0.000048	0.00088	0.000048
24-Jan-13	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Jan-13	27	0.55	0.00046	0.39	0.0000011	0.13	0.11	2.8	0.0000025	0.000088	0.00011	0.0023	0.000042	0.00015	0.000042
7-Feb-13	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Feb-13	29	0.46	0.00033	0.32	0.0000011	0.097	0.085	1.8	0.0000027	0.000089	0.00011	0.0019	0.000045	0.00032	0.000045
21-Feb-13	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
28-Feb-13	31	3.0	9.6	6.4	0.12	0.044	0.021	0.011	0.019	0.0012	0.0000046	0.0000074	0.012	0.0000012
7-Mar-13	32	3.4	11	6.7	--	--	--	--	--	--	--	--	--	--
14-Mar-13	33	2.5	7.0	5.1	0.12	0.038	0.015	0.0099	0.014	0.0012	0.0000046	0.0000037	0.012	0.0000012
21-Mar-13	34	3.1	8.5	6.1	--	--	--	--	--	--	--	--	--	--
28-Mar-13	35	2.1	8.6	6.4	0.12	0.069	0.019	0.016	0.022	0.0017	0.0000049	0.0000044	0.012	0.0000034
4-Apr-13	36	3.3	12	7.0	--	--	--	--	--	--	--	--	--	--
11-Apr-13	37	2.2	11	6.9	0.12	0.074	0.023	0.017	0.026	0.0016	0.0000046	0.0000060	0.012	0.0000046
18-Apr-13	38	2.8	14	5.7	--	--	--	--	--	--	--	--	--	--
25-Apr-13	39	2.0	11	5.5	0.11	0.086	0.020	0.019	0.028	0.0017	0.0000046	0.0000041	0.011	0.0000011
2-May-13	40	2.9	13	5.2	--	--	--	--	--	--	--	--	--	--
9-May-13	41	2.5	12	5.1	0.29	0.069	0.024	0.018	0.027	0.0016	0.0000046	0.0000074	0.012	0.0000032
16-May-13	42	3.5	13	4.6	--	--	--	--	--	--	--	--	--	--
23-May-13	43	2.4	9.8	6.5	0.25	0.051	0.022	0.014	0.020	0.0015	0.0000047	0.0000051	0.012	0.0000033

HC 13

10-Aug-12	0	4.4	45	336	12	0.084	0.0079	0.0057	0.0066	0.031	0.000015	0.0000073	0.073	0.000012
17-Aug-12	1	5.1	35	124	0.60	0.27	0.011	0.028	0.027	0.020	0.0000047	0.0000012	0.028	0.0000074
24-Aug-12	2	3.6	37	95	0.29	0.24	0.019	0.017	0.020	0.017	0.0000043	0.0000011	0.011	0.0000011
31-Aug-12	3	2.7	42	32	0.12	0.24	0.026	0.015	0.020	0.0098	0.0000047	0.0000012	0.012	0.0000051
7-Sep-12	4	2.8	35	40	--	--	--	--	--	--	--	--	--	--
14-Sep-12	5	2.1	30	44	0.11	0.18	0.029	0.012	0.016	0.0084	0.0000042	0.0000011	0.011	0.0000011
21-Sep-12	6	2.4	30	35	--	--	--	--	--	--	--	--	--	--
27-Sep-12	7	2.2	48	30	0.12	0.23	0.019	0.015	0.017	0.0082	0.0000049	0.0000012	0.012	0.0000053
4-Oct-12	8	2.2	30	14	--	--	--	--	--	--	--	--	--	--
11-Oct-12	9	3.1	31	36	0.10	0.16	0.016	0.0093	0.013	0.0079	0.0000041	0.0000010	0.010	0.0000010
18-Oct-12	10	3.2	32	20	--	--	--	--	--	--	--	--	--	--
25-Oct-12	11	1.8	31	25	0.11	0.13	0.023	0.0090	0.013	0.0051	0.0000043	0.0000011	0.011	0.0000047
1-Nov-12	12	3.8	43	26	--	--	--	--	--	--	--	--	--	--
8-Nov-12	13	3.0	41	25	0.12	0.11	0.020	0.0095	0.014	0.0063	0.0000048	0.0000023	0.012	0.0000043
15-Nov-12	14	5.8	41	26	--	--	--	--	--	--	--	--	--	--
22-Nov-12	15	2.7	40	15	0.12	0.099	0.014	0.0091	0.013	0.0053	0.0000050	0.0000012	0.012	0.0000012
29-Nov-12	16	5.7	39	14	--	--	--	--	--	--	--	--	--	--
6-Dec-12	17	2.4	10	2.8	0.12	0.0093	0.14	0.00081	0.0066	0.0012	0.0000047	0.0000012	0.012	0.0000012
13-Dec-12	18	3.8	28	31	--	--	--	--	--	--	--	--	--	--
20-Dec-12	19	1.7	12	6.7	0.12	0.011	0.094	0.0015	0.0066	0.0017	0.0000048	0.0000012	0.012	0.0000072
27-Dec-12	20	3.7	17	20	--	--	--	--	--	--	--	--	--	--
3-Jan-13	21	3.0	27	30	1.8	0.025	0.035	0.0052	0.0084	0.0058	0.0000046	0.0000011	0.011	0.0000041
10-Jan-13	22	3.2	20	19	--	--	--	--	--	--	--	--	--	--
17-Jan-13	23	1.7	18	22	0.26	0.013	0.052	0.0027	0.0056	0.0032	0.0000047	0.0000012	0.012	0.0000012
24-Jan-13	24	2.8	12	12	--	--	--	--	--	--	--	--	--	--
31-Jan-13	25	2.3	18	40	0.12	0.018	0.046	0.0034	0.0063	0.0050	0.0000046	0.0000012	0.012	0.0000012
7-Feb-13	26	3.2	17	29	--	--	--	--	--	--	--	--	--	--
14-Feb-13	27	3.4	18	31	0.22	0.023	0.043	0.0043	0.0063	0.0042	0.0000044	0.0000011	0.011	0.0000070
21-Feb-13	28	2.9	13	17	--	--	--	--	--	--	--	--	--	--
28-Feb-13	29	3.3	16	26	0.30	0.011	0.048	0.0022	0.0042	0.0032	0.0000045	0.0000011	0.011	0.0000011
7-Mar-13	30	4.3	21	37	--	--	--	--	--	--	--	--	--	--
14-Mar-13	31	3.3	14	23	0.12	0.014	0.039	0.0024	0.0036	0.0028	0.0000046	0.0000012	0.012	0.0000012
21-Mar-13	32	4.0	16	29	--	--	--	--	--	--	--	--	--	--
28-Mar-13	33	2.7	16	27	0.11	0.021	0.037	0.0035	0.0043	0.0039	0.0000045	0.0000011	0.011	0.0000011
4-Apr-13	34	3.4	6.3	11	--	--	--	--	--	--	--	--	--	--
11-Apr-13	35	2.8	12	39	0.27	0.017	0.035	0.0024	0.0033	0.0041	0.0000045	0.0000011	0.011	0.0000036
18-Apr-13	36	3.7	12	29	--	--	--	--	--	--	--	--	--	--
25-Apr-13	37	2.6	13	37	0.11	0.018	0.031	0.0026	0.0035	0.0039	0.0000043	0.0000011	0.011	0.0000011
2-May-13	38	3.4	14	29	--	--	--	--	--	--	--	--	--	--
9-May-13	39	3.0	16	40	0.30	0.022	0.038	0.0033	0.0041	0.0038	0.0000045	0.0000011	0.011	0.0000011
16-May-13	40	3.5	11	19	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
28-Feb-13	31	3.9	0.000023	0.0000060	0.00011	0.0011	0.000025	0.00068	0.41	0.00077	0.0000023	0.00072	0.000028	0.0010
7-Mar-13	32	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Mar-13	33	3.5	0.000023	0.0000051	0.000096	0.00078	0.000025	0.00055	0.36	0.00062	0.0000023	0.00079	0.000060	0.00046
21-Mar-13	34	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Mar-13	35	5.5	0.000025	0.0000049	0.00016	0.00059	0.000019	0.00091	0.55	0.00085	0.0000025	0.0017	0.000048	0.00049
4-Apr-13	36	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Apr-13	37	4.4	0.000023	0.0000064	0.00052	0.00069	0.000039	0.00092	0.52	0.00045	0.0000023	0.0019	0.000059	0.00046
18-Apr-13	38	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Apr-13	39	4.6	0.000023	0.000011	0.00016	0.00046	0.000014	0.0010	0.53	0.00023	0.0000023	0.0019	0.000079	0.00046
2-May-13	40	--	--	--	--	--	--	--	--	--	--	--	--	--
9-May-13	41	4.7	0.000023	0.0000041	0.00017	0.0015	0.000046	0.00097	0.58	0.00023	0.0000023	0.0019	0.000052	0.00046
16-May-13	42	--	--	--	--	--	--	--	--	--	--	--	--	--
23-May-13	43	4.2	0.000023	0.0000042	0.00025	0.0015	0.000032	0.00078	0.52	0.00014	0.0000023	0.0016	0.000067	0.00047

HC 13

10-Aug-12	0	118	0.00015	0.0032	0.00076	0.0025	0.0011	0.034	20	0.12	0.000024	0.0012	0.023	0.0029
17-Aug-12	1	42	0.00014	0.00045	0.00053	0.0038	0.0013	0.020	6.8	0.052	0.0000023	0.0030	0.0031	0.00047
24-Aug-12	2	39	0.000022	0.00034	0.00028	0.0013	0.0000039	0.015	6.1	0.049	0.0000022	0.0016	0.0016	0.0012
31-Aug-12	3	21	0.000023	0.00019	--	0.0017	0.000053	0.011	3.5	0.027	0.0000023	0.0011	0.00074	0.00047
7-Sep-12	4	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Sep-12	5	21	0.000055	0.00012	0.00038	0.0020	0.0000067	0.0086	3.3	0.025	0.0000021	0.00066	0.00038	0.00042
21-Sep-12	6	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-12	7	18	0.000024	0.00014	0.00019	0.00078	0.000062	0.010	3.3	0.027	0.0000024	0.00051	0.00043	0.00049
4-Oct-12	8	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Oct-12	9	15	0.000020	0.00010	0.00077	0.0038	0.0000036	0.0072	2.8	0.023	0.0000020	0.00028	0.00037	0.00041
18-Oct-12	10	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-12	11	13	0.000021	0.000087	0.00013	0.0030	0.00014	0.0065	2.4	0.020	0.0000021	0.00020	0.00019	0.00043
1-Nov-12	12	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Nov-12	13	16	0.000024	0.000093	0.00044	0.0013	0.000057	0.0075	2.9	0.024	0.0000024	--	0.00024	0.00048
15-Nov-12	14	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-12	15	13	0.000025	0.000093	0.00023	0.0036	0.000067	0.0070	2.4	0.022	0.0000025	0.00018	0.00027	0.0010
29-Nov-12	16	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Dec-12	17	3.1	0.00011	0.000061	0.00076	0.058	0.000089	0.0018	0.34	0.0039	0.0000023	0.000046	0.00031	0.00047
13-Dec-12	18	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-12	19	4.9	0.000082	0.000057	0.00016	0.035	0.000048	0.0027	0.71	0.0079	0.0000024	0.000041	0.00013	0.00048
27-Dec-12	20	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jan-13	21	17	0.000023	0.000066	0.00013	0.0044	0.0000091	0.0053	2.7	0.023	0.0000023	0.00014	0.00011	0.00046
10-Jan-13	22	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-13	23	9.9	0.000024	0.000050	0.00010	0.0099	0.000013	0.0033	1.6	0.015	0.0000024	0.00012	0.00017	0.00047
24-Jan-13	24	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Jan-13	25	16	0.000023	0.000049	0.00014	0.0025	0.0000028	0.0046	2.5	0.021	0.0000023	0.00013	0.00011	0.00046
7-Feb-13	26	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Feb-13	27	13	0.000022	0.000049	0.00011	0.0049	--	0.0048	2.1	0.017	0.0000022	0.00017	0.000084	0.00044
21-Feb-13	28	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Feb-13	29	10	0.000023	0.000035	0.000083	0.0032	0.0000036	0.0037	1.7	0.015	0.0000023	0.000094	0.000050	0.00045
7-Mar-13	30	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Mar-13	31	9.2	0.000023	0.000035	0.000059	0.0014	0.0000023	0.0034	1.6	0.016	0.0000023	0.000079	0.000059	0.00046
21-Mar-13	32	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Mar-13	33	13	0.000023	0.000050	0.00010	0.0015	0.0000032	0.0047	2.0	0.020	0.0000023	0.000095	0.000071	0.00045
4-Apr-13	34	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Apr-13	35	13	0.000023	0.000059	0.00013	0.00072	0.0000027	0.0040	2.2	0.021	0.0000023	0.000098	0.000082	0.00045
18-Apr-13	36	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Apr-13	37	12	0.000022	0.000061	0.000065	0.00043	0.0000022	0.0039	2.1	0.019	0.0000022	0.000093	0.000078	0.00043
2-May-13	38	--	--	--	--	--	--	--	--	--	--	--	--	--
9-May-13	39	13	0.000023	0.000046	0.000091	0.0033	0.0000030	0.0046	2.2	0.019	0.0000023	0.00011	0.000079	0.00045
16-May-13	40	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K	Se	Si	Ag	Na	Sr	S	Tl	Sn	Ti	U	V	Zn	Zr
		mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk	mg/kg/wk
28-Feb-13	31	0.44	0.00038	0.28	0.0000012	0.086	0.084	1.8	0.0000028	0.00017	0.00012	0.0017	0.00012	0.000051	0.000046
7-Mar-13	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Mar-13	33	0.37	0.00034	0.22	0.0000012	0.072	0.074	1.6	0.0000014	0.000092	0.00012	0.0015	0.00020	0.00011	0.000046
21-Mar-13	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Mar-13	35	0.54	0.00059	0.45	0.0000012	0.11	0.11	2.6	0.0000015	0.000098	0.00012	0.0023	0.000049	0.00016	0.000049
4-Apr-13	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Apr-13	37	0.56	0.00065	0.39	0.0000012	0.100	0.10	1.8	0.0000083	0.000092	0.00054	0.0025	0.00038	--	0.000046
18-Apr-13	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Apr-13	39	0.61	0.00064	0.43	0.0000027	0.093	0.10	1.6	0.0000027	0.000091	0.00011	0.0027	0.000046	0.000068	0.000046
2-May-13	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-May-13	41	0.59	0.00057	0.44	0.0000055	0.080	0.10	1.8	0.0000023	0.000092	0.00012	0.0028	0.000046	0.00015	0.000046
16-May-13	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23-May-13	43	0.47	0.00042	0.33	0.0000051	0.064	0.091	1.5	0.0000023	0.000093	0.00012	0.0024	0.00026	0.00015	0.000047

HC 13

10-Aug-12	0	20	0.0063	1.8	0.000026	10	1.4	133	0.000029	0.00029	0.00073	0.0028	0.00029	0.0024	0.00015
17-Aug-12	1	13	0.0027	2.5	0.0000012	3.0	0.55	45	0.000010	0.00080	0.00012	0.0014	0.00038	0.0017	0.000047
24-Aug-12	2	10	0.0020	2.2	0.0000011	1.6	0.49	36	0.0000069	0.00052	0.00011	0.0011	0.00035	0.00022	0.000043
31-Aug-12	3	7.8	0.0012	2.2	0.0000012	0.85	0.26	16	0.0000047	0.00032	0.00012	0.00065	0.00037	--	0.000047
7-Sep-12	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Sep-12	5	6.0	0.00085	2.1	0.0000011	0.51	0.22	15	0.0000029	0.00021	0.00011	0.00049	0.00045	0.00026	0.000042
21-Sep-12	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Sep-12	7	6.2	0.00071	2.2	0.0000012	0.44	0.22	10	0.0000034	0.0012	0.00012	0.00053	0.00047	0.00040	0.000049
4-Oct-12	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Oct-12	9	4.5	0.00051	1.4	0.0000010	0.29	0.18	12	0.0000028	0.00019	0.00010	0.00037	0.00027	0.00029	0.000041
18-Oct-12	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Oct-12	11	4.1	0.00037	1.5	0.0000011	0.24	0.15	8.1	0.0000047	0.00029	0.00011	0.00026	0.00036	0.00028	0.000043
1-Nov-12	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Nov-12	13	4.9	0.00045	1.9	0.0000012	0.31	0.17	8.8	0.0000034	0.00042	0.00012	0.00036	0.00048	--	0.000048
15-Nov-12	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Nov-12	15	4.1	0.00036	1.8	0.0000012	0.23	0.14	5.1	0.0000025	0.00043	0.00012	0.00023	0.00034	0.00046	0.000050
29-Nov-12	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-Dec-12	17	0.83	0.000074	0.42	0.0000012	0.058	0.021	1.4	0.0000019	0.00048	0.0022	0.000018	0.00027	0.00070	0.000047
13-Dec-12	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-Dec-12	19	1.4	0.00012	0.55	0.0000012	0.080	0.038	2.7	0.0000019	0.000096	0.0015	0.000046	0.00024	0.0011	0.000048
27-Dec-12	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jan-13	21	3.4	0.00024	1.2	0.0000011	0.24	0.15	12	0.0000041	0.00015	0.00025	0.00026	0.00023	0.00045	0.000046
10-Jan-13	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Jan-13	23	2.2	0.00018	0.73	0.0000012	0.16	0.087	7.4	0.0000028	0.000094	0.00031	0.00020	0.00016	0.00017	0.000047
24-Jan-13	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Jan-13	25	2.8	0.00018	0.87	0.0000012	0.23	0.14	13	0.0000032	0.000092	0.00012	0.00022	0.00021	0.00017	0.000046
7-Feb-13	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Feb-13	27	2.8	0.00016	0.87	0.0000011	0.19	0.11	11	0.0000044	0.00011	0.00035	0.00019	0.00017	0.00055	0.000044
21-Feb-13	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Feb-13	29	2.0	0.00017	0.59	0.0000011	0.14	0.088	8.6	0.0000023	0.00023	0.00011	0.00012	0.00021	0.00015	0.000045
7-Mar-13	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Mar-13	31	1.9	0.00023	0.53	0.0000012	0.14	0.079	6.7	0.0000023	0.000092	0.00012	0.00012	0.00030	0.000055	0.000046
21-Mar-13	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Mar-13	33	2.4	0.00023	0.90	0.0000011	0.16	0.11	10	0.0000023	0.000090	0.00011	0.00015	0.00010	0.00014	0.000045
4-Apr-13	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Apr-13	35	2.1	0.00030	0.59	0.0000011	0.15	0.11	12	0.0000045	0.000099	0.00058	0.00011	0.00030	0.00030	0.000045
18-Apr-13	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Apr-13	37	2.0	0.00028	0.61	0.0000011	0.15	0.10	11	0.0000030	0.000086	0.00011	0.00011	0.000043	0.000069	0.000043
2-May-13	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9-May-13	39	2.3	0.00025	0.77	0.0000063	0.17	0.10	11	0.0000027	0.000090	0.00011	0.00012	0.00018	0.000081	0.000045
16-May-13	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Acidity mgCaCO3 /kg/wk	Alkalinity mgCaCO3/ kg/wk	Sulphate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk
23-May-13	41	2.5	6.7	19	0.11	0.0076	0.036	0.00095	0.0019	0.0018	0.0000045	0.0000011	0.011	0.0000011

HC 14

25-Oct-12	0	0.83	20	7.3	1.4	0.18	0.084	0.025	0.021	0.0019	0.0000039	0.0000023	0.0096	0.00000096
1-Nov-12	1	2.4	19	23	0.94	0.24	0.085	0.11	0.035	0.0037	0.0000050	0.0000045	0.012	0.0000012
8-Nov-12	2	1.6	15	18	0.12	0.17	0.069	0.062	0.024	0.0023	0.0000046	0.0000074	0.012	0.0000012
15-Nov-12	3	3.4	19	14	0.30	0.21	0.075	0.090	0.027	0.0021	0.0000042	0.0000029	0.011	0.0000011
22-Nov-12	4	1.7	19	4.5	--	--	--	--	--	--	--	--	--	--
29-Nov-12	5	4.4	19	5.6	0.13	0.14	0.057	0.075	0.015	0.0021	0.0000051	0.0000051	0.013	0.0000013
6-Dec-12	6	2.5	14	6.5	--	--	--	--	--	--	--	--	--	--
13-Dec-12	7	3.1	18	5.8	0.12	0.15	0.067	0.087	0.015	0.0020	0.0000049	0.0000068	0.012	0.0000012
20-Dec-12	8	1.7	15	3.7	--	--	--	--	--	--	--	--	--	--
27-Dec-12	9	3.2	17	5.1	0.25	0.12	0.048	0.075	0.0089	0.0018	0.0000046	0.0000012	0.012	0.0000028
3-Jan-13	10	1.9	14	3.7	--	--	--	--	--	--	--	--	--	--
10-Jan-13	11	2.4	14	5.1	0.33	0.11	0.056	0.063	0.0074	0.0018	0.0000046	0.0000060	0.012	0.0000012
17-Jan-13	12	1.4	16	6.3	--	--	--	--	--	--	--	--	--	--
24-Jan-13	13	2.4	13	5.2	0.28	0.094	0.034	0.054	0.0043	0.0017	0.0000047	0.0000038	0.012	0.0000028
31-Jan-13	14	1.4	11	6.4	--	--	--	--	--	--	--	--	--	--
7-Feb-13	15	2.3	11	5.8	0.11	0.098	0.030	0.043	0.0039	0.0016	0.0000045	0.0000011	0.011	0.0000045
14-Feb-13	16	2.3	11	6.2	--	--	--	--	--	--	--	--	--	--
21-Feb-13	17	2.7	13	5.6	0.27	0.10	0.034	0.048	0.0034	0.0017	0.0000047	0.0000056	0.012	0.0000033
28-Feb-13	18	2.5	12	5.9	--	--	--	--	--	--	--	--	--	--
7-Mar-13	19	3.4	15	5.7	0.12	0.11	0.036	0.054	0.0035	0.0017	0.0000048	0.0000052	0.012	0.0000012
14-Mar-13	20	2.4	13	5.7	--	--	--	--	--	--	--	--	--	--
21-Mar-13	21	2.5	13	4.1	0.12	0.10	0.037	0.044	0.0033	0.0016	0.0000046	0.0000037	0.012	0.0000028
28-Mar-13	22	1.7	14	3.9	--	--	--	--	--	--	--	--	--	--
4-Apr-13	23	3.1	12	3.6	0.11	0.10	0.034	0.038	0.0026	0.0017	0.0000046	0.0000011	0.011	0.0000011
11-Apr-13	24	2.0	11	6.4	--	--	--	--	--	--	--	--	--	--
18-Apr-13	25	2.5	11	4.5	0.28	0.081	0.025	0.030	0.0019	0.0012	0.0000045	0.0000011	0.011	0.0000011
25-Apr-13	26	1.7	9.8	5.8	--	--	--	--	--	--	--	--	--	--
2-May-13	27	2.5	11	4.5	0.25	0.076	0.022	0.028	0.0016	0.0012	0.0000045	0.0000011	0.011	0.0000027
9-May-13	28	2.2	11	4.7	--	--	--	--	--	--	--	--	--	--
16-May-13	29	2.5	10	5.3	0.11	0.076	0.023	0.028	0.0014	0.0013	0.0000045	0.0000011	0.011	0.0000011
23-May-13	30	2.4	9.9	6.2	--	--	--	--	--	--	--	--	--	--
30-May-13	31	4.0	12	6.3	0.11	0.084	0.025	0.028	0.0016	0.0013	0.0000042	0.0000011	0.011	0.0000011
6-Jun-13	32	2.7	11	6.7	--	--	--	--	--	--	--	--	--	--
13-Jun-13	33	4.5	13	7.3	0.11	0.086	0.029	0.030	0.0017	0.0017	0.0000046	0.0000032	0.011	0.0000055
20-Jun-13	34	2.8	11	5.5	--	--	--	--	--	--	--	--	--	--
27-Jun-13	35	1.8	10	5.7	0.27	0.074	0.029	0.025	0.0015	0.0014	0.0000044	0.0000030	0.011	0.0000026
4-Jul-13	36	1.7	11	5.8	--	--	--	--	--	--	--	--	--	--
11-Jul-13	37	3.1	10	5.0	0.11	0.059	0.025	0.020	0.0011	0.0012	0.0000045	0.0000036	0.011	0.0000027
18-Jul-13	38	1.8	8.3	4.2	--	--	--	--	--	--	--	--	--	--
25-Jul-13	39	3.1	11	5.2	0.39	0.073	0.031	0.023	0.0015	0.0014	0.0000043	0.0000034	0.011	0.0000011
1-Aug-13	40	4.5	15	5.3	--	--	--	--	--	--	--	--	--	--

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk
23-May-13	41	6.3	0.000022	0.000028	0.000057	0.0022	0.000049	0.0021	1.0	0.011	0.000022	0.000037	0.00011	0.00045

HC 14

[illegible]

Appendix A.1b: HCT humidity cell raw data - loads

Date	Cycle	K mg/kg/wk	Se mg/kg/wk	Si mg/kg/wk	Ag mg/kg/wk	Na mg/kg/wk	Sr mg/kg/wk	S mg/kg/wk	Tl mg/kg/wk	Sn mg/kg/wk	Ti mg/kg/wk	U mg/kg/wk	V mg/kg/wk	Zn mg/kg/wk	Zr mg/kg/wk
23-May-13	41	1.1	0.000094	0.28	0.0000011	0.075	0.050	5.5	0.0000022	0.000089	0.00011	0.000031	0.00016	0.000098	0.000045

HC 14

25-Oct-12	0	1.6	0.0012	0.45	0.00000096	7.5	0.12	4.2	0.0000042	0.000077	0.000096	0.0040	0.00020	0.000039	0.000039
1-Nov-12	1	1.4	0.0024	0.71	0.0000012	10.0	0.21	7.8	0.0000054	0.013	0.00012	0.018	0.00024	0.00013	0.000050
8-Nov-12	2	1.2	0.0014	0.41	0.0000012	7.3	0.20	6.3	0.0000037	0.0096	0.00012	0.014	0.00022	0.00020	0.000046
15-Nov-12	3	1.2	0.0018	0.63	0.0000011	6.3	0.17	4.0	0.0000034	0.00064	0.00011	0.016	0.00026	0.00088	0.000042
22-Nov-12	4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Nov-12	5	1.1	0.0011	0.44	0.0000013	2.8	0.18	2.1	0.0000025	0.00014	0.00036	0.015	0.000051	0.00015	0.000051
6-Dec-12	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Dec-12	7	1.0	0.0013	0.45	0.0000012	1.8	0.19	2.0	0.0000039	0.00032	0.00012	0.012	0.00015	0.00013	0.000049
20-Dec-12	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Dec-12	9	0.77	0.0012	0.34	0.0000012	1.0	0.18	1.9	0.0000028	0.00028	0.00012	0.0090	0.000046	0.00017	0.000046
3-Jan-13	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Jan-13	11	0.72	0.00093	0.30	0.0000012	0.76	0.19	1.8	0.0000032	0.00051	0.00012	0.0083	0.000046	0.00052	0.000046
17-Jan-13	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Jan-13	13	0.61	0.00088	0.25	0.0000012	0.50	0.17	2.0	0.0000019	0.00097	0.00012	0.0077	0.000047	0.000080	0.000047
31-Jan-13	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Feb-13	15	0.58	0.00068	0.23	0.0000011	0.41	0.17	2.5	0.0000018	0.0011	0.00011	0.0063	0.000045	0.00012	0.000045
14-Feb-13	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Feb-13	17	0.63	0.00073	0.25	0.0000012	0.34	0.17	1.7	0.0000019	0.0012	0.00012	0.0070	0.00013	0.00022	0.000047
28-Feb-13	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7-Mar-13	19	0.65	0.00074	0.25	0.0000012	0.27	0.18	1.8	0.000010	0.0016	0.00012	0.0074	0.00027	0.00012	0.000048
14-Mar-13	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Mar-13	21	0.54	0.00065	0.21	0.0000012	0.22	0.17	1.7	0.0000051	0.00065	0.00012	0.0054	0.00012	0.00010	0.000046
28-Mar-13	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Apr-13	23	0.56	0.00064	0.26	0.0000011	0.18	0.17	2.2	0.0000014	0.00010	0.00011	0.0054	0.000046	0.000068	0.000046
11-Apr-13	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Apr-13	25	0.44	0.00041	0.17	0.0000036	0.14	0.13	1.6	0.0000077	0.000090	0.00011	0.0040	0.000045	0.00010	0.000045
25-Apr-13	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-May-13	27	0.39	0.00034	0.16	0.0000011	0.13	0.14	1.6	0.00000045	0.00032	0.00011	0.0040	0.00032	0.00021	0.000045
9-May-13	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--
16-May-13	29	0.41	0.00035	0.15	0.0000011	0.12	0.15	1.8	0.0000022	0.000089	0.00011	0.0043	0.000045	0.000045	0.000045
23-May-13	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30-May-13	31	0.48	0.00045	0.19	0.0000034	0.12	0.15	2.0	0.0000071	0.000084	0.00011	0.0043	0.000042	0.000059	0.000042
6-Jun-13	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-Jun-13	33	0.47	0.00053	0.21	0.0000011	0.12	0.17	2.5	0.0000023	0.000096	0.00011	0.0048	0.00013	0.00044	0.000046
20-Jun-13	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-Jun-13	35	0.43	0.00064	0.20	0.0000011	0.098	0.15	2.3	0.0000013	0.000087	0.00011	0.0038	0.000044	0.00013	0.000044
4-Jul-13	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Jul-13	37	0.34	0.00048	0.15	0.0000011	0.083	0.12	2.0	0.00000045	0.00011	0.00011	0.0030	0.000045	0.00010	0.000045
18-Jul-13	38	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Jul-13	39	0.43	0.00056	0.19	0.0000011	0.094	0.14	1.8	0.0000022	0.00012	0.00011	0.0033	0.00012	0.00020	0.000043
1-Aug-13	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.2a: DGK humidity cell raw data - concentrations

Date	Cycle	Days	Volume (L)	pH	Conductivity (uS/cm)	Alkalinity (mg/L)	Sulphate (mg/L)	Al (mg/L)	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	B (mg/L)	Cd (mg/L)	Ca (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)
DGK 1																				
24-Sep-96	0	0	0.318	7.89	181	38.1	44.7	0.2	0.0095	0.0047	0.02	0.005	0.1	0.1	0.0043	21.3	0.01	0.01	0.01	0.03
1-Oct-96	1	7	0.466	7.67	584	46.1	237	0.2	0.185	0.0262	0.05	0.005	0.1	0.1	0.0013	71	0.01	0.01	0.01	0.03
8-Oct-96	2	14	0.462	7.77	160	31.5	34.9	0.2	0.0146	0.0109	0.01	0.005	0.1	0.1	0.0002	17.1	0.01	0.01	0.01	0.03
15-Oct-96	3	21	0.457	7.8	116	28.1	23.5	0.2	0.0118	0.006	0.01	0.005	0.1	0.1	0.0002	13.8	0.01	0.01	0.01	0.03
22-Oct-96	4	28	0.458	7.73	87.5	24.6	17.6	0.2	0.0094	0.0113	0.01	0.005	0.1	0.1	0.0002	11.4	0.01	0.01	0.01	0.03
29-Oct-96	5	35	0.437			20.7	13.4	0.2	0.0079	0.0109	0.01	0.005	0.1	0.1	0.0002	9.27	0.01	0.01	0.01	0.03
5-Nov-96	6	42	0.456			22.9	12.9	0.2	0.008	0.0095	0.01	0.005	0.1	0.1	0.0002	9.81	0.01	0.01	0.01	0.03
12-Nov-96	7	49	0.458			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	56	0.439	7.31	61	16.6	9.8	0.2	0.0075	0.0072	0.01	0.005	0.1	0.1	0.0034	7.41	0.01	0.01	0.01	0.03
26-Nov-96	9	63				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	70				15.8	17.6	0.2	0.0074	0.006	0.01	0.005	0.1	0.1	0.0002	9.23	0.01	0.01	0.01	0.03
10-Dec-96	11	77				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	84				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	91	0.425	7.5	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	98	0.428	7.1	47	12.9	7.7	0.2	0.0049	0.0061	0.01	0.005	0.1	0.1	0.0002	5.9	0.01	0.01	0.01	0.03
7-Jan-97	15	105	0.418	6.9	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	112	0.415	6.9	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	119	0.447	6.7	58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	126	0.433	7.49	51.1	13.5	9.4	0.2	0.0052	0.03	0.01	0.005	0.1	0.1	0.0002	6.96	0.01	0.01	0.01	0.03
4-Feb-97	19	133	0.444	6.9	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	140	0.446	7	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	147	0.441			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	154	0.473			14.4	10	0.2	0.0081	0.0064	0.01	0.005	0.1	0.1	0.0002	7.43	0.01	0.01	0.01	0.03
4-Mar-97	23	161	0.447			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	168	0.432	6.8	37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	175				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	182				11.3	6.9	0.2	0.0068	0.005	0.01	--	0.1	--	0.0002	5.3	0.01	0.01	0.01	0.03

D GK 2

[illegible]

Appendix A.2a: DGK humidity cell raw data - concentrations

[illegible]

D GK 2

[illegible]

Appendix A.2a: DGK humidity cell raw data - concentrations

Date	Cycle	Days	Volume (L)	pH	Conductivity (uS/cm)	Alkalinity (mg/L)	Sulphate (mg/L)	Al (mg/L)	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	B (mg/L)	Cd (mg/L)	Ca (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)
28-Jan-97	18	126	0.5	7.82	80.9	30.5	8.8	0.2	0.123	0.0155	0.01	0.005	0.1	0.1	0.0002	10.9	0.01	0.01	0.01	0.03
4-Feb-97	19	133	0.462	7.5	69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	140	0.426	7.7	63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	147	0.434			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	154	0.391			19.9	5.8	0.2	0.0425	0.0127	0.01	0.005	0.1	0.1	0.0002	7.13	0.01	0.01	0.01	0.03
4-Mar-97	23	161	0.473			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	168	0.393	7.6	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	175				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	182				21.1	8.4	0.2	0.0584	0.01	0.01	--	0.1	--	0.0002	8	0.01	0.01	0.01	0.03

DGK 3

24-Sep-96	0	0	0.37	7.91	170	41.4	33	0.2	0.0066	0.0376	0.02	0.005	0.1	0.1	0.0015	20.3	0.01	0.01	0.01	0.03
1-Oct-96	1	7	0.47	7.68	240	37.6	62.4	0.2	0.0133	0.0735	0.02	0.005	0.1	0.1	0.0016	29.6	0.01	0.01	0.01	0.03
8-Oct-96	2	14	0.467	8.02	110	28.7	19.7	0.2	0.0113	0.0563	0.01	0.005	0.1	0.1	0.0002	12.7	0.01	0.01	0.01	0.03
15-Oct-96	3	21	0.464	7.79	90.9	22.7	13.9	0.2	0.007	0.0392	0.01	0.005	0.1	0.1	0.0002	10	0.01	0.01	0.01	0.03
22-Oct-96	4	28	0.457	8.02	75	25.7	11.1	0.2	0.0081	0.0654	0.01	0.005	0.1	0.1	0.0002	10.1	0.01	0.01	0.01	0.03
29-Oct-96	5	35	0.412			23	8.4	0.2	0.0066	0.0555	0.01	0.005	0.1	0.1	0.0002	8.42	0.01	0.01	0.01	0.03
5-Nov-96	6	42	0.455			20.6	12.9	0.2	0.0039	0.0389	0.01	0.005	0.1	0.1	0.0002	9.67	0.01	0.01	0.01	0.03
12-Nov-96	7	49	0.46			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	56	0.446	7.41	55	21.3	7.5	0.2	0.0043	0.0343	0.01	0.005	0.1	0.1	0.0002	7.17	0.01	0.01	0.01	0.03
26-Nov-96	9	63				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	70				18.5	9.4	0.2	0.0044	0.0389	0.01	0.005	0.1	0.1	0.0002	7.81	0.01	0.01	0.01	0.03
10-Dec-96	11	77				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	84				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	91	0.435	7.9	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	98	0.451	7.38	49	16.2	6	0.2	0.0037	0.0317	0.01	0.005	0.1	0.1	0.0002	6.58	0.01	0.01	0.01	0.03
7-Jan-97	15	105	0.461	7.5	53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	112	0.469	7.6	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	119	0.484	7.3	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	126	0.478	7.68	53.7	18.5	5.9	0.2	0.0061	0.0345	0.01	0.005	0.1	0.1	0.0002	7.17	0.01	0.01	0.01	0.03
4-Feb-97	19	133	0.476	7.4	54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	140	0.473	7.6	51	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	147	0.462			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	154	0.47			16.4	5.2	0.2	0.0043	0.0279	0.01	0.005	0.1	0.1	0.0002	6.17	0.01	0.01	0.01	0.03
4-Mar-97	23	161	0.435			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	168	0.478	7.4	42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	175				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	182				13.9	6.9	0.2	0.0029	0.025	0.01	--	0.1	--	0.0002	6.1	0.01	0.01	0.01	0.03

D GK 4

[illegible]

Appendix A.2a: DGK humidity cell raw data - concentrations

Date	Cycle	Pb (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Hg (mg/L)	Mo (mg/L)	Ni (mg/L)	P (mg/L)	K (mg/L)	Se (mg/L)	Si (mg/L)	Ag (mg/L)	Na (mg/L)	Sr (mg/L)	Tl (mg/L)	Sn (mg/L)	Ti (mg/L)	V (mg/L)	Zn (mg/L)
28-Jan-97	18	0.001	0.01	1.54	0.012	0.00005	0.03	0.02	0.3	2	0.2	1.36	0.01	2	0.642	0.1	0.3	0.01	0.03	0.005
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	0.001	0.01	1.03	0.008	0.00005	0.03	0.02	0.3	2	0.2	0.91	0.01	2	0.402	0.1	0.3	0.01	0.03	0.005
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.001	--	1.2	0.01	0.00005	0.03	0.02	0.3	2	0.2	0.95	0.01	2	0.46	0.1	0.3	--	--	0.005

DGK 3

24-Sep-96	0	0.001	0.01	1.8	0.018	0.00005	0.03	0.02	0.3	4	0.2	1.7	0.01	8	0.284	0.1	0.03	0.01	0.03	0.005
1-Oct-96	1	0.001	0.01	2.97	0.04	0.00005	0.03	0.02	0.3	4	0.2	2.87	0.01	9	0.426	0.1	0.3	0.01	0.03	0.007
8-Oct-96	2	0.001	0.01	1.21	0.014	0.00005	0.03	0.02	0.3	3	0.2	1.74	0.01	3	0.168	0.1	0.2	0.01	0.03	0.005
15-Oct-96	3	0.001	0.01	0.97	0.01	0.00005	0.03	0.02	0.3	3	0.2	1.44	0.01	2	0.144	0.1	0.3	0.01	0.03	0.005
22-Oct-96	4	0.001	0.01	0.95	0.009	0.00005	0.03	0.02	0.3	2	0.2	1.76	0.01	2	0.141	0.1	0.3	0.01	0.03	0.005
29-Oct-96	5	0.001	0.01	0.79	0.007	0.00005	0.03	0.02	0.3	2	0.2	1.54	0.01	2	0.118	0.1	0.3	0.01	0.03	0.005
5-Nov-96	6	0.001	0.01	0.85	0.008	0.00005	0.03	0.02	0.3	2	0.2	1.18	0.01	2	0.129	0.1	0.3	0.01	0.03	0.005
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	0.001	0.01	0.62	0.005	0.00005	0.03	0.02	0.3	2	0.2	0.98	0.01	2	0.097	0.1	0.3	0.01	0.03	0.005
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	0.001	0.01	0.7	0.005	0.00005	0.03	0.02	0.3	2	0.2	1.17	0.01	2	0.103	0.1	0.3	0.01	0.03	0.005
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	0.001	0.01	0.57	0.005	0.00005	0.03	0.02	0.3	2	0.2	0.87	0.01	2	0.085	0.1	0.3	0.01	0.03	0.005
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	0.001	0.01	0.61	0.005	0.00005	0.03	0.02	0.3	2	0.2	1.11	0.01	2	0.093	0.1	0.3	0.01	0.03	0.005
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	0.001	0.01	0.5	0.005	0.00005	0.03	0.02	0.3	2	0.2	0.89	0.01	2	0.077	0.1	0.3	0.01	0.03	0.005
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.001	--	0.5	0.005	0.00005	0.03	0.02	0.3	2	0.2	0.83	0.01	2	0.6	0.1	0.3	--	--	0.005

D GK 4

[illegible]

Appendix A.2a: DGK humidity cell raw data - concentrations

Date	Cycle	Days	Volume (L)	pH	Conductivity (uS/cm)	Alkalinity (mg/L)	Sulphate (mg/L)	Al (mg/L)	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	B (mg/L)	Cd (mg/L)	Ca (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)
19-Nov-96	8	56	0.445	7.47	84	23.1	14.5	0.2	0.101	0.021	0.01	0.005	0.1	0.1	0.0002	8.77	0.01	0.01	0.01	0.03
26-Nov-96	9	63				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	70				15.2	15.6	0.2	0.0751	0.0104	0.01	0.005	0.1	0.1	0.0002	6.98	0.01	0.01	0.01	0.03
10-Dec-96	11	77				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	84				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	91	0.423	7.9	56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	98	0.411	7.39	57	15.1	9.8	0.2	0.0563	0.0118	0.01	0.005	0.1	0.1	0.0002	6.29	0.01	0.01	0.01	0.03
7-Jan-97	15	105	0.434	7.5	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	112	0.404	7.9	43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	119	0.467	7.3	64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	126	0.456	7.51	69.5	17.1	14.3	0.2	0.0851	0.0101	0.01	0.005	0.1	0.1	0.0002	7.5	0.01	0.01	0.01	0.03
4-Feb-97	19	133	0.463	7.5	81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	140	0.458	7.6	74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	147	0.443			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	154	0.493			24.3	11.2	0.2	0.0855	0.0077	0.01	0.005	0.1	0.1	0.0002	8.35	0.01	0.01	0.01	0.03
4-Mar-97	23	161	0.434			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	168	0.441	7.5	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	175				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	182				17.3	10.3	0.2	0.0582	0.006	0.01	--	0.1	--	0.0002	6.6	0.01	0.01	0.01	0.03

DGK 5

24-Sep-96	0	0	0.337	7.98	302	44.5	84.9	0.2	0.126	0.0562	0.03	0.005	0.1	0.1	0.0018	20.4	0.01	0.01	0.01	0.03
1-Oct-96	1	7	0.463	8	865	98.9	315	0.2	0.527	0.0819	0.05	0.005	0.1	0.1	0.0003	61.4	0.01	0.01	0.01	0.03
8-Oct-96	2	14	0.472	8.19	194	59.8	39.3	0.2	0.275	0.0788	0.02	0.005	0.1	0.1	0.0002	13.4	0.01	0.01	0.01	0.03
15-Oct-96	3	21	0.459	8.08	148	45.4	25.6	0.2	0.228	0.0519	0.02	0.005	0.1	0.1	0.0002	12.2	0.01	0.01	0.01	0.03
22-Oct-96	4	28	0.448	8.2	255	30.3	18.5	0.2	0.175	0.0485	0.02	0.005	0.1	0.1	0.0002	10.3	0.01	0.01	0.01	0.03
29-Oct-96	5	35	0.431			25.7	12.7	0.2	0.0989	0.0296	0.01	0.005	0.1	0.1	0.0002	9.08	0.01	0.01	0.01	0.03
5-Nov-96	6	42	0.436			24.6	13.2	0.2	0.0834	0.0304	0.01	0.005	0.1	0.1	0.0002	8.08	0.01	0.01	0.01	0.03
12-Nov-96	7	49	0.465			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	56	0.459	7.51	82	22.7	13.4	0.2	0.106	0.0173	0.01	0.005	0.1	0.1	0.0002	9.05	0.01	0.01	0.01	0.03
26-Nov-96	9	63				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	70				23.9	13.8	0.2	0.112	0.0211	0.01	0.005	0.1	0.1	0.0002	8.47	0.01	0.01	0.01	0.03
10-Dec-96	11	77				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	84				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	91	0.471	7.7	63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	98	0.487	7.67	66	22.1	8.3	0.2	0.0833	0.0087	0.01	0.005	0.1	0.1	0.0002	7.77	0.01	0.01	0.01	0.03
7-Jan-97	15	105	0.484	7.5	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	112	0.475	7.7	67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	119	0.481	7.5	67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	126	0.451	7.66	65.5	20	9.8	0.2	0.0742	0.0108	0.01	0.005	0.1	0.1	0.0002	7.35	0.01	0.01	0.01	0.03
4-Feb-97	19	133	0.451	7.6	70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	140	0.472	7.6	74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	147	0.45			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	154	0.455			21.6	13.1	0.2	0.0875	0.0075	0.01	0.005	0.1	0.1	0.0002	8.27	0.01	0.01	0.01	0.03
4-Mar-97	23	161	0.445			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	168	0.45	7.6	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	175				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	182				19.7	10.2	0.2	0.0593	0.005	0.01	--	0.1	0.1	0.0002	7.2	0.01	0.01	0.01	0.03

Appendix A.2a: DGK humidity cell raw data - concentrations

Date	Cycle	Pb (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Hg (mg/L)	Mo (mg/L)	Ni (mg/L)	P (mg/L)	K (mg/L)	Se (mg/L)	Si (mg/L)	Ag (mg/L)	Na (mg/L)	Sr (mg/L)	Tl (mg/L)	Sn (mg/L)	Ti (mg/L)	V (mg/L)	Zn (mg/L)
19-Nov-96	8	0.001	0.01	2.16	0.01	0.00005	0.03	0.02	0.3	2	0.2	0.65	0.01	2	0.521	0.1	0.3	0.01	0.03	0.005
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	0.001	0.01	1.71	0.008	0.00005	0.03	0.02	0.3	2	0.2	0.35	0.01	2	0.4	0.1	0.3	0.01	0.03	0.005
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	0.001	0.01	1.59	0.009	0.00005	0.03	0.02	0.3	2	0.2	0.4	0.01	2	0.357	0.1	0.3	0.01	0.03	0.005
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	0.001	0.01	2.11	0.009	0.00005	0.03	0.02	0.3	2	0.2	0.39	0.01	2	0.431	0.1	0.3	0.01	0.03	0.005
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	0.001	0.01	2.48	0.008	0.00005	0.03	0.02	0.3	2	0.2	0.38	0.01	2	0.447	0.1	0.3	0.01	0.03	0.005
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.001	--	2	0.01	0.00005	0.03	0.02	0.3	2	0.2	0.31	0.01	2	0.36	0.1	0.3	--	--	0.005

DGK 5

24-Sep-96	0	0.001	0.02	3.64	0.021	0.00005	0.03	0.02	0.3	6	0.2	0.92	0.01	35	1.15	0.1	0.03	0.01	0.03	0.005
1-Oct-96	1	0.001	0.04	13.4	0.078	0.00005	0.04	0.02	0.3	12	0.2	3.15	0.01	98	3.8	0.1	0.3	0.01	0.03	0.018
8-Oct-96	2	0.001	0.01	2.9	0.013	0.00005	0.03	0.02	0.3	4	0.2	1.64	0.01	17	0.774	0.1	0.03	0.01	0.03	0.008
15-Oct-96	3	0.001	0.01	2.79	0.013	0.00005	0.03	0.02	0.3	4	0.2	1.28	0.01	9	0.74	0.1	0.3	0.01	0.03	0.006
22-Oct-96	4	0.001	0.01	2.37	0.011	0.00005	0.03	0.02	0.3	3	0.2	1	0.01	5	0.628	0.1	0.3	0.01	0.03	0.005
29-Oct-96	5	0.001	0.01	2.06	0.02	0.00005	0.03	0.02	0.3	3	0.2	0.82	0.01	3	0.509	0.1	0.3	0.01	0.03	0.005
5-Nov-96	6	0.001	0.01	2.01	0.008	0.00005	0.03	0.02	0.3	2	0.2	0.64	0.01	2	0.501	0.1	0.3	0.01	0.03	0.005
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	0.001	0.01	2.2	0.012	0.00005	0.03	0.02	0.3	2	0.2	0.66	0.01	2	0.531	0.1	0.3	0.01	0.03	0.005
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	0.001	0.01	2.22	0.008	0.00005	0.03	0.02	0.3	2	0.2	0.57	0.01	2	0.505	0.1	0.3	0.01	0.03	0.005
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	0.001	0.01	1.94	0.013	0.00005	0.03	0.02	0.3	2	0.2	0.39	0.01	2	0.417	0.1	0.3	0.01	0.03	0.006
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	0.001	0.01	2.02	0.008	0.00005	0.03	0.02	0.3	2	0.2	0.4	0.01	2	0.422	0.1	0.3	0.01	0.03	0.005
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	0.001	0.01	2.41	0.01	0.00005	0.03	0.02	0.3	2	0.2	0.44	0.01	2	0.448	0.1	0.3	0.01	0.03	0.005
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.001	--	2.4	0.01	0.00005	0.03	0.02	0.3	2	0.2	0.32	0.01	2	0.39	0.1	0.3	--	--	0.005

Appendix A.2a: DGK humidity cell raw data - concentrations

Date	Cycle	Days	Volume (L)	pH	Conductivity (uS/cm)	Alkalinity (mg/L)	Sulphate (mg/L)	Al (mg/L)	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	B (mg/L)	Cd (mg/L)	Ca (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)
------	-------	------	------------	----	----------------------	-------------------	-----------------	-----------	-----------	-----------	-----------	-----------	-----------	----------	-----------	-----------	-----------	-----------	-----------	-----------

DGK 6

24-Sep-96	0	0	1.198	7.8	420	64	119	0.2	0.184	0.0696	0.03	0.005	0.1	0.1	0.0005	28.7	0.01	0.01	0.01	0.04
1-Oct-96	1	7	0.784	8.09	478	69.5	149	0.2	0.287	0.111	0.03	0.005	0.1	0.1	0.0012	32	0.01	0.01	0.01	0.03
8-Oct-96	2	14	0.445	8	413	86.3	111	0.2	0.494	0.0981	0.04	0.005	0.1	0.1	0.0002	27.3	0.01	0.01	0.01	0.03
15-Oct-96	3	21	0.439	8.01	339	79.5	83.2	0.2	0.413	0.0672	0.03	0.005	0.1	0.1	0.0002	22.6	0.01	0.01	0.01	0.03
22-Oct-96	4	28	0.472	8.18	256	68.7	64	0.2	0.43	0.0734	0.03	0.005	0.1	0.1	0.0002	22.5	0.01	0.01	0.01	0.03
29-Oct-96	5	35	0.468			62.4	56.6	0.2	0.412	0.0644	0.03	0.005	0.1	0.1	0.0002	23.6	0.01	0.01	0.01	0.03
5-Nov-96	6	42	0.452			73	50.2	0.2	0.426	0.0525	0.03	0.005	0.1	0.1	0.0002	26.7	0.01	0.01	0.01	0.03
12-Nov-96	7	49	0.47			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	56	0.42	7.6	199	47.2	41.4	0.2	0.344	0.0418	0.03	0.005	0.1	0.1	0.0002	20.8	0.01	0.01	0.01	0.03
26-Nov-96	9	63				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	70				44.2	47.6	0.2	0.278	0.0392	0.02	0.005	0.1	0.1	0.0002	19.2	0.01	0.01	0.01	0.03
10-Dec-96	11	77				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	84				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	91	0.4	7.4	145	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	98	0.461	7.91	175	50.1	35	0.2	0.342	0.0314	0.02	0.005	0.1	0.1	0.0002	19.7	0.01	0.01	0.01	0.03
7-Jan-97	15	105	0.421	7.6	152	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	112	0.436	7.7	158	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	119	0.453	7.5	159	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	126	0.449	7.88	174	48.3	35.1	0.2	0.269	0.0246	0.02	0.005	0.1	0.1	0.0002	19.9	0.01	0.01	0.01	0.03
4-Feb-97	19	133	0.414	7.7	181	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	140	0.399	7.6	178	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	147	0.43			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	154	0.473			54.1	30.6	0.2	0.253	0.0175	0.02	0.005	0.1	0.1	0.0002	18.9	0.01	0.01	0.01	0.03
4-Mar-97	23	161	0.516			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	168	0.511	7.6	159	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	175				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	182				53.7	34.6	0.2	--	0.013	0.02	--	0.1	--	0.0002	19.4	0.01	0.01	0.01	0.03

DGK 7

24-Sep-96	0	0	5.6	8.26	564	70.8	160	0.2	0.188	0.0713	0.04	0.005	0.1	0.1	0.001	42.4	0.01	0.01	0.02	0.03
1-Oct-96	1	7	0.594	8.01	1180	144	429	0.2	0.559	0.062	0.1	0.005	0.1	0.1	0.0004	90.2	0.01	0.01	0.01	0.03
8-Oct-96	2	14	0.609	8.06	1060	143	400	0.2	0.569	0.053	0.1	0.005	0.1	0.1	0.0003	88	0.01	0.01	0.01	0.03
15-Oct-96	3	21	0.614	8.05	932	124	365	0.2	0.494	0.0417	0.08	0.005	0.1	0.1	0.0002	73	0.01	0.01	0.01	0.03
22-Oct-96	4	28	0.586	8.21	819	111	334	0.2	0.643	0.0524	0.07	0.005	0.1	0.1	0.0002	73.4	0.01	0.01	0.01	0.03
29-Oct-96	5	35	0.029			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Nov-96	6	42	0.04			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-96	7	49	0.007			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	56	0.022	7.75	1320	109	649	0.2	0.685	0.0409	0.09	0.005	0.1	0.1	0.0002	104	0.01	0.01	0.02	0.03
26-Nov-96	9	63				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	70				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-96	11	77				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	84				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	91	0.669	7.64	1680	76.3	866	0.2	0.515	0.0273	0.06	0.005	0.1	0.1	0.0005	190	0.01	0.01	0.01	0.03
31-Dec-96	14	98	0.858	7.92	1070	73.3	494	0.2	0.518	0.0258	0.04	0.005	0.1	0.1	0.0002	112	0.01	0.01	0.01	0.03
7-Jan-97	15	105	0.883	7.6	685	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	112	0.877	7.92	552	82.3	184	0.2	0.595	0.0289	0.04	0.005	0.1	0.1	0.0002	53.6	0.01	0.01	0.01	0.03

Appendix A.2a: DGK humidity cell raw data - concentrations

Date	Cycle	Pb (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Hg (mg/L)	Mo (mg/L)	Ni (mg/L)	P (mg/L)	K (mg/L)	Se (mg/L)	Si (mg/L)	Ag (mg/L)	Na (mg/L)	Sr (mg/L)	Tl (mg/L)	Sn (mg/L)	Ti (mg/L)	V (mg/L)	Zn (mg/L)
------	-------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	-------------	-------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	--------------	-------------	--------------

DGK 6

24-Sep-96	0	0.001	0.02	5.4	0.022	0.00005	0.03	0.02	0.3	7	0.2	1.28	0.01	50	1.71	0.1	0.03	0.01	0.03	0.005
1-Oct-96	1	0.001	0.03	6.9	0.033	0.00005	0.03	0.02	0.3	6	0.2	2.31	0.01	54	2	0.1	0.3	0.01	0.03	0.007
8-Oct-96	2	0.001	0.03	6.03	0.028	0.00005	0.03	0.02	0.3	8	0.2	2.61	0.01	48	1.63	0.1	0.2	0.01	0.03	0.01
15-Oct-96	3	0.001	0.02	5.38	0.024	0.00005	0.03	0.02	0.3	8	0.2	2.18	0.01	30	1.44	0.1	0.3	0.01	0.03	0.009
22-Oct-96	4	0.001	0.02	5.26	0.024	0.00005	0.03	0.02	0.3	6	0.2	2.13	0.01	20	1.41	0.1	0.3	0.01	0.03	0.009
29-Oct-96	5	0.001	0.02	5.71	0.024	0.00005	0.03	0.02	0.3	7	0.2	2.02	0.01	14	1.46	0.1	0.3	0.01	0.03	0.006
5-Nov-96	6	0.001	0.02	6.5	0.025	0.00005	0.03	0.02	0.3	6	0.2	2.02	0.01	10	1.65	0.1	0.3	0.01	0.03	0.045
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	0.001	0.01	5.3	0.018	0.00005	0.03	0.02	0.3	5	0.2	1.45	0.01	5	1.29	0.1	0.3	0.01	0.03	0.01
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	0.001	0.01	5.23	0.016	0.00005	0.03	0.02	0.3	5	0.2	1.19	0.01	3	1.21	0.1	0.3	0.01	0.03	0.006
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	0.001	0.01	5.59	0.012	0.00005	0.03	0.02	0.3	4	0.2	1.14	0.01	2	1.22	0.1	0.3	0.01	0.03	0.005
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	0.001	0.01	5.81	0.013	0.00005	0.03	0.02	0.3	4	0.2	1.07	0.01	2	1.22	0.1	0.3	0.01	0.03	0.005
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	0.001	0.01	5.82	0.011	0.00005	0.03	0.02	0.3	3	0.2	0.97	0.01	2	1.07	0.1	0.3	0.01	0.03	0.01
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.001	--	6.6	0.01	0.00005	0.03	0.02	0.3	3	0.2	0.9	0.01	2	1.13	0.1	0.3	--	--	0.01

DGK 7

24-Sep-96	0	0.001	0.03	7.91	0.038	0.00005	0.03	0.02	0.3	8	0.2	1.38	0.01	61	2.47	0.1	0.03	0.01	0.03	0.006
1-Oct-96	1	0.001	0.06	19.6	0.106	0.00005	0.09	0.02	0.3	14	0.2	3.75	0.01	136	5.66	0.1	0.3	0.01	0.03	0.012
8-Oct-96	2	0.001	0.06	19.2	0.099	0.00005	0.09	0.02	0.3	13	0.2	3.74	0.01	114	5.24	0.1	0.2	0.01	0.03	0.01
15-Oct-96	3	0.001	0.06	16.7	0.085	0.00005	0.07	0.02	0.3	13	0.2	3.25	0.01	92	4.62	0.1	0.3	0.01	0.03	0.007
22-Oct-96	4	0.001	0.05	17.1	0.071	0.00005	0.07	0.02	0.3	14	0.2	3.32	0.01	87	4.69	0.1	0.3	0.01	0.03	0.006
29-Oct-96	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Nov-96	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	0.001	0.07	29.3	0.066	0.00005	0.08	0.02	0.3	16	0.2	3.05	0.01	116	6.87	0.1	0.3	0.01	0.03	0.045
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	0.001	0.07	48.3	0.15	0.00005	0.06	0.02	0.3	20	0.2	2.31	0.01	110	11.4	0.1	0.3	0.01	0.03	0.009
31-Dec-96	14	0.001	0.05	28.6	0.101	0.00005	0.04	0.02	0.3	15	0.2	2.03	0.01	64	6.78	0.1	0.3	0.01	0.03	0.014
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	0.001	0.03	14.1	0.044	0.00005	0.03	0.02	0.3	10	0.2	2.14	0.01	30	3.49	0.1	0.3	0.01	0.03	0.005

Appendix A.2a: DGK humidity cell raw data - concentrations

Date	Cycle	Days	Volume (L)	pH	Conductivity (uS/cm)	Alkalinity (mg/L)	Sulphate (mg/L)	Al (mg/L)	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Bi (mg/L)	B (mg/L)	Cd (mg/L)	Ca (mg/L)	Cr (mg/L)	Co (mg/L)	Cu (mg/L)	Fe (mg/L)
21-Jan-97	17	119	0.629	7.7	420	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	126	0.586	7.7	419	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-97	19	133	0.618	7.7	490	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	140	0.699	7.6	448	88	134	0.2	0.683	0.02	0.04	--	0.1	--	0.0002	49	0.01	0.01	0.01	0.03
18-Feb-97	21	147	0.06			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	154	0.017			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Mar-97	23	161	0.014			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	168	0.04	7.7	646	84	266	0.2	0.694	0.022	0.07	--	0.1	--	0.0002	70.1	0.01	0.01	0.01	0.03
18-Mar-97	25	175				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	182				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-97	27	189				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-97	28	196				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Apr-97	29	203				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-97	30	210				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-97	31	217				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-May-97	32	224		8.16	559	98.5	179	0.2	0.446	0.0132	0.04	0.005	0.1	0.1	0.0002	60	0.01	0.01	0.01	0.03
13-May-97	33	231				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-May-97	34	238				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-97	35	245				--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-97	36	252		8.09	456	97.8	140	0.2	0.4	0.0115	0.04	0.005	0.1	0.1	0.0002	49.4	0.01	0.01	0.01	0.03

Appendix A.2a: DGK humidity cell raw data - concentrations

Date	Cycle	Pb (mg/L)	Li (mg/L)	Mg (mg/L)	Mn (mg/L)	Hg (mg/L)	Mo (mg/L)	Ni (mg/L)	P (mg/L)	K (mg/L)	Se (mg/L)	Si (mg/L)	Ag (mg/L)	Na (mg/L)	Sr (mg/L)	Tl (mg/L)	Sn (mg/L)	Ti (mg/L)	V (mg/L)	Zn (mg/L)
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	0.001	--	13.8	0.04	0.00005	0.03	0.02	0.3	11	0.2	2.03	0.01	17	3.1	0.1	0.3	--	--	0.007
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	0.001	--	21.6	0.01	0.00005	0.04	0.02	0.3	12	0.2	2.16	0.01	20	4.56	0.1	0.3	--	--	0.025
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-97	27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-97	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Apr-97	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-97	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-97	31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-May-97	32	0.001	0.04	20.2	0.024	0.00005	0.03	0.02	0.3	10	0.2	1.63	0.01	10	3.81	0.1	0.3	0.01	0.03	0.007
13-May-97	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-May-97	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-97	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-97	36	0.001	0.03	18.7	0.017	0.00005	0.03	0.02	0.3	10	0.2	1.59	0.01	6	3.17	0.1	0.3	0.01	0.03	0.006

Appendix A.2b: DGK humidity cell raw data - loads

[illegible]

DGK 2																		
24-Sep-96	0	12	41	0.069	0.026	0.0024	0.010	0.0017	0.035	0.035	0.00031	14	0.0035	0.0035	0.0035	0.010	0.00035	0.0069
1-Oct-96	1	18	34	0.092	0.0061	0.0077	0.0092	0.0023	0.046	0.046	0.00018	14	0.0046	0.0046	0.0046	0.014	0.00046	0.0092
8-Oct-96	2	22	29	0.093	0.092	0.013	0.0093	0.0023	0.046	0.046	0.000093	12	0.0046	0.0046	0.0046	0.014	0.00046	0.0093
15-Oct-96	3	21	18	0.097	0.10	0.0092	0.0097	0.0024	0.049	0.049	0.000097	9.1	0.0049	0.0049	0.0049	0.015	0.00049	0.0049
22-Oct-96	4	16	10	0.091	0.061	0.012	0.0045	0.0023	0.045	0.045	0.000091	6.9	0.0045	0.0045	0.0045	0.014	0.00045	0.0045
29-Oct-96	5	14	6.2	0.089	0.066	0.011	0.0044	0.0022	0.044	0.044	0.000089	5.2	0.0044	0.0044	0.0044	0.013	0.00044	0.0044
5-Nov-96	6	17	6.4	0.092	0.054	0.011	0.0046	0.0023	0.046	0.046	0.000092	5.8	0.0046	0.0046	0.0046	0.014	0.00046	0.0046
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	15	5.8	0.091	0.061	0.011	0.0046	0.0023	0.046	0.046	0.000091	5.7	0.0046	0.0046	0.0046	0.014	0.00046	0.0046
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	12	4.2	0.088	0.050	0.0079	0.0044	0.0022	0.044	0.044	0.000088	4.1	0.0044	0.0044	0.0044	0.013	0.00044	0.0044
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	13	3.5	0.095	0.046	0.0071	0.0048	0.0024	0.048	0.048	0.000095	4.6	0.0048	0.0048	0.0048	0.014	0.00048	0.0048
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	15	4.4	0.100	0.061	0.0077	0.0050	0.0025	0.050	0.050	0.000100	5.4	0.0050	0.0050	0.0050	0.015	0.00050	0.0050
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	7.7	2.3	0.078	0.017	0.0049	0.0039	0.0019	0.039	0.039	0.000078	2.8	0.0039	0.0039	0.0039	0.012	0.00039	0.0039
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	9.5	3.8	0.090	0.026	0.0045	0.0045	--	0.045	--	0.000090	3.6	0.0045	0.0045	0.0045	0.014	0.00045	--

[illegible]

Appendix A.2b: DGK humidity cell raw data - loads

Date	Cycle	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk	K mg/kg/wk	Se mg/kg/wk	Si mg/kg/wk	Ag mg/kg/wk	Na mg/kg/wk	Sr mg/kg/wk	Tl mg/kg/wk	Sn mg/kg/wk	Ti mg/kg/wk	V mg/kg/wk	Zn mg/kg/wk
DGK 1																		
24-Sep-96	0	0.83	0.014	0.000016	0.0096	0.0064	0.096	1.9	0.064	0.41	0.0032	2.2	0.13	0.032	0.0096	0.0032	0.0096	0.0016
1-Oct-96	1	5.5	0.069	0.000023	0.014	0.0094	0.094	3.7	0.094	1.4	0.0047	11	1.3	0.047	0.14	1.047	0.014	0.010
8-Oct-96	2	1.1	0.022	0.000023	0.014	0.0093	0.14	2.3	0.093	0.83	0.0046	1.4	0.15	0.046	0.093	0.0046	0.014	0.0023
15-Oct-96	3	0.86	0.017	0.000023	0.014	0.0092	0.14	1.8	0.092	0.75	0.0046	0.92	0.12	0.046	0.14	0.0046	0.014	0.0023
22-Oct-96	4	0.69	0.012	0.000023	0.014	0.0092	0.14	1.4	0.092	0.69	0.0046	0.92	0.10	0.046	0.14	0.0046	0.014	0.0032
29-Oct-96	5	0.51	0.0092	0.000022	0.013	0.0088	0.13	1.3	0.088	0.47	0.0044	0.88	0.076	0.044	0.13	0.0044	0.013	0.0022
5-Nov-96	6	0.60	0.0092	0.000023	0.014	0.0092	0.14	1.4	0.092	0.54	0.0046	0.92	0.078	0.046	0.14	0.0046	0.014	0.0046
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	0.41	0.0057	0.000022	0.013	0.0088	0.13	1.3	0.088	0.40	0.0044	0.88	0.061	0.044	0.13	0.0044	0.013	0.0022
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	0.46	0.0064	0.000021	0.013	0.0086	0.13	0.86	0.086	0.36	0.0043	0.86	0.070	0.043	0.13	0.0043	0.013	0.0026
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	0.31	0.0026	0.000021	0.013	0.0086	0.13	0.86	0.086	0.27	0.0043	0.86	0.045	0.043	0.13	0.0043	0.013	0.0021
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	0.35	0.0039	0.000022	0.013	0.0087	0.13	0.87	0.087	0.33	0.0043	0.87	0.053	0.043	0.13	0.0043	0.013	0.0030
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	0.36	0.0033	0.000024	0.014	0.0095	0.14	0.95	0.095	0.36	0.0047	0.95	0.057	0.047	0.14	0.0047	0.014	0.0024
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.27	0.0022	0.000022	0.013	0.0089	0.13	0.89	0.089	0.28	0.0045	0.89	0.040	0.045	0.13	--	--	0.0022

DGK 2

24-Sep-96	0	2.1	0.016	0.000017	0.010	0.0069	0.10	2.1	0.069	0.39	0.0035	5.9	0.56	0.035	0.010	0.0035	0.010	0.0017
1-Oct-96	1	2.1	0.043	0.000023	0.014	0.0092	0.14	3.2	0.092	1.1	0.0046	3.7	0.28	0.046	0.14	0.0046	0.014	0.0060
8-Oct-96	2	1.9	0.023	0.000023	0.014	0.0093	0.14	2.3	0.093	1.1	0.0046	2.8	0.57	0.046	0.093	0.0046	0.014	0.0028
15-Oct-96	3	1.4	0.018	0.000024	0.015	0.0097	0.15	2.4	0.097	1.1	0.0049	1.5	0.53	0.049	0.15	0.0049	0.015	0.0029
22-Oct-96	4	1.0	0.012	0.000023	0.014	0.0091	0.14	1.4	0.091	0.94	0.0045	0.91	0.39	0.045	0.14	0.0045	0.014	0.0023
29-Oct-96	5	0.82	0.0093	0.000022	0.013	0.0089	0.13	1.3	0.089	0.74	0.0044	0.89	0.31	0.044	0.13	0.0044	0.013	0.0022
5-Nov-96	6	0.93	0.0087	0.000023	0.014	0.0092	0.14	1.4	0.092	0.79	0.0046	0.92	0.35	0.046	0.14	0.0046	0.014	0.0037
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	0.90	0.0078	0.000023	0.014	0.0091	0.14	1.4	0.091	0.85	0.0046	0.91	0.35	0.046	0.14	0.0046	0.014	0.0027
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	0.66	0.0057	0.000022	0.013	0.0088	0.13	0.88	0.088	0.56	0.0044	0.88	0.26	0.044	0.13	0.0044	0.013	0.0022
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	0.70	0.0057	0.000024	0.014	0.0095	0.14	0.95	0.095	0.56	0.0048	0.95	0.28	0.048	0.14	0.0048	0.014	0.0024
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	0.77	0.0060	0.000025	0.015	0.0100	0.15	1.00	0.100	0.68	0.0050	1.00	0.32	0.050	0.15	0.0050	0.015	0.0025
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	0.40	0.0031	0.000019	0.012	0.0078	0.12	0.78	0.078	0.35	0.0039	0.78	0.16	0.039	0.12	0.0039	0.012	0.0019
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.54	0.0045	0.000023	0.014	0.0090	0.14	0.90	0.090	0.43	0.0045	0.90	0.21	0.045	0.14	--	--	0.0023

D GK 3

[illegible]

Appendix A.2b: DGK humidity cell raw data - loads

Date	Cycle	Alkalinity mg/kg/wk	Sulphate mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	7.3	2.7	0.090	0.0017	0.014	0.0045	0.0023	0.045	0.045	0.000090	3.0	0.0045	0.0045	0.0045	0.014	0.00045	0.0045
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	8.8	2.8	0.096	0.0029	0.016	0.0048	0.0024	0.048	0.048	0.000096	3.4	0.0048	0.0048	0.0048	0.014	0.00048	0.0048
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	7.7	2.4	0.094	0.0020	0.013	0.0047	0.0024	0.047	0.047	0.000094	2.9	0.0047	0.0047	0.0047	0.014	0.00047	0.0047
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	6.2	3.1	0.090	0.0013	0.011	0.0045	--	0.045	--	0.000090	2.7	0.0045	0.0045	0.0045	0.013	0.00045	--

DGK 4

24-Sep-96	0	22	42	0.100	0.062	0.027	0.015	0.0025	0.050	0.050	0.0012	11	0.0050	0.0050	0.0050	0.015	0.00050	0.0100
1-Oct-96	1	32	79	0.093	0.14	0.061	0.019	0.0023	0.046	0.046	0.00037	16	0.0046	0.0046	0.0046	0.014	0.00046	0.014
8-Oct-96	2	27	18	0.093	0.13	0.038	0.0093	0.0023	0.046	0.046	0.000093	5.7	0.0046	0.0046	0.0046	0.014	0.00046	0.0046
15-Oct-96	3	20	11	0.093	0.13	0.021	0.0093	0.0023	0.046	0.046	0.000093	5.3	0.0046	0.0046	0.0046	0.014	0.00046	0.0046
22-Oct-96	4	11	7.2	0.090	0.047	0.015	0.0045	0.0022	0.045	0.045	0.000090	3.8	0.0045	0.0045	0.0045	0.013	0.00045	0.0045
29-Oct-96	5	8.3	4.5	0.082	0.029	0.0063	0.0041	0.0020	0.041	0.041	0.000082	3.2	0.0041	0.0041	0.0041	0.012	0.00041	0.0041
5-Nov-96	6	10	7.3	0.088	0.036	0.0089	0.0044	0.0022	0.044	0.044	0.000088	4.0	0.0044	0.0044	0.0044	0.013	0.00044	0.0044
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	10	6.4	0.089	0.045	0.0093	0.0044	0.0022	0.044	0.044	0.000089	3.9	0.0044	0.0044	0.0044	0.013	0.00044	0.0044
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	6.8	7.0	0.090	0.034	0.0047	0.0045	0.0022	0.045	0.045	0.000090	3.1	0.0045	0.0045	0.0045	0.013	0.00045	0.0045
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	6.2	4.0	0.082	0.023	0.0048	0.0041	0.0020	0.041	0.041	0.000082	2.6	0.0041	0.0041	0.0041	0.012	0.00041	0.0041
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	7.8	6.5	0.091	0.039	0.0046	0.0045	0.0023	0.045	0.045	0.000091	3.4	0.0045	0.0045	0.0045	0.014	0.00045	0.0045
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	12	5.5	0.098	0.042	0.0038	0.0049	0.0025	0.049	0.049	0.000098	4.1	0.0049	0.0049	0.0049	0.015	0.00049	0.0049
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	7.8	4.7	0.091	0.026	0.0027	0.0045	--	0.045	--	0.000091	3.0	0.0045	0.0045	0.0045	0.014	0.00045	--

D GK 5

[illegible]

Appendix A.2b: DGK humidity cell raw data - loads

Date	Cycle	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk	K mg/kg/wk	Se mg/kg/wk	Si mg/kg/wk	Ag mg/kg/wk	Na mg/kg/wk	Sr mg/kg/wk	Tl mg/kg/wk	Sn mg/kg/wk	Ti mg/kg/wk	V mg/kg/wk	Zn mg/kg/wk
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	0.26	0.0023	0.000023	0.014	0.0090	0.14	0.90	0.090	0.39	0.0045	0.90	0.038	0.045	0.14	0.0045	0.014	0.0023
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	0.29	0.0024	0.000024	0.014	0.0096	0.14	0.96	0.096	0.53	0.0048	0.96	0.044	0.048	0.14	0.0048	0.014	0.0024
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	0.24	0.0024	0.000024	0.014	0.0094	0.14	0.94	0.094	0.42	0.0047	0.94	0.036	0.047	0.14	0.0047	0.014	0.0024
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.22	0.0022	0.000022	0.013	0.0090	0.13	0.90	0.090	0.37	0.0045	0.90	0.27	0.045	0.13	--	--	0.0022

DGK 4

24-Sep-96	0	1.9	0.010	0.000025	0.015	0.0100	0.15	3.0	0.100	0.47	0.0050	17	0.61	0.050	0.015	0.0050	0.015	0.0025
1-Oct-96	1	3.4	0.016	0.000023	0.014	0.0093	0.14	3.3	0.093	1.1	0.0046	27	0.98	0.046	0.14	0.0046	0.014	0.0028
8-Oct-96	2	1.3	0.0060	0.000023	0.014	0.0093	0.14	1.9	0.093	0.73	0.0046	7.9	0.33	0.046	0.093	0.0046	0.014	0.0028
15-Oct-96	3	1.2	0.0056	0.000023	0.014	0.0093	0.14	1.4	0.093	0.54	0.0046	3.7	0.32	0.046	0.14	0.0046	0.014	0.0023
22-Oct-96	4	0.84	0.0036	0.000022	0.013	0.0090	0.13	0.90	0.090	0.32	0.0045	1.8	0.23	0.045	0.13	0.0045	0.013	0.0022
29-Oct-96	5	0.63	0.010	0.000020	0.012	0.0082	0.12	0.82	0.082	0.24	0.0041	1.2	0.16	0.041	0.12	0.0041	0.012	0.0020
5-Nov-96	6	0.93	0.0044	0.000022	0.013	0.0088	0.13	0.88	0.088	0.29	0.0044	1.3	0.24	0.044	0.13	0.0044	0.013	0.0026
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	0.96	0.0044	0.000022	0.013	0.0089	0.13	0.89	0.089	0.29	0.0044	0.89	0.23	0.044	0.13	0.0044	0.013	0.0022
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	0.77	0.0036	0.000022	0.013	0.0090	0.13	0.90	0.090	0.16	0.0045	0.90	0.18	0.045	0.13	0.0045	0.013	0.0022
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	0.65	0.0037	0.000020	0.012	0.0082	0.12	0.82	0.082	0.16	0.0041	0.82	0.15	0.041	0.12	0.0041	0.012	0.0020
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	0.96	0.0041	0.000023	0.014	0.0091	0.14	0.91	0.091	0.18	0.0045	0.91	0.20	0.045	0.14	0.0045	0.014	0.0023
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	1.2	0.0039	0.000025	0.015	0.0098	0.15	0.98	0.098	0.19	0.0049	0.98	0.22	0.049	0.15	0.0049	0.015	0.0025
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.91	0.0045	0.000023	0.014	0.0091	0.14	0.91	0.091	0.14	0.0045	0.91	0.16	0.045	0.14	--	--	0.0023

D GK 5

[illegible]

Appendix A.2b: DGK humidity cell raw data - loads

Date	Cycle	Alkalinity mg/kg/wk	Sulphate mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk	Cu mg/kg/wk	Fe mg/kg/wk	Pb mg/kg/wk	Li mg/kg/wk
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	9.2	4.8	0.094	0.028	0.0023	0.0047	--	0.047	0.047	0.000094	3.4	0.0047	0.0047	0.0047	0.014	0.00047	--

DGK 6

24-Sep-96	0	25	47	0.079	0.073	0.028	0.012	0.0020	0.040	0.040	0.00020	11	0.0040	0.0040	0.0040	0.016	0.00040	0.0079
1-Oct-96	1	18	39	0.052	0.074	0.029	0.0078	0.0013	0.026	0.026	0.00031	8.3	0.0026	0.0026	0.0026	0.0078	0.00026	0.0078
8-Oct-96	2	13	16	0.029	0.073	0.014	0.0059	0.00074	0.015	0.015	0.000029	4.0	0.0015	0.0015	0.0015	0.0044	0.00015	0.0044
15-Oct-96	3	12	12	0.029	0.060	0.0098	0.0044	0.00073	0.015	0.015	0.000029	3.3	0.0015	0.0015	0.0015	0.0044	0.00015	0.0029
22-Oct-96	4	11	10.0	0.031	0.067	0.011	0.0047	0.00078	0.016	0.016	0.000031	3.5	0.0016	0.0016	0.0016	0.0047	0.00016	0.0031
29-Oct-96	5	9.7	8.8	0.031	0.064	0.0100	0.0046	0.00077	0.015	0.015	0.000031	3.7	0.0015	0.0015	0.0015	0.0046	0.00015	0.0031
5-Nov-96	6	11	7.5	0.030	0.064	0.0078	0.0045	0.00075	0.015	0.015	0.000030	4.0	0.0015	0.0015	0.0015	0.0045	0.00015	0.0030
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	6.6	5.8	0.028	0.048	0.0058	0.0042	0.00069	0.014	0.014	0.000028	2.9	0.0014	0.0014	0.0014	0.0042	0.00014	0.0014
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	5.4	5.8	0.024	0.034	0.0048	0.0024	0.00061	0.012	0.012	0.000024	2.3	0.0012	0.0012	0.0012	0.0037	0.00012	0.0012
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	7.6	5.3	0.030	0.052	0.0048	0.0030	0.00076	0.015	0.015	0.000030	3.0	0.0015	0.0015	0.0015	0.0046	0.00015	0.0015
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	7.2	5.2	0.030	0.040	0.0037	0.0030	0.00074	0.015	0.015	0.000030	3.0	0.0015	0.0015	0.0015	0.0045	0.00015	0.0015
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	8.5	4.8	0.031	0.040	0.0027	0.0031	0.00078	0.016	0.016	0.000031	3.0	0.0016	0.0016	0.0016	0.0047	0.00016	0.0016
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	7.7	5.0	0.029	--	0.0019	0.0029	--	0.014	--	0.000029	2.8	0.0014	0.0014	0.0014	0.0043	0.00014	--

D GK 7

24-Sep-96	0	26	60	0.075	0.070	0.027	0.015	0.0019	0.037	0.037	0.00037	16	0.0037	0.0037	0.0075	0.011	0.00037	0.011
1-Oct-96	1	5.7	17	0.0079	0.022	0.0025	0.0040	0.00020	0.0040	0.0040	0.000016	3.6	0.00040	0.00040	0.00040	0.0012	0.000040	0.0024
8-Oct-96	2	5.8	16	0.0081	0.023	0.0022	0.0041	0.00020	0.0041	0.0041	0.000012	3.6	0.00041	0.00041	0.00041	0.0012	0.000041	0.0024
15-Oct-96	3	5.1	15	0.0082	0.020	0.0017	0.0033	0.00020	0.0041	0.0041	0.0000082	3.0	0.00041	0.00041	0.00041	0.0012	0.000041	0.0025
22-Oct-96	4	4.3	13	0.0078	0.025	0.0020	0.0027	0.00020	0.0039	0.0039	0.0000078	2.9	0.00039	0.00039	0.00039	0.0012	0.000039	0.0020
29-Oct-96	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5-Nov-96	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	0.16	0.95	0.00029	0.0010	0.000060	0.00013	0.0000073	0.00015	0.00015	0.00000029	0.15	0.000015	0.000015	0.000029	0.000044	0.0000015	0.00010
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	3.4	39	0.0089	0.023	0.0012	0.0027	0.00022	0.0045	0.0045	0.000022	8.5	0.00045	0.00045	0.00045	0.0013	0.000045	0.0031
31-Dec-96	14	4.2	28	0.011	0.030	0.0015	0.0023	0.00029	0.0057	0.0057	0.000011	6.4	0.00057	0.00057	0.00057	0.0017	0.000057	0.0029
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	4.8	11	0.012	0.035	0.0017	0.0023	0.00029	0.0058	0.0058	0.000012	3.1	0.00058	0.00058	0.00058	0.0018	0.000058	0.0018
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	4.1	6.2	0.0093	0.032	0.00093	0.0019	--	0.0047	--	0.0000093	2.3	0.00047	0.00047	0.00047	0.0014	0.000047	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	0.22	0.71	0.00053	0.0019	0.000059	0.00019	--	0.00027	--	0.00000053	0.19	0.000027	0.000027	0.000027	0.000080	0.0000027	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Apr-97	27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8-Apr-97	28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15-Apr-97	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22-Apr-97	30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29-Apr-97	31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-May-97	32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13-May-97	33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20-May-97	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27-May-97	35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Jun-97	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix A.2b: DGK humidity cell raw data - loads

Date	Cycle	Mg mg/kg/wk	Mn mg/kg/wk	Hg mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk	K mg/kg/wk	Se mg/kg/wk	Si mg/kg/wk	Ag mg/kg/wk	Na mg/kg/wk	Sr mg/kg/wk	Tl mg/kg/wk	Sn mg/kg/wk	Ti mg/kg/wk	V mg/kg/wk	Zn mg/kg/wk
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	1.1	0.0047	0.000023	0.014	0.0094	0.14	0.94	0.094	0.15	0.0047	0.94	0.18	0.047	0.14	--	--	0.0023

DGK 6

24-Sep-96	0	2.1	0.0087	0.000020	0.012	0.0079	0.12	2.8	0.079	0.51	0.0040	20	0.68	0.040	0.012	0.0040	0.012	0.0020
1-Oct-96	1	1.8	0.0086	0.000013	0.0078	0.0052	0.078	1.6	0.052	0.60	0.0026	14	0.52	0.026	0.078	0.0026	0.0078	0.0018
8-Oct-96	2	0.89	0.0041	0.0000074	0.0044	0.0029	0.044	1.2	0.041	0.38	0.0015	7.1	0.24	0.015	0.029	0.0015	0.0044	0.0015
15-Oct-96	3	0.78	0.0035	0.0000073	0.0044	0.0029	0.044	1.2	0.029	0.32	0.0015	4.4	0.21	0.015	0.044	0.0015	0.0044	0.0013
22-Oct-96	4	0.82	0.0037	0.0000078	0.0047	0.0031	0.047	0.94	0.031	0.33	0.0016	3.1	0.22	0.016	0.047	0.0016	0.0047	0.0014
29-Oct-96	5	0.88	0.0037	0.0000077	0.0046	0.0031	0.046	1.1	0.031	0.31	0.0015	2.2	0.23	0.015	0.046	0.0015	0.0046	0.00093
5-Nov-96	6	0.97	0.0037	0.0000075	0.0045	0.0030	0.045	0.90	0.030	0.30	0.0015	1.5	0.25	0.015	0.045	0.0015	0.0045	0.0067
12-Nov-96	7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19-Nov-96	8	0.74	0.0025	0.0000069	0.0042	0.0028	0.042	0.69	0.028	0.20	0.0014	0.69	0.18	0.014	0.042	0.0014	0.0042	0.0014
26-Nov-96	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3-Dec-96	10	0.64	0.0019	0.0000061	0.0037	0.0024	0.037	0.61	0.024	0.14	0.0012	0.37	0.15	0.012	0.037	0.0012	0.0037	0.00073
10-Dec-96	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17-Dec-96	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24-Dec-96	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31-Dec-96	14	0.85	0.0018	0.0000076	0.0046	0.0030	0.046	0.61	0.030	0.17	0.0015	0.30	0.19	0.015	0.046	0.0015	0.0046	0.00076
7-Jan-97	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14-Jan-97	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21-Jan-97	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28-Jan-97	18	0.86	0.0019	0.0000074	0.0045	0.0030	0.045	0.59	0.030	0.16	0.0015	0.18	0.015	0.015	0.045	0.0015	0.0045	0.00074
4-Feb-97	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Feb-97	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Feb-97	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Feb-97	22	0.91	0.0017	0.0000078	0.0047	0.0031	0.047	0.47	0.031	0.15	0.0016	0.31	0.17	0.016	0.047	0.0016	0.0047	0.0016
4-Mar-97	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11-Mar-97	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
18-Mar-97	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25-Mar-97	26	0.95	0.0014	0.0000072	0.0043	0.0029	0.043	0.43	0.029	0.13	0.0014	0.29	0.16	0.014	0.043	--	--	0.0014

DGK 7

[illegible]

Appendix A.3a: Metallurgical column (63301) raw data - concentrations

Test Phase	Sampling Date	Cycle Code	pH	TDS mg/L	Electrical Conductivity µmhos/cm	Redox Potential mV	Bicarbonate mg/L as CaCO3	Carbonate mg/L	Total Alkalinity mg/L	Sulfate mg/L	Chloride mg/L	Fluoride mg/L	Ammonia mg/L	Nitrate mg/L
Humidity Cell Phase	3-Dec-12	1	8.8	2600	4100	230	1200	65	1100	950	27	1.6	--	1.0
	10-Dec-12	2	8.71	1600	2400	220	380	19	340	670	16	3.9	0.32	0.60
	24-Dec-12	4	8.86	790	1200	180	540	40	510	110	1.0	2.7	0.099	0.84
	31-Dec-12	5	8.7	780	1100	220	550	28	490	110	1.0	2.1	1.2	0.45
	7-Jan-13	6	8.71	660	1000	240	490	28	450	79	0.10	1.6	0.068	0.41
	14-Jan-13	7	8.76	690	1100	270	490	35	460	97	0.10	1.4	0.050	0.67
	21-Jan-13	8	8.76	660	980	280	490	20	440	71	0.13	1.3	0.050	0.35
	28-Jan-13	9	8.69	720	1100	310	510	19	450	90	0.10	1.4	0.050	0.61
	4-Feb-13	10	8.66	660	1000	250	500	17	440	99	0.10	1.3	0.050	0.84
	11-Feb-13	11	9.04	660	970	300	380	47	390	92	0.10	1.3	0.050	0.61
	18-Feb-13	12	8.68	630	840	270	410	16	360	74	2.1	1.2	0.050	0.48
	25-Feb-13	13	8.61	580	890	3.5	460	14	400	76	0.10	1.0	0.050	0.35
	4-Mar-13	14	8.56	560	830	36	410	11	360	77	0.10	1.1	0.050	0.28
	11-Mar-13	15	8.58	540	790	23	400	13	350	74	0.10	1.0	0.050	0.20
	18-Mar-13	16	8.66	560	840	28	400	16	350	79	0.10	1.0	0.050	0.10
	25-Mar-13	17	8.68	540	730	145	370	17	330	72	0.10	0.93	0.050	0.099
	1-Apr-13	18	8.7	510	740	98	370	17	330	67	0.10	0.98	0.050	0.082
	8-Apr-13	19	8.69	550	820	123	410	17	360	60	0.10	0.79	0.050	0.22
	15-Apr-13	20	8.61	490	770	148	390	14	340	56	0.10	0.72	0.050	0.30
	22-Apr-13	21	8.63	510	770	160	380	15	340	63	0.10	0.73	0.050	0.41
	6-May-13	23	8.65	520	740	35	360	16	330	84	0.10	0.79	0.050	0.51
	20-May-13	25	8.63	530	760	86	360	14	320	84	0.10	0.81	0.053	0.67
	3-Jun-13	27	8.58	490	700	55	360	11	310	75	0.10	0.89	0.17	0.82
	17-Jun-13	29	8.62	540	760	141	370	13	320	88	0.12	0.77	0.056	1.7
	1-Jul-13	31	8.6	480	640	85	310	13	280	60	0.32	1.0	0.050	0.69
	15-Jul-13	33	8.66	520	700	143	330	15	290	79	0.10	0.74	0.050	0.83
	29-Jul-13	35	8.56	460	670	54	310	13	270	70	0.11	0.67	0.050	0.98

Appendix A.3a: Metallurgical column (63301) raw data - concentrations

Test Phase	Sampling Date	Nitrite mg/L	Kjeldahl Nitrogen mg/L	Total Nitrogen mg/L	Cyanate mg/L	Thiocyanate mg/L	Total Cyanide mg/L	WAD Cyanide mg/L	Ag mg/L	Al mg/L	As mg/L	B mg/L	Ba mg/L	Be mg/L	Bi mg/L
Humidity Cell Phase	3-Dec-12	0.25	0.15	0.15	5.3	2.2	11	0.24	0.0050	0.70	2.2	0.12	0.031	0.0010	0.10
	10-Dec-12	3.0	7.5	11	3.9	3.5	18	0.17	0.00050	5.4	6.6	0.12	0.046	0.00050	0.075
	24-Dec-12	0.22	2.9	2.9	2.9	2.2	1.0	0.067	0.0011	4.4	6.4	0.090	0.046	0.00070	0.075
	31-Dec-12	0.18	1.2	1.2	1.9	1.8	0.69	0.017	0.0012	4.1	6.1	0.078	0.045	0.00040	0.075
	7-Jan-13	0.058	1.2	1.7	2.5	1.8	0.46	0.021	0.00050	3.1	4.8	0.10	0.033	0.00070	0.075
	14-Jan-13	0.053	1.2	1.9	2.8	1.4	0.56	0.034	0.00050	3.5	4.7	0.071	0.038	0.00060	0.075
	21-Jan-13	0.034	1.0	1.4	3.2	1.3	0.36	0.015	0.00050	2.7	4.2	0.059	0.030	0.00020	0.075
	28-Jan-13	0.040	0.99	0.99	3.7	1.3	0.41	0.023	0.00050	3.7	4.6	0.070	0.039	0.00046	0.075
	4-Feb-13	0.040	0.94	1.8	3.0	1.5	0.38	0.048	0.00050	3.7	4.2	0.061	0.046	0.00020	0.075
	11-Feb-13	0.061	0.88	1.5	3.2	0.89	0.45	0.020	0.00050	3.9	4.6	0.057	0.044	0.00020	0.075
	18-Feb-13	0.035	0.93	1.4	4.2	1.1	0.31	0.019	0.0015	3.2	4.2	0.044	0.037	0.00035	0.075
	25-Feb-13	0.010	0.73	1.1	4.0	0.84	0.33	0.050	0.0015	2.9	3.8	0.042	0.035	0.00035	0.075
	4-Mar-13	0.010	0.72	1.0	3.0	1.1	0.31	0.025	0.0015	3.1	4.2	0.054	0.034	0.00035	0.075
	11-Mar-13	0.010	0.66	0.85	0.15	1.0	0.32	0.053	0.0015	3.4	3.8	0.042	0.038	0.00035	0.075
	18-Mar-13	0.024	0.75	0.88	0.61	0.39	0.31	0.021	0.0015	3.2	3.7	0.049	0.042	0.00035	0.075
	25-Mar-13	0.010	0.72	0.82	0.37	0.37	0.29	0.050	0.0015	3.1	3.4	0.030	0.038	0.00035	0.075
	1-Apr-13	0.028	0.64	0.75	0.10	0.30	0.25	0.025	0.0015	3.0	3.5	0.035	0.037	0.00035	0.075
	8-Apr-13	0.029	0.70	0.95	0.20	0.35	0.22	0.015	0.0015	2.5	2.7	0.038	0.035	0.00035	0.075
	15-Apr-13	0.010	0.67	0.67	0.16	0.34	0.15	0.027	0.0015	2.0	2.3	0.034	0.028	0.00035	0.075
	22-Apr-13	0.023	0.58	0.58	0.060	0.31	0.15	0.019	0.0015	1.9	2.2	0.027	0.026	0.00046	0.075
	6-May-13	0.015	0.65	1.2	0.050	0.22	0.16	0.011	0.0015	2.6	2.2	0.026	0.033	0.00035	0.075
	20-May-13	0.010	0.74	1.4	0.050	0.34	0.18	0.029	0.0015	2.8	2.6	0.032	0.038	0.0010	0.075
	3-Jun-13	0.16	1.1	2.1	0.050	0.37	0.13	0.010	0.0015	2.1	2.6	0.028	0.029	0.00042	0.075
	17-Jun-13	0.22	0.76	2.7	0.10	0.13	0.18	0.026	0.015	3.0	2.3	0.028	0.040	0.0035	0.075
	1-Jul-13	0.19	0.90	1.8	0.060	0.21	0.17	0.021	0.0015	2.9	2.6	0.027	0.036	0.00040	0.075
	15-Jul-13	0.25	0.85	1.9	0.090	0.26	0.18	0.020	0.0015	4.1	2.2	0.034	0.052	0.00062	0.075
	29-Jul-13	0.17	0.74	1.9	0.20	0.10	0.15	0.023	0.0015	2.8	1.9	0.034	0.040	0.00035	0.075

Appendix A.3a: Metallurgical column (63301) raw data - concentrations

Test Phase	Sampling Date	Ca mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Fe mg/L	Ga mg/L	Hg mg/L	K mg/L	Li mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Na mg/L	Ni mg/L
Humidity Cell Phase	3-Dec-12	17	0.0010	0.17	0.0050	0.050	3.6	0.10	0.0010	13	0.10	3.3	0.036	0.11	960	0.010
	10-Dec-12	9.9	0.0011	0.12	0.0045	0.20	5.7	0.020	0.00090	8.6	0.020	2.0	0.070	0.093	510	0.0087
	24-Dec-12	8.0	0.00030	0.0080	0.0038	0.034	2.8	0.020	0.00077	4.6	0.020	0.91	0.080	0.024	270	0.0073
	31-Dec-12	8.1	0.00050	0.0050	0.0031	0.025	2.5	0.020	0.00035	4.3	0.020	0.90	0.077	0.021	250	0.0071
	7-Jan-13	5.8	0.00020	0.0040	0.0026	0.021	2.2	0.020	0.00070	3.9	0.020	0.68	0.058	0.014	230	0.0056
	14-Jan-13	6.8	0.00040	0.0040	0.0025	0.023	2.2	0.020	0.00040	4.1	0.020	0.70	0.060	0.017	240	0.0053
	21-Jan-13	6.2	0.00020	0.0030	0.0016	0.027	1.7	0.020	0.00070	3.7	0.020	0.61	0.048	0.012	210	0.0044
	28-Jan-13	7.1	0.00046	0.0029	0.0025	0.021	1.9	0.020	0.00070	4.2	0.020	0.69	0.058	0.014	230	0.0043
	4-Feb-13	8.7	0.00020	0.0030	0.0027	0.043	2.1	0.020	0.00070	4.1	0.020	0.72	0.071	0.014	220	0.0048
	11-Feb-13	7.8	0.00020	0.0030	0.0028	0.016	2.0	0.020	0.00070	3.7	0.020	0.66	0.064	0.013	200	0.0050
	18-Feb-13	7.5	0.00090	0.0030	0.0036	0.014	1.9	0.020	0.0010	3.4	0.020	0.66	0.057	0.0090	180	0.0047
	25-Feb-13	7.5	0.00090	0.0020	0.0020	0.0095	1.5	0.020	0.0010	3.5	0.020	0.57	0.051	0.010	190	0.0034
	4-Mar-13	6.8	0.00090	0.0020	0.0014	0.019	1.7	0.020	0.0010	3.2	0.020	0.54	0.053	0.011	170	0.0037
	11-Mar-13	7.3	0.00090	0.0020	0.0019	0.0093	1.8	0.020	0.0010	3.8	0.020	0.57	0.052	0.010	180	0.0038
	18-Mar-13	6.6	0.00090	0.0023	0.0028	0.010	1.5	0.020	0.0010	3.2	0.020	0.49	0.058	0.0068	160	0.0037
	25-Mar-13	7.7	0.00090	0.0020	0.0010	0.0066	1.7	0.020	0.00010	3.2	0.020	0.52	0.053	0.0050	160	0.0033
	1-Apr-13	7.6	0.00090	0.0020	0.0015	0.0084	1.6	0.020	0.00010	3.0	0.020	0.50	0.052	0.0051	160	0.0037
	8-Apr-13	8.3	0.00090	0.0020	0.0025	0.0095	1.4	0.020	0.00010	3.5	0.020	0.49	0.046	0.0050	180	0.0029
	15-Apr-13	7.1	0.00090	0.0020	0.0015	0.0075	1.1	0.020	0.00010	3.7	0.020	0.53	0.034	0.0050	200	0.0025
	22-Apr-13	6.2	0.00090	0.0020	0.0018	0.013	0.91	0.020	0.0010	3.3	0.020	0.46	0.032	0.0053	170	0.0022
	6-May-13	6.6	0.0013	0.0020	0.0020	0.011	1.1	0.020	0.00010	3.4	0.020	0.44	0.040	0.0080	190	0.0025
	20-May-13	8.2	0.00090	0.0020	0.0022	0.012	1.3	0.020	0.00010	3.4	0.020	0.48	0.050	0.0060	170	0.0028
	3-Jun-13	6.2	0.00090	0.0020	0.0017	0.0093	1.0	0.020	0.00010	3.5	0.020	0.42	0.036	0.0050	160	0.0025
	17-Jun-13	8.5	0.0090	0.0022	0.010	0.025	1.3	0.020	0.00010	3.9	0.020	0.49	0.051	0.0050	160	0.010
	1-Jul-13	7.2	0.00090	0.0020	0.0016	0.010	1.4	0.020	0.00010	4.1	0.020	0.48	0.044	0.0050	150	0.0028
	15-Jul-13	11	0.00090	0.0024	0.0023	0.0088	1.8	0.020	0.00010	5.6	0.020	0.65	0.061	0.0083	200	0.0031
	29-Jul-13	8.8	0.00090	0.0023	0.0020	0.0092	1.4	0.020	0.00010	4.1	0.020	0.50	0.048	0.0050	140	0.0027

Appendix A.3a: Metallurgical column (63301) raw data - concentrations

Test Phase	Sampling Date	P mg/L	Pb mg/L	Sb mg/L	Sc mg/L	Se mg/L	Si mg/L	Sn mg/L	Sr mg/L	Ti mg/L	Tl mg/L	U mg/L	V mg/L	Zn mg/L
Humidity Cell Phase	3-Dec-12	0.50	0.057	1.3	0.10	0.016	--	0.10	0.44	0.10	0.0010	--	0.019	0.010
	10-Dec-12	1.2	0.18	1.3	0.0011	0.027	28	0.010	0.23	0.10	0.00020	0.48	0.042	0.054
	24-Dec-12	1.2	0.29	1.1	0.0010	0.018	25	0.010	0.14	0.060	0.00020	0.17	0.034	0.043
	31-Dec-12	1.0	0.33	0.98	0.0010	0.016	24	0.010	0.13	0.060	0.00020	0.16	0.026	0.083
	7-Jan-13	0.93	0.23	0.71	0.0010	0.015	20	0.010	0.10	0.050	0.00020	0.12	0.028	0.035
	14-Jan-13	1.1	0.24	0.74	0.0010	0.018	23	0.010	0.11	0.060	0.00020	0.12	0.032	0.037
	21-Jan-13	0.91	0.21	0.59	0.0010	0.012	19	0.010	0.10	0.050	0.00020	0.10	0.026	0.033
	28-Jan-13	0.98	0.27	0.67	0.0010	0.014	24	0.010	0.12	0.061	0.00020	0.12	0.029	0.036
	4-Feb-13	0.90	0.34	0.64	0.0011	0.020	26	0.010	0.12	0.060	0.00020	0.12	0.028	0.041
	11-Feb-13	1.0	0.33	0.64	0.0011	0.016	24	0.010	0.11	0.060	0.00020	0.12	0.029	0.039
	18-Feb-13	1.0	0.26	0.51	0.0010	0.016	22	0.010	0.10	0.040	0.00040	0.084	0.033	0.055
	25-Feb-13	0.92	0.27	0.55	0.0010	0.015	21	0.010	0.10	0.044	0.00040	0.082	0.030	0.038
	4-Mar-13	1.0	0.27	0.57	0.0010	0.014	24	0.010	0.090	0.050	0.00040	0.073	0.030	0.034
	11-Mar-13	0.88	0.28	0.52	0.0010	0.013	24	0.010	0.10	0.060	0.00040	0.068	0.034	0.034
	18-Mar-13	0.95	0.31	0.56	0.0010	0.013	22	0.010	0.090	0.039	0.00040	0.065	0.038	0.036
	25-Mar-13	0.93	0.30	0.43	0.0010	0.014	25	0.010	0.090	0.050	0.00040	0.063	0.033	0.036
	1-Apr-13	0.87	0.25	0.51	0.0010	0.014	24	0.010	0.091	0.051	0.00040	0.050	0.035	0.032
	8-Apr-13	0.78	0.26	0.49	0.0010	0.010	22	0.010	0.11	0.035	0.00040	0.050	0.032	0.033
	15-Apr-13	0.70	0.19	0.43	0.0010	0.0096	21	0.010	0.094	0.030	0.00040	0.044	0.028	0.025
	22-Apr-13	0.63	0.18	0.41	0.0010	0.0082	19	0.010	0.082	0.026	0.00040	0.041	0.025	0.022
	6-May-13	0.60	0.26	0.45	0.0010	0.0081	23	0.010	0.094	0.031	0.00040	0.040	0.024	0.026
	20-May-13	0.63	0.32	0.51	0.0010	0.0095	25	0.010	0.10	0.039	0.00040	0.040	0.025	0.036
	3-Jun-13	0.83	0.23	0.47	0.0010	0.011	22	0.010	0.082	0.027	0.00040	0.032	0.026	0.028
	17-Jun-13	0.68	0.33	0.43	0.0010	0.020	26	0.010	0.11	0.036	0.0040	0.034	0.018	0.032
	1-Jul-13	0.68	0.28	0.59	0.0010	0.010	28	0.010	0.089	0.042	0.00040	0.027	0.030	0.030
	15-Jul-13	0.78	0.34	0.42	0.0010	0.0082	--	0.010	0.13	0.041	0.00040	0.028	0.024	0.041
	29-Jul-13	0.93	0.29	0.38	0.0010	0.0081	28	0.010	0.11	0.032	0.00040	0.025	0.019	0.031

Appendix A.3a: Metallurgical column (63301) raw data - loads

Test Phase	Sampling Date	Cycle Code	pH	Total Alkalinity mg/kg/wk	Sulfate mg/kg/wk	Chloride mg/kg/wk	Fluoride mg/kg/wk	Ammonia mg/kg/wk	Nitrate mg/kg/wk	Nitrite mg/kg/wk	Kjeldahl Nitrogen mg/kg/wk	Total Nitrogen mg/kg/wk	Cyanate mg/kg/wk	Thiocyanate mg/kg/wk
Humidity Cell Phase	3-Dec-12	1	8.80	41	36	1.0	0.060	--	0.038	0.0094	0.0056	0.0056	0.20	0.083
	10-Dec-12	2	8.71	13	25	0.60	0.15	0.012	0.023	0.11	0.28	0.41	0.15	0.13
	24-Dec-12	4	8.86	19	4.1	0.038	0.10	0.0037	0.032	0.0083	0.11	0.11	0.11	0.083
	31-Dec-12	5	8.70	18	4.1	0.038	0.079	0.045	0.017	0.0068	0.045	0.045	0.071	0.068
	7-Jan-13	6	8.71	17	3.0	0.0038	0.060	0.0026	0.015	0.0022	0.045	0.064	0.094	0.068
	14-Jan-13	7	8.76	17	3.6	0.0038	0.053	0.0019	0.025	0.0020	0.045	0.071	0.11	0.053
	21-Jan-13	8	8.76	17	2.7	0.0049	0.049	0.0019	0.013	0.0013	0.038	0.053	0.12	0.049
	28-Jan-13	9	8.69	17	3.4	0.0038	0.053	0.0019	0.023	0.0015	0.037	0.037	0.14	0.049
	4-Feb-13	10	8.66	17	3.7	0.0038	0.049	0.0019	0.032	0.0015	0.035	0.068	0.11	0.056
	11-Feb-13	11	9.04	15	3.5	0.0038	0.049	0.0019	0.023	0.0023	0.033	0.056	0.12	0.033
	18-Feb-13	12	8.68	14	2.8	0.079	0.045	0.0019	0.018	0.0013	0.035	0.053	0.16	0.041
	25-Feb-13	13	8.61	15	2.9	0.0038	0.038	0.0019	0.013	0.00038	0.027	0.041	0.15	0.032
	4-Mar-13	14	8.56	14	2.9	0.0038	0.041	0.0019	0.011	0.00038	0.027	0.038	0.11	0.041
	11-Mar-13	15	8.58	13	2.8	0.0038	0.038	0.0019	0.0075	0.00038	0.025	0.032	0.0056	0.038
	18-Mar-13	16	8.66	13	3.0	0.0038	0.038	0.0019	0.0038	0.00090	0.028	0.033	0.023	0.015
	25-Mar-13	17	8.68	12	2.7	0.0038	0.035	0.0019	0.0037	0.00038	0.027	0.031	0.014	0.014
	1-Apr-13	18	8.70	12	2.5	0.0038	0.037	0.0019	0.0031	0.0011	0.024	0.028	0.0038	0.011
	8-Apr-13	19	8.69	14	2.3	0.0038	0.030	0.0019	0.0083	0.0011	0.026	0.036	0.0075	0.013
	15-Apr-13	20	8.61	13	2.1	0.0038	0.027	0.0019	0.011	0.00038	0.025	0.025	0.0060	0.013
	22-Apr-13	21	8.63	13	2.4	0.0038	0.027	0.0019	0.015	0.00086	0.022	0.022	0.0023	0.012
	6-May-13	23	8.65	12	3.2	0.0038	0.030	0.0019	0.019	0.00056	0.024	0.045	0.0019	0.0083
	20-May-13	25	8.63	12	3.2	0.0038	0.030	0.0020	0.025	0.00038	0.028	0.053	0.0019	0.013
	3-Jun-13	27	8.58	12	2.8	0.0038	0.033	0.0064	0.031	0.0060	0.041	0.079	0.0019	0.014
	17-Jun-13	29	8.62	12	3.3	0.0045	0.029	0.0021	0.064	0.0083	0.029	0.10	0.0038	0.0049
	1-Jul-13	31	8.60	11	2.3	0.012	0.038	0.0019	0.026	0.0071	0.034	0.068	0.0023	0.0079
	15-Jul-13	33	8.66	11	3.0	0.0038	0.028	0.0019	0.031	0.0094	0.032	0.071	0.0034	0.0098
	29-Jul-13	35	8.56	10	2.6	0.0041	0.025	0.0019	0.037	0.0064	0.028	0.071	0.0075	0.0038

Appendix A.3a: Metallurgical column (63301) raw data - loads

Test Phase	Sampling Date	Total Cyanide mg/kg/wk	WAD Cyanide mg/kg/wk	Al mg/kg/wk	Sb mg/kg/wk	As mg/kg/wk	Ba mg/kg/wk	Be mg/kg/wk	Bi mg/kg/wk	B mg/kg/wk	Cd mg/kg/wk	Ca mg/kg/wk	Cr mg/kg/wk	Co mg/kg/wk
Humidity Cell Phase	3-Dec-12	0.41	0.0090	0.026	0.049	0.083	0.0012	0.000038	0.0038	0.0045	0.000038	0.64	0.00019	0.0064
	10-Dec-12	0.68	0.0064	0.20	0.049	0.25	0.0017	0.000019	0.0028	0.0045	0.000041	0.37	0.00017	0.0045
	24-Dec-12	0.038	0.0025	0.17	0.041	0.24	0.0017	0.000026	0.0028	0.0034	0.000011	0.30	0.00014	0.00030
	31-Dec-12	0.026	0.00064	0.15	0.037	0.23	0.0017	0.000015	0.0028	0.0029	0.000019	0.30	0.00012	0.00019
	7-Jan-13	0.017	0.00079	0.12	0.027	0.18	0.0012	0.000026	0.0028	0.0038	0.0000075	0.22	0.000098	0.00015
	14-Jan-13	0.021	0.0013	0.13	0.028	0.18	0.0014	0.000023	0.0028	0.0027	0.000015	0.26	0.000094	0.00015
	21-Jan-13	0.014	0.00056	0.10	0.022	0.16	0.0011	0.0000075	0.0028	0.0022	0.0000075	0.23	0.000060	0.00011
	28-Jan-13	0.015	0.00086	0.14	0.025	0.17	0.0015	0.000017	0.0028	0.0026	0.000017	0.27	0.000094	0.00011
	4-Feb-13	0.014	0.0018	0.14	0.024	0.16	0.0017	0.0000075	0.0028	0.0023	0.0000075	0.33	0.00010	0.00011
	11-Feb-13	0.017	0.00075	0.15	0.024	0.17	0.0017	0.0000075	0.0028	0.0021	0.0000075	0.29	0.00011	0.00011
	18-Feb-13	0.012	0.00071	0.12	0.019	0.16	0.0014	0.000013	0.0028	0.0017	0.000034	0.28	0.00014	0.00011
	25-Feb-13	0.012	0.0019	0.11	0.021	0.14	0.0013	0.000013	0.0028	0.0016	0.000034	0.28	0.000075	0.000075
	4-Mar-13	0.012	0.00094	0.12	0.021	0.16	0.0013	0.000013	0.0028	0.0020	0.000034	0.26	0.000053	0.000075
	11-Mar-13	0.012	0.0020	0.13	0.020	0.14	0.0014	0.000013	0.0028	0.0016	0.000034	0.27	0.000071	0.000075
	18-Mar-13	0.012	0.00079	0.12	0.021	0.14	0.0016	0.000013	0.0028	0.0018	0.000034	0.25	0.00011	0.000086
	25-Mar-13	0.011	0.0019	0.12	0.016	0.13	0.0014	0.000013	0.0028	0.0011	0.000034	0.29	0.000038	0.000075
	1-Apr-13	0.0095	0.00094	0.11	0.019	0.13	0.0014	0.000013	0.0028	0.0013	0.000034	0.29	0.000056	0.000075
	8-Apr-13	0.0083	0.00056	0.094	0.018	0.10	0.0013	0.000013	0.0028	0.0014	0.000034	0.31	0.000094	0.000075
	15-Apr-13	0.0056	0.0010	0.075	0.016	0.086	0.0011	0.000013	0.0028	0.0013	0.000034	0.27	0.000056	0.000075
	22-Apr-13	0.0056	0.00071	0.071	0.015	0.083	0.00098	0.000017	0.0028	0.0010	0.000034	0.23	0.000068	0.000075
	6-May-13	0.0060	0.00041	0.098	0.017	0.083	0.0012	0.000013	0.0028	0.00098	0.000049	0.25	0.000075	0.000075
	20-May-13	0.0068	0.0011	0.11	0.019	0.098	0.0014	0.000038	0.0028	0.0012	0.000034	0.31	0.000083	0.000075
	3-Jun-13	0.0049	0.00038	0.079	0.018	0.098	0.0011	0.000016	0.0028	0.0011	0.000034	0.23	0.000064	0.000075
	17-Jun-13	0.0068	0.00098	0.11	0.016	0.086	0.0015	0.00013	0.0028	0.0011	0.00034	0.32	0.00038	0.000083
	1-Jul-13	0.0064	0.00079	0.11	0.022	0.098	0.0014	0.000015	0.0028	0.0010	0.000034	0.27	0.000060	0.000075
	15-Jul-13	0.0068	0.00075	0.15	0.016	0.083	0.0020	0.000023	0.0028	0.0013	0.000034	0.41	0.000086	0.000090
	29-Jul-13	0.0056	0.00086	0.11	0.014	0.071	0.0015	0.000013	0.0028	0.0013	0.000034	0.33	0.000075	0.000086

Appendix A.3a: Metallurgical column (63301) raw data - loads

Test Phase	Sampling Date	Cu mg/kg/wk	Ga mg/kg/wk	Fe mg/kg/wk	Li mg/kg/wk	Pb mg/kg/wk	Mg mg/kg/wk	Mn mg/kg/wk	Mo mg/kg/wk	Ni mg/kg/wk	P mg/kg/wk	K mg/kg/wk	Sc mg/kg/wk	Si mg/kg/wk
Humidity Cell Phase	3-Dec-12	0.0019	0.0038	0.14	0.0038	0.0021	0.12	0.0014	0.0041	0.00038	0.019	0.49	0.0038	--
	10-Dec-12	0.0075	0.00075	0.21	0.00075	0.0068	0.075	0.0026	0.0035	0.00033	0.045	0.32	0.000041	1.1
	24-Dec-12	0.0013	0.00075	0.11	0.00075	0.011	0.034	0.0030	0.00090	0.00027	0.045	0.17	0.000038	0.94
	31-Dec-12	0.00094	0.00075	0.094	0.00075	0.012	0.034	0.0029	0.00079	0.00027	0.038	0.16	0.000038	0.90
	7-Jan-13	0.00079	0.00075	0.083	0.00075	0.0086	0.026	0.0022	0.00053	0.00021	0.035	0.15	0.000038	0.75
	14-Jan-13	0.00086	0.00075	0.083	0.00075	0.0090	0.026	0.0023	0.00064	0.00020	0.041	0.15	0.000038	0.86
	21-Jan-13	0.0010	0.00075	0.064	0.00075	0.0079	0.023	0.0018	0.00045	0.00017	0.034	0.14	0.000038	0.71
	28-Jan-13	0.00079	0.00075	0.071	0.00075	0.010	0.026	0.0022	0.00053	0.00016	0.037	0.16	0.000038	0.90
	4-Feb-13	0.0016	0.00075	0.079	0.00075	0.013	0.027	0.0027	0.00053	0.00018	0.034	0.15	0.000041	0.98
	11-Feb-13	0.00060	0.00075	0.075	0.00075	0.012	0.025	0.0024	0.00049	0.00019	0.038	0.14	0.000041	0.90
	18-Feb-13	0.00053	0.00075	0.071	0.00075	0.0098	0.025	0.0021	0.00034	0.00018	0.038	0.13	0.000038	0.83
	25-Feb-13	0.00036	0.00075	0.056	0.00075	0.010	0.021	0.0019	0.00038	0.00013	0.035	0.13	0.000038	0.79
	4-Mar-13	0.00071	0.00075	0.064	0.00075	0.010	0.020	0.0020	0.00041	0.00014	0.038	0.12	0.000038	0.90
	11-Mar-13	0.00035	0.00075	0.068	0.00075	0.011	0.021	0.0020	0.00038	0.00014	0.033	0.14	0.000038	0.90
	18-Mar-13	0.00038	0.00075	0.056	0.00075	0.012	0.018	0.0022	0.00026	0.00014	0.036	0.12	0.000038	0.83
	25-Mar-13	0.00025	0.00075	0.064	0.00075	0.011	0.020	0.0020	0.00019	0.00012	0.035	0.12	0.000038	0.94
	1-Apr-13	0.00032	0.00075	0.060	0.00075	0.0094	0.019	0.0020	0.00019	0.00014	0.033	0.11	0.000038	0.90
	8-Apr-13	0.00036	0.00075	0.053	0.00075	0.0098	0.018	0.0017	0.00019	0.00011	0.029	0.13	0.000038	0.83
	15-Apr-13	0.00028	0.00075	0.041	0.00075	0.0071	0.020	0.0013	0.00019	0.000094	0.026	0.14	0.000038	0.79
	22-Apr-13	0.00049	0.00075	0.034	0.00075	0.0068	0.017	0.0012	0.00020	0.000083	0.024	0.12	0.000038	0.71
	6-May-13	0.00041	0.00075	0.041	0.00075	0.0098	0.017	0.0015	0.00030	0.000094	0.023	0.13	0.000038	0.86
	20-May-13	0.00045	0.00075	0.049	0.00075	0.012	0.018	0.0019	0.00023	0.00011	0.024	0.13	0.000038	0.94
	3-Jun-13	0.00035	0.00075	0.038	0.00075	0.0086	0.016	0.0014	0.00019	0.000094	0.031	0.13	0.000038	0.83
	17-Jun-13	0.00094	0.00075	0.049	0.00075	0.012	0.018	0.0019	0.00019	0.00038	0.026	0.15	0.000038	0.98
	1-Jul-13	0.00038	0.00075	0.053	0.00075	0.011	0.018	0.0017	0.00019	0.00011	0.026	0.15	0.000038	1.1
	15-Jul-13	0.00033	0.00075	0.068	0.00075	0.013	0.024	0.0023	0.00031	0.00012	0.029	0.21	0.000038	1.1
	29-Jul-13	0.00035	0.00075	0.053	0.00075	0.011	0.019	0.0018	0.00019	0.00010	0.035	0.15	0.000038	1.1

Appendix A.3a: Metallurgical column (63301) raw data - loads

Test Phase	Sampling Date	Ag mg/kg/wk	Na mg/kg/wk	Sr mg/kg/wk	Sn mg/kg/wk	Ti mg/kg/wk	V mg/kg/wk	Zn mg/kg/wk	Hg mg/kg/wk	Se mg/kg/wk	Tl mg/kg/wk	U mg/kg/wk
Humidity Cell Phase	3-Dec-12	0.00019	36	0.017	0.0038	0.0038	0.00071	0.00038	0.000038	0.00060	0.000038	--
	10-Dec-12	0.000019	19	0.0086	0.00038	0.0038	0.0016	0.0020	0.000034	0.0010	0.0000075	0.018
	24-Dec-12	0.000041	10	0.0053	0.00038	0.0023	0.0013	0.0016	0.000029	0.00068	0.0000075	0.0064
	31-Dec-12	0.000045	9.4	0.0049	0.00038	0.0023	0.00098	0.0031	0.000013	0.00060	0.0000075	0.0060
	7-Jan-13	0.000019	8.6	0.0038	0.00038	0.0019	0.0011	0.0013	0.000026	0.00056	0.0000075	0.0045
	14-Jan-13	0.000019	9.0	0.0041	0.00038	0.0023	0.0012	0.0014	0.000015	0.00068	0.0000075	0.0045
	21-Jan-13	0.000019	7.9	0.0038	0.00038	0.0019	0.00098	0.0012	0.000026	0.00045	0.0000075	0.0038
	28-Jan-13	0.000019	8.6	0.0045	0.00038	0.0023	0.0011	0.0014	0.000026	0.00053	0.0000075	0.0045
	4-Feb-13	0.000019	8.3	0.0045	0.00038	0.0023	0.0011	0.0015	0.000026	0.00075	0.0000075	0.0045
	11-Feb-13	0.000019	7.5	0.0041	0.00038	0.0023	0.0011	0.0015	0.000026	0.00060	0.0000075	0.0045
	18-Feb-13	0.000056	6.8	0.0038	0.00038	0.0015	0.0012	0.0021	0.000038	0.00060	0.000015	0.0032
	25-Feb-13	0.000056	7.1	0.0038	0.00038	0.0017	0.0011	0.0014	0.000038	0.00056	0.000015	0.0031
	4-Mar-13	0.000056	6.4	0.0034	0.00038	0.0019	0.0011	0.0013	0.000038	0.00053	0.000015	0.0027
	11-Mar-13	0.000056	6.8	0.0038	0.00038	0.0023	0.0013	0.0013	0.000038	0.00049	0.000015	0.0026
	18-Mar-13	0.000056	6.0	0.0034	0.00038	0.0015	0.0014	0.0014	0.000038	0.00049	0.000015	0.0024
	25-Mar-13	0.000056	6.0	0.0034	0.00038	0.0019	0.0012	0.0014	0.0000038	0.00053	0.000015	0.0024
	1-Apr-13	0.000056	6.0	0.0034	0.00038	0.0019	0.0013	0.0012	0.0000038	0.00053	0.000015	0.0019
	8-Apr-13	0.000056	6.8	0.0041	0.00038	0.0013	0.0012	0.0012	0.0000038	0.00038	0.000015	0.0019
	15-Apr-13	0.000056	7.5	0.0035	0.00038	0.0011	0.0011	0.00094	0.0000038	0.00036	0.000015	0.0017
	22-Apr-13	0.000056	6.4	0.0031	0.00038	0.00098	0.00094	0.00083	0.000038	0.00031	0.000015	0.0015
	6-May-13	0.000056	7.1	0.0035	0.00038	0.0012	0.00090	0.00098	0.0000038	0.00030	0.000015	0.0015
	20-May-13	0.000056	6.4	0.0038	0.00038	0.0015	0.00094	0.0014	0.0000038	0.00036	0.000015	0.0015
	3-Jun-13	0.000056	6.0	0.0031	0.00038	0.0010	0.00098	0.0011	0.0000038	0.00041	0.000015	0.0012
	17-Jun-13	0.00056	6.0	0.0041	0.00038	0.0014	0.00068	0.0012	0.0000038	0.00075	0.00015	0.0013
	1-Jul-13	0.000056	5.6	0.0033	0.00038	0.0016	0.0011	0.0011	0.0000038	0.00038	0.000015	0.0010
	15-Jul-13	0.000056	7.5	0.0049	0.00038	0.0015	0.00090	0.0015	0.0000038	0.00031	0.000015	0.0011
	29-Jul-13	0.000056	5.3	0.0041	0.00038	0.0012	0.00071	0.0012	0.0000038	0.00030	0.000015	0.00094

***Appendix B:
Review of Scaling Factors Applied to
Geochemical Predictions***

A Review of Scale Factors for Estimating Waste Rock Weathering from Laboratory Tests

Houston Kempton¹

Knight Piesold Consulting, Inc., Denver, CO, US. hkempton@knightpiesold.com

ABSTRACT

Authorization to start or expand most hardrock mines now requires the proponents to estimate *a priori* the environmental impacts they may have on surface and groundwater water quality. These estimates are often based on the intrinsic environmental characteristics of mine waste measured in laboratory-scale tests, including total concentrations of major minerals and regulated metals, soluble metals liberated by aqueous leach tests, and rates of sulfide-mineral oxidation and solute release under standard weathering conditions. Waste-rock leach rates under full-scale weathering are then estimated by “scaling” from these laboratory rates to field conditions. This paper reviews laboratory- and field-scale studies of sulfidic waste rock weathering, then provides updated estimates of scale factors based on moisture content, fragment size, temperature, contact (i.e., the fraction of rock actually flushed by unsaturated flow), and oxygen concentration. The results provide a basis for making screening level estimates of mine-water impacts at proposed mines. Further, the ranges in scale factors provide a basis for conducting probabilistic estimates impacts. Ultimately, the goal is to improve mine permitting by identifying the ranges for these critical scale factors that will bracket reliably estimates of pollutant release from full-scale mine waste facilities.

Key Words: Acid rock drainage, scale factor, prediction, waste rock, uncertainty, permitting

Introduction

Authorization to start or expand most hardrock mines now requires the proponents to estimate *a priori* the environmental impacts they may have on surface and groundwater water quality. These water-quality forecasts are required initially to comply with disclosure requirements (such as the U.S. National Environmental Policy Act), and are soon thereafter required to support the permits designed to prevent water pollution (such as issued under the U.S. Clean Water Act). Further, environmental effects relate directly to project financing, which considers cost estimates for mitigation required to comply with water quality permits. At the pre-mining stage, water quality predictions must rely on models using the intrinsic environmental characteristics of mined materials, primarily sulfide mineral concentrations, net acid generating potential, laboratory-scale rates of sulfide mineral oxidation and metal dissolution, and major mineral content in excavated rock. All of these parameters are readily available from tests on materials recovered during exploration. Estimates of full-scale behaviour of mine waste then follow from the geostatistical interpolation of these intrinsic environmental characteristics, providing estimates for (and uncertainty in) the environmental characteristics of rock across the entire deposit. The environmental character of tailings follows a parallel tract, with metallurgical tests on ore producing representative material for environmental testing. These environmental characteristics, when coupled with the mine plans and site-specific climate conditions, provide the basis for predicting water quality impacts using environmental models.

Yet despite active research and the improving understanding of mine waste management, great challenges remain in making these initial water-quality predictions in a manner that is efficient, reliable, and

defensible. A significant problem has been a systematic model underestimate of actual water quality effects reported in audits. A comparison of predicted versus actual water quality at 25 large US mines found that at eight of the nine mines that actually developed acid drainage, modelers had predicted “low acid drainage potential initially or had no information on acid drainage potential” (Kuipers *et al.* 2006). Past errors understandably raise concern among stakeholders near proposed mines. Related to this is the tendency for scientists to overestimate prediction accuracy, in large part by assigning zero uncertainty to all parameters omitted from their model (Morgan and Henrion 1990). To this is added the natural tendency toward increasing complexity—new phenomena are easily added to environmental assessments and tend to remain in future analyses. The result can be longer and more expensive permitting phases for mines as stakeholders request more reliable predictions.

Defensibility in mine permitting increasingly means incorporating prediction uncertainty with impact disclosure. While predictions have essentially no value without some estimate of uncertainty, the increased complexity of probabilistic simulations can reduce transparency and reliability. Analog studies help by improving clarity, providing a basis for calibrating models and illustrating ranges of solute loads to receiving waters at similar waste-rock facilities. But analogs are a trade off, losing detail in site-specific characteristics in exchange for very accurate descriptions of impacts under full-scale conditions. And predictions based on analog sites may well increase uncertainty relative to a computational model of a proposed mine-waste facility. But this too is a trade off, exchanging larger uncertainty in predictions for simplicity and, ideally, acceptance among stakeholders.

This paper provides an updated review of published studies linking the environmental behavior of mine waste under field conditions to the intrinsic characteristics of the rock. The framework for this review is the widely applied concept of using scale factors to extrapolate from laboratory conditions to field scale behavior in waste rock. In this framework, solute releases from laboratory tests are “scaled up” to field conditions by correcting for the effects known to significantly affect oxidation and pollution migration in sulfide mine waste. Specific scale effects considered here are moisture content, fragment size, temperature, contact (i.e., the fraction of rock actually flushed by unsaturated flow), oxygen concentration, and chemical attenuation. These findings, when considered in light of site-specific intrinsic rock characteristics such as sulfide sulfur concentrations, fraction of neutralizing rock, and climate, provide a basis for making screening level estimates of mine-water impacts at proposed mines.

The “scale factor” model for estimating solute release from waste rock

The use of analog waste rock facilities to estimate environmental impacts at proposed mines is predicated on a common conceptual model for how sulfide-bearing mine waste degrades water quality. Chemically, the aeration of the excavated rock introduces oxygen that oxidizes sulfide minerals, producing directly sulfate, and dissolving metals that were bound in sulfide minerals (e.g., iron, copper, nickel, arsenic, etc.) in approximate proportion to sulfate. Pore gas in the rock is generally oxygenated as atmospheric oxygen moves through the rock, often by advection or convection in conductive coarse areas, and by diffusion into less permeable zones; but pore-gas oxygen concentrations can be depleted where oxidation is fast and transport is slow, and oxidation rates are reduced proportionally. Energy released by oxidation will heat the rock, further increasing chemical oxidation rates. Reaction rates are generally proportional to the surface area of sulfide minerals, and oxygen diffusion into fragments or through rinds of weathering products can limit the oxygen flux to sulfide; thus the rate of oxidation decreases with increasing fragment size. The pore water chemistry generally varies with pH: in pH-neutral zones, produced acid has been neutralized by carbonate or silicate minerals, and metal concentrations are limited by precipitation of secondary minerals and adsorption; in acidic zones, chemical oxidation is much faster and pore-water metal concentrations may be limited only by oxidation rate. Some meteoric water will percolate into the waste rock, but the unsaturated flow passes preferentially, through finer fragments in dryer climates and coarser fragments in wetter climates, so acid and metals in finer materials are preferentially rinsed and produce the seepage to surface or groundwater.

The scaling factor concept described herein follows generally the concept described by Malmstrom *et al.* (2000), which assumed that these basic controls on mine waste reaction — fragment size, temperature, water flow, and oxygen concentration — could be “scaled-up” from laboratory tests to estimate solute release from full scale waste facilities. Key laboratory static analyses are sulfide sulphur (acid-generating potential), carbonate carbon (acid neutralizing potential), and acid and metals dissolved by oxidation (typically measured by hydrogen peroxide digestion). Humidity cells then indicate rates of oxidation and solute release under oxygenated moist conditions at 20 °C, ideally measuring rates in material spanning a wide range in sulfide mineral concentration and pH. Geostatistical models of deposits can then extend these environmental parameters so that each block of waste rock has an estimate for intrinsic solute release rates.

For a single parcel of waste rock under field conditions, the pollutant release rate, R_{Field} , follows from the lab rate, R_{lab} , and “Scale Factors”:

$$R_{\text{Field}} = R_{\text{Lab}} * SF_{\text{moist}} * SF_{\text{size}} * SF_{\text{contact}} * SF_{\text{temp}} * SF_{\text{O}_2} \quad \text{Equation 1}$$

Where the lab-to-field Scale Factors are:

SF_{moist} : the reduction in oxidation that can arise when moisture becomes too low to support chemical oxidation,

SF_{size} : The reduction in field oxidation due to larger fragment sizes,

SF_{contact} : The reduction in solute leaching from fragments too coarse to be flushed by pore water,

SF_{temp} : the change (increase or decrease) in oxidation rate caused by field temperatures higher or lower than lab tests,

SF_{O_2} : The reduction in field oxidation rate caused by reduced O₂ concentration in pore gas,

These factors are presented in this paper as fractions for field conditions relative to laboratory conditions.

The effect of chemical attenuation of pollutant due to pore-water composition is often studied in field applications, but is discussed here only conceptually.

Broad application of the scale-factor approach warrants some caution. First, water quality estimates using a facility-wide scale-factor approach provide only facility-wide average behavior. Waste rock effluent water quality varies temporally and spatially. A study at the Mine Doyon (Quebec, Canada; ~7% pyrite by mass [Lefebvre *et al.* 2001]) “revealed strong temporal (dry period vs. recharge period), and spatial (slope vs. central region of pile) variability in the formation of acid mine drainage” (Sracek *et al.* 2004). Second, some scale factors are not entirely independent, so combining scale factors can double count some effects. In particular, coarse rock in end-dumped slopes will carry minimal unsaturated flow in all but the wettest climates (Newman *et al.*, 1997), and solute loads in Equation 1 should not also be reduced further by slow oxidation in the large fragments that have already been eliminated based on conductivity.

This scale-factor approach was demonstrated clearly in a study of the Aitik mine site in northern Sweden, where small-scale (0.15 kg), short-term (20 week or longer), kinetic tests at room temperature were scaled to larger columns (1.82x10³ kg, aerated and with constant water flow, and operated for 85 weeks at temperature of 4 to 10 °C) and full-scale field piles (9.5x10¹⁰ kg), where effluent load was determined from water recovered from drainage ditches with temperatures ranging from 1 to 4°C (Malmstrom *et al.* 2000). The study indicated that “the scale dependence is to a large degree predictable by quantification of the effects of a few critical and readily available, bulk-averaged, physicochemical characteristics.”

A second study compared oxidation rates in large-scale kinetic tests (20- to 30-tonne piles of run-of-mine rock) against laboratory-scale kinetic tests in a temperate climate, where temperature scaling was less important (Bennett *et al.* 2000). The study found good comparison between laboratory kinetic tests and field scale piles in terms of sulfate production rate per kg of rock (ranging from 1x10⁻⁹ to 1x10⁻¹⁰

kg(O₂)/kg(rock)/s). This consistency in field-to-lab comparisons led the authors to conclude “oxidation rates measured in the laboratory can be confidently applied to full-size dumps if the materials tested in the laboratory represented the composition of the dump” (Bennett *et al.* 2000)

These lab-to-field comparison studies provide a rough estimate of prediction accuracy and the magnitude of the various scale factors. At the Aitik Mine full-scale tests, the factors producing the greatest effect on lab-to-field scaling, from largest to smallest, were temperature, particle size, specific mineral concentration, and surface area of minerals (Malmstrom *et al.* 2000). For pyrite oxidation, the total estimated lab-to-field scale reduction factor for solute release was approximately 50, and the discrepancy between predicted and observed field-scale results was approximately 20%. The scale effects were similar for trace metals based on copper release from chalcopyrite reaction rates; the lab-to-field scaling factor was approximately 50, but the discrepancy between observed and predicted field-scale results was much larger, at 500 to 1,000 % (i.e., factor of 5 to 10 error), apparently due to complex metal attenuation processes. In the present literature review, these scale factors are extended to include the effects of low moisture and pore-gas oxygen.

Parameter Ranges for Water Quality Modeling at Hard Rock Mining

Presented here is a discussion of each scale factor. The discussion starts with an explanation of how and why the effect alters reaction rates or transport under field conditions, followed by ranges for the scale factor based on parameters collected from published studies.

Moisture content effect on oxidation rate

Measurements of mine waste under field conditions indicate that moisture is unlikely to appreciably limit oxidation in waste rock or pit wall rock in any but the most extreme arid climates. Hollings *et al.* (2001) found that oxidation rates decreased when gravimetric moisture increased above ~10%, apparently because water reduced oxygen transport. Pyrite oxidation in waste rock does in fact slow dramatically at low moisture. A study focused on drier conditions found oxidation rates steady at gravimetric moisture between 10% and 2%, but then decreasing by ~85% at 1% moisture (Kempton *et al.* 1997). Moisture profiles through waste rock in Arizona, US, where potential evaporation [~180 cm/yr] was ~8 times greater than precipitation [23 cm/yr], indicated that moisture in the pile at hydraulic equilibrium waste was ~4% to 6%, which is not low enough to inhibit oxidation, and that surface drying from uncovered waste rock extended only to ~1 m (Swanson *et al.* 2000). Approximately 30% of the rock below 1-m depth had gravimetric moisture below 2%. However, this drier rock was still reactive, with ~1% moisture. Unless a closure cover effectively restricts infiltration, the waste rock should eventually wet up to the ~4 to 6% gravimetric moisture, which is high enough that sulfide mineral oxidation will not be restricted by low moisture. In general, low moisture will, therefore, not restrict oxidation in waste rock. This finding extends to pit walls, where reactive fracture zones (1 to 15 m thick) are usually far thicker than the zone affected by seasonal drying (Kempton and Atkins 2009). The SF_{moist} should thus be 1 unless site conditions demonstrate that *in situ* waste rock will be dryer than ~2% gravimetric moisture.

Fragment size effect on oxidation rate

Published studies report that sulfide mineral oxidation rates in mine waste decrease dramatically with increasing fragment size, consistent with the proportionality between surface area and heterogeneous reaction rates. Models based on diffusion-limited oxidation into shrinking-core spheres demonstrate fragments greater than 200 mm contribute very little to total waste-pile oxidation, even after hundreds of years (Davis and Ritchie 1987). More recently, studies have found that only waste-rock fragments less than ~20 to 30 mm are flushed by percolating water, reducing the oxidation focus to this small size. In rock from the Cluff Lake Mine, Canada, oxidation rates (based on O₂ consumption) vs. diameter in uniformly sized waste-rock at 20 °C indicated that the 13 mm fraction was only ~30% as reactive as the 1 mm fraction, and the 25 mm fraction only ~20% as reactive as the 1 mm fraction (Hollings *et al.* 2001). A second study, which measured oxidation rate (based on sulfate release) vs. fragment size in mine waste

rock, found that the cumulative <25 mm fraction released 80% of the total sulfate compared to larger material of 25 to 76 mm diameters (Stockwell *et al.* 2003).

Surface area measurements (based on geometry in fragments >6.3 mm and BET nitrogen adsorption in less than 6.3 mm) for five field-scale barrel tests (275 to 325 kg in each, 100 mm maximum diameter fragments) at the Antamina Mine, Peru, indicated that 65% of the surface area was in material < 6 mm (35% gravimetric fraction), and 88% of the surface area in material < 20 mm (55% gravimetric fraction) (Aranda *et al.* 2009).

Scaling to correct for fragment size in waste thus has two components:

- Scaling the oxidation rates in the fraction flushed by water (<20 mm diameter [Neuner *et al.* 2009]) to the entire pile; and
- Scaling the oxidation rate measured in humidity cell tests (<6.4 mm diameter) to estimate the slower reaction rates in the entire fraction flushed by water (<20 mm diameter).

This first component follows directly from fragment size distributions in waste rock (Figure 1), but the second component (i.e. scaling for reactivity) can be achieved using small fragments in laboratory-scale measurements.

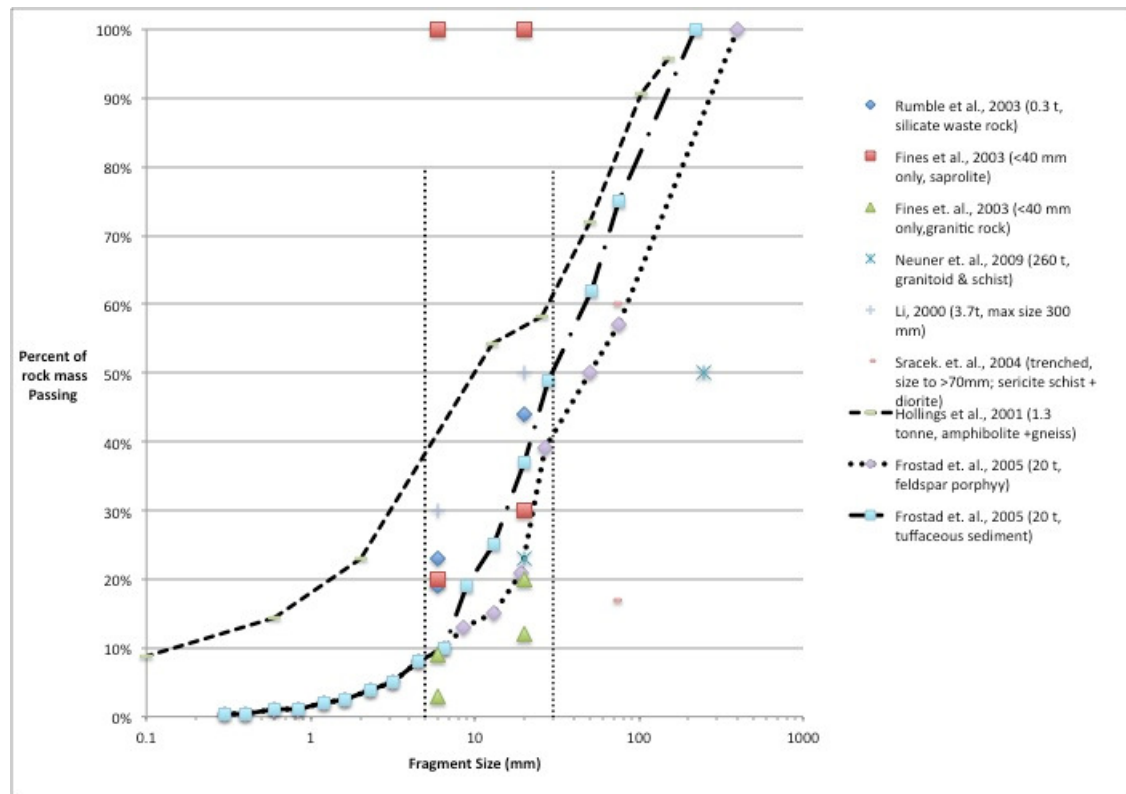


Figure 1. Fragment size distributions reported for large samples of waste rock. The most representative run-of-mine samples shown with connected lines.

The surface area study of waste rock at the Antamina Mine by Aranda *et al.* (2009) illustrates a method for scaling from the <6.4 mm fraction to the <20 mm fraction. This study reported that:

- 65% of surface area is in material < 6 mm (35% gravimetric fraction),
- 88% of surface area is in material < 20 mm (55% gravimetric fraction).

The ratio of *surface area* : *mass* in the <6 mm fraction is 1.9 (i.e., 65% of area / 35% of mass), which is ~1.2 times greater than the ratio of *surface area* : *mass* for the <20 mm fraction (i.e., 88% of area / 55% of

mass = 1.6). Thus the scale factor for converting reaction rate in humidity cells (<6 mm diameter) to reaction rate in the rock that will be flushed by water (<20 mm size fraction) is ~1/1.2, or ~0.83.

Estimates of fragment-size distributions in waste rock vary widely primarily due to the small number of sieve analyses on large run-of-mine rock samples, and the variable effect of blast methods and rock strength. However, a review of published studies of fragment size distribution in large-scale (e.g., tens to hundreds of kg run-of-mine rock) identified the following relevant results (Figure 1):

- Modeling study of full-scale waste-rock facilities (Davis and Ritchie 1987)
 - 90% of the material less than 200 mm
- Large-scale column tests (1.2 m diameter, 2 m height, mass = 1.2 to 3.7 tonne; Li 2000)
 - 50% of rock less than 20 mm
 - 30% of rock less than 6 mm
- Large-scale waste rock sieve analysis, low-strength friable schist waste-rock at Mine Doyon, Canada (Sracek *et al.* 2004)
 - Between 17% and 60% of the rock fragments greater than 70 mm
- Large-scale sieve test (1,300 kg sample) from waste rock at the Cluff Lake Mine, Canada (Hollings *et al.* 2001)
 - 58% of rock less than 20 mm
 - 23% to 40% of the rock less than 6 mm
- Sieve of 0.5 m cubic excavation from waste-rock at Ok Tedi Mine, New Guinea (Rumble *et al.* 2003)
 - 45% less than 20 mm diameter
 - 23% less than 6 mm diameter
- Large-scale sieve analysis of very weathered (saprolite) bulk waste-rock sample, South Carolina, US; (Fines *et al.* 2003)
 - 30% to 100% of rock less than 20 mm diameter
 - 20% to 100% of rock less than 6 mm diameter
- Large-scale sieve analysis of granitic bulk waste rock sample, Sudbury, Canada; (Fines *et al.* 2003)
 - 12% (granitic rock) to 20% (volcanic rock) less than 20 cm
 - 3% (granitic rock) to 9% (volcanic rock) less than 6 mm
- Large-scale (20 tonne) sieve analysis of rock subjected to field kinetic tests (Frostad *et al.* 2005):
 - 20% to 35% of waste rock is less than 20 mm diameter
 - 10% of waste rock less than 6 mm diameter
- Large-scale (two test pads, 15 m high and 60 m x 50 m) field experiment at the Diavik Diamond Mine, Northern Canada (Neuner *et al.* 2009):
 - 23% of the rock less than 20 mm

Temperature effect on oxidation rate

The effect of temperature on oxidation rate is described by the Arrhenius equation:

$$k = Ae^{[-E_a/RT]} \quad \text{Equation 2}$$

Where:

- k = reaction rate [1/s, or same units as used for A]
- A = empirical constant, determined at given temperature [1/s]
- E_a = activation energy of the reaction [kJ/mole]
- R = Universal gas constant [0.008314 kJ/mole/K]
- T = temperature [Kelvin]

The factor to correct reaction rate measured under laboratory conditions to field temperature is derived by dividing the Arrhenius equation under field temperature by the equation at laboratory temperature

(Malmstrom *et al.* 2000):

$$k_{\text{field}}/k_{\text{lab}} = e^{[-Ea/R](1/T_{\text{lab}} - (1/T_{\text{field}}))}$$

Equation 3

The activation energy of pyrite oxidation varies from 50 to 88 kJ/mole for a variety of experimental conditions [Nicholson *et al.* 1988], and the value between 20-40 °C was measured to be 56.9 ± 7.5 kJ/mole (McKibben and Barnes 1986). The reported activation energy for the oxidation of pyrrhotite is between 47 and 63 kJ/mole (Nicholson and Sharer 1998).

In practice, a simpler estimate of the change in oxidation rate with temperature is often described as the “Q10”, which is the change in oxidation rate with a change in temperature of 10 °C. The Q10 for pyrite oxidation has been reported to be between 2 and 3 at temperatures between 3 and 25 °C (Nicholson *et al.* 1988). Ideal temperatures for iron-oxidizing bacteria are between 25 and 45°C, though some thermophilic bacteria thrive between 60 and 80 °C (Hiskey and Schlitt 1981)

Elevated temperatures in waste rock are observed in a wide range of climates. In semi-arid climates (e.g., Nevada, US), studies of field-scale waste rock piles include one report with steady temperatures of ~20-40 °C through the year (~10-30 °C above ambient air), indicating active oxidation across the entire depth (up to 39 m deep; Milczarek *et al.* 2009). Another study in older sulfide bearing waste rock at the Robinson District found rock temperature ~6 °C above ambient and ~50% reduction in oxygen; temperatures 10 – 20 °C above ambient conditions were observed in oxygenated facility edges (Helgen *et al.* 2000). Unfortunately, neither of these studies report sulfide sulfur content in the rock. In wetter climates, the Mine Doyon waste-rock facility (Quebec, Canada; ~7% pyrite by mass, ambient air temperature ~5 °C) has zones with advective oxygen flow that maintain rapid oxidation and internal temperatures of 45 to 70 °C over the 6 to 30 m depth interval (Sracek *et al.* 2004). However, in zones where oxidation is diffusion-limited and thus slower, overall average temperatures vary less and are closer to ambient air temperature. The Nordhalde waste rock (Germany; ~3 % pyrite by mass) has internal temperatures of 15 – 20 °C (6 to 11 °C above ambient air temperature (Levebvre *et al.* 2001). In arctic conditions, the well-studied Aitik Mine waste rock in Sweden (average air temperature ~0 °C, average gravimetric pyrite content ~1 % [range 0 – 5%]; Bennett *et al.* 1994) is well oxygenated throughout the dump (Malmstrom *et al.* 2000), but has internal temperatures of only 1 – 4 °C. Finally, in very wet climates, a study of waste rock at the Mt. Lyle Mine (Tasmania, average air temperature ~11 °C, average gravimetric sulfide S ~5%, rock age ~40 years at time of study) found temperatures of 10 to almost 30 °C above ambient through the rock (monitored from surface down to 30 to 40 m; Garvie *et al.* 1997). Calculations based on thermal and oxygen profiles indicated that reactive pods that comprised ~15% of the rock accounted for ~70% of the total oxidation. Scale factors for temperature can thus range from ~0.3 or lower in arctic conditions (e.g., 0°C or colder) up to ~6 (i.e., corresponding to ~40°C) in well oxygenated sulfidic waste rock.

Water contact: fraction of waste flushed by unsaturated flow

The internal structure observed in waste rock facilities produces enormous zonal variability in unsaturated hydraulic conductivity. Careful excavation and study of mine waste finds compacted horizontal layers develop by heavy equipment, and the structure created by end-dumping, including a basal layer of coarse boulders and lenses on angle-of-repose slopes (~40 degrees) that are 10 – 20 cm thick with extreme variability between adjacent layers (Herasymiuk 1996, Newman *et al.* 1997). Studies using unsaturated-flow models and column studies of waste rock structures demonstrate that unsaturated flow is conveyed preferentially through fine materials at low water flux typical of capped waste rock facilities (Newman *et al.* 1997; Fala *et al.* 2003). A similar study of waste-rock hydrology concludes that “transient water flow in mine waste-rock reflects the summation of water flow and transport in multiple pathways of varying properties . . . that range in scale from macro-sized variations in properties to differences in properties at the pore scale” (Marcoline *et al.* 2003). Ideally, preferential flow layers can be designed to isolate

reactive waste (Fala *et al.* 2003); but at pre-feasibility planning stage, a simple range for contact factors may be adequate.

Two studies measured average water contact factors in field scale waste rock. At the Aitik Mine (Sweden), hydrological tests using unreactive tracers found that approximately 65% of the water in the field-scale waste rock was mobile and 35% was immobile (Malmstrom *et al.* 2000). At the Island Copper Mine (Vancouver, BC, Canada), the effluent at the toe of the waste-rock was correlated with precipitation events, and interpretation using a kinematic wave-theory model estimated that "...approximately 42% of the total area of the pile contributes to flow through channels or macropores", with "...only a small fraction of the water lost to the porous matrix from these channels" (i.e., $SF_{\text{contact}} \sim 42\%$; Lopez *et al.* 1997).

Additional research has demonstrated that this preferential flow usually occurs in small fragments, a finding that yields a parallel approach for estimating the contact factor. Hydraulic tracer studies (Br^- and Cl^-) of waste rock at the Diavik diamond mine indicated that under unsaturated conditions, flow occurs primarily through material that is less than ~ 20 mm (Neuner *et al.* 2009). Another detailed study of two waste-rock piles (one in a wetter temperate climate, South Carolina, U.S.; the other in a seasonally frozen climate, Sudbury, Canada) found that materials between 5 mm and 30 mm were most effectively flushed, and that materials above this size showed evidence of accumulation of oxidation products (Tran *et al.* 2003). Particle size distributions in run-of-mine waste rock indicate that the 5 to 30 mm size fractions can correspond approximately to the 0.1 to 0.6 mass fraction (Figure 1). Conveniently, the upper estimates for the fragment size carrying moisture (i.e., up to 20 mm in Neuner *et al.* (2009) and up to 30 mm in Tran *et al.* (2003)) are close to the maximum size contributing appreciably to sulfide oxidation. Therefore, correcting for the reactive size fraction in waste rock can eliminate the need to correct for water contact fraction.

An important caveat in assuming that solutes released by oxidation in coarse fragments (e.g., greater than ~ 30 mm) are permanently immobilized is the risk that these salts could be flushed out during infrequent larger storm events that produce flow in larger pores. A review of various studies of water discharge from uncovered mine waste-rock (Stockwell *et al.* 2003) reported that "...rapid outflow within hours of infiltration through tens of metres of waste-rock has been observed at numerous field sites . . . and in large-scale experiments . . . and that chemical analyses of outflow waters indicate differences exist between slower and faster moving waters." This is consistent with observed water flow through the waste rock at the Island Copper Mine, where effluent at the toe of the waste-rock was correlated with precipitation events (Lopez *et al.* 1997). One of the few specific examples was a tracer study at the Diavik Mine, which found that 15 mm rainfall event over 1.5 hrs did not produce macropore flow, but that a 29 mm event over 3.8 hours may have produced some flow in preferential paths (Neuner *et al.* 2009). As a result, the assumption that large waste-rock fragments (e.g., >30 mm diameter) remain isolated from percolating pore water is most defensible in reclaimed waste rock where covers dampen water flux and prevent storm-induced flushing of pollutants accumulated in coarse fragments. Collectively, these field measurements suggests a wide range for SF_{contact} , from ~ 0.1 to 0.65, with even higher values possible in rock with highly variable water flux.

Oxygen concentrations in waste rock

Oxidation rates in mine waste are approximately proportional to oxygen concentrations in diffusion- and kinetic-limited mine waste (Davis *et al.* 1986; McKibben and Barnes 1986), so the fraction of macro scale zones with depleted pore-gas oxygen is a basis for scaling down oxidation rates under field conditions. Waste rock facilities are typically heterogeneous, and gas transport occurs through a complex mix of advection, diffusion, and convection (e.g., Garvie *et al.* 1997; Fala *et al.* 2003). While computational models can mimic these phenomena, their accuracy is not widely demonstrated, and at a feasibility stage, the volume fraction of oxygen-depleted waste rock may be estimated best using ranges at analog facilities.

The wide variability in measured pore-gas oxygen distributions in field-scale waste rock facilities reflects the effects of intrinsic reactivity, temperature, and advective flow. At Nordhalde, Germany (~3 % pyrite by mass, ambient air temperature ~9 °C), oxygen flux is diffusion limited, and O₂ is depleted within ~15 meters below the surface and near zero to the total 70 m depth (Lefebvre *et al.* 2001). Lefebvre *et al.* contrast this to the Mine Doyon, Quebec, Canada (~7% pyrite by mass, ambient air temperature ~5 °C), which is dominated by advective flow, producing average oxygen concentrations of approximately 10% through the pile (i.e., approximately 50% reduction below 21% atmospheric oxygen; Šrček *et al.* 2004). Rock in semi-arid climates exhibits similar reactivity and associated oxygen depletion. Borings near angle-of-repose slopes at one Nevada, U.S. mine found oxygen concentrations near atmospheric (21%) through the entire depth (23 to 69 m), but at 400 m back from exposed slopes, oxygen partial pressures diminished to between 0 and 10 % (Milczarek *et al.* 2009). Studies at another Nevada mine indicated oxygen concentrations of 10 -15% in most of the vertical profiles in young sulfide rock (9 m to 30 m total depth; Helgen *et al.* 2000). (Sulfide sulfur was not reported in either Nevada study). Finally, studies at the Mt. Lyle Mine, Tasmania (average sulfide S ~5%) found that advective flow maintained oxygen at atmospheric concentrations in most of the waste rock between 0 and 40 m below the surface, but that reactive zones comprising 20% to 80% of vertical profiles were completely depleted in oxygen (Garvie *et al.* 1997). For prediction purposes, assuming SF_{O2} values less than 1 are warranted primarily in rock with sulfide S concentrations of ~1% to 5% (or higher). In these conditions, SF_{O2} ranges between ~0.2 and 0.5 appear reasonable, though facility designs that inhibit convective air flow could create even lower values.

Solute attenuation effects in mine waste effluent

A computational method that reliably brackets the concentrations of major ions and trace elements in effluent from oxidizing sulfidic mine waste remains elusive. In developing an approach, there is a strong incentive to link metal release to sulphate production. Sulfide oxidation is a well-studied and measurable parameter, and many regulated metals are bound as sulfides and thus dissolve in proportion to sulphate. However, extrapolating the dissolution of each metal independently from short-term kinetic tests often produces enormous mass-balance errors and neglects entirely solution charge balance. A partial remedy is to bracket the *solute: sulphate* ratio in leachate between slight oxidation (e.g., cumulative leachate during a 20-week kinetic test) and complete oxidation (peroxide oxidation extraction), then maintain charge balance in estimates of average solute composition by bootstrapping from complete water analyses (Kempton *et al.* 2009). But this simplification does not incorporate temporal changes in water quality as oxidation proceeds.

Promising approaches used to predict trace metal concentrations in mine waste leachates include: 1) measurements of metal:sulphate dissolution ratios using stepwise partial-oxidation extractions, 2) identification of solubility caps using sequential equilibration of leachate with partially-oxidized mine waste, and 3) equilibrium geochemical models calibrated to these dissolution and attenuation tests.

Recommendations

Screening level estimates of waste-rock pollutant production based on scaling factors and analog sites will have large uncertainty. Considering only the fragment sizes identified as carrying the majority of unsaturated flow (from <5 to <30 mm) and the fragment size distributions in waste rock (Figure 1) produces an almost 8-fold range in contact factors (i.e., from 0.08 to 0.6). A large component of uncertainty is timing of pollutant discharge. The duration over which solutes will leach from waste rock is poorly constrained, but is typically estimated in decades to centuries, and two of the effects that can scale down initial reaction rates - temperature and oxygen concentration - result in extending the duration of pollutant release.

Environmental analyses should focus early on refining values for those parameters that will improve the accuracy in extrapolating laboratory tests to full-scale conditions. Determination of the waste rock water

balance and unsaturated flux supports identification of the size fraction of the conductive material that will carry most pore water under site conditions. Oxygen consumption tests can be quick and inexpensive method to measure oxidation rates in waste (Hollings *et al.* 2001); these should be conducted on samples over a wide range of fragment sizes, sulfide sulfur concentrations, pore water pH, and lithologic types.

Consider early development of a method that estimates the dissolution and attenuation of metals and anions from waste rock and tailings over the entire period that it oxidizes. This is most easily bracketed between minimal oxidation (humidity cells) and complete oxidation (peroxide oxidation), but could include interim stages of reaction. Helpful attributes of effective models include empirical tests of solute release at different stages in sulfide oxidation (maintains mass balance on pollutant sources), tracking sources as linear combinations of complete aqueous analyses (maintains charge), simulating transport and attenuation using an equilibrium chemical model with mineral phases fit to the empirical tests (maintain mass and charge balance), and estimating loads from waste as convolution sums of rock parcels that are drawn from the geologic block model (source represents the entire deposit). Ideally, any solute release model would allow propagation of parameter ranges to yield prediction uncertainty.

Finally, simple engineered designs can reduce oxidation and/or solute release. Principal among these are configurations that use preferential flow in fine fragments to divert water around reactive waste (Fala *et al.* 2003) and low-permeability layers on waste slopes to reduce advective air flow; but full-scale examples of waste constructed using these remedial designs were not identified in this review.

Acknowledgements

This manuscript was improved significantly by the helpful comments of two anonymous reviewers. This research was funded in part by Knight Piesold Consulting, Inc.

References

- Aranda, C.A., Llein, B., Beckie, R.D., and Mayer, K.U. 2009. Assessment of waste rock weathering characteristics at the Antamina mine based on field cell experiments. In: Securing the Future and 8th ICARD, June 23-26, 2009, Skeleftea, Sweden.
- Bennett, J.W., Comarmond, M.J. and Jeffery, J.J. 2000. Comparison of sulfidic oxidation rates measured in the laboratory and the field. In: 5th International Conference on Acid Rock Drainage, 2000, pp. 171 – 180.
- Bennett, J.W., Gibson, D.K., Ritchie, A.I.M., Tan, Y., Broman, P.G., and Jonsson, H. 1994. Oxidation rates and pollution loads in drainage; correlation of measurements in a pyritic waste rock dump. Int'l Land Rec. and Acid Mine Drainage Conference, Pittsburgh, PA, USA. April 24-29, 1994. pp. 400-409.
- Davis, G.B., Doherty, G., and Ritchie, A.I.M. 1986. A Model of Oxidation in Pyritic Mine Wastes: Part 2: Comparison of Numerical and Approximate Solutions. Appl. Math. Modelling 10:323-329.
- Davis, G.B., and Ritchie, A.I.M., 1987. A model of oxidation in pyritic mine wastes: part 3: import of particle size distribution. Appl. Math Modelling. Vol. 11, pp. 417-422.
- Fala, O., Aubertin, M., Molson, J., Bussière, B., Wilson, G.W., Chapuis, R., and Martin, V. 2003. Numerical modelling of unsaturated flow in uniform and heterogeneous waste rock piles. In: Proceedings of the 6th International Conference Acid Rock Drainage, Cairns, Australia, July 14-17.
- Fines, P., Wilson, G.W., Williams, D.J., Tran, A.B., and Miller, S. 2003. Field Characterisation of two full-scale waste rock piles. In: Proceedings of the 6th International Conference on Acid Rock Drainage, Cairns, Australia. 12 - 18 July. pp. 903-909.
- Frostad, S., Klein, B., and Lawrence, R.W. 2005. Determining the weathering characteristics of a waste dump with field tests. Int. J. of Surface Mining, Reclamation and Environment, 19(2), pp. 132 – 143.

- Garvie, A.M, Bennett, J.W., and Ritchie, A.I.M. 1997. Quantifying the spatial dependence of sulfide oxidation rates in a waste rock dump at Mt. Lyell, Tasmania. In: Fourth International Conference on Acid Rock Drainage, Vancouver, Canada. May 31 - June 6. pp 335 - 349.
- Helgen, S., Davis, A., and Byrns, C. 2000. Measurement of oxygen, temperature, and geochemical profiles in sulfide and oxide waste rock dumps of different ages. In: Proceedings from the 5th Int. Conf. on Acid Rock Drainage, Denver, CO. Published by: Soc. Mining Engineering. Pp. 269-275.
- Herasymiuk, G. 1996. Hydrogeology of a Sulfide Waste Rock Dump. MSc. Thesis, Department of Civil Engineering, University of Saskatchewan, Saskatoon, Canada.
- Hiskey, J.B., and Schlitt, W.J. 1981. Aqueous oxidation of pyrite. In: Schlitt, W.J. Ed., *Interfacing Technologies in Solution Mining*. Proc. of the 2nd SME-SPE Int. Solution Mining Symp. Denver, CO, Nov. 18–20. pp. 55–74.
- Hollings, P., Hendry, M.J., Nicholson, R.V., and Kirkland, R.A. 2001. Quantification of oxygen consumption and sulphate release rates for waste rock piles using kinetic cells: Cluff Lake uranium mine, northern Saskatchewan, Canada. *Applied Geochemistry*, Vol. 16, pp. 1215-1230.
- Kempton, H. and Atkins, D. 2009. Direct Measurement of Sulfide Mineral Oxidation Rates and Acid Rock Drainage in Wall Rock of Open Pit Mines. In: *Securing the Future and 8th ICARD*, June 23-26, 2009, Skeleftea, Sweden.
- Kempton, H., Conrad, C., Parnow, C., and Phillips, S. 2009. Linking sulfide mineral oxidation and metal release in models of acid rock drainage from mine waste. In: *Securing the Future and 8th ICARD*, June 23-26, 2009, Skeleftea, Sweden.
- Kempton, J.H., Cook, T.L., Atkins, D., and McHugh, M. 1997. Moisture and salinity limits on pyrite oxidation in semi-arid climates. 4th International Symposium on Environmental Geochemistry, October 5-10, Vail, CO. USGS Open File Report No. OF97-496.
- Kuipers, J.R., Maest, A.S., MacHardy, K.A., and Lawson, G. 2006. Comparison of Predicted and Actual Water Quality at Hardrock Mines: The reliability of predictions in Environmental Impact Statements. Kuipers & Associates. PO Box 641, Butte, MT USA 59703.
<http://www.earthworksaction.org/pubs/ComparisonsReportFinal.pdf>.
- Lefebvre, R., Hockley, D., Smolensky, J., and Gelinas, P. 2001. Multiphase transfer processes in waste rock piles producing acid mine drainage, 1. Conceptual model and system conceptualization. *J. Contam. Hydrol.* 52, p. 137-164.
- Li, M. 2000. Unsaturated flow and solute transport observations in large waste rock columns. In: *Proceedings from the fifth international conference on acid rock drainage*, Soc. For Mining, Metallurgy, and Exploration, Inc. Vol. 1, pp. 247 – 256.
- Lopez, D.L., Smith, L. and Beckie, R. 1997. Modeling water flow in waste rock piles using kinematic wave theory. In *Proceedings of the Fourth International Conference on Acid Rock Drainage*, Vancouver, B.C. Canada, May31 – June 6, 1997. Vol. 2, pp. 497 – 513.
- Malmstrom, M., Destouni, G., Banwart, S., and Stromberg, B.H.E. 2000. Resolving the scale-dependence of mineral weathering rates. *Env. Sci. and Technol.* 34(7), pp 1375 – 1378.
- Marcoline, J. .R., Beckie, R. D., Smith, L., and Nichol, C.F. 2003. Mine Waste Rock Hydrogeology — The Effect of Surface Configuration on Internal Water Flow. In: *Proceedings of the 6th International Conference on Acid Rock Drainage*, Cairns, Australia. 12 - 18 July 2003, pp. 911 – 918.
- McKibben, M.A., and Barnes, H.L. 1986. Oxidation of pyrite in low temperature acidic solutions: Rate laws and surface textures. *Geochimica et Cosmochimica Acta*, Vol. 50(7), pp.1509-1520.
- Milczarek, M. D. Hammermeister, M. Buchanan, B. Vorwaller, B., and Conner, T. 2009. *In-situ* Monitoring of a Closed Waste Rock Facility. In: *Securing the Future and 8th ICARD*, June 23-26, 2009, Skeleftea, Sweden.
- Morgan, G.M., and Henrion, M.H. 1990. *Uncertainty: A guide to dealing with uncertainty in quantitative risk and policy analysis*. Cambridge University Press, New York. 332 pp.
- Neuner, M., Gupton, M., Smith, L., Pham, N., Smith, L., Blowes, D., and Sego, D. 2009. Diavik water rock project: unsaturated water flow. In: *Securing the Future and 8th ICARD*, June 23-26, 2009, Skeleftea, Sweden..

- Newman, L. L., Herasymiuk, G. M., Barbour, S. L., Fredlund, D. G. and Smith, T. 1997. The hydrogeology of waste rock dumps and a mechanism for unsaturated preferential flow, in Proceedings Fourth International Conference on Acid Rock Drainage, Vancouver, Canada. pp 551-564.
- Nicholson, R.V. and Sharer, J.M. 1998. Laboratory Studies of Pyrrhotite Oxidation. Mine Environment Neutral Drainage Program Report 1.21.2. March 1998.
- Rumble, C., Miller, S., Kundapen, H., and Bolton, B. 2003. Evaluation of Sulfide and Carbonate Distribution in Waste Rock Dumps and Development of Operational Guidelines for Acid Rock Drainage Control at the Ok Tedi Mine, Papua New Guinea. In: Proceedings of the 6th International Conference on Acid Rock Drainage, Cairns, Australia. 12 - 18 July 2003, pp. 173 – 180.
- Sracek, O., Choquette, M., Gelinasa, P., Lefebvre, R., and Nicholson, R.V. 2004. Geochemical characterization of acid mine drainage from a waste rock pile, Mine Doyon, Quebec, Canada. J. of Contaminant Hydrology Vol. 69, pp. 45–71.
- Swanson, D., Savci, G., Danziger, G., Silliamson, A., Barnes, C., 2000. Unsaturated hydrologic assessment of waste rock stockpiles in semi-arid climates. In: Proc. 5th International Conference on Acid Rock Drainage, Denver, Colorado. Pub. Soc. Mining, Metal., and Explor., Littleton, CO. pp. 1273-1282.
- Stockwell, J., Beckie, R., and Smith, L. 2003. The hydrogeochemical characterisation of an unsaturated waste rock pile, Key Lake, Saskatchewan, Canada. In: Proceedings of the 6th International Conference on Acid Rock Drainage, Cairns, Australia. 12 - 18 July 2003, pp. 927-938.
- Tran, A.B., Miller, S., Williams, D.J., Fines, P., and Wilson, G.W. 2003. Geochemical and mineralogical characterisation of two contrasting waste rock dumps — The INAP Waste Rock Dump Characterisation Project. In: Proceedings of the 6th International Conference on Acid Rock Drainage, Cairns, Australia. 12 - 18 July 2003, pp. 939-947.

Appendix C: ***Field Barrel Leachate Results***

Appendix C - Field Barrel Test Results

Sample ID Date Sampled	Oxide Metasediment					
	FB 1 19/Sep/12	FB 1 17/Oct/12	FB 1 22/Jun/13	FB 1 22/Aug/13	FB 1 14/Sep/13	FB 1 20/Oct/13
Hardness	303	327	100	196	189	54.9
pH	7.7	-	8.0	8.09	8.2	7.89
Acidity	<6.0	-	<2.0	1.4	2.1	2.3
Alkalinity	82	-	86	101	99	34.8
Cl	33	-	2.4	1.15	0.75	<0.50
F	0.72	-	0.62	0.934	0.77	0.332
Nitrate (as N)	0.092	-	0.022	0.0153	<0.0050	<0.0050
Nitrite (as N)	0.046	-	<0.0010	0.0020	<0.0010	<0.0010
SO ₄	321	-	78	196	182	47.6
Al	0.0021	0.0020	0.0042	0.0034	0.0016	<0.0010
Sb	0.0040	0.0046	0.0035	0.00637	0.0051	0.00131
As	0.18	0.17	0.15	0.204	0.16	0.0514
Ba	0.0093	0.0159	0.0051	0.0369	0.013	0.00276
Be	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bi	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
B	0.036	0.036	0.018	0.032	0.020	<0.010
Cd	<0.000070	0.000259	<0.000030	<0.000070	<0.000030	0.000014
Ca	94	100	31	62.0	61	17.1
Cr	0.00023	0.00043	0.00031	0.00018	0.00012	<0.00010
Co	0.0022	0.0030	0.00017	0.00033	0.00017	<0.00010
Cu	0.011	0.012	0.0036	0.00772	0.0043	0.00106
Fe	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Pb	<0.000050	0.00288	<0.000050	<0.000050	<0.000050	<0.000050
Li	0.021	0.024	0.011	0.0177	0.013	0.00413
Mg	17	19	5.1	10.0	9.2	2.99
Mn	0.092	0.145	0.0085	0.00862	0.0060	0.00251
Hg	0.000010	<0.000010	N/A	<0.000010	N/A	<0.000010
Mo	0.17	0.18	0.060	0.142	0.11	0.0319
Ni	0.0093	0.0104	0.0034	0.00401	0.0026	0.00093
P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
K	6.3	6.4	3.1	5.61	4.1	1.57
Se	0.026	0.026	0.0053	0.00782	0.0093	0.00255
Si	6.0	6.5	3.8	6.64	5.3	1.52
Ag	0.000033	0.000023	<0.000010	<0.000010	<0.000010	<0.000010
Na	74	85	32	45.5	36	12.7
Sr	0.73	0.83	0.24	0.530	0.49	0.141
Tl	<0.000010	0.00002	<0.000010	0.000021	0.000014	<0.000010
Sn	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
U	0.030	0.047	0.023	0.0170	0.019	0.00609
V	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zn	0.0042	0.0337	0.0018	0.0035	0.0021	<0.0010

Appendix C - Field Barrel Test Results

Sample ID Date Sampled	Fresh Metasediment					
	FB 2 19/Sep/12	FB 2 17/Oct/12	FB 2 22/Jun/13	FB 2 22/Aug/13	FB 2 14/Sep/13	FB 2 20/Oct/13
Hardness	507	338	154	338	179	154
pH	7.8	-	8.0	7.93	8.0	7.68
Acidity	<6.0	-	<2.0	2.1	2.7	2.3
Alkalinity	76	-	86	82.8	89	83.5
Cl	71	-	6.5	3.84	1.2	0.61
F	0.69	-	0.79	0.854	0.94	0.806
Nitrate (as N)	0.21	-	0.12	1.25	0.22	0.0147
Nitrite (as N)	0.045	-	0.0055	0.0160	0.0033	<0.0010
SO ₄	437	-	118	335	159	104
Al	0.0034	<0.0010	0.0035	0.0033	0.0038	<0.0010
Sb	0.0056	0.0039	0.0052	0.00635	0.0065	0.00470
As	0.035	0.022	0.033	0.0291	0.036	0.0274
Ba	0.015	0.011	0.0048	0.0224	0.012	0.00670
Be	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bi	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
B	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cd	0.000064	0.000220	0.000018	0.000066	0.000023	0.000014
Ca	134	85	41	92.2	49	39.7
Cr	0.00011	0.00018	0.00012	<0.00010	<0.00010	<0.00010
Co	0.0017	0.0013	0.00018	0.00041	<0.00010	<0.00010
Cu	0.0086	0.0078	0.0029	0.00687	0.0026	0.00155
Fe	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Pb	<0.000050	0.000571	<0.000050	<0.000050	<0.000050	<0.000050
Li	0.022	0.020	0.012	0.0212	0.013	0.0113
Mg	42	31	13	26.2	14	13.2
Mn	0.085	0.058	0.0031	0.0110	0.00015	0.00156
Hg	<0.000010	<0.000010	N/A	<0.000010	N/A	<0.000010
Mo	0.036	0.025	0.024	0.0305	0.031	0.0271
Ni	0.0056	0.0048	0.0033	0.00348	0.0024	0.00232
P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
K	7.8	5.2	3.4	6.39	3.9	3.65
Se	0.045	0.029	0.0093	0.0218	0.010	0.00692
Si	4.4	3.3	3.2	4.09	3.6	3.01
Ag	0.000025	<0.000010	<0.000010	0.000013	<0.000010	<0.000010
Na	60	48	27	38.7	25	21.9
Sr	1.4	1.0	0.46	1.07	0.58	0.450
Tl	<0.000010	<0.000010	<0.000010	0.000012	<0.000010	<0.000010
Sn	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
U	0.023	0.023	0.012	0.0127	0.010	0.0103
V	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zn	0.0058	0.0056	0.0029	0.0078	0.0022	0.0012

Appendix C - Field Barrel Test Results

Sample ID Date Sampled	Oxide/Fresh Metasediment					
	FB 3 19/Sep/12	FB 3 17/Oct/12	FB 3 22/Jun/13	FB 3 22/Aug/13	FB 3 14/Sep/13	FB 3 20/Oct/13
Hardness	730	556	245	423	226	192
pH	7.9	7.9	7.9	7.77	7.9	7.68
Acidity	<6.0	4.4	<2.0	3.2	3.9	1.8
Alkalinity	90	89	82	48.4	66	46.4
Cl	26	18	3.2	<5.0	<0.50	<0.50
F	0.64	0.61	0.64	0.83	0.82	0.536
Nitrate (as N)	0.054	<0.050	<0.0050	0.063	0.010	<0.0050
Nitrite (as N)	<0.010	<0.010	<0.0010	<0.010	0.0034	<0.0010
SO ₄	673	558	217	446	215	105
Al	0.0031	0.0012	0.0019	0.0027	0.0026	0.0034
Sb	0.027	0.027	0.022	0.0323	0.032	0.0258
As	0.012	0.010	0.0091	0.0138	0.016	0.0104
Ba	0.044	0.030	0.017	0.0480	0.026	0.0167
Be	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bi	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
B	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Cd	0.000026	0.000033	0.000014	0.000030	0.000012	0.000012
Ca	235	179	80	138	74	61.5
Cr	<0.00020	0.00021	<0.00010	<0.00010	<0.00010	<0.00010
Co	0.0064	0.0046	0.00056	0.00155	0.00077	0.00055
Cu	0.014	0.009	0.0046	0.00585	0.0029	0.00219
Fe	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Pb	0.00011	0.00017	<0.000050	0.000208	0.00010	0.000161
Li	0.022	0.020	0.011	0.0166	0.012	0.0111
Mg	35	27	11	19.0	9.9	9.25
Mn	0.16	0.13	0.027	0.0189	0.0037	0.00375
Hg	<0.000010	<0.000010	N/A	<0.000010	N/A	<0.000010
Mo	0.024	0.019	0.015	0.0146	0.016	0.0143
Ni	0.032	0.022	0.014	0.0144	0.0084	0.00722
P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
K	12	9	5.5	8.35	5.6	4.94
Se	0.080	0.058	0.014	0.0217	0.0089	0.00557
Si	3.3	2.9	2.6	3.35	2.9	2.30
Ag	<0.000020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Na	59	48	29	30.5	22	20.2
Sr	3.4	2.6	1.1	1.86	1.1	0.895
Tl	0.000095	0.000080	0.000045	0.000120	0.000088	0.000055
Sn	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
U	0.22	0.21	0.16	0.110	0.100	0.144
V	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zn	0.0040	0.0035	0.0025	0.0106	0.0020	0.0022

Appendix C - Field Barrel Test Results

Oxide Granodiorite						
Sample ID	FB 4	FB 4	FB 4	FB 4	FB 4	FB 4
Date Sampled	19/Sep/12	17/Oct/12	22/Jun/13	22/Aug/13	14/Sep/13	20/Oct/13
Hardness	390	287	171	363	273	46.7
pH	7.9	8.3	8.0	7.93	8.1	7.79
Acidity	<6.0	<1.0	<2.0	2.2	1.5	2.0
Alkalinity	87	67	80	82.9	90	25.4
Cl	27	18	4.2	<2.5	1.1	<0.50
F	0.49	0.64	0.48	0.58	0.62	0.249
Nitrate (as N)	0.079	0.140	<0.0050	0.409	<0.0050	<0.0050
Nitrite (as N)	<0.010	0.0116	<0.0010	0.0100	<0.0010	<0.0010
SO ₄	417	356	155	400	283	39.1
Al	0.0045	<0.0010	0.0054	0.0055	0.0027	<0.0010
Sb	0.11	0.09	0.095	0.0992	0.11	0.0267
As	0.32	0.28	0.27	0.231	0.26	0.0679
Ba	0.038	0.024	0.014	0.0453	0.035	0.00459
Be	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bi	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
B	0.027	0.022	0.017	0.022	0.022	<0.010
Cd	0.00013	0.00013	0.000023	0.000142	0.00010	0.000013
Ca	135	98	60	128	96	16.3
Cr	<0.00010	0.00015	0.00010	<0.00010	0.00010	<0.00010
Co	0.0032	0.0021	0.00013	0.00186	0.00099	0.00010
Cu	0.020	0.013	0.0083	0.0134	0.0085	0.00150
Fe	<0.010	<0.010	<0.010	0.018	<0.010	<0.010
Pb	<0.000050	0.000064	<0.000050	0.000075	<0.000050	<0.000050
Li	0.0087	0.0082	0.0052	0.00901	0.0069	0.00118
Mg	13	10	5.3	10.6	7.9	1.44
Mn	0.090	0.058	0.00026	0.0426	0.020	0.00167
Hg	0.000013	<0.000010	N/A	<0.000010	N/A	<0.000010
Mo	0.056	0.042	0.020	0.0355	0.037	0.00701
Ni	0.0071	0.0049	0.0036	0.00606	0.0042	0.00073
P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
K	5.8	4.7	3.2	5.65	4.6	1.24
Se	0.047	0.036	0.016	0.0309	0.019	0.00241
Si	4.3	3.3	3.1	4.05	3.8	0.908
Ag	0.000023	<0.000010	<0.000010	0.000017	0.000020	<0.000010
Na	66	57	34	44.3	38	9.92
Sr	1.8	1.3	0.72	1.62	1.3	0.198
Tl	<0.000010	0.000013	0.000010	0.000016	0.000013	<0.000010
Sn	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
U	0.22	0.18	0.19	0.117	0.13	0.0314
V	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zn	0.0056	0.0036	0.0012	0.0072	0.0047	<0.0010

Appendix C - Field Barrel Test Results

Fresh Granodiorite						
Sample ID	FB 5	FB 5	FB 5	FB 5	FB 5	FB 5
Date Sampled	19/Sep/12	17/Oct/12	22/Jun/13	22/Aug/13	14/Sep/13	20/Oct/13
Hardness	1490	1030	627	1380	990	389
pH	7.5	8.1	7.9	7.76	7.8	7.53
Acidity	<6.0	2.3	<2.0	3.3	2.8	4.3
Alkalinity	60	77	74	77.2	49	43.0
Cl	153	107	19	<10	<5.0	<2.5
F	1.1	1.3	1.3	1.48	1.2	0.87
Nitrate (as N)	0.49	0.85	0.21	0.41	<0.050	<0.025
Nitrite (as N)	0.33	0.09	<0.010	0.021	<0.010	<0.0050
SO ₄	1640	1290	678	1590	1070	398
Al	0.0033	<0.0020	0.0010	0.0086	0.0030	<0.0010
Sb	0.019	0.015	0.018	0.0207	0.017	0.0102
As	0.048	0.034	0.034	0.0288	0.026	0.0143
Ba	0.073	0.036	0.034	0.106	0.049	0.0199
Be	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010
Bi	<0.0010	<0.0010	<0.00050	<0.0010	<0.00050	<0.00050
B	0.027	0.020	0.017	0.022	0.018	<0.010
Cd	0.00040	0.00035	0.00013	0.000436	0.00023	0.000124
Ca	418	269	183	399	292	106
Cr	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010
Co	0.016	0.014	0.0054	0.0108	0.0067	0.00331
Cu	0.023	0.020	0.0071	0.0112	0.0058	0.00264
Fe	<0.020	<0.020	<0.010	0.029	<0.010	<0.010
Pb	0.0011	0.0004	0.00019	0.00155	0.00075	0.000515
Li	0.066	0.054	0.037	0.0666	0.044	0.0234
Mg	109	87	41	93.5	63	30.4
Mn	0.22	0.18	0.065	0.193	0.094	0.0448
Hg	0.000039	0.000010	N/A	<0.000010	N/A	<0.000010
Mo	0.079	0.053	0.041	0.0417	0.034	0.0180
Ni	0.021	0.018	0.013	0.0222	0.017	0.00874
P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
K	9.7	8.0	5.1	9.18	7.0	3.97
Se	0.56	0.41	0.12	0.335	0.14	0.0452
Si	4.0	3.2	3.1	3.80	3.3	1.97
Ag	0.00010	<0.000020	<0.000010	0.000022	<0.000010	<0.000010
Na	139	117	66	88.8	65	33.6
Sr	14	8	5.7	13.4	8.8	3.38
Tl	0.000079	0.000074	0.000057	0.000167	0.00018	0.000103
Sn	<0.00020	<0.00020	<0.00010	<0.00020	<0.00010	<0.00010
Ti	<0.010	<0.010	0.012	<0.010	<0.010	<0.010
U	0.47	0.47	0.46	0.329	0.32	0.236
V	<0.0020	<0.0020	<0.0010	<0.0020	<0.0010	<0.0010
Zn	0.030	0.015	0.011	0.0421	0.022	0.0146

Appendix C - Field Barrel Test Results

Sample ID Date Sampled	Altered Granodiorite					
	FB 6 19/Sep/12	FB 6 17/Oct/12	FB 6 22/Jun/13	FB 6 22/Aug/13	FB 6 14/Sep/13	FB 6 20/Oct/13
Hardness	1350	950	444	852	597	122
pH	7.6	8.2	7.9	7.89	7.9	7.73
Acidity	<6.0	1.6	<2.0	2.4	2.0	2.5
Alkalinity	80	86	79.9	79.7	85	28.0
Cl	84	49	6.3	<5.0	<5.0	<0.50
F	1.5	1.7	1.5	1.69	1.6	0.552
Nitrate (as N)	0.82	1.83	0.44	2.26	0.51	0.0241
Nitrite (as N)	0.35	0.20	<0.010	0.024	<0.010	0.0010
SO ₄	1710	1300	518	994	656	120
Al	0.0026	<0.0020	0.0027	0.0048	0.0042	<0.0010
Sb	0.15	0.20	0.18	0.351	0.37	0.109
As	0.12	0.09	0.095	0.0891	0.083	0.0203
Ba	0.043	0.027	0.019	0.0474	0.025	0.00563
Be	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
Bi	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050
B	0.049	0.045	0.030	0.036	0.029	<0.010
Cd	0.00023	0.00021	0.000064	0.000402	0.00021	0.000041
Ca	334	219	116	218	155	31.5
Cr	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
Co	0.013	0.010	0.00096	0.00250	0.0018	0.00052
Cu	0.020	0.013	0.0061	0.00950	0.0075	0.00131
Fe	<0.020	<0.020	<0.010	<0.010	<0.010	<0.010
Pb	0.00071	0.00035	0.000057	0.000967	0.00087	0.000211
Li	0.052	0.054	0.027	0.0426	0.033	0.00759
Mg	125	98	37	74.9	51	10.5
Mn	0.22	0.17	0.020	0.0916	0.060	0.0181
Hg	<0.000010	<0.000010	N/A	<0.000010	N/A	<0.000010
Mo	0.066	0.049	0.025	0.0360	0.029	0.00654
Ni	0.024	0.018	0.0096	0.00943	0.0072	0.00211
P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
K	14	11	6.1	9.51	7.3	2.03
Se	0.14	0.10	0.028	0.0825	0.040	0.00554
Si	3.5	2.8	2.4	2.76	2.3	0.680
Ag	0.000050	<0.000020	<0.000010	0.000038	0.000018	<0.000010
Na	212	173	70	87.9	61	13.9
Sr	7.7	5.2	2.7	5.61	3.9	0.770
Tl	0.000063	0.000057	0.000033	0.000082	0.000056	0.000012
Sn	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
U	0.55	0.53	0.31	0.291	0.28	0.0777
V	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010
Zn	0.028	0.013	0.0084	0.0485	0.027	0.0136

Appendix C - Field Barrel Test Results

Sample ID Date Sampled	Oxide/Fresh Granodiorite					
	FB 7 19/Sep/12	FB 7 17/Oct/12	FB 7 22/Jun/13	FB 7 22/Aug/13	FB 7 14/Sep/13	FB 7 20/Oct/13
Hardness	1110	765	586	749	767	299
pH	7.6	7.9	7.8	7.81	7.9	7.62
Acidity	<6.0	2.7	<2.0	2.4	2.6	2.7
Alkalinity	84	48	61	65.4	80	38.0
Cl	38	23	5.7	<5.0	<5.0	<0.50
F	0.93	1.32	0.93	1.27	1.1	0.569
Nitrate (as N)	0.068	<0.050	0.056	<0.050	<0.050	<0.0050
Nitrite (as N)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0010
SO ₄	1100	835	595	764	768	264
Al	0.0037	<0.0020	0.0029	0.0045	0.0042	<0.0010
Sb	0.029	0.025	0.022	0.0325	0.030	0.0138
As	0.014	0.011	0.011	0.0137	0.012	0.00575
Ba	0.034	0.022	0.019	0.0360	0.035	0.0111
Be	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
Bi	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050
B	<0.020	<0.020	<0.010	0.011	<0.010	<0.010
Cd	0.00055	0.00037	0.00031	0.000463	0.00050	0.000185
Ca	346	230	182	233	240	93.8
Cr	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
Co	0.017	0.010	0.0043	0.00307	0.0033	0.00143
Cu	0.013	0.009	0.0053	0.00845	0.0056	0.00412
Fe	<0.020	<0.020	<0.010	0.021	<0.010	<0.010
Pb	0.00039	0.00013	<0.000050	0.000468	0.00018	0.000123
Li	0.023	0.020	0.013	0.0182	0.017	0.00784
Mg	60	47	32	40.9	41	15.7
Mn	0.61	0.39	0.20	0.159	0.18	0.0711
Hg	0.000018	<0.000010	N/A	<0.000010	N/A	<0.000010
Mo	0.030	0.027	0.015	0.0272	0.020	0.00832
Ni	0.021	0.013	0.012	0.00822	0.0089	0.00376
P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
K	8.6	7.0	5.0	6.78	5.5	2.61
Se	0.12	0.09	0.039	0.0698	0.061	0.0169
Si	3.5	2.8	2.5	3.39	3.2	1.52
Ag	0.000054	0.000036	<0.000010	0.000018	<0.000010	<0.000010
Na	59	54	32	33.1	31	12.7
Sr	5.8	3.9	3.2	4.65	4.6	1.78
Tl	0.000063	0.000051	0.000033	0.000077	0.000066	0.000024
Sn	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010
Ti	<0.010	<0.010	0.011	<0.010	<0.010	<0.010
U	0.35	0.29	0.29	0.231	0.28	0.149
V	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010
Zn	0.025	0.012	0.012	0.0177	0.022	0.0087

Appendix C - Field Barrel Test Results

Sample ID Date Sampled	Overburden					
	FB 8 19/Sep/12	FB 8 17/Oct/12	FB 8 22/Jun/13	FB 8 22/Aug/13	FB 8 14/Sep/13	FB 8 20/Oct/13
Hardness	208	173	56	138	128	103
pH	8.0	8.5	8.1	8.10	7.9	7.72
Acidity	<6.0	<1.0	<2.0	<1.0	1.1	2.2
Alkalinity	96	70	40	98.6	89	54.9
Cl	13	13	1.4	0.58	<0.50	<0.50
F	0.093	0.098	0.071	0.202	0.17	0.136
Nitrate (as N)	8.3	5.9	1.5	3.54	4.2	1.92
Nitrite (as N)	0.35	0.05	0.013	0.0650	0.037	0.0051
SO ₄	93	110	23	59.2	57	38.6
Al	0.0071	0.0016	0.010	0.0120	0.0077	0.0012
Sb	0.0042	0.0032	0.0027	0.0116	0.012	0.00524
As	0.012	0.010	0.015	0.0265	0.025	0.0207
Ba	0.061	0.040	0.023	0.0489	0.041	0.0291
Be	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bi	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
B	<0.010	<0.010	0.013	<0.010	<0.010	<0.010
Cd	0.000051	0.000043	<0.000010	0.000054	0.000010	0.000015
Ca	69	55	18	47.3	44	33.8
Cr	0.00013	0.00012	0.00071	0.00038	0.00033	0.00015
Co	0.0015	0.0017	0.00011	0.00046	0.00026	0.00028
Cu	0.0076	0.0061	0.0058	0.0133	0.0088	0.00650
Fe	<0.010	<0.010	0.015	0.023	<0.010	<0.010
Pb	0.00016	0.00010	0.00011	0.000500	0.000072	0.000090
Li	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Mg	8.4	8.6	2.7	4.91	4.4	4.44
Mn	0.29	0.22	0.00074	0.0390	0.011	0.0153
Hg	<0.000010	<0.000010	N/A	<0.000010	N/A	<0.000010
Mo	0.0037	0.0032	0.0024	0.0104	0.0098	0.00902
Ni	0.0060	0.0053	0.0018	0.00449	0.0031	0.00221
P	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
K	2.7	2.5	1.2	2.85	2.4	2.16
Se	0.0032	0.0024	0.00062	0.00084	0.0010	0.00086
Si	2.0	1.6	0.98	2.43	1.8	1.39
Ag	<0.000010	<0.000010	<0.000010	0.000012	<0.000010	<0.000010
Na	17	18	5.9	15.9	14	13.6
Sr	0.42	0.38	0.11	0.284	0.26	0.232
Tl	0.000020	0.000019	<0.000010	0.000020	0.000017	<0.000010
Sn	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Ti	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
U	0.0034	0.0041	0.0017	0.00290	0.0030	0.00329
V	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zn	0.0032	0.0026	<0.0010	0.0100	0.0018	0.0029

Appendix D: ***Source Term Predictions***

Appendix D.1 - Eagle Pup Drainage Chemistry Predictions

Eagle Pup	Month	pH	Alkal. mg/L	SO ₄ mg/L	Cl mg/L	F mg/L	Ag mg/L	Al mg/L	As mg/L	B mg/L	Ba mg/L	Be mg/L	Ca mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Fe mg/L	Hg mg/L	K mg/L
Year																				
Scenario 1 (median)																				
Year 1	Mar	8.2	45	130	6.7	0.85	0.000020	0.011	0.074	0.14	0.021	0.00010	45	0.000040	0.00075	0.00038	0.0099	0.0016	0.000030	9.5
	Apr	8.1	39	130	6.7	1.8	0.000030	0.0091	0.14	0.31	0.024	0.00012	64	0.000090	0.00075	0.0006	0.0099	0.0017	0.00006	20
	May	8.2	43	130	6.7	1.5	0.000030	0.0101	0.11	0.25	0.022	0.00010	51	0.000070	0.00075	0.0005	0.0099	0.0016	0.00005	17
	Jun	8.2	45	130	6.7	1.2	0.000020	0.011	0.089	0.20	0.021	0.00010	46	0.000060	0.00075	0.00041	0.0099	0.0016	0.000040	13
	Jul	8.2	45	130	6.7	1.3	0.000020	0.011	0.095	0.21	0.021	0.00010	46	0.000060	0.00075	0.00043	0.0099	0.0016	0.000040	14
	Aug	8.2	45	130	6.7	1.2	0.000020	0.011	0.090	0.20	0.021	0.00010	46	0.000060	0.00075	0.00041	0.0099	0.0016	0.000040	13
	Sep	8.2	45	130	6.7	1.1	0.000020	0.011	0.081	0.18	0.021	0.00010	45	0.000050	0.00075	0.00038	0.0099	0.0016	0.000040	12
	Oct	8.2	45	130	6.7	0.96	0.000020	0.011	0.074	0.16	0.021	0.00010	45	0.000050	0.00075	0.00038	0.0099	0.0016	0.000030	11
	Nov	8.2	45	130	6.7	0.87	0.000020	0.011	0.074	0.15	0.021	0.00010	45	0.000040	0.00075	0.00038	0.0099	0.0016	0.000030	9.7
	Dec	8.2	45	130	6.7	0.79	0.000020	0.011	0.074	0.13	0.021	0.00010	45	0.000040	0.00075	0.00038	0.0099	0.0016	0.000030	8.8
	Jan	8.2	45	143	1.5	0.73	0.000010	0.011	0.100	0.14	0.019	0.00010	46	0.000040	0.00048	0.00034	0.0083	0.0016	0.000030	8.8
	Feb	8.2	45	143	1.4	0.68	0.000010	0.011	0.100	0.13	0.019	0.00010	46	0.000040	0.00048	0.00034	0.0083	0.0016	0.000030	8.2
Year 2	Mar	8.2	45	143	1.6	0.78	0.000020	0.011	0.100	0.15	0.019	0.00010	46	0.000040	0.00048	0.00034	0.0083	0.0016	0.000030	9.5
	Apr	8.1	39	143	3.3	1.7	0.000030	0.0091	0.20	0.33	0.021	0.00013	64	0.000080	0.00048	0.0007	0.0083	0.0017	0.00007	20
	May	8.2	44	143	2.7	1.4	0.000030	0.0101	0.16	0.27	0.020	0.00011	51	0.000070	0.00048	0.0006	0.0083	0.0016	0.00005	17
	Jun	8.2	45	143	2.2	1.1	0.000020	0.011	0.13	0.22	0.019	0.00010	46	0.000050	0.00048	0.00044	0.0083	0.0016	0.000040	13
	Jul	8.2	45	143	2.3	1.2	0.000020	0.011	0.14	0.23	0.019	0.00010	46	0.000060	0.00048	0.00046	0.0083	0.0016	0.000050	14
	Aug	8.2	45	143	2.2	1.1	0.000020	0.011	0.13	0.22	0.019	0.00010	46	0.000050	0.00048	0.00044	0.0083	0.0016	0.000040	13
	Sep	8.2	45	143	2.0	0.99	0.000020	0.011	0.12	0.20	0.019	0.00010	46	0.000050	0.00048	0.00040	0.0083	0.0016	0.000040	12
	Oct	8.2	45	143	1.8	0.89	0.000020	0.011	0.10	0.17	0.019	0.00010	46	0.000040	0.00048	0.00035	0.0083	0.0016	0.000030	11
	Nov	8.2	45	143	1.6	0.80	0.000020	0.011	0.100	0.16	0.019	0.00010	46	0.000040	0.00048	0.00034	0.0083	0.0016	0.000030	9.7
	Dec	8.2	45	143	1.4	0.73	0.000010	0.011	0.100	0.14	0.019	0.00010	46	0.000040	0.00048	0.00034	0.0083	0.0016	0.000030	8.8
	Jan	8.2	45	62	1.7	0.74	0.000020	0.011	0.12	0.17	0.039	0.000070	40	0.000030	0.00025	0.00034	0.0027	0.0015	0.000030	13
	Feb	8.2	46	58	1.6	0.68	0.000020	0.011	0.11	0.16	0.038	0.000060	36	0.000030	0.00023	0.00032	0.0025	0.0015	0.000030	12
Mar	8.2	43	67	1.8	0.79	0.000020	0.010	0.13	0.18	0.037	0.000070	43	0.000040	0.00027	0.00037	0.0029	0.0016	0.000040	14	
Year 3	Apr	8.0	31	142	4.0	1.7	0.000040	0.0072	0.28	0.39	0.024	0.00016	105	0.00008	0.00058	0.0008	0.0061	0.0019	0.00008	30
	May	8.0	34	117	3.2	1.4	0.000030	0.0079	0.23	0.32	0.027	0.00013	84	0.00007	0.00047	0.0006	0.0050	0.0018	0.00006	24
	Jun	8.1	37	93	2.6	1.1	0.000030	0.0087	0.18	0.25	0.030	0.00010	64	0.000050	0.00038	0.0005	0.0040	0.0017	0.00005	19
	Jul	8.1	36	99	2.7	1.2	0.000030	0.0085	0.19	0.27	0.029	0.00011	69	0.000060	0.00040	0.0005	0.0042	0.0017	0.00005	20
	Aug	8.1	37	93	2.6	1.1	0.000030	0.0087	0.18	0.26	0.030	0.00010	64	0.000050	0.00038	0.0005	0.0040	0.0017	0.00005	19
	Sep	8.1	39	85	2.3	1.00	0.000020	0.0091	0.17	0.23	0.032	0.000090	57	0.000050	0.00034	0.00047	0.0036	0.0017	0.000050	18
	Oct	8.1	41	75	2.1	0.90	0.000020	0.0096	0.15	0.21	0.034	0.000080	50	0.000040	0.00030	0.00042	0.0032	0.0016	0.000040	16
	Nov	8.2	43	68	1.9	0.81	0.000020	0.010	0.13	0.19	0.037	0.000070	44	0.000040	0.00027	0.00037	0.0029	0.0016	0.000040	14
	Dec	8.2	45	62	1.7	0.73	0.000020	0.011	0.12	0.17	0.039	0.000070	40	0.000030	0.00025	0.00034	0.0027	0.0015	0.000030	13
	Jan	8.2	43	68	1.8	0.80	0.000020	0.010	0.12	0.17	0.037	0.000070	43	0.000040	0.00026	0.00035	0.0028	0.0016	0.000030	13
	Feb	8.2	44	63	1.6	0.75	0.000020	0.011	0.11	0.16	0.038	0.000060	40	0.000030	0.00024	0.00032	0.0026	0.0015	0.000030	12
	Mar	8.1	42	73	1.9	0.86	0.000020	0.0098	0.13	0.19	0.035	0.000070	47	0.000040	0.00028	0.00038	0.0030	0.0016	0.000040	14
Year 4	Apr	8.0	30	155	4.0	1.8	0.000040	0.0070	0.28	0.40	0.023	0.00016	115	0.00009	0.00061	0.0008	0.0064	0.0020	0.00008	30
	May	8.0	33	127	3.3	1.5	0.000030	0.0076	0.23	0.33	0.025	0.00013	91	0.00007	0.00050	0.0007	0.0053	0.0019	0.00007	25
	Jun	8.1	36	101	2.6	1.2	0.000030	0.0084	0.18	0.26	0.029	0.00010	70	0.000060	0.00039	0.0005	0.0042	0.0017	0.00005	20
	Jul	8.1	35	108	2.8	1.3	0.000030	0.0082	0.19	0.28	0.028	0.00011	75	0.000060	0.00042	0.0006	0.0045	0.0018	0.00006	21
	Aug	8.1	36	102	2.6	1.2	0.000030	0.0084	0.18	0.26	0.029	0.00010	70	0.000060	0.00040	0.0005	0.0042	0.0017	0.00005	20
	Sep	8.1	37	92	2.4	1.1	0.000020	0.0088	0.17	0.24	0.030	0.00009	63	0.000050	0.00036	0.00048	0.0038	0.0017	0.00005	18
	Oct	8.1	39	82	2.1	1.0	0.000020	0.0093	0.15	0.21	0.032	0.000080	55	0.000050	0.00032	0.00042	0.0034	0.0016	0.000040	16
	Nov	8.1	41	74	1.9	0.88	0.000020	0.0097	0.13	0.19	0.034	0.000080	48	0.000040	0.00029	0.00038	0.0031	0.0016	0.000040	15
	Dec	8.2	43	67	1.8	0.80	0.000020	0.010	0.12	0.17	0.037	0.000070	43	0.000040	0.00026	0.00035	0.0028	0.0016	0.000030	13
	Jan	8.1	38	99	2.1	0.97	0.000020	0.0089	0.15	0.21	0.028	0.000080	61	0.000040	0.00036	0.00043	0.0036	0.0017	0.000040	17
	Feb	8.1	39	93	2.0	0.90	0.000020	0.0092	0.14	0.20	0.029	0.000080	56	0.000040	0.00034	0.00040	0.0034	0.0017	0.000040	16
	Mar	8.1	37	107	2.3	1.0	0.000020	0.0086	0.16	0.23	0.026	0.000090	67	0.000050	0.00039	0.00046	0.0039	0.0017	0.000050	18
Year 5	Apr	7.9	27	229	4.9	2.2	0.000050	0.0063	0.35	0.49	0.018	0.00019	160	0.00010	0.00084	0.0010	0.0083	0.0021	0.00010	39
	May	8.0	29	187	4	1.8	0.00004	0.0068	0.29	0.4	0.020	0.00016	128	0.00008	0.00069	0.0008	0.0068	0.0020	0.00008	32
	Jun	8.0	32	149	3.2	1.5	0.000030	0.0074	0.23	0.32	0.022	0.00013	98	0.000070	0.00055	0.0006				

Appendix D.1 - Eagle Pup Drainage Chemistry Predictions

Eagle Pup	Month	Li	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	Si	Sn	Sr	Tl	U	V	Zn
Year		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Scenario 1 (median)																		
Year 1	Mar	0.0106	12	0.034	0.074	28	0.0046	0.30	0.00016	0.019	0.011	5.2	0.00010	0.46	0.000100	0.021	0.0010	0.0047
	Apr	0.023	25	0.034	0.16	28	0.0046	0.30	0.00026	0.019	0.011	5.2	0.00010	0.95	0.00020	0.027	0.0014	0.0047
	May	0.018	21	0.034	0.13	28	0.0046	0.30	0.00022	0.019	0.011	5.2	0.00010	0.78	0.00017	0.022	0.0011	0.0047
	Jun	0.015	17	0.034	0.103	28	0.0046	0.30	0.00017	0.019	0.011	5.2	0.00010	0.62	0.00013	0.021	0.0010	0.0047
	Jul	0.016	18	0.034	0.11	28	0.0046	0.30	0.00018	0.019	0.011	5.2	0.00010	0.66	0.00014	0.021	0.0010	0.0047
	Aug	0.015	17	0.034	0.104	28	0.0046	0.30	0.00017	0.019	0.011	5.2	0.00010	0.63	0.00013	0.021	0.0010	0.0047
	Sep	0.013	15	0.034	0.094	28	0.0046	0.30	0.00016	0.019	0.011	5.2	0.00010	0.57	0.00012	0.021	0.0010	0.0047
	Oct	0.012	13	0.034	0.084	28	0.0046	0.30	0.00016	0.019	0.011	5.2	0.00010	0.51	0.00011	0.021	0.0010	0.0047
	Nov	0.011	12	0.034	0.075	28	0.0046	0.30	0.00016	0.019	0.011	5.2	0.00010	0.46	0.000100	0.021	0.0010	0.0047
	Dec	0.0098	11	0.034	0.069	28	0.0046	0.30	0.00016	0.019	0.011	5.2	0.00010	0.46	0.000090	0.021	0.0010	0.0047
	Jan	0.0096	9.5	0.019	0.059	26	0.0038	0.30	0.00015	0.020	0.011	5.2	0.00010	0.59	0.000080	0.029	0.0010	0.0043
	Feb	0.0089	8.9	0.019	0.054	26	0.0038	0.30	0.00015	0.020	0.011	5.2	0.00010	0.59	0.000070	0.029	0.0010	0.0043
Year 2	Mar	0.0103	10.3	0.019	0.063	26	0.0038	0.30	0.00015	0.020	0.011	5.2	0.00010	0.59	0.000090	0.029	0.0010	0.0043
	Apr	0.022	22	0.029	0.13	26	0.0038	0.30	0.00027	0.020	0.011	5.2	0.00010	0.96	0.00018	0.032	0.0015	0.0043
	May	0.018	18	0.023	0.11	26	0.0038	0.30	0.00022	0.020	0.011	5.2	0.00010	0.78	0.00015	0.029	0.0012	0.0043
	Jun	0.014	14	0.019	0.088	26	0.0038	0.30	0.00018	0.020	0.011	5.2	0.00010	0.63	0.00012	0.029	0.0010	0.0043
	Jul	0.015	15	0.020	0.093	26	0.0038	0.30	0.00019	0.020	0.011	5.2	0.00010	0.66	0.00013	0.029	0.0010	0.0043
	Aug	0.014	14	0.019	0.088	26	0.0038	0.30	0.00018	0.020	0.011	5.2	0.00010	0.63	0.00012	0.029	0.0010	0.0043
	Sep	0.013	13	0.019	0.080	26	0.0038	0.30	0.00016	0.020	0.011	5.2	0.00010	0.59	0.00011	0.029	0.0010	0.0043
	Oct	0.012	12	0.019	0.071	26	0.0038	0.30	0.00015	0.020	0.011	5.2	0.00010	0.59	0.000100	0.029	0.0010	0.0043
	Nov	0.011	10	0.019	0.064	26	0.0038	0.30	0.00015	0.020	0.011	5.2	0.00010	0.59	0.000090	0.029	0.0010	0.0043
	Dec	0.0096	9.5	0.019	0.058	26	0.0038	0.30	0.00015	0.020	0.011	5.2	0.00010	0.59	0.000080	0.029	0.0010	0.0043
	Jan	0.015	9.3	0.033	0.047	2.8	0.0016	0.007	0.00013	0.013	0.0043	5.2	0.00014	0.53	0.000070	0.015	0.0009	0.0024
	Feb	0.014	8.6	0.031	0.044	2.6	0.0015	0.006	0.00012	0.012	0.0040	5.2	0.00013	0.49	0.000070	0.014	0.0009	0.0023
	Mar	0.016	10.0	0.036	0.051	3.0	0.0017	0.007	0.00014	0.014	0.0046	5.2	0.00015	0.57	0.000080	0.017	0.0010	0.0026
Year 3	Apr	0.035	21	0.076	0.11	6.4	0.0037	0.016	0.00031	0.030	0.0099	5.2	0.00031	1.2	0.00017	0.035	0.0022	0.0056
	May	0.029	17	0.062	0.09	5.2	0.0030	0.013	0.00025	0.025	0.008	5.2	0.00026	1.0	0.00014	0.029	0.0018	0.0046
	Jun	0.023	14	0.050	0.071	4.2	0.0024	0.010	0.00020	0.020	0.0064	5.2	0.00020	0.79	0.00011	0.023	0.0014	0.0037
	Jul	0.024	15	0.053	0.075	4.4	0.0026	0.011	0.00021	0.021	0.0068	5.2	0.00022	0.84	0.00012	0.024	0.0015	0.0039
	Aug	0.023	14	0.050	0.071	4.2	0.0024	0.010	0.00020	0.020	0.0065	5.2	0.00020	0.80	0.00011	0.023	0.0014	0.0037
	Sep	0.021	13	0.045	0.065	3.8	0.0022	0.009	0.00018	0.018	0.0059	5.2	0.00019	0.72	0.00010	0.021	0.0013	0.0033
	Oct	0.019	11	0.040	0.058	3.4	0.0020	0.008	0.00016	0.016	0.0052	5.2	0.00017	0.64	0.000090	0.019	0.0012	0.0030
	Nov	0.017	10	0.036	0.052	3.1	0.0018	0.008	0.00015	0.015	0.0047	5.2	0.00015	0.58	0.000080	0.017	0.0010	0.0027
	Dec	0.015	9.3	0.033	0.047	2.8	0.0016	0.007	0.00013	0.013	0.0043	5.2	0.00014	0.53	0.000070	0.015	0.0009	0.0024
	Jan	0.016	10	0.037	0.048	2.9	0.0017	0.007	0.00015	0.030	0.0047	5.2	0.00015	0.68	0.000080	0.023	0.0010	0.0026
	Feb	0.015	9.3	0.034	0.045	2.7	0.0015	0.007	0.00014	0.028	0.0043	5.2	0.00014	0.63	0.000080	0.022	0.0009	0.0024
	Mar	0.017	11	0.039	0.052	3.1	0.0018	0.008	0.00016	0.032	0.0050	5.2	0.00016	0.73	0.000090	0.025	0.0010	0.0028
	Apr	0.037	23	0.084	0.11	6.7	0.0038	0.017	0.00035	0.069	0.011	5.2	0.00034	1.6	0.00019	0.054	0.0022	0.0060
Year 4	May	0.030	19	0.069	0.09	5.5	0.0031	0.014	0.00028	0.056	0.009	5.2	0.00028	1.3	0.00016	0.044	0.0018	0.0049
	Jun	0.024	15	0.055	0.072	4.4	0.0025	0.011	0.00023	0.045	0.0070	5.2	0.00022	1.0	0.00012	0.035	0.0015	0.0039
	Jul	0.026	16	0.058	0.077	4.7	0.0026	0.012	0.00024	0.048	0.0074	5.2	0.00024	1.1	0.00013	0.037	0.0015	0.0041
	Aug	0.024	15	0.055	0.073	4.4	0.0025	0.011	0.00023	0.045	0.0070	5.2	0.00022	1.0	0.00012	0.035	0.0015	0.0039
	Sep	0.022	14	0.050	0.066	4.0	0.0023	0.010	0.00021	0.041	0.0064	5.2	0.00020	0.92	0.00011	0.032	0.0013	0.0036
	Oct	0.020	12	0.045	0.059	3.6	0.0020	0.009	0.00018	0.036	0.0057	5.2	0.00018	0.82	0.00010	0.028	0.0012	0.0032
	Nov	0.018	11	0.040	0.053	3.2	0.0018	0.008	0.00016	0.033	0.0051	5.2	0.00016	0.74	0.000090	0.026	0.0011	0.0029
	Dec	0.016	10	0.036	0.048	2.9	0.0016	0.007	0.00015	0.030	0.0047	5.2	0.00015	0.68	0.000080	0.023	0.0010	0.0026
	Jan	0.021	12	0.054	0.048	3.5	0.0021	0.009	0.00019	0.051	0.0065	5.2	0.00023	0.95	0.000090	0.035	0.0013	0.0034
	Feb	0.020	11	0.050	0.045	3.3	0.0020	0.008	0.00017	0.048	0.0061	5.2	0.00021	0.88	0.000080	0.033	0.0012	0.0031
	Mar	0.023	12	0.058	0.052	3.8	0.0023	0.010	0.00020	0.055	0.0070	5.2	0.00025	1.0	0.00010	0.038	0.0014	0.0036
	Apr	0.049	26	0.12	0.11	8.1	0.0048	0.021	0.00043	0.12	0.015	5.2	0.00053	2.2	0.00021	0.081	0.0029	0.0077
	May	0.040	22	0.10	0.09	6.6	0.0040	0.017	0.00035	0.10	0.012	5.2	0.00043	1.8	0.00017	0.066	0.0024	0.0063
Year 5	Jun	0.032	17	0.081	0.073	5.3	0.0032	0.013	0.00028	0.077	0.010	5.2	0.00034	1.4	0.00014	0.053	0.0019	0.0050
	Jul	0.034	18	0.086	0.077	5.6	0.0033	0.014	0.00029	0.082	0.010	5.2	0.00036	1.5	0.00015	0.056	0.0020	0.0053
	Aug	0.032	17	0.082	0.073	5.3	0.0032	0.014	0.00028	0.077	0.010	5.2	0.00034	1.4	0.00014	0.053	0.0019	0.0051
	Sep	0.029	16	0.074	0.066	4.8	0.0029	0.012	0.00025	0.070	0.0089	5.2	0.00031	1.3	0.00012	0.048	0.0017	0.0046
	Oct	0.026	14	0.066	0.059	4.3	0.0026	0.011	0.00023	0.062	0.0080	5.2	0.00028	1.2	0.00011	0.043	0.0015	0.0041
	Nov	0.024	13	0.059	0.053	3.8	0.0023	0.010	0.00020	0.056	0.0072	5.2	0.00025	1.0	0.00010	0.039	0.0014	0.0037
	Dec	0.021	11	0.054	0.048	3.5	0.0021	0.009	0.00018	0.051	0.0065	5.2	0.00023	0.94	0.000090	0.035	0.0013	0.0033
	Jan	0.030	15	0.081	0.054	4.4	0.0028	0.011	0.00024	0.072	0.0095	5.2	0.00037	1.3	0.00011	0.046	0.0017	0.0044
	Feb	0.028	14	0.075	0.050	4.1	0.0026	0.011	0.00022	0.067	0.0088	5.2	0.00034	1.2	0.00010	0.043	0.0016	0.0041
	Mar	0.032	16	0.087	0.058	4.7	0.0030	0.012	0.00025	0.078	0.0102	5.2	0.00039	1.4	0.00012	0.050	0.0018	0.0048
	Apr	0.068	34	0.19	0.12	10.1	0.0064	0.026	0.00054	0.17	0.022	5.2	0.00084	2.9	0.00025	0.107	0.0039	0.0102

Appendix D.1 - Eagle Pup Drainage Chemistry Predictions

Eagle Pup	Month	pH	Alkal.	SO ₄	Cl	F	Ag	Al	As	B	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Hg	K
Year			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Year 7	Aug	8.0	28	225	4.1	1.9	0.000040	0.0065	0.29	0.40	0.017	0.00016	144	0.00008	0.00078	0.0008	0.0071	0.0021	0.00008	34
	Sep	8.0	29	203	3.7	1.7	0.000040	0.0068	0.26	0.36	0.018	0.00014	129	0.000070	0.00070	0.0007	0.0064	0.0020	0.00007	31
	Oct	8.0	30	181	3.3	1.5	0.000030	0.0071	0.23	0.32	0.019	0.00013	113	0.000070	0.00063	0.0007	0.0057	0.0019	0.00006	27
	Nov	8.0	32	163	3.0	1.4	0.000030	0.0074	0.21	0.29	0.020	0.00012	101	0.000060	0.00057	0.0006	0.0051	0.0019	0.00006	25
	Dec	8.0	33	149	2.7	1.2	0.000030	0.0077	0.19	0.26	0.021	0.00011	90	0.000050	0.00051	0.0005	0.0047	0.0018	0.00005	23
	Jan	8.0	32	159	2.9	1.4	0.000030	0.0074	0.21	0.29	0.021	0.00011	99	0.000060	0.00055	0.0006	0.0052	0.0019	0.00006	24
	Feb	8.0	33	148	2.7	1.3	0.000030	0.0077	0.19	0.27	0.021	0.00011	91	0.000060	0.00051	0.0005	0.0049	0.0018	0.00005	22
	Mar	8.0	31	171	3.2	1.5	0.000030	0.0072	0.22	0.31	0.020	0.00012	108	0.000060	0.00059	0.0006	0.0056	0.0019	0.00006	25
	Apr	7.9	24	366	7	3.2	0.00007	0.0054	0.48	0.7	0.014	0.00026	252	0.00014	0.0013	0.0013	0.012	0.0024	0.00013	55
	May	7.9	26	299	6	2.7	0.00005	0.0058	0.39	0.5	0.015	0.00022	202	0.00011	0.0010	0.0011	0.010	0.0023	0.00011	45
	Jun	7.9	27	239	4.4	2.1	0.000040	0.0063	0.31	0.43	0.017	0.00017	157	0.00009	0.00083	0.0009	0.0079	0.0021	0.00009	36
	Jul	7.9	27	253	4.7	2.2	0.000050	0.0062	0.33	0.46	0.016	0.00018	168	0.00010	0.00088	0.0009	0.0084	0.0022	0.00009	38
Year 8	Aug	7.9	27	240	4.4	2.1	0.000040	0.0063	0.31	0.43	0.017	0.00017	158	0.00009	0.00083	0.0009	0.0079	0.0021	0.00009	36
	Sep	8.0	28	217	4.0	1.9	0.000040	0.0066	0.28	0.39	0.018	0.00016	142	0.00008	0.00075	0.0008	0.0072	0.0021	0.00008	32
	Oct	8.0	30	194	3.6	1.7	0.000040	0.0069	0.25	0.35	0.019	0.00014	124	0.000070	0.00067	0.0007	0.0064	0.0020	0.00007	29
	Nov	8.0	31	174	3.2	1.5	0.000030	0.0072	0.23	0.32	0.020	0.00013	110	0.000070	0.00060	0.0006	0.0057	0.0019	0.00006	26
	Dec	8.0	32	159	2.9	1.4	0.000030	0.0074	0.21	0.29	0.021	0.00011	99	0.000060	0.00055	0.0006	0.0052	0.0019	0.00006	24
	Jan	8.0	32	160	3.0	1.5	0.000030	0.0074	0.21	0.29	0.021	0.00012	102	0.000060	0.00056	0.0006	0.0055	0.0019	0.00006	24
	Feb	8.0	32	149	2.8	1.4	0.000030	0.0076	0.20	0.27	0.021	0.00011	94	0.000060	0.00052	0.0006	0.0051	0.0019	0.00005	22
	Mar	8.0	31	172	3.2	1.6	0.000030	0.0071	0.23	0.32	0.020	0.00013	111	0.000070	0.00060	0.0006	0.0059	0.0019	0.00006	26
	Apr	7.9	24	368	7	3.4	0.00007	0.0054	0.49	0.7	0.014	0.00027	258	0.00014	0.0013	0.0014	0.013	0.0024	0.00014	55
	May	7.9	25	301	6	2.8	0.00006	0.0058	0.40	0.6	0.015	0.00022	207	0.00012	0.0011	0.0011	0.010	0.0023	0.00011	45
	Jun	7.9	27	240	4.5	2.2	0.000040	0.0063	0.32	0.44	0.017	0.00018	161	0.00009	0.00084	0.0009	0.0082	0.0021	0.00009	36
	Jul	7.9	27	255	4.8	2.4	0.000050	0.0061	0.34	0.47	0.017	0.00019	172	0.00010	0.00089	0.0010	0.0087	0.0022	0.00009	38
Year 9	Aug	7.9	27	241	4.5	2.2	0.000040	0.0063	0.32	0.44	0.017	0.00018	162	0.00009	0.00084	0.0009	0.0082	0.0021	0.00009	36
	Sep	8.0	28	219	4.1	2.0	0.000040	0.0065	0.29	0.40	0.018	0.00016	145	0.00009	0.00076	0.0008	0.0075	0.0021	0.00008	33
	Oct	8.0	29	195	3.7	1.8	0.000040	0.0068	0.26	0.36	0.019	0.00014	127	0.000080	0.00068	0.0007	0.0066	0.0020	0.00007	29
	Nov	8.0	30	176	3.3	1.6	0.000030	0.0071	0.23	0.32	0.020	0.00013	113	0.000070	0.00061	0.0007	0.0060	0.0019	0.00006	26
	Dec	8.0	32	160	3.0	1.5	0.000030	0.0074	0.21	0.29	0.021	0.00012	102	0.000060	0.00056	0.0006	0.0054	0.0019	0.00006	24
	Jan	8.0	31	163	3.1	1.6	0.000030	0.0072	0.22	0.31	0.021	0.00012	106	0.000070	0.00056	0.0006	0.0058	0.0019	0.00006	25
	Feb	8.0	32	152	2.9	1.5	0.000030	0.0075	0.20	0.29	0.021	0.00011	98	0.000060	0.00052	0.0006	0.0054	0.0019	0.00006	23
	Mar	8.0	30	176	3.4	1.7	0.000030	0.0070	0.24	0.33	0.020	0.00013	115	0.000070	0.00061	0.0007	0.0062	0.0020	0.00007	27
	Apr	7.8	24	375	7	3.7	0.00007	0.0053	0.50	0.7	0.014	0.00028	268	0.00015	0.0013	0.0014	0.013	0.0025	0.00014	57
	May	7.9	25	307	6	3.0	0.00006	0.0057	0.41	0.6	0.015	0.00023	215	0.00012	0.0011	0.0012	0.011	0.0023	0.00012	47
	Jun	7.9	27	245	4.7	2.4	0.000050	0.0062	0.33	0.46	0.017	0.00018	168	0.00010	0.00085	0.0009	0.0086	0.0022	0.00009	37
	Jul	7.9	26	260	5.0	2.5	0.000050	0.0060	0.35	0.49	0.017	0.00020	179	0.00011	0.00090	0.0010	0.0092	0.0022	0.00010	40
Year 10	Aug	7.9	27	246	4.7	2.4	0.000050	0.0062	0.33	0.46	0.017	0.00018	169	0.00010	0.00085	0.0009	0.0087	0.0022	0.00009	37
	Sep	7.9	28	223	4.3	2.2	0.000040	0.0064	0.30	0.42	0.018	0.00017	151	0.00009	0.00077	0.0009	0.0079	0.0021	0.00008	34
	Oct	8.0	29	199	3.8	1.9	0.000040	0.0067	0.27	0.37	0.019	0.00015	133	0.000080	0.00069	0.0008	0.0070	0.0020	0.00007	30
	Nov	8.0	30	179	3.4	1.7	0.000030	0.0070	0.24	0.34	0.020	0.00013	118	0.000070	0.00062	0.0007	0.0063	0.0020	0.00007	27
	Dec	8.0	31	163	3.1	1.6	0.000030	0.0073	0.22	0.31	0.021	0.00012	106	0.000070	0.00056	0.0006	0.0057	0.0019	0.00006	25
	Jan	8.0	33	140	2.7	1.4	0.000030	0.0077	0.19	0.26	0.022	0.00011	89	0.000060	0.00048	0.0005	0.0050	0.0018	0.00005	21
	Feb	8.1	34	130	2.5	1.3	0.000020	0.0080	0.17	0.24	0.023	0.00010	82	0.000050	0.00045	0.00049	0.0046	0.0018	0.00005	20
	Mar	8.0	32	151	2.9	1.5	0.000030	0.0075	0.20	0.28	0.022	0.00011	97	0.000060	0.00052	0.0006	0.0054	0.0019	0.00006	23
	Apr	7.9	25	322	6	3.2	0.00006	0.0056	0.43	0.6	0.015	0.00024	227	0.00013	0.0011	0.0012	0.011	0.0024	0.00012	49
	May	7.9	26	264	5	2.6	0.00005	0.0060	0.35	0.5	0.017	0.00020	182	0.00011	0.0009	0.0010	0.009	0.0022	0.00010	40
	Jun	8.0	28	210	4.0	2.1	0.000040	0.0065	0.28	0.39	0.018	0.00016	142	0.00009	0.00072	0.0008	0.0075	0.0021	0.00008	32
	Jul	7.9	28	223	4.3	2.2	0.000040	0.0064	0.30	0.42	0.018	0.00017	152	0.00009	0.00077	0.0009	0.0079	0.0021	0.00008	34
PC	Aug	8.0	28	211	4.0	2.1	0.000040	0.0065	0.28	0.40	0.018	0.00016	143	0.00009	0.00073	0.0008	0.0075	0.0021	0.00008	32
	Sep	8.0	29	191	3.7	1.9	0.000040	0.0068	0.26	0.36	0.019	0.00014	127	0.000080	0.00066	0.0007	0.0068	0.0020	0.00007	29
	Oct	8.0	31	171	3.3	1.7	0.000030	0.0071	0.23	0.32	0.020	0.00013	112	0.000070	0.00059	0.0007	0.0061	0.0019	0.00006	26
	Nov	8.0	32	154	2.9	1.5	0.000030	0.0074	0.21	0.29	0.021	0.00012	99	0.000060	0.0005					

Appendix D.1 - Eagle Pup Drainage Chemistry Predictions

Eagle Pup	Month	Li	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	Si	Sn	Sr	Tl	U	V	Zn
Year		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Year 7	Aug	0.045	22	0.12	0.082	6.6	0.0042	0.017	0.00036	0.11	0.014	5.2	0.00055	1.9	0.00017	0.070	0.0025	0.0067
	Sep	0.040	20	0.11	0.074	6.0	0.0038	0.015	0.00032	0.099	0.013	5.2	0.00050	1.8	0.00015	0.063	0.0023	0.0060
	Oct	0.036	18	0.098	0.066	5.4	0.0034	0.014	0.00029	0.088	0.012	5.2	0.00045	1.6	0.00013	0.056	0.0020	0.0054
	Nov	0.032	16	0.089	0.059	4.8	0.0030	0.012	0.00026	0.079	0.010	5.2	0.00040	1.4	0.00012	0.051	0.0018	0.0048
	Dec	0.030	15	0.081	0.054	4.4	0.0028	0.011	0.00024	0.072	0.0095	5.2	0.00037	1.3	0.00011	0.046	0.0017	0.0044
	Jan	0.032	16	0.088	0.055	4.8	0.0030	0.013	0.00027	0.11	0.0100	5.2	0.00038	1.6	0.00012	0.069	0.0018	0.0049
	Feb	0.029	15	0.082	0.051	4.5	0.0028	0.012	0.00026	0.106	0.0093	5.2	0.00035	1.5	0.00012	0.064	0.0017	0.0046
	Mar	0.034	17	0.095	0.059	5.2	0.0032	0.014	0.00030	0.12	0.011	5.2	0.00041	1.8	0.00013	0.074	0.0019	0.0053
	Apr	0.073	36	0.20	0.13	11.1	0.0068	0.029	0.00063	0.26	0.023	5.2	0.00087	3.8	0.00028	0.16	0.0041	0.0113
	May	0.059	30	0.17	0.10	9	0.0056	0.024	0.00052	0.21	0.019	5.2	0.00071	3.1	0.00023	0.13	0.0034	0.009
	Jun	0.047	24	0.13	0.082	7.3	0.0045	0.019	0.00041	0.17	0.015	5.2	0.00057	2.5	0.00019	0.103	0.0027	0.0074
	Jul	0.050	25	0.14	0.087	7.7	0.0047	0.020	0.00044	0.18	0.016	5.2	0.00060	2.6	0.00020	0.11	0.0029	0.0078
Year 8	Aug	0.048	24	0.13	0.082	7.3	0.0045	0.019	0.00041	0.17	0.015	5.2	0.00057	2.5	0.00019	0.104	0.0027	0.0074
	Sep	0.043	22	0.12	0.075	6.6	0.0041	0.017	0.00038	0.16	0.014	5.2	0.00052	2.2	0.00017	0.094	0.0024	0.0067
	Oct	0.038	19	0.107	0.067	5.9	0.0036	0.015	0.00033	0.14	0.012	5.2	0.00046	2.0	0.00015	0.084	0.0022	0.0060
	Nov	0.035	17	0.096	0.060	5.3	0.0033	0.014	0.00030	0.12	0.011	5.2	0.00041	1.8	0.00014	0.076	0.0020	0.0054
	Dec	0.031	16	0.088	0.055	4.8	0.0030	0.013	0.00027	0.11	0.0100	5.2	0.00038	1.6	0.00012	0.069	0.0018	0.0049
	Jan	0.032	16	0.089	0.054	5.0	0.0030	0.013	0.00029	0.14	0.0101	5.2	0.00037	1.8	0.00013	0.081	0.0018	0.0051
	Feb	0.030	15	0.083	0.051	4.7	0.0028	0.012	0.00027	0.13	0.0094	5.2	0.00035	1.7	0.00012	0.075	0.0017	0.0047
	Mar	0.034	17	0.096	0.059	5.4	0.0033	0.014	0.00031	0.15	0.0108	5.2	0.00040	2.0	0.00014	0.087	0.0020	0.0055
	Apr	0.073	37	0.21	0.13	11.5	0.0069	0.031	0.00067	0.31	0.023	5.2	0.00085	4.2	0.00030	0.19	0.0042	0.012
	May	0.060	30	0.17	0.10	9	0.0057	0.025	0.00055	0.26	0.019	5.2	0.00070	3.4	0.00024	0.15	0.0034	0.010
	Jun	0.048	24	0.13	0.082	7.5	0.0045	0.020	0.00044	0.20	0.015	5.2	0.00056	2.7	0.00019	0.12	0.0027	0.0076
	Jul	0.051	26	0.14	0.087	8.0	0.0048	0.021	0.00047	0.22	0.016	5.2	0.00059	2.9	0.00021	0.13	0.0029	0.0081
Year 9	Aug	0.048	24	0.13	0.082	7.6	0.0046	0.020	0.00044	0.20	0.015	5.2	0.00056	2.8	0.00020	0.12	0.0027	0.0077
	Sep	0.043	22	0.12	0.074	6.8	0.0041	0.018	0.00040	0.19	0.014	5.2	0.00051	2.5	0.00018	0.110	0.0025	0.0069
	Oct	0.039	20	0.109	0.066	6.1	0.0037	0.016	0.00036	0.17	0.012	5.2	0.00045	2.2	0.00016	0.098	0.0022	0.0062
	Nov	0.035	18	0.098	0.060	5.5	0.0033	0.015	0.00032	0.15	0.0110	5.2	0.00041	2.0	0.00014	0.089	0.0020	0.0056
	Dec	0.032	16	0.089	0.054	5.0	0.0030	0.013	0.00029	0.14	0.0100	5.2	0.00037	1.8	0.00013	0.081	0.0018	0.0051
	Jan	0.033	17	0.092	0.057	5.3	0.0031	0.014	0.00031	0.16	0.0104	5.2	0.00036	2.0	0.00014	0.094	0.0019	0.0053
	Feb	0.031	16	0.085	0.053	4.9	0.0029	0.013	0.00029	0.15	0.0097	5.2	0.00033	1.9	0.00013	0.087	0.0018	0.0049
	Mar	0.036	18	0.099	0.061	5.7	0.0033	0.015	0.00034	0.17	0.0112	5.2	0.00038	2.2	0.00015	0.101	0.0020	0.0057
	Apr	0.076	39	0.21	0.13	12	0.0071	0.032	0.00072	0.36	0.024	5.2	0.00082	4.7	0.00032	0.22	0.0043	0.012
	May	0.062	32	0.17	0.11	10	0.0058	0.026	0.00059	0.30	0.020	5.2	0.00067	3.8	0.00026	0.18	0.0035	0.010
	Jun	0.050	25	0.14	0.085	8.0	0.0046	0.021	0.00047	0.24	0.016	5.2	0.00053	3.1	0.00021	0.14	0.0028	0.0080
	Jul	0.053	27	0.15	0.091	8.5	0.0049	0.022	0.00050	0.25	0.017	5.2	0.00057	3.2	0.00022	0.15	0.0030	0.0085
Year 10	Aug	0.050	25	0.14	0.086	8.0	0.0047	0.021	0.00047	0.24	0.016	5.2	0.00054	3.1	0.00021	0.14	0.0028	0.0080
	Sep	0.045	23	0.13	0.078	7.2	0.0042	0.019	0.00043	0.22	0.014	5.2	0.00049	2.8	0.00019	0.13	0.0026	0.0073
	Oct	0.040	20	0.112	0.069	6.5	0.0038	0.017	0.00038	0.19	0.013	5.2	0.00043	2.5	0.00017	0.114	0.0023	0.0065
	Nov	0.036	18	0.101	0.062	5.8	0.0034	0.015	0.00034	0.17	0.0114	5.2	0.00039	2.2	0.00015	0.103	0.0021	0.0058
	Dec	0.033	17	0.092	0.057	5.3	0.0031	0.014	0.00031	0.16	0.0104	5.2	0.00036	2.0	0.00014	0.094	0.0019	0.0053
	Jan	0.028	14	0.079	0.048	4.6	0.0026	0.012	0.00027	0.14	0.0089	5.2	0.00030	1.8	0.00012	0.085	0.0016	0.0046
	Feb	0.026	13	0.074	0.044	4.3	0.0025	0.011	0.00025	0.13	0.0083	5.2	0.00028	1.7	0.00011	0.079	0.0015	0.0043
	Mar	0.031	15	0.085	0.051	4.9	0.0028	0.013	0.00029	0.16	0.0096	5.2	0.00033	1.9	0.00013	0.092	0.0017	0.0049
	Apr	0.065	33	0.18	0.11	10.5	0.0061	0.028	0.00063	0.33	0.021	5.2	0.00070	4.2	0.00027	0.20	0.0037	0.0105
	May	0.053	27	0.15	0.09	9	0.0050	0.023	0.00051	0.27	0.017	5.2	0.00057	3.4	0.00022	0.16	0.0030	0.009
	Jun	0.043	22	0.12	0.072	6.9	0.0040	0.018	0.00041	0.22	0.013	5.2	0.00045	2.7	0.00018	0.13	0.0024	0.0069
	Jul	0.045	23	0.13	0.076	7.3	0.0042	0.019	0.00043	0.23	0.014	5.2	0.00048	2.9	0.00019	0.14	0.0026	0.0073
PC	Aug	0.043	22	0.12	0.072	6.9	0.0040	0.018	0.00041	0.22	0.013	5.2	0.00046	2.7	0.00018	0.13	0.0024	0.0069
	Sep	0.039	20	0.11	0.065	6.2	0.0036	0.016	0.00037	0.20	0.012	5.2	0.00041	2.5	0.00016	0.12	0.0022	0.0063
	Oct	0.035	18	0.096	0.058	5.6	0.0032	0.015	0.00033	0.18	0.011	5.2	0.00037	2.2	0.00014	0.10	0.0020	0.0056
	Nov	0.031	16	0.087	0.052	5.0	0.0029	0.013	0.00030	0.16	0.0098	5.2	0.00033	2.0	0.00013	0.093	0.0018	0.0050
	Dec	0.028	14	0.079	0.048	4.6	0.0026	0.012	0.00027	0.14	0.0089	5.2	0.00030	1.8	0.00012	0.085	0.0016	0.0046
	Jan	0.028	17	0.080	0.039	3.3	0.0032	0.016	0.00027	0.12	0.0100	5.2	0.00032	1.9	0.00014	0.062	0.0029	0.0048
	Feb	0.026	16	0.074	0.036	3.1	0.0029	0.015	0.00025	0.108	0.0093	5.2	0.00029	1.8	0.00013	0.058	0.0027	0.0044
	Mar	0.030	18	0.086	0.042	3.5	0.0034	0.017	0.00029	0.12	0.0107	5.2	0.00034	2.1	0.00016	0.067	0.0031	0.0051
	Apr	0.065	38	0.18	0.089	7.6	0.0073	0.037	0.00062	0.27	0.023	5.2	0.00073	4.4	0.00033	0.14	0.0066	0.0110
	May	0.053	31	0.15	0.073	6.2	0.0060	0.030	0.00051	0.22	0.019	5.2	0.00059	3.6	0.00027	0.12	0.0054	0.0090
	Jun	0.042	25	0.12	0.058	4.9	0.											

Appendix D.1 - Eagle Pup Drainage Chemistry Predictions

Eagle Pup	Month	pH	Alkal. mg/L	SO ₄ mg/L	Cl mg/L	F mg/L	Ag mg/L	Al mg/L	As mg/L	B mg/L	Ba mg/L	Be mg/L	Ca mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Fe mg/L	Hg mg/L	K mg/L
Year																				
Scenario 2 (75th PCTL)																				
Year 1	Mar	8.2	45	130	6.7	1.4	0.000020	0.011	0.074	0.15	0.021	0.00010	45	0.000060	0.00075	0.00038	0.0099	0.0016	0.000030	13
	Apr	8.1	37	130	6.7	2.9	0.000030	0.0086	0.16	0.31	0.025	0.00012	72	0.00012	0.00075	0.0007	0.0099	0.0017	0.00006	28
	May	8.1	41	130	6.7	2.4	0.000030	0.0095	0.13	0.26	0.023	0.00010	57	0.00010	0.00075	0.0006	0.0099	0.0016	0.00005	23
	Jun	8.2	45	130	6.7	1.9	0.000020	0.011	0.103	0.20	0.022	0.00010	46	0.000080	0.00075	0.00047	0.0099	0.0016	0.000040	18
	Jul	8.2	45	130	6.7	2.0	0.000020	0.010	0.11	0.22	0.022	0.00010	48	0.000080	0.00075	0.00050	0.0099	0.0016	0.000040	19
	Aug	8.2	45	130	6.7	1.9	0.000020	0.011	0.104	0.20	0.022	0.00010	46	0.000080	0.00075	0.00047	0.0099	0.0016	0.000040	18
	Sep	8.2	45	130	6.7	1.7	0.000020	0.011	0.094	0.19	0.021	0.00010	46	0.000070	0.00075	0.00043	0.0099	0.0016	0.000040	17
	Oct	8.2	45	130	6.7	1.5	0.000020	0.011	0.084	0.17	0.021	0.00010	45	0.000060	0.00075	0.00038	0.0099	0.0016	0.000030	15
	Nov	8.2	45	130	6.7	1.4	0.000020	0.011	0.075	0.15	0.021	0.00010	45	0.000060	0.00075	0.00038	0.0099	0.0016	0.000030	13
	Dec	8.2	45	130	6.7	1.3	0.000020	0.011	0.074	0.14	0.021	0.00010	45	0.000050	0.00075	0.00038	0.0099	0.0016	0.000030	12
	Jan	8.2	45	143	1.6	1.1	0.000010	0.011	0.100	0.15	0.019	0.00010	46	0.000050	0.00048	0.00037	0.0083	0.0016	0.000030	12
	Feb	8.2	45	143	1.5	1.1	0.000010	0.011	0.100	0.14	0.019	0.00010	46	0.000040	0.00048	0.00035	0.0083	0.0016	0.000030	11
Year 2	Mar	8.2	45	143	1.7	1.2	0.000020	0.011	0.11	0.16	0.019	0.00010	46	0.000050	0.00048	0.00040	0.0083	0.0016	0.000030	13
	Apr	8.1	37	143	3.6	2.6	0.000030	0.0086	0.23	0.34	0.022	0.00013	73	0.00011	0.00048	0.0009	0.0083	0.0017	0.00007	27
	May	8.1	41	143	3.0	2.2	0.000030	0.0095	0.19	0.27	0.021	0.00011	58	0.00009	0.00048	0.0007	0.0083	0.0016	0.00005	22
	Jun	8.2	45	143	2.4	1.7	0.000020	0.011	0.15	0.22	0.020	0.00010	46	0.000070	0.00048	0.00056	0.0083	0.0016	0.000040	18
	Jul	8.2	45	143	2.5	1.8	0.000020	0.010	0.16	0.23	0.020	0.00010	48	0.000080	0.00048	0.00059	0.0083	0.0016	0.000050	19
	Aug	8.2	45	143	2.4	1.7	0.000020	0.011	0.15	0.22	0.020	0.00010	46	0.000070	0.00048	0.00056	0.0083	0.0016	0.000040	18
	Sep	8.2	45	143	2.2	1.6	0.000020	0.011	0.14	0.20	0.019	0.00010	46	0.000060	0.00048	0.00051	0.0083	0.0016	0.000040	16
	Oct	8.2	45	143	1.9	1.4	0.000020	0.011	0.12	0.18	0.019	0.00010	46	0.000060	0.00048	0.00045	0.0083	0.0016	0.000040	14
	Nov	8.2	45	143	1.7	1.3	0.000020	0.011	0.11	0.16	0.019	0.00010	46	0.000050	0.00048	0.00041	0.0083	0.0016	0.000030	13
	Dec	8.2	45	143	1.6	1.1	0.000010	0.011	0.100	0.15	0.019	0.00010	46	0.000050	0.00048	0.00037	0.0083	0.0016	0.000030	12
	Jan	8.1	41	90	2.2	1.2	0.000020	0.0097	0.15	0.17	0.029	0.000070	50	0.000050	0.00033	0.00045	0.0039	0.0016	0.000030	18
	Feb	8.2	42	84	2.1	1.1	0.000020	0.010	0.14	0.16	0.030	0.000060	46	0.000050	0.00031	0.00042	0.0036	0.0016	0.000030	16
Mar	8.1	40	97	2.4	1.3	0.000020	0.0094	0.16	0.19	0.028	0.000070	55	0.000060	0.00036	0.00049	0.0042	0.0016	0.000040	19	
Year 3	Apr	8.0	29	208	5.2	2.7	0.000040	0.0068	0.34	0.40	0.018	0.00016	132	0.00012	0.00077	0.0010	0.0089	0.0020	0.00008	41
	May	8.0	31	170	4.2	2.2	0.000030	0.0073	0.28	0.32	0.020	0.00013	105	0.00010	0.00063	0.0009	0.0073	0.0019	0.00006	33
	Jun	8.1	34	136	3.4	1.8	0.000030	0.0081	0.22	0.26	0.023	0.00010	81	0.000080	0.00050	0.0007	0.0058	0.0018	0.00005	26
	Jul	8.0	34	144	3.6	1.9	0.000030	0.0079	0.23	0.27	0.022	0.00011	87	0.000080	0.00053	0.0007	0.0062	0.0018	0.00005	28
	Aug	8.1	34	136	3.4	1.8	0.000030	0.0081	0.22	0.26	0.023	0.00010	82	0.000080	0.00050	0.0007	0.0058	0.0018	0.00005	27
	Sep	8.1	36	124	3.1	1.6	0.000020	0.0084	0.20	0.24	0.024	0.000090	73	0.000070	0.00046	0.0006	0.0053	0.0017	0.000050	24
	Oct	8.1	38	110	2.7	1.4	0.000020	0.0088	0.18	0.21	0.026	0.000080	64	0.000060	0.00041	0.00055	0.0047	0.0017	0.000040	21
	Nov	8.1	39	99	2.5	1.3	0.000020	0.0093	0.16	0.19	0.027	0.000080	56	0.000060	0.00037	0.00049	0.0043	0.0017	0.000040	19
	Dec	8.1	41	90	2.2	1.2	0.000020	0.0097	0.15	0.17	0.029	0.000070	50	0.000050	0.00033	0.00045	0.0039	0.0016	0.000030	18
	Jan	8.1	40	100	2.4	1.3	0.000020	0.0093	0.15	0.18	0.027	0.000070	56	0.000060	0.00035	0.00047	0.0041	0.0016	0.000040	18
	Feb	8.1	41	93	2.2	1.2	0.000020	0.0096	0.14	0.16	0.028	0.000070	51	0.000050	0.00033	0.00043	0.0038	0.0016	0.000030	17
	Mar	8.1	38	108	2.5	1.4	0.000020	0.0090	0.16	0.19	0.026	0.000080	61	0.000060	0.00038	0.00050	0.0044	0.0017	0.000040	20
Year 4	Apr	8.0	28	231	5.4	2.9	0.000040	0.0066	0.34	0.41	0.017	0.00016	146	0.00013	0.00081	0.0011	0.0094	0.0021	0.00008	42
	May	8.0	31	189	4.4	2.4	0.000030	0.0071	0.28	0.33	0.019	0.00013	116	0.00010	0.00067	0.0009	0.008	0.0020	0.00007	35
	Jun	8.0	33	150	3.5	1.9	0.000030	0.0078	0.22	0.26	0.021	0.00011	89	0.00008	0.00053	0.0007	0.0061	0.0018	0.00005	28
	Jul	8.0	33	160	3.8	2.0	0.000030	0.0076	0.24	0.28	0.021	0.00011	96	0.00009	0.00056	0.0007	0.0065	0.0019	0.00006	29
	Aug	8.0	33	151	3.6	1.9	0.000030	0.0078	0.22	0.27	0.021	0.00011	90	0.00008	0.00053	0.0007	0.0062	0.0018	0.00005	28
	Sep	8.1	35	137	3.2	1.7	0.000020	0.0081	0.20	0.24	0.023	0.00010	80	0.000080	0.00048	0.0006	0.0056	0.0018	0.00005	25
	Oct	8.1	36	122	2.9	1.5	0.000020	0.0085	0.18	0.21	0.024	0.000090	70	0.000070	0.00043	0.00057	0.0050	0.0017	0.000040	22
	Nov	8.1	38	110	2.6	1.4	0.000020	0.0089	0.16	0.19	0.026	0.000080	62	0.000060	0.00039	0.00051	0.0045	0.0017	0.000040	20
	Dec	8.1	40	100	2.4	1.3	0.000020	0.0093	0.15	0.18	0.027	0.000070	55	0.000060	0.00035	0.00046	0.0041	0.0016	0.000040	18
	Jan	8.1	35	148	3.0	1.5	0.000020	0.0081	0.19	0.22	0.021	0.000090	80	0.000070	0.00050	0.0006	0.0054	0.0018	0.000040	24
	Feb	8.1	36	138	2.8	1.4	0.000020	0.0084	0.18	0.20	0.021	0.000080	74	0.000060	0.00046	0.00055	0.0050	0.0017	0.000040	22
	Mar	8.0	34	160	3.3	1.6	0.000020	0.0079	0.20	0.23	0.020	0.000090	87	0.000070	0.00053	0.0006	0.0058	0.0018	0.000050	26
Year 5	Apr	7.9	26	342	7	3.5	0.00005	0.0059	0.43	0.50	0.014	0.00020	206	0.00015	0.0011	0.0014	0.012	0.0023	0.00010	55
	May	7.9	28	280	6	2.9	0.00004	0.0063	0.35	0.4	0.015	0.00016	165	0.00013	0.0009	0.0011	0.010	0.0021	0.00008	45
	Jun	8.0	30	223	4.6	2.3	0.000030	0.0069	0.28	0.32	0.017	0.00013	128	0.00010	0.00074	0.0009	0.0081	0.0020		

Appendix D.1 - Eagle Pup Drainage Chemistry Predictions

Eagle Pup	Month	Li	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	Si	Sn	Sr	Tl	U	V	Zn
Year		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Scenario 2 (75th PCTL)																		
Year 1	Mar	0.014	13	0.034	0.11	28	0.0046	0.30	0.00036	0.019	0.011	5.2	0.00019	0.49	0.00012	0.021	0.0010	0.0047
	Apr	0.030	28	0.034	0.23	28	0.0046	0.30	0.00077	0.019	0.011	5.2	0.00041	1.05	0.00025	0.030	0.0014	0.0058
	May	0.025	23	0.034	0.19	28	0.0046	0.30	0.00063	0.019	0.011	5.2	0.00033	0.9	0.00021	0.025	0.0012	0.0047
	Jun	0.020	18	0.034	0.15	28	0.0046	0.30	0.00050	0.019	0.011	5.2	0.00027	0.69	0.00016	0.021	0.0010	0.0047
	Jul	0.021	19	0.034	0.16	28	0.0046	0.30	0.00053	0.019	0.011	5.2	0.00028	0.73	0.00017	0.021	0.0010	0.0047
	Aug	0.020	18	0.034	0.15	28	0.0046	0.30	0.00050	0.019	0.011	5.2	0.00027	0.69	0.00016	0.021	0.0010	0.0047
	Sep	0.018	16	0.034	0.14	28	0.0046	0.30	0.00045	0.019	0.011	5.2	0.00024	0.63	0.00015	0.021	0.0010	0.0047
	Oct	0.016	15	0.034	0.12	28	0.0046	0.30	0.00041	0.019	0.011	5.2	0.00022	0.56	0.00013	0.021	0.0010	0.0047
	Nov	0.014	13	0.034	0.11	28	0.0046	0.30	0.00037	0.019	0.011	5.2	0.00019	0.50	0.00012	0.021	0.0010	0.0047
	Dec	0.013	12	0.034	0.101	28	0.0046	0.30	0.00033	0.019	0.011	5.2	0.00018	0.46	0.00011	0.021	0.0010	0.0047
	Jan	0.013	10	0.019	0.086	26	0.0038	0.30	0.00033	0.020	0.011	5.2	0.00018	0.59	0.000100	0.029	0.0010	0.0043
	Feb	0.012	9.7	0.019	0.080	26	0.0038	0.30	0.00031	0.020	0.011	5.2	0.00017	0.59	0.000090	0.029	0.0010	0.0043
Year 2	Mar	0.014	11	0.019	0.093	26	0.0038	0.30	0.00036	0.020	0.011	5.2	0.00020	0.59	0.00011	0.029	0.0010	0.0043
	Apr	0.030	24	0.038	0.20	26	0.0038	0.30	0.00076	0.021	0.011	5.2	0.00042	1.08	0.00022	0.039	0.0016	0.0061
	May	0.024	20	0.031	0.16	26	0.0038	0.30	0.00062	0.020	0.011	5.2	0.00034	0.9	0.00018	0.032	0.0013	0.0050
	Jun	0.019	16	0.025	0.13	26	0.0038	0.30	0.00050	0.020	0.011	5.2	0.00027	0.71	0.00015	0.029	0.0010	0.0043
	Jul	0.020	17	0.026	0.14	26	0.0038	0.30	0.00053	0.020	0.011	5.2	0.00029	0.75	0.00016	0.029	0.0011	0.0043
	Aug	0.019	16	0.025	0.13	26	0.0038	0.30	0.00050	0.020	0.011	5.2	0.00027	0.71	0.00015	0.029	0.0010	0.0043
	Sep	0.018	14	0.023	0.12	26	0.0038	0.30	0.00045	0.020	0.011	5.2	0.00025	0.64	0.00013	0.029	0.0010	0.0043
	Oct	0.016	13	0.020	0.10	26	0.0038	0.30	0.00040	0.020	0.011	5.2	0.00022	0.59	0.00012	0.029	0.0010	0.0043
	Nov	0.014	11	0.019	0.095	26	0.0038	0.30	0.00036	0.020	0.011	5.2	0.00020	0.59	0.00011	0.029	0.0010	0.0043
	Dec	0.013	10	0.019	0.086	26	0.0038	0.30	0.00033	0.020	0.011	5.2	0.00018	0.59	0.000100	0.029	0.0010	0.0043
	Jan	0.021	11	0.045	0.070	7.8	0.0022	0.009	0.00039	0.018	0.0063	5.2	0.00039	0.65	0.000090	0.020	0.0011	0.0037
	Feb	0.019	10.1	0.042	0.065	7.2	0.0020	0.008	0.00036	0.017	0.0058	5.2	0.00036	0.61	0.000090	0.018	0.0010	0.0034
Mar	0.022	12	0.048	0.075	8.3	0.0023	0.009	0.00042	0.020	0.0067	5.2	0.00042	0.70	0.00010	0.021	0.0012	0.0039	
Year 3	Apr	0.048	25	0.103	0.16	18	0.0050	0.020	0.00090	0.042	0.014	5.2	0.00090	1.5	0.00021	0.045	0.0025	0.0084
	May	0.039	20	0.08	0.13	15	0.0041	0.016	0.00073	0.035	0.012	5.2	0.00074	1.2	0.00017	0.037	0.0020	0.0069
	Jun	0.031	16	0.067	0.10	12	0.0033	0.013	0.00059	0.028	0.0094	5.2	0.00059	0.98	0.00014	0.029	0.0016	0.0055
	Jul	0.033	17	0.071	0.11	12	0.0035	0.014	0.00062	0.029	0.0100	5.2	0.00062	1.0	0.00015	0.031	0.0017	0.0058
	Aug	0.032	16	0.068	0.11	12	0.0033	0.013	0.00059	0.028	0.0094	5.2	0.00059	0.98	0.00014	0.030	0.0016	0.0055
	Sep	0.029	15	0.061	0.096	11	0.0030	0.012	0.00053	0.025	0.0085	5.2	0.00054	0.89	0.00012	0.027	0.0015	0.0050
	Oct	0.025	13	0.055	0.085	9.4	0.0026	0.010	0.00047	0.022	0.0076	5.2	0.00048	0.79	0.00011	0.024	0.0013	0.0044
	Nov	0.023	12	0.049	0.077	8.5	0.0024	0.009	0.00043	0.020	0.0069	5.2	0.00043	0.71	0.00010	0.022	0.0012	0.0040
	Dec	0.021	11	0.045	0.070	7.7	0.0022	0.009	0.00039	0.018	0.0062	5.2	0.00039	0.65	0.000090	0.020	0.0011	0.0036
	Jan	0.022	12	0.050	0.071	8.6	0.0023	0.009	0.00041	0.040	0.0069	5.2	0.00041	0.84	0.00010	0.032	0.0011	0.0039
	Feb	0.021	11	0.047	0.066	8.0	0.0021	0.009	0.00038	0.037	0.0064	5.2	0.00039	0.78	0.00009	0.030	0.0011	0.0036
	Mar	0.024	13	0.054	0.077	9.2	0.0024	0.010	0.00044	0.043	0.0074	5.2	0.00045	0.90	0.00011	0.034	0.0012	0.0042
Year 4	Apr	0.052	27	0.12	0.16	20	0.0052	0.022	0.00095	0.092	0.016	5.2	0.00095	1.9	0.00023	0.074	0.0026	0.0089
	May	0.042	22	0.09	0.13	16	0.0042	0.018	0.0008	0.075	0.013	5.2	0.0008	1.6	0.00019	0.060	0.0022	0.0073
	Jun	0.034	18	0.075	0.11	13	0.0034	0.014	0.00062	0.060	0.010	5.2	0.00062	1.3	0.00015	0.048	0.0017	0.0058
	Jul	0.036	19	0.080	0.11	14	0.0036	0.015	0.00066	0.063	0.011	5.2	0.00066	1.3	0.00016	0.051	0.0018	0.0062
	Aug	0.034	18	0.076	0.11	13	0.0034	0.014	0.00062	0.060	0.010	5.2	0.00063	1.3	0.00015	0.048	0.0017	0.0058
	Sep	0.031	16	0.068	0.10	12	0.0031	0.013	0.00056	0.054	0.0094	5.2	0.00057	1.1	0.00014	0.044	0.0016	0.0053
	Oct	0.027	14	0.061	0.087	10	0.0027	0.012	0.00050	0.048	0.0084	5.2	0.00051	1.0	0.00012	0.039	0.0014	0.0047
	Nov	0.025	13	0.055	0.078	9.4	0.0025	0.010	0.00045	0.044	0.0076	5.2	0.00045	0.92	0.00011	0.035	0.0013	0.0043
	Dec	0.022	12	0.050	0.071	8.5	0.0023	0.009	0.00041	0.040	0.0069	5.2	0.00041	0.84	0.00010	0.032	0.0011	0.0039
	Jan	0.030	14	0.075	0.072	10	0.0029	0.012	0.00051	0.068	0.0098	5.2	0.00059	1.2	0.00011	0.050	0.0015	0.0050
	Feb	0.028	13	0.069	0.067	9.7	0.0027	0.011	0.00047	0.063	0.0091	5.2	0.00055	1.1	0.00010	0.047	0.0014	0.0047
	Mar	0.033	15	0.080	0.078	11	0.0031	0.012	0.00054	0.073	0.011	5.2	0.00063	1.3	0.00012	0.054	0.0017	0.0054
Year 5	Apr	0.070	32	0.17	0.17	24	0.0067	0.026	0.0012	0.16	0.022	5.2	0.0014	2.8	0.00026	0.12	0.0035	0.012
	May	0.057	26	0.14	0.14	20	0.0055	0.022	0.0010	0.13	0.018	5.2	0.0011	2.3	0.00021	0.09	0.0029	0.009
	Jun	0.046	21	0.11	0.11	16	0.0044	0.017	0.00076	0.10	0.015	5.2	0.00088	1.8	0.00017	0.075	0.0023	0.0075
	Jul	0.048	22	0.12	0.11	17	0.0046	0.018	0.00081	0.11	0.016	5.2	0.00094	1.9	0.00018	0.080	0.0025	0.0080
	Aug	0.046	21	0.11	0.11	16	0.0044	0.017	0.00076	0.10	0.015	5.2	0.00089	1.8	0.00017	0.076	0.0023	0.0076
	Sep	0.041	19	0.10	0.10	14	0.0040	0.016	0.00069	0.093	0.013	5.2	0.00080	1.6	0.00015	0.069	0.0021	0.0069
	Oct	0.037	17	0.091	0.088	13	0.0036	0.014	0.00062	0.083	0.012	5.2	0.00072	1.5	0.00014	0.061	0.0019	0.0061
	Nov	0.033	15	0.082	0.079	11	0.0032	0.013	0.00055	0.074	0.011	5.2	0.00065	1.3	0.00012	0.055	0.0017	0.0055
	Dec	0.030	14	0.074	0.072	10	0.0029	0.011	0.00050	0.068	0.0098	5.2	0.00059	1.2	0.00011	0.050	0.0015	0.0050
	Jan	0.042	18	0.11	0.081	13	0.0039	0.014	0.00065	0.097	0.014	5.2	0.00088	1.7	0.0001.			

Appendix D.1 - Eagle Pup Drainage Chemistry Predictions

Eagle Pup	Month	pH	Alkal.	SO ₄	Cl	F	Ag	Al	As	B	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Hg	K
Year			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Year 7	Aug	7.9	26	334	6.1	2.9	0.000040	0.0061	0.36	0.41	0.013	0.00016	189	0.00013	0.0011	0.0011	0.011	0.0022	0.00008	49
	Sep	7.9	27	302	5.6	2.6	0.000040	0.0063	0.32	0.37	0.014	0.00015	169	0.00012	0.00097	0.0010	0.0098	0.0021	0.00007	44
	Oct	8.0	28	270	5.0	2.4	0.000030	0.0066	0.29	0.33	0.015	0.00013	149	0.00011	0.00087	0.0009	0.0087	0.0021	0.00007	39
	Nov	8.0	29	243	4.5	2.1	0.000030	0.0068	0.26	0.30	0.016	0.00012	133	0.00010	0.00078	0.0008	0.0078	0.0020	0.00006	35
	Dec	8.0	30	221	4.1	1.9	0.000030	0.0071	0.24	0.27	0.016	0.00011	119	0.000090	0.00071	0.0007	0.0071	0.0020	0.00005	32
	Jan	8.0	30	241	4.4	2.2	0.000030	0.0069	0.26	0.29	0.016	0.00012	132	0.00010	0.00076	0.0008	0.0079	0.0020	0.00006	34
	Feb	8.0	30	224	4.1	2.0	0.000030	0.0071	0.24	0.27	0.016	0.00011	121	0.000090	0.00071	0.0008	0.0073	0.0020	0.00005	32
	Mar	8.0	29	260	4.7	2.3	0.000030	0.0067	0.28	0.32	0.015	0.00013	143	0.00010	0.00082	0.0009	0.0085	0.0020	0.00006	37
	Apr	7.8	23	555	10	5.0	0.00007	0.0051	0.60	0.7	0.011	0.00027	328	0.00022	0.0018	0.0019	0.017	0.0026	0.00014	79
	May	7.9	24	454	8	4.1	0.00006	0.0055	0.49	0.6	0.012	0.00022	264	0.00018	0.0014	0.0016	0.015	0.0024	0.00011	64
	Jun	7.9	26	362	6.6	3.2	0.000040	0.0059	0.39	0.44	0.013	0.00018	207	0.00014	0.0011	0.0013	0.012	0.0023	0.00009	51
	Jul	7.9	25	384	7.0	3.4	0.000050	0.0058	0.41	0.47	0.013	0.00019	221	0.00015	0.0012	0.0013	0.013	0.0023	0.00009	54
Year 8	Aug	7.9	26	364	6.6	3.3	0.000040	0.0059	0.39	0.44	0.013	0.00018	208	0.00014	0.0011	0.0013	0.012	0.0023	0.00009	52
	Sep	7.9	27	329	6.0	3.0	0.000040	0.0061	0.35	0.40	0.014	0.00016	186	0.00013	0.00104	0.0012	0.011	0.0022	0.00008	47
	Oct	7.9	28	294	5.4	2.6	0.000040	0.0064	0.32	0.36	0.014	0.00014	164	0.00012	0.00092	0.0010	0.0096	0.0021	0.00007	42
	Nov	8.0	29	265	4.8	2.4	0.000030	0.0066	0.28	0.32	0.015	0.00013	146	0.00010	0.00083	0.0009	0.0086	0.0021	0.00006	37
	Dec	8.0	30	241	4.4	2.2	0.000030	0.0069	0.26	0.29	0.016	0.00012	131	0.00010	0.00076	0.0008	0.0079	0.0020	0.00006	34
	Jan	8.0	29	246	4.5	2.3	0.000030	0.0068	0.27	0.30	0.015	0.00012	135	0.00010	0.00077	0.0009	0.0081	0.0020	0.00006	34
	Feb	8.0	30	229	4.2	2.1	0.000030	0.0070	0.25	0.28	0.016	0.00011	124	0.000090	0.00071	0.0008	0.0076	0.0020	0.00006	32
	Mar	8.0	29	265	4.8	2.4	0.000030	0.0066	0.29	0.33	0.015	0.00013	147	0.00011	0.00083	0.0010	0.0087	0.0021	0.00007	37
	Apr	7.8	23	566	10	5.2	0.00007	0.0051	0.61	0.7	0.011	0.00028	336	0.00023	0.0018	0.0020	0.017	0.0026	0.00014	79
	May	7.9	24	463	8	4.3	0.00006	0.0054	0.50	0.6	0.012	0.00023	271	0.00019	0.0014	0.0017	0.015	0.0024	0.00011	65
	Jun	7.9	26	369	6.8	3.4	0.000050	0.0059	0.40	0.45	0.013	0.00018	212	0.00015	0.0012	0.0013	0.012	0.0023	0.00009	52
	Jul	7.9	25	392	7.2	3.6	0.000050	0.0057	0.42	0.48	0.013	0.00019	226	0.00016	0.0012	0.0014	0.013	0.0023	0.00010	55
Year 9	Aug	7.9	26	371	6.8	3.4	0.000050	0.0059	0.40	0.46	0.013	0.00018	213	0.00015	0.0012	0.0013	0.012	0.0023	0.00009	52
	Sep	7.9	26	336	6.1	3.1	0.000040	0.0061	0.36	0.41	0.013	0.00016	191	0.00013	0.00105	0.0012	0.011	0.0022	0.00008	47
	Oct	7.9	27	299	5.5	2.7	0.000040	0.0063	0.32	0.37	0.014	0.00015	168	0.00012	0.00093	0.0011	0.0099	0.0021	0.00007	42
	Nov	8.0	28	270	4.9	2.5	0.000030	0.0066	0.29	0.33	0.015	0.00013	150	0.00011	0.00084	0.0010	0.0089	0.0021	0.00007	38
	Dec	8.0	29	245	4.5	2.3	0.000030	0.0068	0.27	0.30	0.015	0.00012	135	0.00010	0.00077	0.0009	0.0081	0.0020	0.00006	34
	Jan	8.0	29	253	4.7	2.4	0.000030	0.0067	0.28	0.31	0.015	0.00013	141	0.00010	0.00078	0.0009	0.0085	0.0020	0.00006	36
	Feb	8.0	30	236	4.3	2.2	0.000030	0.0069	0.26	0.29	0.016	0.00012	130	0.000100	0.00072	0.0009	0.0079	0.0020	0.00006	33
	Mar	8.0	28	273	5.0	2.6	0.000030	0.0065	0.30	0.34	0.015	0.00014	153	0.00011	0.00084	0.0010	0.0092	0.0021	0.00007	38
	Apr	7.8	23	583	11	5.5	0.00007	0.0051	0.64	0.7	0.011	0.00029	349	0.00024	0.0018	0.0022	0.017	0.0026	0.00014	82
	May	7.9	24	477	9	4.5	0.00006	0.0054	0.52	0.6	0.012	0.00024	282	0.00019	0.0015	0.0018	0.016	0.0025	0.00012	67
	Jun	7.9	25	380	7.0	3.6	0.000050	0.0058	0.41	0.47	0.013	0.00019	220	0.00016	0.0012	0.0014	0.013	0.0023	0.00009	53
	Jul	7.9	25	404	7.4	3.8	0.000050	0.0057	0.44	0.50	0.012	0.00020	235	0.00016	0.0012	0.0015	0.014	0.0023	0.00010	57
Year 10	Aug	7.9	25	382	7.0	3.6	0.000050	0.0058	0.42	0.47	0.013	0.00019	221	0.00016	0.0012	0.0014	0.013	0.0023	0.00009	54
	Sep	7.9	26	346	6.4	3.3	0.000040	0.0060	0.38	0.43	0.013	0.00017	199	0.00014	0.00106	0.0013	0.012	0.0022	0.00009	49
	Oct	7.9	27	308	5.7	2.9	0.000040	0.0062	0.34	0.38	0.014	0.00015	175	0.00013	0.00095	0.0011	0.0104	0.0022	0.00008	43
	Nov	7.9	28	278	5.1	2.6	0.000030	0.0065	0.30	0.35	0.015	0.00014	156	0.00011	0.00085	0.0010	0.0093	0.0021	0.00007	39
	Dec	8.0	29	253	4.7	2.4	0.000030	0.0067	0.28	0.31	0.015	0.00013	140	0.00010	0.00077	0.0009	0.0085	0.0020	0.00006	36
	Jan	8.0	31	219	4.0	2.1	0.000030	0.0071	0.24	0.27	0.016	0.00011	119	0.00009	0.00066	0.0008	0.0073	0.0020	0.00005	30
	Feb	8.0	31	203	3.7	1.9	0.000030	0.0073	0.22	0.25	0.017	0.00010	109	0.000080	0.00062	0.0008	0.0068	0.0019	0.00005	28
	Mar	8.0	30	235	4.3	2.2	0.000030	0.0069	0.25	0.29	0.016	0.00012	129	0.00010	0.00071	0.0009	0.0079	0.0020	0.00006	33
	Apr	7.8	24	503	9	4.8	0.00006	0.0053	0.54	0.6	0.011	0.00025	298	0.00020	0.0015	0.0019	0.017	0.0025	0.00012	70
	May	7.9	25	412	8	3.9	0.00005	0.0056	0.44	0.5	0.012	0.00020	240	0.00017	0.0013	0.0015	0.014	0.0024	0.00010	57
	Jun	7.9	27	328	6.0	3.1	0.000040	0.0061	0.35	0.40	0.014	0.00016	187	0.00013	0.00100	0.0012	0.011	0.0022	0.00008	46
	Jul	7.9	26	348	6.4	3.3	0.000040	0.0060	0.38	0.43	0.013	0.00017	200	0.00014	0.0011	0.0013	0.012	0.0022	0.00009	48
PC	Aug	7.9	27	330	6.0	3.1	0.000040	0.0061	0.36	0.41	0.014	0.00016	188	0.00013	0.00100	0.0012	0.011	0.0022	0.00008	46
	Sep	7.9	27	299	5.5	2.8	0.000040	0.0063	0.32	0.37	0.014	0.00015	169	0.00012	0.00091	0.0011	0.0100	0.0021	0.00007	42
	Oct	8.0	28	266	4.9	2.5	0.000030	0.0066	0.29	0.33	0.015	0.00013	148	0.00011	0.00081	0.0010	0.0089	0.0021	0.00007	37
	Nov	8.0	30	240	4.4	2.3	0.000030	0.0068	0.26	0.30	0.016	0.00012	132	0.00010	0.00073	0.0009	0.0080	0.0020	0.00006</	

Appendix D.1 - Eagle Pup Drainage Chemistry Predictions

Eagle Pup	Month	Li	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	Si	Sn	Sr	Tl	U	V	Zn
Year		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Year 7	Aug	0.064	28	0.17	0.12	20	0.0060	0.022	0.00098	0.15	0.021	5.2	0.0013	2.5	0.00020	0.101	0.0031	0.0102
	Sep	0.058	25	0.15	0.11	18	0.0054	0.020	0.00089	0.13	0.019	5.2	0.0012	2.3	0.00018	0.091	0.0028	0.0092
	Oct	0.052	22	0.13	0.099	16	0.0048	0.018	0.00080	0.12	0.017	5.2	0.0011	2.0	0.00016	0.082	0.0025	0.0082
	Nov	0.047	20	0.12	0.089	14	0.0043	0.016	0.00072	0.11	0.015	5.2	0.00097	1.8	0.00015	0.073	0.0023	0.0074
	Dec	0.042	18	0.11	0.081	13	0.0039	0.014	0.00065	0.096	0.014	5.2	0.00088	1.7	0.00013	0.067	0.0021	0.0067
	Jan	0.046	20	0.12	0.082	15	0.0042	0.017	0.00071	0.15	0.015	5.2	0.00091	2.1	0.00015	0.102	0.0023	0.0074
	Feb	0.043	18	0.11	0.076	14	0.0039	0.016	0.00066	0.14	0.014	5.2	0.00085	2.0	0.00014	0.095	0.0022	0.0069
	Mar	0.049	21	0.13	0.088	17	0.0045	0.018	0.00076	0.16	0.016	5.2	0.00098	2.3	0.00016	0.11	0.0025	0.0079
	Apr	0.106	46	0.28	0.19	35	0.0097	0.038	0.0016	0.34	0.035	5.2	0.0021	4.9	0.00035	0.23	0.0053	0.017
	May	0.09	37	0.23	0.15	29	0.0079	0.031	0.0013	0.28	0.029	5.2	0.0017	4.0	0.00028	0.19	0.0044	0.014
Year 8	Jun	0.069	30	0.18	0.12	23	0.0063	0.025	0.00107	0.22	0.023	5.2	0.0014	3.2	0.00023	0.15	0.0035	0.011
	Jul	0.073	32	0.19	0.13	25	0.0067	0.027	0.0011	0.24	0.024	5.2	0.0015	3.4	0.00024	0.16	0.0037	0.012
	Aug	0.069	30	0.18	0.12	23	0.0063	0.025	0.0011	0.22	0.023	5.2	0.0014	3.2	0.00023	0.15	0.0035	0.011
	Sep	0.063	27	0.17	0.11	21	0.0057	0.023	0.00097	0.20	0.021	5.2	0.0012	2.9	0.00021	0.14	0.0032	0.0101
	Oct	0.056	24	0.15	0.100	19	0.0051	0.020	0.00087	0.18	0.019	5.2	0.0011	2.6	0.00018	0.12	0.0028	0.0090
	Nov	0.050	22	0.13	0.090	17	0.0046	0.018	0.00078	0.16	0.017	5.2	0.00100	2.3	0.00017	0.11	0.0025	0.0081
	Dec	0.046	20	0.12	0.082	15	0.0042	0.017	0.00071	0.15	0.015	5.2	0.00091	2.1	0.00015	0.102	0.0023	0.0074
	Jan	0.047	20	0.13	0.082	16	0.0042	0.018	0.00073	0.18	0.015	5.2	0.00090	2.4	0.00016	0.12	0.0024	0.0076
	Feb	0.044	19	0.12	0.076	15	0.0039	0.016	0.00068	0.16	0.014	5.2	0.00084	2.2	0.00015	0.11	0.0022	0.0070
	Mar	0.050	22	0.13	0.088	18	0.0046	0.019	0.00079	0.19	0.017	5.2	0.00097	2.5	0.00017	0.13	0.0026	0.0081
Year 9	Apr	0.108	47	0.29	0.19	38	0.0098	0.041	0.0017	0.41	0.036	5.2	0.0021	5.4	0.00036	0.28	0.0055	0.017
	May	0.09	38	0.24	0.15	31	0.0080	0.033	0.0014	0.33	0.029	5.2	0.0017	4.4	0.00030	0.23	0.0045	0.014
	Jun	0.070	30	0.19	0.12	25	0.0064	0.027	0.00110	0.27	0.023	5.2	0.0014	3.5	0.00024	0.18	0.0036	0.011
	Jul	0.075	32	0.20	0.13	26	0.0068	0.028	0.0012	0.28	0.025	5.2	0.0014	3.8	0.00025	0.19	0.0038	0.012
	Aug	0.071	31	0.19	0.12	25	0.0064	0.027	0.0011	0.27	0.023	5.2	0.0014	3.6	0.00024	0.18	0.0036	0.011
	Sep	0.064	28	0.17	0.11	22	0.0058	0.024	0.00100	0.24	0.021	5.2	0.0012	3.2	0.00022	0.16	0.0033	0.0103
	Oct	0.057	25	0.15	0.100	20	0.0052	0.022	0.00089	0.22	0.019	5.2	0.00109	2.9	0.00019	0.15	0.0029	0.0092
	Nov	0.051	22	0.14	0.090	18	0.0047	0.019	0.00080	0.19	0.017	5.2	0.00099	2.6	0.00017	0.13	0.0026	0.0083
	Dec	0.047	20	0.13	0.082	16	0.0042	0.018	0.00073	0.18	0.015	5.2	0.00090	2.4	0.00016	0.12	0.0024	0.0076
	Jan	0.049	21	0.13	0.086	18	0.0043	0.019	0.00076	0.21	0.016	5.2	0.00087	2.6	0.00017	0.14	0.0025	0.0078
Year 10	Feb	0.045	20	0.12	0.080	17	0.0040	0.018	0.00071	0.19	0.015	5.2	0.00081	2.4	0.00016	0.13	0.0024	0.0073
	Mar	0.052	23	0.14	0.092	19	0.0046	0.020	0.00082	0.22	0.017	5.2	0.00094	2.8	0.00018	0.15	0.0027	0.0084
	Apr	0.112	49	0.30	0.20	41	0.0099	0.044	0.0017	0.47	0.037	5.2	0.0020	6.0	0.00039	0.32	0.0058	0.018
	May	0.09	40	0.24	0.16	34	0.0081	0.036	0.0014	0.39	0.030	5.2	0.0016	4.9	0.00032	0.27	0.0048	0.015
	Jun	0.073	32	0.19	0.13	27	0.0065	0.029	0.00114	0.31	0.024	5.2	0.0013	3.9	0.00025	0.21	0.0038	0.012
	Jul	0.078	34	0.21	0.14	29	0.0069	0.030	0.0012	0.33	0.026	5.2	0.0014	4.2	0.00027	0.22	0.0040	0.013
	Aug	0.074	32	0.20	0.13	27	0.0065	0.029	0.0011	0.31	0.024	5.2	0.0013	3.9	0.00025	0.21	0.0038	0.012
	Sep	0.067	29	0.18	0.12	25	0.0059	0.026	0.00104	0.28	0.022	5.2	0.0012	3.6	0.00023	0.19	0.0035	0.0107
	Oct	0.059	26	0.16	0.105	22	0.0052	0.023	0.00092	0.25	0.020	5.2	0.00106	3.2	0.00020	0.17	0.0031	0.0096
	Nov	0.053	23	0.14	0.094	20	0.0047	0.021	0.00083	0.22	0.018	5.2	0.00096	2.9	0.00018	0.15	0.0028	0.0086
PC	Dec	0.049	21	0.13	0.086	18	0.0043	0.019	0.00076	0.20	0.016	5.2	0.00087	2.6	0.00017	0.14	0.0025	0.0078
	Jan	0.042	18	0.11	0.072	16	0.0037	0.016	0.00065	0.19	0.014	5.2	0.00074	2.3	0.00014	0.13	0.0022	0.0068
	Feb	0.039	17	0.10	0.067	15	0.0034	0.015	0.00060	0.17	0.013	5.2	0.00069	2.2	0.00013	0.12	0.0020	0.0063
	Mar	0.045	19	0.12	0.078	17	0.0040	0.018	0.00070	0.20	0.015	5.2	0.00080	2.5	0.00015	0.14	0.0024	0.0073
	Apr	0.097	42	0.26	0.17	36	0.0085	0.038	0.0015	0.43	0.032	5.2	0.0017	5.4	0.00033	0.29	0.0050	0.016
	May	0.079	34	0.21	0.14	30	0.0069	0.031	0.0012	0.35	0.026	5.2	0.0014	4.4	0.00027	0.24	0.0041	0.013
	Jun	0.063	27	0.17	0.11	24	0.0055	0.025	0.00097	0.28	0.021	5.2	0.0011	3.5	0.00022	0.19	0.0033	0.0101
	Jul	0.067	29	0.18	0.12	25	0.0059	0.026	0.0010	0.30	0.022	5.2	0.0012	3.7	0.00023	0.20	0.0035	0.011
	Aug	0.063	27	0.17	0.11	24	0.0055	0.025	0.00098	0.28	0.021	5.2	0.0011	3.5	0.00022	0.19	0.0033	0.0102
	Sep	0.057	25	0.15	0.099	22	0.0050	0.023	0.00089	0.25	0.019	5.2	0.00101	3.2	0.00020	0.17	0.0030	0.0092

Appendix D.2 - Platinum Gulch Drainage Chemistry Predictions

Platinum Gulch	Month	pH	Alkal. mg/L	SO ₄ mg/L	Cl mg/L	F mg/L	Ag mg/L	Al mg/L	As mg/L	B mg/L	Ba mg/L	Be mg/L	Ca mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Fe mg/L
Year																		
Scenario 1 (median)																		
Year 1	Mar	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.07	0.015	0.00010	47	0.000040	0.00021	0.00021	0.0052	0.0016
	Apr	8.2	46	185	1.6	0.81	0.000020	0.011	0.19	0.16	0.015	0.00010	47	0.000040	0.00021	0.00032	0.0052	0.0016
	May	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.13	0.015	0.00010	47	0.000040	0.00021	0.00026	0.0052	0.0016
	Jun	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.10	0.015	0.00010	47	0.000040	0.00021	0.00021	0.0052	0.0016
	Jul	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.11	0.015	0.00010	47	0.000040	0.00021	0.00022	0.0052	0.0016
	Aug	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.10	0.015	0.00010	47	0.000040	0.00021	0.00021	0.0052	0.0016
	Sep	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.09	0.015	0.00010	47	0.000040	0.00021	0.00021	0.0052	0.0016
	Oct	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.08	0.015	0.00010	47	0.000040	0.00021	0.00021	0.0052	0.0016
	Nov	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.08	0.015	0.00010	47	0.000040	0.00021	0.00021	0.0052	0.0016
	Dec	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.07	0.015	0.00010	47	0.000040	0.00021	0.00021	0.0052	0.0016
	Jan	8.2	47	142	1.8	0.59	0.000010	0.011	0.092	0.11	0.018	0.00010	41	0.000030	0.00026	0.00028	0.0067	0.0015
	Feb	8.2	47	142	1.8	0.59	0.000010	0.011	0.092	0.10	0.018	0.00010	41	0.000030	0.00026	0.00028	0.0067	0.0015
Year 2	Mar	8.2	47	142	1.8	0.59	0.000010	0.011	0.092	0.12	0.018	0.00010	41	0.000030	0.00026	0.00028	0.0067	0.0015
	Apr	8.1	41	142	2.6	1.06	0.000030	0.010	0.19	0.26	0.020	0.00010	58	0.000050	0.00039	0.00052	0.0067	0.0016
	May	8.2	45	142	2.1	0.87	0.000020	0.011	0.15	0.21	0.019	0.00010	46	0.000040	0.00032	0.00042	0.0067	0.0016
	Jun	8.2	47	142	1.8	0.69	0.000020	0.011	0.12	0.17	0.019	0.00010	41	0.000030	0.00026	0.00034	0.0067	0.0015
	Jul	8.2	47	142	1.8	0.74	0.000020	0.011	0.13	0.18	0.019	0.00010	41	0.000040	0.00027	0.00036	0.0067	0.0015
	Aug	8.2	47	142	1.8	0.70	0.000020	0.011	0.12	0.17	0.019	0.00010	41	0.000030	0.00026	0.00034	0.0067	0.0015
	Sep	8.2	47	142	1.8	0.63	0.000020	0.011	0.112	0.15	0.019	0.00010	41	0.000030	0.00026	0.00031	0.0067	0.0015
	Oct	8.2	47	142	1.8	0.59	0.000010	0.011	0.100	0.14	0.019	0.00010	41	0.000030	0.00026	0.00028	0.0067	0.0015
	Nov	8.2	47	142	1.8	0.59	0.000010	0.011	0.092	0.12	0.018	0.00010	41	0.000030	0.00026	0.00028	0.0067	0.0015
	Dec	8.2	47	142	1.8	0.59	0.000010	0.011	0.092	0.11	0.018	0.00010	41	0.000030	0.00026	0.00028	0.0067	0.0015
	Jan	8.3	54	44	1.2	0.45	0.000010	0.013	0.095	0.12	0.021	0.000050	25	0.000020	0.00021	0.00024	0.0018	0.0014
	Feb	8.3	55	41	1.1	0.42	0.000010	0.013	0.089	0.11	0.019	0.000040	23	0.000020	0.00019	0.00022	0.0017	0.0014
Year 3	Mar	8.3	52	48	1.3	0.49	0.000010	0.012	0.103	0.13	0.022	0.000050	27	0.000020	0.00022	0.00026	0.0020	0.0015
	Apr	8.1	37	102	2.8	1.04	0.000030	0.0086	0.22	0.28	0.028	0.000110	66	0.000050	0.00048	0.00056	0.0042	0.0017
	May	8.1	40	84	2.3	0.85	0.000020	0.0094	0.18	0.23	0.031	0.00009	52	0.000040	0.00039	0.0005	0.0035	0.0016
	Jun	8.2	44	67	1.8	0.68	0.000020	0.010	0.14	0.18	0.031	0.000070	40	0.000030	0.00031	0.00036	0.0028	0.0015
	Jul	8.2	43	71	1.9	0.72	0.000020	0.010	0.15	0.19	0.033	0.000080	43	0.000030	0.00033	0.00038	0.0029	0.0016
	Aug	8.2	44	67	1.8	0.68	0.000020	0.010	0.14	0.18	0.031	0.000070	40	0.000030	0.00031	0.00036	0.0028	0.0016
	Sep	8.2	46	61	1.7	0.62	0.000020	0.011	0.13	0.16	0.028	0.000070	36	0.000030	0.00028	0.00033	0.0025	0.0015
	Oct	8.2	49	54	1.5	0.55	0.000010	0.012	0.12	0.15	0.025	0.000060	31	0.000030	0.00025	0.00029	0.0022	0.0015
	Nov	8.3	51	49	1.3	0.50	0.000010	0.012	0.105	0.13	0.023	0.000050	28	0.000020	0.00023	0.00026	0.0020	0.0015
	Dec	8.3	54	44	1.2	0.45	0.000010	0.013	0.095	0.12	0.021	0.000050	25	0.000020	0.00021	0.00024	0.0018	0.0014
	Jan	8.2	44	75	1.6	0.58	0.000020	0.011	0.13	0.16	0.025	0.000060	40	0.000030	0.00032	0.00032	0.0025	0.0015
	Feb	8.2	46	70	1.5	0.54	0.000010	0.011	0.12	0.15	0.023	0.000060	37	0.000020	0.00030	0.00030	0.0024	0.0015
	Mar	8.2	43	81	1.7	0.62	0.000020	0.010	0.14	0.17	0.027	0.000070	44	0.000030	0.00034	0.00034	0.0027	0.0016
Year 4	Apr	8.0	31	173	3.7	1.3	0.000040	0.0073	0.30	0.36	0.020	0.00015	107	0.000060	0.00073	0.0007	0.0058	0.0019
	May	8.0	34	142	3.0	1.1	0.000030	0.0079	0.24	0.30	0.022	0.00012	85	0.000050	0.00060	0.0006	0.0048	0.0018
	Jun	8.1	37	113	2.4	0.86	0.000020	0.0087	0.19	0.24	0.025	0.000090	65	0.000040	0.00048	0.00048	0.0038	0.0017
	Jul	8.1	36	120	2.6	0.92	0.000030	0.0085	0.21	0.25	0.024	0.00010	70	0.000040	0.00051	0.0005	0.0040	0.0017
	Aug	8.1	37	113	2.4	0.87	0.000020	0.0087	0.19	0.24	0.025	0.000100	65	0.000040	0.00048	0.00048	0.0038	0.0017
	Sep	8.1	39	103	2.2	0.79	0.000020	0.0091	0.18	0.22	0.026	0.000090	58	0.000040	0.00043	0.00044	0.0035	0.0017
	Oct	8.1	41	92	2.0	0.70	0.000020	0.0096	0.16	0.19	0.028	0.000080	51	0.000030	0.00039	0.00039	0.0031	0.0016
	Nov	8.2	43	82	1.8	0.63	0.000020	0.010	0.14	0.17	0.027	0.000070	45	0.000030	0.00035	0.00035	0.0028	0.0016
	Dec	8.2	45	75	1.6	0.58	0.000020	0.011	0.13	0.16	0.025	0.000060	40	0.000030	0.00032	0.00032	0.0025	0.0015
	Jan	8.1	38	109	2.9	0.90	0.000030	0.009	0.20	0.29	0.025	0.000120	61	0.000030	0.00044	0.0010	0.0050	0.0017
	Feb	8.1	39	101	2.7	0.83	0.000030	0.009	0.19	0.27	0.026	0.000110	56	0.000030	0.00041	0.00089	0.0047	0.0016
	Mar	8.1	37	117	3.2	0.97	0.000030	0.0087	0.22	0.32	0.024	0.000130	66	0.000030	0.00047	0.0010	0.0054	0.0017
	Apr	7.9	28	251	6.8	2.1	0.000070	0.0063	0.46	0.68	0.016	0.00027	159	0.000070	0.00101	0.0022	0.0115	0.0021
PC	May	8.0	30	205	6	1.7	0.00006	0.0069	0.38	0.6	0.018	0.00022	127	0.00006	0.00083	0.0018	0.0094	0.0020
	Jun	8.0	32	164	4.4	1.3	0.000040	0.0075	0.30	0.44	0.020	0.00018	98	0.000040	0.00066	0.0014	0.0075	0.0019
	Jul	8.0	31	174	4.7	1.4	0.000050	0.0073	0.32	0.47	0.019	0.00019	105	0.000050	0.00070	0.0015	0.0080	0.0019
	Aug	8.0	32	164	4.4	1.4	0.000040	0.0075	0.30	0.44	0.020	0.00018	98	0.000040	0.00066	0.0014	0.0076	0.0019
	Sep	8.0	33	149	4.0	1.22	0.000040	0.0078	0.27	0.40	0.021	0.00016	88	0.000040	0.00060	0.0013	0.0068	0.0018
	Oct	8.1	35	133	3.6	1.09	0.000040	0.0082	0.24	0.36	0.022	0.00014	77	0.000040	0.00053	0.0012	0.0061	0.0018
	Nov	8.1	37	120	3.2	0.98	0.000030	0.0086	0.22	0.32	0.024	0.00013	68	0.000030	0.00048	0.0011	0.0055	0.0017
	Dec	8.1	38	109	2.9	0.90	0.000030	0.009	0.20	0.29	0.025	0.000120	61	0.000030	0.00044	0.0010	0.0050	0.0017

Appendix D.2 - Platinum Gulch Drainage Chemistry Predictions

Platinum Gulch	Month	Hg mg/L	K mg/L	Li mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Na mg/L	Ni mg/L	P mg/L	Pb mg/L	Sb mg/L	Se mg/L	Si mg/L	Sn mg/L	Sr mg/L	Tl mg/L	U mg/L	V mg/L	Zn mg/L	
Scenario 1 (median)																					
Year 1	Mar	0.000010	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.000050	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Apr	0.000030	4.6	0.014	9.4	0.0088	0.12	38	0.0035	0.30	0.000090	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	May	0.000030	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.000070	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Jun	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.000060	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Jul	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.000060	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Aug	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.000060	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Sep	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.000050	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Oct	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.000050	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Nov	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.000050	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Dec	0.000010	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.000050	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Year 2	Jan	0.000020	6.4	0.0094	9.1	0.020	0.061	28	0.0035	0.30	0.00011	0.0079	0.0088	5.0	0.00011	0.45	0.000050	0.012	0.0010	0.0036
		Feb	0.000020	5.9	0.0094	9.1	0.018	0.061	28	0.0035	0.30	0.00011	0.0079	0.0088	4.7	0.00010	0.45	0.000040	0.012	0.0010	0.0036
Mar		0.000020	6.8	0.0094	9.1	0.021	0.061	28	0.0035	0.30	0.00011	0.0079	0.0088	5.2	0.00012	0.45	0.000050	0.012	0.0010	0.0036	
Apr		0.000050	15	0.018	14	0.045	0.066	28	0.0035	0.30	0.00019	0.0112	0.0088	5.2	0.00025	0.66	0.000110	0.017	0.0013	0.0036	
May		0.000040	12	0.014	11	0.037	0.061	28	0.0035	0.30	0.00016	0.0092	0.0088	5.2	0.00021	0.54	0.000090	0.014	0.0010	0.0036	
Jun		0.000030	9.5	0.0115	9.1	0.029	0.061	28	0.0035	0.30	0.00013	0.0079	0.0088	5.2	0.00017	0.45	0.000070	0.012	0.0010	0.0036	
Jul		0.000040	10.1	0.012	9.6	0.031	0.061	28	0.0035	0.30	0.00013	0.0079	0.0088	5.2	0.00018	0.45	0.000070	0.012	0.0010	0.0036	
Aug		0.000030	9.6	0.0116	9.1	0.029	0.061	28	0.0035	0.30	0.00013	0.0079	0.0088	5.2	0.00017	0.45	0.000070	0.012	0.0010	0.0036	
Sep		0.000030	8.7	0.0105	9.1	0.027	0.061	28	0.0035	0.30	0.00011	0.0079	0.0088	5.2	0.00015	0.45	0.000060	0.012	0.0010	0.0036	
Oct		0.000030	7.7	0.0094	9.1	0.024	0.061	28	0.0035	0.30	0.00011	0.0079	0.0088	5.2	0.00013	0.45	0.000060	0.012	0.0010	0.0036	
Nov		0.000020	7.0	0.0094	9.1	0.021	0.061	28	0.0035	0.30	0.00011	0.0079	0.0088	5.2	0.00012	0.45	0.000050	0.012	0.0010	0.0036	
Dec		0.000020	6.3	0.0094	9.1	0.019	0.061	28	0.0035	0.30	0.00011	0.0079	0.0088	5.0	0.00011	0.45	0.000050	0.012	0.0010	0.0036	
Year 3	Jan	0.000020	7.0	0.0087	5.8	0.025	0.024	1.6	0.0013	0.0048	0.000090	0.0063	0.0025	5.3	0.00015	0.30	0.000040	0.0073	0.00062	0.0017	
	Feb	0.000020	6.5	0.0081	5.4	0.023	0.022	1.5	0.0012	0.0045	0.000080	0.0058	0.0024	4.9	0.00014	0.28	0.000040	0.0068	0.00058	0.0016	
	Mar	0.000030	7.5	0.0093	6.2	0.027	0.026	1.8	0.0014	0.0052	0.000090	0.0067	0.0027	5.3	0.00016	0.33	0.000050	0.0079	0.0007	0.0019	
	Apr	0.000060	16	0.020	13	0.057	0.055	3.7	0.0029	0.011	0.00020	0.014	0.0058	5.2	0.00033	0.70	0.000100	0.017	0.0014	0.0040	
	May	0.00005	13	0.016	11	0.047	0.045	3.1	0.0024	0.009	0.00016	0.012	0.0048	5.2	0.00027	0.57	0.000080	0.014	0.0012	0.0033	
	Jun	0.000040	10.5	0.013	8.7	0.038	0.036	2.4	0.0019	0.007	0.00013	0.0094	0.0038	5.2	0.00022	0.45	0.000060	0.011	0.0009	0.0026	
	Jul	0.000040	11	0.014	9.2	0.040	0.038	2.6	0.0020	0.008	0.00014	0.0100	0.0040	5.2	0.00023	0.48	0.000070	0.012	0.0010	0.0028	
	Aug	0.000040	10.5	0.013	8.7	0.038	0.036	2.5	0.0019	0.007	0.00013	0.0094	0.0038	5.2	0.00022	0.46	0.000060	0.011	0.0009	0.0026	
	Sep	0.000030	9.5	0.012	7.9	0.034	0.032	2.2	0.0017	0.007	0.00012	0.0086	0.0035	5.3	0.00020	0.41	0.000060	0.0100	0.0009	0.0024	
	Oct	0.000030	8.5	0.0106	7.0	0.030	0.029	2.0	0.0015	0.006	0.00011	0.0076	0.0031	5.3	0.00018	0.37	0.000050	0.0089	0.0008	0.0021	
	Nov	0.000030	7.6	0.0095	6.3	0.027	0.026	1.8	0.0014	0.0053	0.000100	0.0069	0.0028	5.3	0.00016	0.33	0.000050	0.0080	0.0007	0.0019	
	Dec	0.000020	7.0	0.0087	5.8	0.025	0.024	1.6	0.0013	0.0048	0.000090	0.0063	0.0025	5.3	0.00015	0.30	0.000040	0.0073	0.00062	0.0017	
Year 4	Jan	0.000030	10.0	0.013	7.4	0.042	0.025	2.1	0.0018	0.006	0.00012	0.010	0.0040	5.2	0.00025	0.43	0.000050	0.0090	0.0009	0.0024	
	Feb	0.000030	9.3	0.012	6.9	0.039	0.023	1.9	0.0016	0.006	0.00011	0.0095	0.0037	5.2	0.00023	0.40	0.000050	0.0084	0.0008	0.0023	
	Mar	0.000030	11	0.014	8.0	0.045	0.027	2.2	0.0019	0.007	0.00012	0.011	0.0043	5.2	0.00027	0.46	0.000050	0.0097	0.0010	0.0026	
	Apr	0.00007	23	0.030	17	0.096	0.057	4.8	0.0040	0.015	0.00027	0.024	0.0092	5.2	0.00057	0.98	0.00012	0.021	0.0020	0.0056	
	May	0.00006	19	0.025	14	0.079	0.046	3.9	0.0033	0.012	0.00022	0.019	0.0075	5.2	0.00047	0.8	0.00009	0.017	0.0017	0.0046	
	Jun	0.000050	15	0.020	11	0.063	0.037	3.1	0.0026	0.010	0.00017	0.015	0.0060	5.2	0.00037	0.64	0.000080	0.013	0.0013	0.0036	
	Jul	0.00005	16	0.021	12	0.066	0.039	3.3	0.0028	0.010	0.00018	0.016	0.0064	5.2	0.00040	0.68	0.000080	0.014	0.0014	0.0039	
	Aug	0.000050	15	0.020	11	0.063	0.037	3.1	0.0027	0.010	0.00017	0.015	0.0060	5.2	0.00038	0.64	0.000080	0.014	0.0013	0.0036	
	Sep	0.000040	14	0.018	10	0.057	0.034	2.8	0.0024	0.009	0.00016	0.014	0.0054	5.2	0.00034	0.58	0.000070	0.012	0.0012	0.0033	
	Oct	0.000040	12	0.016	9.0	0.051	0.030	2.5	0.0021	0.008	0.00014	0.012	0.0049	5.2	0.00030	0.52	0.000060	0.011	0.0011	0.0029	
	Nov	0.000030	11	0.014	8.1	0.046	0.027	2.3	0.0019	0.007	0.00013	0.011	0.0044	5.2	0.00027	0.47	0.000050	0.0099	0.0010	0.0027	
	Dec	0.000030	9.9	0.013	7.4	0.042	0.025	2.1	0.0018	0.006	0.00012	0.010	0.0040	5.2	0.00025	0.43	0.000050	0.0090	0.0009	0.0024	
PC	Jan	0.000060	13.3	0.018	11.8	0.056	0.027	2.3	0.0029	0.012	0.000120	0.0131	0.0058	5.2	0.00032	0.63	0.000080	0.0129	0.0019	0.0027	
	Feb	0.000050	12.4	0.017	11.0	0.052	0.025	2.2	0.0027	0.011	0.000120	0.0122	0.0054	5.2	0.00029	0.59	0.000070	0.0120	0.0018	0.0025	
	Mar	0.000060	14	0.020	12.7	0.060	0.029	2.5	0.0031	0.013	0.00013	0.014	0.0062	5.2	0.00034	0.68	0.000080	0.014	0.0021	0.0029	
	Apr	0.00014	31	0.042	27	0.129	0.063	5.3	0.0066	0.027	0.00029	0.030	0.0133	5.2	0.00073	1.45	0.00018	0.030	0.0044	0.0061	
	May	0.00011	25	0.034	22	0.11	0.051	4.4	0.0054	0.022	0.00023	0.025	0.011	5.2	0.00060	1.2	0.00015				

Appendix D.2 - Platinum Gulch Drainage Chemistry Predictions

Platinum Gulch	Month	pH	Alkal. mg/L	SO ₄ mg/L	Cl mg/L	F mg/L	Ag mg/L	Al mg/L	As mg/L	B mg/L	Ba mg/L	Be mg/L	Ca mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Fe mg/L
Year																		
Scenario 2 (75th PCTL)																		
Year 1	Mar	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.07	0.015	0.00010	47	0.000040	0.00021	0.00026	0.0052	0.0016
	Apr	8.2	46	185	1.6	0.81	0.000020	0.011	0.22	0.16	0.015	0.00010	47	0.000040	0.00024	0.00056	0.0052	0.0016
	May	8.2	46	185	1.5	0.81	0.000010	0.011	0.18	0.13	0.015	0.00010	47	0.000040	0.00021	0.00046	0.0052	0.0016
	Jun	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.10	0.015	0.00010	47	0.000040	0.00021	0.00036	0.0052	0.0016
	Jul	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.11	0.015	0.00010	47	0.000040	0.00021	0.00039	0.0052	0.0016
	Aug	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.10	0.015	0.00010	47	0.000040	0.00021	0.00037	0.0052	0.0016
	Sep	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.10	0.015	0.00010	47	0.000040	0.00021	0.00033	0.0052	0.0016
	Oct	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.08	0.015	0.00010	47	0.000040	0.00021	0.00030	0.0052	0.0016
	Nov	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.08	0.015	0.00010	47	0.000040	0.00021	0.00027	0.0052	0.0016
	Dec	8.2	46	185	1.5	0.81	0.000010	0.011	0.17	0.07	0.015	0.00010	47	0.000040	0.00021	0.00024	0.0052	0.0016
	Jan	8.2	47	142	1.8	0.75	0.000010	0.011	0.098	0.11	0.019	0.00010	41	0.000030	0.00026	0.00031	0.0067	0.0015
	Feb	8.2	47	142	1.8	0.70	0.000010	0.011	0.092	0.11	0.019	0.00010	41	0.000030	0.00026	0.00029	0.0067	0.0015
Year 2	Mar	8.2	47	142	1.8	0.81	0.000010	0.011	0.106	0.12	0.019	0.00010	41	0.000030	0.00026	0.00033	0.0067	0.0015
	Apr	8.1	37	142	3.2	1.7	0.000030	0.0086	0.23	0.26	0.021	0.00010	71	0.000070	0.00050	0.00071	0.0067	0.0017
	May	8.1	41	142	2.6	1.4	0.000020	0.0096	0.18	0.21	0.020	0.00010	56	0.000060	0.00041	0.0006	0.0067	0.0016
	Jun	8.2	46	142	2.1	1.13	0.000020	0.011	0.15	0.17	0.019	0.00010	44	0.000050	0.00033	0.00047	0.0067	0.0016
	Jul	8.2	45	142	2.2	1.2	0.000020	0.010	0.16	0.18	0.019	0.00010	47	0.000050	0.00035	0.00049	0.0067	0.0016
	Aug	8.2	46	142	2.1	1.14	0.000020	0.011	0.15	0.17	0.019	0.00010	44	0.000050	0.00033	0.00047	0.0067	0.0016
	Sep	8.2	47	142	1.9	1.03	0.000020	0.011	0.13	0.15	0.019	0.00010	42	0.000040	0.00030	0.00042	0.0067	0.0015
	Oct	8.2	47	142	1.8	0.92	0.000010	0.011	0.12	0.14	0.019	0.00010	41	0.000040	0.00026	0.00038	0.0067	0.0015
	Nov	8.2	47	142	1.8	0.83	0.000010	0.011	0.108	0.12	0.019	0.00010	41	0.000040	0.00026	0.00034	0.0067	0.0015
	Dec	8.2	47	142	1.8	0.75	0.000010	0.011	0.098	0.11	0.019	0.00010	41	0.000030	0.00026	0.00031	0.0067	0.0015
	Jan	8.2	49	65	1.6	0.74	0.000010	0.012	0.11	0.12	0.024	0.000050	32	0.000030	0.00027	0.00034	0.0027	0.0015
	Feb	8.2	51	61	1.5	0.69	0.000010	0.012	0.107	0.11	0.022	0.000050	30	0.000030	0.00025	0.00032	0.0025	0.0015
Year 3	Mar	8.2	47	70	1.7	0.80	0.000010	0.011	0.12	0.13	0.026	0.000050	35	0.000030	0.00029	0.00037	0.0029	0.0015
	Apr	8.0	34	150	3.6	1.7	0.000030	0.0080	0.26	0.28	0.021	0.00011	85	0.000070	0.00062	0.0008	0.0061	0.0018
	May	8.1	37	123	3.0	1.4	0.000020	0.0087	0.22	0.23	0.023	0.00009	67	0.000060	0.00051	0.0006	0.0050	0.0017
	Jun	8.1	41	98	2.4	1.1	0.000020	0.010	0.17	0.18	0.027	0.000070	51	0.000050	0.00040	0.00051	0.0040	0.0016
	Jul	8.1	40	104	2.5	1.2	0.000020	0.0094	0.18	0.19	0.026	0.000080	55	0.000050	0.00043	0.00055	0.0042	0.0016
	Aug	8.1	41	98	2.4	1.1	0.000020	0.010	0.17	0.18	0.027	0.000070	52	0.000050	0.00041	0.00052	0.0040	0.0016
	Sep	8.2	43	89	2.1	1.01	0.000020	0.010	0.16	0.17	0.028	0.000070	46	0.000040	0.00037	0.00047	0.0036	0.0016
	Oct	8.2	45	79	1.9	0.90	0.000010	0.011	0.14	0.15	0.029	0.000060	40	0.000040	0.00033	0.00042	0.0032	0.0015
	Nov	8.2	47	72	1.7	0.81	0.000010	0.011	0.13	0.13	0.026	0.000050	36	0.000040	0.00030	0.00038	0.0029	0.0015
	Dec	8.2	49	65	1.6	0.74	0.000010	0.012	0.11	0.12	0.024	0.000050	32	0.000030	0.00027	0.00034	0.0026	0.0015
	Jan	8.1	40	110	2.2	0.96	0.000020	0.0096	0.16	0.16	0.024	0.000060	53	0.000040	0.00042	0.00045	0.0038	0.0016
	Feb	8.2	42	102	2.1	0.89	0.000020	0.0099	0.15	0.15	0.025	0.000060	49	0.000040	0.00039	0.00042	0.0035	0.0016
Year 4	Mar	8.1	39	118	2.4	1.0	0.000020	0.0093	0.17	0.17	0.023	0.000070	58	0.000050	0.00045	0.00049	0.0041	0.0017
	Apr	8.0	29	252	5.1	2.2	0.000040	0.0067	0.36	0.37	0.015	0.00015	139	0.00010	0.00097	0.0010	0.0087	0.0020
	May	8.0	31	206	4.2	1.8	0.000030	0.0073	0.30	0.30	0.017	0.00012	110	0.00008	0.0008	0.0009	0.0071	0.0019
	Jun	8.1	34	165	3.4	1.4	0.000020	0.0080	0.24	0.24	0.019	0.00010	85	0.000060	0.00063	0.0007	0.0057	0.0018
	Jul	8.0	33	175	3.6	1.5	0.000030	0.0078	0.25	0.26	0.018	0.00010	91	0.000070	0.00067	0.0007	0.0060	0.0018
	Aug	8.1	34	165	3.4	1.4	0.000020	0.0080	0.24	0.24	0.019	0.00010	86	0.000070	0.00064	0.0007	0.0057	0.0018
	Sep	8.1	35	150	3.1	1.3	0.000020	0.0083	0.21	0.22	0.020	0.000090	76	0.000060	0.00058	0.0006	0.0052	0.0018
	Oct	8.1	37	134	2.7	1.2	0.000020	0.0088	0.19	0.20	0.021	0.000080	67	0.000050	0.00051	0.00055	0.0046	0.0017
	Nov	8.1	39	120	2.5	1.1	0.000020	0.0092	0.17	0.18	0.023	0.000070	59	0.000050	0.00046	0.00050	0.0041	0.0017
	Dec	8.1	41	109	2.2	0.96	0.000020	0.0096	0.16	0.16	0.024	0.000060	53	0.000040	0.00042	0.00045	0.0038	0.0016
	Jan	8.1	37	137	4.1	0.89	0.000050	0.0087	0.25	0.30	0.021	0.000120	68	0.000060	0.00051	0.00017	0.0051	0.0017
	Feb	8.1	38	128	3.8	0.83	0.000040	0.009	0.23	0.28	0.022	0.000110	62	0.000050	0.00048	0.00016	0.0048	0.0017
PC	Mar	8.1	36	148	4.4	0.96	0.000050	0.0084	0.27	0.33	0.020	0.00013	74	0.000060	0.00055	0.00018	0.0055	0.0017
	Apr	7.9	27	315	9.4	2.1	0.00010	0.0062	0.58	0.70	0.014	0.00028	176	0.00014	0.00118	0.0039	0.0118	0.0022
	May	8.0	29	258	8	1.7	0.00009	0.0067	0.48	0.6	0.015	0.00023	141	0.00011	0.00097	0.0032	0.0096	0.0020
	Jun	8.0	31	206	6.1	1.3	0.000070	0.0073	0.38	0.46	0.017	0.00018	109	0.000090	0.00077	0.0025	0.0077	0.0019
	Jul	8.0	31	218	6.5	1.4	0.000070	0.0071	0.40	0.48	0.016	0.00019	117	0.00009	0.00082	0.0027	0.0082	0.0019
	Aug	8.0	31	207	6.2	1.3	0.000070	0.0073	0.38	0.46	0.017	0.00018	109	0.00009	0.00077	0.0026	0.0077	0.0019
	Sep	8.0	33	187	5.6	1.22	0.000060	0.0076	0.34	0.42	0.018	0.00017	98	0.000080	0.00070	0.0023	0.0070	0.0019
	Oct	8.1	34	167	5.0	1.09	0.000060	0.0080	0.31	0.37	0.019	0.00015	86	0.000070	0.00062	0.0021	0.0062	0.0018
	Nov	8.1	36	150	4.5	0.98	0.000050	0.0083	0.28	0.33	0.020	0.00013	76	0.000060	0.00056	0.0019	0.0056	0.0018
	Dec	8.1	37	137	4.1	0.89	0.000050	0.0087	0.25	0.30	0.021	0.000120	68	0.000060	0.00051	0.0017	0.0051	0.0017

Appendix D.2 - Platinum Gulch Drainage Chemistry Predictions

Platinum Gulch	Month	Hg mg/L	K mg/L	Li mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Na mg/L	Ni mg/L	P mg/L	Pb mg/L	Sb mg/L	Se mg/L	Si mg/L	Sn mg/L	Sr mg/L	Tl mg/L	U mg/L	V mg/L	Zn mg/L	
Scenario 2 (75th PCTL)																					
Year 1	Mar	0.000010	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.00012	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Apr	0.000030	5.5	0.014	9.4	0.013	0.12	38	0.0035	0.30	0.00025	0.0054	0.0084	5.2	0.00019	0.50	0.000030	0.020	0.0010	0.0025	
	May	0.000030	4.5	0.014	9.4	0.011	0.12	38	0.0035	0.30	0.00021	0.0054	0.0084	5.2	0.00016	0.50	0.000020	0.020	0.0010	0.0025	
	Jun	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.00016	0.0054	0.0084	5.2	0.00013	0.50	0.000020	0.020	0.0010	0.0025	
	Jul	0.000020	4.5	0.014	9.4	0.0090	0.12	38	0.0035	0.30	0.00017	0.0054	0.0084	5.2	0.00013	0.50	0.000020	0.020	0.0010	0.0025	
	Aug	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.00016	0.0054	0.0084	5.2	0.00013	0.50	0.000020	0.020	0.0010	0.0025	
	Sep	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.00015	0.0054	0.0084	5.2	0.00012	0.50	0.000020	0.020	0.0010	0.0025	
	Oct	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.00013	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Nov	0.000020	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.00012	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Dec	0.000010	4.5	0.014	9.4	0.0086	0.12	38	0.0035	0.30	0.00011	0.0054	0.0084	5.2	0.00010	0.50	0.000020	0.020	0.0010	0.0025	
	Jan	0.000020	9.3	0.0111	9.1	0.026	0.061	28	0.0035	0.30	0.00025	0.0079	0.0088	5.2	0.00030	0.45	0.000060	0.012	0.0010	0.0036	
	Feb	0.000020	8.7	0.0103	9.1	0.024	0.061	28	0.0035	0.30	0.00024	0.0079	0.0088	5.2	0.00028	0.45	0.000050	0.012	0.0010	0.0036	
Year 2	Mar	0.000020	10.0	0.012	9.1	0.027	0.061	28	0.0035	0.30	0.00027	0.0080	0.0088	5.2	0.00033	0.45	0.000060	0.012	0.0010	0.0036	
	Apr	0.000050	21	0.025	16	0.059	0.098	28	0.0035	0.30	0.00058	0.017	0.0088	5.2	0.00070	0.80	0.00013	0.020	0.0014	0.0054	
	May	0.000040	18	0.021	13	0.048	0.080	28	0.0035	0.30	0.00048	0.014	0.0088	5.2	0.00057	0.65	0.00011	0.016	0.0011	0.0044	
	Jun	0.000030	14	0.017	10.5	0.038	0.064	28	0.0035	0.30	0.00038	0.0112	0.0088	5.2	0.00045	0.52	0.000080	0.013	0.0010	0.0036	
	Jul	0.000040	15	0.018	11.1	0.041	0.068	28	0.0035	0.30	0.00040	0.012	0.0088	5.2	0.00048	0.55	0.000090	0.014	0.0010	0.0038	
	Aug	0.000030	14	0.017	10.5	0.038	0.064	28	0.0035	0.30	0.00038	0.0113	0.0088	5.2	0.00046	0.52	0.000080	0.013	0.0010	0.0036	
	Sep	0.000030	13	0.015	9.5	0.035	0.061	28	0.0035	0.30	0.00035	0.0102	0.0088	5.2	0.00041	0.47	0.000080	0.012	0.0010	0.0036	
	Oct	0.000030	11.3	0.013	9.1	0.031	0.061	28	0.0035	0.30	0.00031	0.0091	0.0088	5.2	0.00037	0.45	0.000070	0.012	0.0010	0.0036	
	Nov	0.000020	10.2	0.012	9.1	0.028	0.061	28	0.0035	0.30	0.00028	0.0082	0.0088	5.2	0.00033	0.45	0.000060	0.012	0.0010	0.0036	
	Dec	0.000020	9.3	0.0110	9.1	0.025	0.061	28	0.0035	0.30	0.00025	0.0079	0.0088	5.2	0.00030	0.45	0.000060	0.012	0.0010	0.0036	
	Jan	0.000020	10.3	0.013	6.9	0.033	0.035	4.2	0.0017	0.0056	0.00027	0.0098	0.0037	5.3	0.00037	0.38	0.000050	0.0089	0.0007	0.0026	
	Feb	0.000020	9.6	0.012	6.4	0.031	0.033	3.9	0.0016	0.0052	0.00025	0.0091	0.0035	5.3	0.00035	0.35	0.000050	0.0083	0.00063	0.0025	
Year 3	Mar	0.000030	11	0.014	7.4	0.035	0.038	4.5	0.0018	0.006	0.00029	0.0105	0.0040	5.3	0.00040	0.41	0.000060	0.0096	0.0007	0.0028	
	Apr	0.00006	24	0.029	16	0.076	0.081	9.7	0.0039	0.013	0.00062	0.022	0.0085	5.2	0.00086	0.88	0.00012	0.020	0.0016	0.0061	
	May	0.00005	19	0.024	13	0.062	0.066	7.9	0.0032	0.011	0.00051	0.018	0.0070	5.2	0.00071	0.72	0.00010	0.017	0.0013	0.0050	
	Jun	0.000040	16	0.019	10.3	0.049	0.053	6.3	0.0026	0.008	0.00040	0.015	0.0056	5.2	0.00056	0.57	0.000080	0.013	0.0010	0.0040	
	Jul	0.000040	16	0.020	11	0.052	0.056	6.7	0.0027	0.009	0.00043	0.016	0.0059	5.2	0.00060	0.61	0.000080	0.014	0.0011	0.0042	
	Aug	0.000040	16	0.019	10.4	0.050	0.053	6.3	0.0026	0.008	0.00041	0.015	0.0056	5.2	0.00057	0.57	0.000080	0.013	0.0010	0.0040	
	Sep	0.000030	14	0.017	9.4	0.045	0.048	5.7	0.0023	0.008	0.00037	0.013	0.0051	5.2	0.00051	0.52	0.000070	0.012	0.0009	0.0036	
	Oct	0.000030	13	0.015	8.4	0.040	0.043	5.1	0.0021	0.007	0.00033	0.012	0.0045	5.2	0.00046	0.46	0.000060	0.0108	0.0008	0.0032	
	Nov	0.000030	11	0.014	7.5	0.036	0.039	4.6	0.0019	0.006	0.00030	0.0107	0.0041	5.3	0.00041	0.42	0.000060	0.0097	0.0008	0.0029	
	Dec	0.000020	10.3	0.013	6.9	0.033	0.035	4.2	0.0017	0.0056	0.00027	0.0098	0.0037	5.3	0.00037	0.38	0.000050	0.0089	0.0007	0.0026	
	Jan	0.000030	15	0.019	9.2	0.055	0.037	5.1	0.0025	0.007	0.00036	0.016	0.0058	5.2	0.00060	0.56	0.000060	0.011	0.0010	0.0038	
	Feb	0.000030	14	0.018	8.5	0.051	0.034	4.8	0.0023	0.007	0.00034	0.015	0.0054	5.2	0.00056	0.52	0.000060	0.010	0.0009	0.0035	
Year 4	Mar	0.000030	16	0.021	9.9	0.059	0.039	5.5	0.0026	0.008	0.00039	0.018	0.0063	5.2	0.00065	0.60	0.000070	0.012	0.0011	0.0041	
	Apr	0.00007	35	0.044	21	0.13	0.084	12	0.0057	0.017	0.00084	0.038	0.013	5.2	0.0014	1.3	0.00014	0.025	0.0023	0.0087	
	May	0.00006	28	0.036	17	0.10	0.069	10	0.0046	0.014	0.00069	0.031	0.011	5.2	0.0011	1.0	0.00012	0.021	0.0019	0.0071	
	Jun	0.00005	23	0.029	14	0.082	0.055	7.7	0.0037	0.011	0.00055	0.025	0.0087	5.2	0.00090	0.83	0.000090	0.017	0.0015	0.0056	
	Jul	0.00005	24	0.031	15	0.088	0.058	8.2	0.0039	0.012	0.00058	0.026	0.0093	5.2	0.00096	0.89	0.00010	0.018	0.0016	0.0060	
	Aug	0.00005	23	0.029	14	0.083	0.055	7.7	0.0037	0.011	0.00055	0.025	0.0088	5.2	0.00091	0.84	0.000090	0.017	0.0015	0.0057	
	Sep	0.000040	21	0.026	13	0.075	0.050	7.0	0.0034	0.010	0.00050	0.022	0.0079	5.2	0.00082	0.76	0.000080	0.015	0.0014	0.0051	
	Oct	0.000040	18	0.023	11	0.067	0.045	6.3	0.0030	0.009	0.00044	0.020	0.0071	5.2	0.00073	0.68	0.000070	0.013	0.0012	0.0046	
	Nov	0.000040	17	0.021	10	0.060	0.040	5.6	0.0027	0.008	0.00040	0.018	0.0064	5.2	0.00066	0.61	0.000070	0.012	0.0011	0.0041	
	Dec	0.000030	15	0.019	9.2	0.055	0.037	5.1	0.0025	0.007	0.00036	0.016	0.0058	5.2	0.00060	0.56	0.000060	0.011	0.0010	0.0038	
	PC	Jan	0.000060	15	0.020	12.5	0.060	0.029	2.5	0.0039	0.012	0.0014	0.016	0.0073	5.2	0.00090	0.67	0.000090	0.016	0.0020	0.0049
		Feb	0.000060	14	0.019	11.6	0.055	0.027	2.3	0.0036	0.011	0.00130	0.015	0.0068	5.2	0.00084	0.63	0.000080	0.015	0.0019	0.0046
Mar		0.00007	16	0.022	13	0.064	0.031	2.7	0.0041	0.013	0.0015	0.017	0.0078	5.2	0.00097	0.72	0.000100	0.018	0.0022	0.0053	
Apr		0.00014	35	0.047	29	0.137	0.067	5.8	0.0089	0.028	0.0032	0.037	0.017	5.2	0.0021	1.55	0.00021	0.038	0.0046	0.0113	
May		0.00011	28	0.038	23	0.11	0.055	4.7	0.0072	0.023	0.0026	0.030	0.014	5.2	0.0017	1.3	0.00017	0.031	0.0038	0.0092	
Jun		0.00009	23	0.031	19	0.089	0.044	3.8	0.0058	0.018	0.0021	0.024	0								

Appendix D.3 - Pit Wall Runoff Chemistry Predictions

Pit walls	Month	pH	Alkal. mg/L	SO ₄ mg/L	Cl mg/L	F mg/L	Ag mg/L	Al mg/L	As mg/L	B mg/L	Ba mg/L	Be mg/L	Ca mg/L	Cd mg/L	Co mg/L	Cr mg/L	Cu mg/L	Fe mg/L	Hg mg/L	K mg/L
Year																				
Scenario 1 (median)																				
Year 1	Mar	8.3	49	2.3	0.037	0.014	0.0000004	0.0070	0.0032	0.0036	0.00067	0.0000010	1.6	0.0000010	0.0000080	0.000007	0.000069	0.00086	0.0000010	0.34
	Apr	8.2	49	22	0.35	0.13	0.0000035	0.012	0.030	0.034	0.0063	0.000014	15	0.0000060	0.000076	0.00007	0.00066	0.0015	0.000007	3.2
	May	8.2	49	37	0.6	0.22	0.000006	0.012	0.051	0.06	0.011	0.000023	25	0.000011	0.00013	0.00012	0.0011	0.0015	0.000012	5.4
	Jun	8.2	49	34	0.5	0.21	0.000005	0.012	0.047	0.05	0.0098	0.000021	23	0.000010	0.00012	0.00011	0.0010	0.0015	0.000011	4.9
	Jul	8.2	48	46	0.7	0.27	0.000007	0.012	0.062	0.07	0.013	0.000028	31	0.000013	0.00016	0.00014	0.0014	0.0015	0.000014	6.6
	Aug	8.2	49	39	0.6	0.24	0.000006	0.012	0.053	0.06	0.011	0.000024	26	0.000011	0.00013	0.00012	0.0012	0.0015	0.000012	5.7
	Sep	8.2	49	31	0.48	0.18	0.000005	0.012	0.041	0.047	0.0088	0.000019	21	0.000009	0.00010	0.00010	0.00091	0.0015	0.000010	4.4
	Oct	8.2	49	16	0.25	0.096	0.0000025	0.012	0.022	0.025	0.0046	0.000010	11	0.0000050	0.000055	0.00005	0.00047	0.0014	0.000005	2.3
	Mar	8.3	49	10	0.16	0.074	0.0000016	0.012	0.013	0.016	0.0031	0.0000060	7.2	0.0000030	0.000035	0.000032	0.00032	0.0014	0.0000030	1.5
Year 2	Apr	8.2	46	51	0.8	0.36	0.000008	0.011	0.063	0.08	0.015	0.000031	34	0.000015	0.00017	0.00016	0.0016	0.0015	0.000016	7.2
	May	8.1	40	78	1.2	0.55	0.000012	0.0095	0.097	0.12	0.023	0.000048	51	0.000024	0.00026	0.00024	0.0024	0.0016	0.000024	11
	Jun	8.2	42	67	1.0	0.47	0.000010	0.010	0.083	0.10	0.020	0.000041	44	0.000020	0.00022	0.00021	0.0020	0.0016	0.000020	9.4
	Jul	8.1	40	79	1.2	0.56	0.000012	0.0094	0.098	0.12	0.023	0.000049	51	0.000024	0.00026	0.00025	0.0024	0.0016	0.000024	11
	Aug	8.2	43	62	1.0	0.44	0.000010	0.010	0.076	0.09	0.018	0.000038	41	0.000019	0.00020	0.00019	0.0019	0.0016	0.000019	8.7
	Sep	8.2	48	44	0.7	0.31	0.000007	0.012	0.054	0.07	0.013	0.000027	30	0.000013	0.00014	0.00014	0.0013	0.0015	0.000013	6.1
	Oct	8.2	49	22	0.34	0.15	0.0000033	0.012	0.027	0.033	0.0064	0.000013	15	0.0000070	0.000071	0.00007	0.00066	0.0015	0.000007	3.0
	Mar	8.2	49	11	0.16	0.086	0.0000016	0.012	0.012	0.016	0.0032	0.0000060	7.5	0.0000030	0.000034	0.000033	0.00033	0.0014	0.0000030	1.5
	Apr	8.2	46	52	0.8	0.42	0.000008	0.011	0.058	0.08	0.016	0.000032	36	0.000017	0.00016	0.00016	0.0016	0.0015	0.000016	7.2
Year 3	May	8.1	39	80	1.2	0.65	0.000012	0.0093	0.090	0.12	0.024	0.000048	53	0.000025	0.00025	0.00025	0.0025	0.0016	0.000024	11
	Jun	8.2	41	68	1.1	0.55	0.000010	0.0098	0.077	0.10	0.021	0.000041	46	0.000022	0.00022	0.00021	0.0021	0.0016	0.000021	9.4
	Jul	8.1	39	81	1.3	0.66	0.000012	0.0092	0.091	0.12	0.025	0.000049	54	0.000026	0.00026	0.00025	0.0025	0.0016	0.000025	11
	Aug	8.2	43	63	1.0	0.51	0.000010	0.010	0.071	0.10	0.019	0.000038	42	0.000020	0.00020	0.00019	0.0020	0.0016	0.000019	8.7
	Sep	8.2	48	45	0.7	0.36	0.000007	0.011	0.050	0.07	0.014	0.000027	31	0.000014	0.00014	0.00014	0.0014	0.0015	0.000014	6.1
	Oct	8.2	49	22	0.34	0.18	0.0000034	0.012	0.025	0.033	0.0067	0.000013	16	0.0000070	0.000070	0.00007	0.00069	0.0015	0.000007	3.0
	Mar	8.2	49	12	0.17	0.094	0.0000017	0.012	0.012	0.017	0.0033	0.0000070	8.3	0.0000040	0.000038	0.000034	0.00036	0.0014	0.0000030	1.5
	Apr	8.2	44	58	0.8	0.46	0.000008	0.010	0.060	0.08	0.016	0.000032	39	0.000018	0.00018	0.00017	0.0017	0.0015	0.000016	7.4
	May	8.1	38	89	1.3	0.70	0.000013	0.0090	0.092	0.12	0.025	0.000050	58	0.000028	0.00028	0.00025	0.0026	0.0017	0.000025	11
Year 4	Jun	8.1	40	76	1.1	0.60	0.000011	0.0095	0.078	0.11	0.021	0.000043	50	0.000024	0.00024	0.00022	0.0023	0.0016	0.000021	9.6
	Jul	8.1	38	90	1.3	0.71	0.000013	0.0089	0.093	0.13	0.025	0.000050	59	0.000028	0.00028	0.00026	0.0027	0.0017	0.000025	11
	Aug	8.2	41	70	1.0	0.55	0.000010	0.0098	0.072	0.10	0.020	0.000039	46	0.000022	0.00022	0.00020	0.0021	0.0016	0.000020	8.8
	Sep	8.2	47	49	0.7	0.39	0.000007	0.011	0.051	0.07	0.014	0.000027	34	0.000015	0.00015	0.00014	0.0015	0.0015	0.000014	6.2
	Oct	8.2	49	24	0.35	0.19	0.0000034	0.012	0.025	0.034	0.0068	0.000014	17	0.0000080	0.000077	0.00007	0.00072	0.0015	0.000007	3.1
	Mar	8.2	49	13	0.17	0.10	0.0000017	0.012	0.012	0.017	0.0034	0.0000070	9.0	0.0000040	0.000041	0.000034	0.00037	0.0014	0.0000030	1.5
	Apr	8.2	43	64	0.8	0.49	0.000008	0.010	0.060	0.08	0.016	0.000033	42	0.000019	0.00020	0.00017	0.0018	0.0016	0.000016	7.4
	May	8.1	37	98	1.3	0.75	0.000013	0.0087	0.092	0.13	0.025	0.000050	63	0.000030	0.00030	0.00026	0.0027	0.0017	0.000025	11
	Jun	8.1	39	83	1.1	0.64	0.000011	0.0093	0.079	0.11	0.021	0.000043	54	0.000025	0.00026	0.00022	0.0023	0.0016	0.000022	9.7
Year 5	Jul	8.1	37	99	1.3	0.75	0.000013	0.0087	0.093	0.13	0.025	0.000051	63	0.000030	0.00031	0.00026	0.0028	0.0017	0.000025	11
	Aug	8.1	40	76	1.0	0.58	0.000010	0.0096	0.072	0.10	0.020	0.000039	49	0.000023	0.00024	0.00020	0.0021	0.0016	0.000020	8.9
	Sep	8.2	46	54	0.7	0.41	0.000007	0.011	0.051	0.07	0.014	0.000028	36	0.000016	0.00017	0.00014	0.0015	0.0015	0.000014	6.3
	Oct	8.2	49	27	0.35	0.20	0.0000034	0.012	0.025	0.034	0.0068	0.000014	18	0.000008	0.000083	0.00007	0.00075	0.0015	0.000007	3.1
	Mar	8.2	49	13	0.18	0.10	0.0000017	0.012	0.012	0.017	0.0034	0.0000070	9.2	0.0000040	0.000042	0.000035	0.00038	0.0014	0.0000030	1.5
	Apr	8.2	43	64	0.9	0.50	0.000008	0.010	0.060	0.08	0.016	0.000033	42	0.000020	0.00020	0.00017	0.0018	0.0016	0.000017	7.3
	May	8.1	37	99	1.3	0.77	0.000013	0.0087	0.092	0.13	0.025	0.000051	64	0.000030	0.00031	0.00026	0.0028	0.0017	0.000026	11
	Jun	8.1	39	84	1.1	0.66	0.000011	0.0092	0.078	0.11	0.021	0.000043	54	0.000026	0.00026	0.00022	0.0024	0.0016	0.000022	9.6
	Jul	8.1	37	99	1.3	0.78	0.000013	0.0087	0.092	0.13	0.025	0.000051	64	0.000030	0.00031	0.00026	0.0028	0.0017	0.000026	11
Year 6	Aug	8.1	40	77	1.0	0.60	0.000010	0.0095	0.071	0.10	0.019	0.000040	50	0.000023	0.00024	0.00020	0.0022	0.0016	0.000020	8.7
	Sep	8.2	45	54	0.7	0.42	0.000007	0.011	0.050	0.07	0.014	0.000028	36	0.000016	0.00017	0.00014	0.0015	0.0015	0.000014	6.2
	Oct	8.2	49	27	0.35	0.21	0.0000035	0.012	0.025	0.034	0.0067	0.000014	18	0.000008	0.000083	0.00007	0.00076	0.0015	0.000007	3.0
	Mar	8.2	49	13	0.18	0.11	0.0000017	0.012	0.012	0.017	0.0033	0.0000070	9.2	0.0000040	0.000042	0.000035	0.00038	0.0014	0.0000030	1.5
	Apr	8.2	43	64	0.9	0.52	0.000008	0.010	0.059	0.08	0.016	0.000033	42	0.000020	0.00020	0.00017	0.0018	0.0016	0.000017	7.2
	May	8.1	37	99	1.3	0.79	0.000013	0.0087	0.091	0.13	0.025	0.000051	64	0.000030	0.00031	0.00026	0.0028	0.0017	0.000026	11
Year 7	Mar	8.2	49	13	0.18	0.11	0.0000017	0.012	0.012	0.017	0.0033	0.0000070	9.2	0.0000040	0.000042	0.000035	0.00038	0.0014	0.0000030	1.5
	Apr	8.2	43	64	0.9	0.52	0.000008	0.010	0.059	0.08	0.016	0.000033	42	0.000020	0.00020	0.00017	0.0018	0.0016	0.000017	7.2
	May	8.1	37	99	1.3	0.79	0.000013	0.0087	0.091	0.13	0.025	0.000051	64	0.000030	0.00031	0.00026	0.0028	0.0017	0.000026	11

Appendix D.3 - Pit Wall Runoff Chemistry Predictions

Pit walls	Month	Li mg/L	Mg mg/L	Mn mg/L	Mo mg/L	Na mg/L	Ni mg/L	P mg/L	Pb mg/L	Sb mg/L	Se mg/L	Si mg/L	Sn mg/L	Sr mg/L	Tl mg/L	U mg/L	V mg/L	Zn mg/L
Year																		
Scenario 1 (median)																		
Year 1	Mar	0.00044	0.16	0.0012	0.00047	0.055	0.000039	0.00017	0.0000030	0.0010	0.00014	0.17	0.0000050	0.017	0.0000020	0.00057	0.000025	0.000063
	Apr	0.0042	1.5	0.012	0.0044	0.52	0.00037	0.0016	0.000033	0.0097	0.0013	1.6	0.000051	0.16	0.000014	0.0054	0.00023	0.00060
	May	0.0070	2.6	0.019	0.0075	0.88	0.00062	0.0027	0.000055	0.016	0.0022	2.6	0.000086	0.27	0.000024	0.0092	0.00039	0.0010
	Jun	0.0064	2.4	0.018	0.0069	0.81	0.00057	0.0025	0.000051	0.015	0.0020	2.4	0.000079	0.25	0.000022	0.0084	0.00036	0.00093
	Jul	0.0086	3.2	0.024	0.0091	1.1	0.00076	0.0033	0.000067	0.020	0.0027	3.2	0.00011	0.33	0.000029	0.011	0.00048	0.0012
	Aug	0.0074	2.8	0.021	0.0079	0.93	0.00065	0.0029	0.000058	0.017	0.0023	2.8	0.00009	0.29	0.000025	0.0097	0.00042	0.0011
	Sep	0.0057	2.1	0.016	0.0061	0.72	0.00051	0.0022	0.000045	0.013	0.0018	2.2	0.000070	0.22	0.000020	0.0075	0.00032	0.00083
	Oct	0.0030	1.1	0.0083	0.0032	0.38	0.00026	0.0012	0.000024	0.0070	0.00093	1.1	0.000037	0.12	0.000010	0.0039	0.00017	0.00043
	Nov	0.0020	0.77	0.0057	0.0020	0.26	0.00017	0.0008	0.000017	0.0079	0.00063	0.75	0.000023	0.10	0.0000070	0.0044	0.00011	0.00029
Year 2	Mar	0.0096	3.8	0.028	0.0097	1.3	0.00083	0.0037	0.000081	0.038	0.0031	3.6	0.00011	0.50	0.000033	0.022	0.00053	0.0014
	Apr	0.015	5.8	0.042	0.015	2.0	0.0013	0.006	0.00012	0.059	0.0047	5.2	0.00017	0.77	0.000050	0.033	0.0008	0.0022
	May	0.013	4.9	0.036	0.013	1.7	0.0011	0.0048	0.00011	0.050	0.0040	4.8	0.00015	0.66	0.000043	0.028	0.0007	0.0019
	Jun	0.015	5.9	0.043	0.015	2.0	0.0013	0.006	0.00013	0.060	0.0047	5.2	0.00017	0.78	0.000051	0.034	0.0008	0.0022
	Jul	0.012	4.6	0.033	0.012	1.5	0.00100	0.0044	0.000097	0.046	0.0037	4.4	0.00014	0.61	0.000040	0.026	0.00064	0.0017
	Aug	0.0082	3.2	0.024	0.0083	1.1	0.00071	0.0031	0.000069	0.033	0.0026	3.1	0.00010	0.43	0.000028	0.018	0.00045	0.0012
	Sep	0.0041	1.6	0.012	0.0041	0.54	0.00035	0.0016	0.000034	0.016	0.0013	1.5	0.000047	0.21	0.000014	0.0092	0.00022	0.00060
	Oct	0.0020	0.83	0.0059	0.0019	0.28	0.00017	0.0008	0.000018	0.011	0.00065	0.76	0.000022	0.13	0.0000070	0.0063	0.00011	0.00030
	Nov	0.0099	4.0	0.029	0.0095	1.4	0.00082	0.0037	0.000087	0.055	0.0032	3.7	0.00011	0.64	0.000034	0.031	0.00053	0.0015
Year 3	Mar	0.015	6.2	0.045	0.015	2.1	0.0013	0.006	0.00013	0.085	0.0049	5.2	0.00017	0.99	0.000051	0.048	0.0008	0.0023
	Apr	0.013	5.3	0.038	0.012	1.8	0.0011	0.0049	0.00011	0.072	0.0042	4.9	0.00014	0.84	0.000044	0.041	0.0007	0.0020
	May	0.015	6.3	0.045	0.015	2.2	0.0013	0.006	0.00014	0.086	0.0050	5.2	0.00017	1.00	0.000052	0.048	0.0008	0.0023
	Jun	0.012	4.9	0.035	0.011	1.7	0.00099	0.0045	0.00011	0.067	0.0039	4.5	0.00013	0.78	0.000041	0.038	0.00065	0.0018
	Jul	0.0085	3.5	0.025	0.0081	1.2	0.00070	0.0032	0.000075	0.047	0.0027	3.2	0.00009	0.55	0.000029	0.027	0.00046	0.0013
	Aug	0.0042	1.7	0.012	0.0040	0.59	0.00035	0.0016	0.000037	0.023	0.0014	1.6	0.000046	0.27	0.000014	0.013	0.00023	0.00063
	Sep	0.0022	0.92	0.0067	0.0018	0.30	0.00018	0.0008	0.000020	0.013	0.00071	0.81	0.000027	0.15	0.0000080	0.0073	0.00011	0.00033
	Oct	0.011	4.5	0.033	0.0088	1.5	0.00088	0.0041	0.000099	0.065	0.0034	3.9	0.00013	0.73	0.000039	0.035	0.00056	0.0016
	Nov	0.016	6.9	0.050	0.014	2.2	0.0013	0.006	0.00015	0.10	0.0053	5.2	0.00020	1.1	0.000059	0.054	0.0009	0.0025
Year 4	Mar	0.014	5.9	0.043	0.012	1.9	0.0011	0.0054	0.00013	0.086	0.0045	5.1	0.00017	0.96	0.000051	0.046	0.0007	0.0021
	Apr	0.016	7.0	0.051	0.014	2.2	0.0014	0.006	0.00015	0.10	0.0053	5.2	0.00020	1.1	0.000060	0.055	0.0009	0.0025
	May	0.013	5.4	0.039	0.011	1.7	0.0011	0.0049	0.00012	0.079	0.0041	4.7	0.00016	0.88	0.000046	0.043	0.00067	0.0019
	Jun	0.0089	3.8	0.028	0.0075	1.2	0.00074	0.0035	0.000083	0.055	0.0029	3.3	0.00011	0.62	0.000033	0.030	0.00047	0.0014
	Jul	0.0044	1.9	0.014	0.0037	0.61	0.00037	0.0017	0.000041	0.027	0.0014	1.6	0.000055	0.31	0.000016	0.015	0.00023	0.00068
	Aug	0.0023	1.0	0.0074	0.0016	0.31	0.00019	0.0009	0.000022	0.015	0.00074	0.83	0.000031	0.17	0.0000090	0.0081	0.00012	0.00035
	Sep	0.011	4.9	0.036	0.0080	1.5	0.00091	0.0044	0.00011	0.075	0.0036	4.0	0.00015	0.81	0.000043	0.039	0.00057	0.0017
	Oct	0.017	7.5	0.055	0.012	2.3	0.0014	0.007	0.00017	0.11	0.0055	5.2	0.00023	1.2	0.000066	0.060	0.0009	0.0026
	Nov	0.014	6.4	0.047	0.010	1.9	0.0012	0.006	0.00014	0.098	0.0047	5.2	0.00020	1.1	0.000057	0.051	0.0007	0.0022
Year 5	Mar	0.017	7.5	0.056	0.012	2.3	0.0014	0.007	0.00017	0.12	0.0055	5.2	0.00023	1.3	0.000067	0.061	0.0009	0.0026
	Apr	0.013	5.8	0.043	0.0096	1.8	0.0011	0.0053	0.00013	0.090	0.0043	4.8	0.00018	0.98	0.000052	0.047	0.00068	0.0020
	May	0.0093	4.1	0.030	0.0067	1.3	0.00077	0.0037	0.000092	0.063	0.0030	3.4	0.00013	0.69	0.000037	0.033	0.00048	0.0014
	Jun	0.0046	2.0	0.015	0.0033	0.62	0.00038	0.0018	0.000045	0.031	0.0015	1.7	0.000063	0.34	0.000018	0.016	0.00024	0.00071
	Jul	0.0023	1.0	0.0076	0.0015	0.31	0.00019	0.0009	0.000023	0.017	0.00074	0.84	0.000032	0.18	0.0000090	0.0087	0.00012	0.00036
	Aug	0.011	4.9	0.037	0.0075	1.5	0.00093	0.0045	0.00011	0.080	0.0036	4.1	0.00015	0.86	0.000043	0.042	0.00057	0.0017
	Sep	0.017	7.6	0.056	0.011	2.3	0.0014	0.007	0.00017	0.12	0.0055	5.2	0.00024	1.3	0.000067	0.065	0.0009	0.0027
	Oct	0.014	6.5	0.048	0.0098	2.0	0.0012	0.006	0.00015	0.10	0.0047	5.2	0.00020	1.1	0.000057	0.055	0.0007	0.0023
	Nov	0.017	7.6	0.057	0.012	2.3	0.0014	0.007	0.00017	0.12	0.0055	5.2	0.00024	1.3	0.000067	0.065	0.0009	0.0027
Year 6	Mar	0.013	5.9	0.044	0.0089	1.8	0.0011	0.0053	0.00013	0.096	0.0043	4.9	0.00018	1.0	0.000052	0.050	0.00068	0.0021
	Apr	0.0092	4.2	0.031	0.0063	1.3	0.00078	0.0037	0.000093	0.067	0.0030	3.4	0.00013	0.72	0.000036	0.035	0.00048	0.0015
	May	0.0045	2.0	0.015	0.0031	0.63	0.00038	0.0018	0.000046	0.033	0.0015	1.7	0.000064	0.35	0.000018	0.017	0.00024	0.00072
	Jun	0.0023	1.0	0.0077	0.0014	0.32	0.00019	0.0009	0.000023	0.018	0.00074	0.85	0.000032	0.18	0.0000090	0.0092	0.00012	0.00037
	Jul	0.011	5.0	0.037	0.0069	1.5	0.00093	0.0045	0.00011	0.085	0.0036	4.1	0.00016	0.89	0.000043	0.045	0.00057	0.0018
	Aug	0.017	7.6	0.057	0.011	2.3	0.0014	0.007	0.00017	0.13	0.0054	5.2	0.00024	1.4	0.000066	0.068	0.0009	0.0027
	Sep	0.013	5.9	0.044	0.0089	1.8	0.0011	0.0053	0.00013	0.096	0.0043	4.9	0.00018	1.0	0.000052	0.050	0.00068	0.0021
	Oct	0.0092	4.2	0.031	0.0063	1.3	0.00078	0.0037	0.000093	0.067	0.0030	3.4	0.00013	0.72	0.000036	0.035	0.00048	0.0015
	Nov	0.0045	2.0	0.015	0.0031	0.63	0.00038	0.0018	0.000046	0.033	0.0015	1.7	0.000064	0.35	0.000018	0.017	0.00024	0.00072
Year 7	Mar	0.0023	1.0	0.0077	0.0014	0.32	0.00019	0.0009	0.000023	0.018	0.00074	0.85	0.000032	0.18	0.0000090	0.0092	0.00012	0.00037
	Apr	0.011	5.0	0.037	0.0069	1.5	0.00093	0.0045	0.00011	0.085	0.0036	4.1	0.00016	0.89	0.000043	0.045	0.00057	0.0018
	May	0.017	7.6	0.057	0.011	2.3	0.0014	0.007	0.00017	0.13	0.0054	5.2	0.00024	1.4	0.000066	0.068	0.0009	0.0027

Appendix D.3 - Pit Wall Runoff Chemistry Predictions

Pit walls	Month	pH	Alkal.	SO ₄	Cl	F	Ag	Al	As	B	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Hg	K
Year			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Year 8	Jun	8.1	39	84	1.1	0.68	0.000011	0.0092	0.077	0.11	0.021	0.000044	55	0.000026	0.00026	0.00022	0.0024	0.0016	0.000022	9.4
	Jul	8.1	37	99	1.3	0.80	0.000013	0.0086	0.091	0.13	0.025	0.000051	64	0.000031	0.00031	0.00026	0.0028	0.0017	0.000026	11
	Aug	8.1	40	77	1.0	0.62	0.000010	0.0095	0.071	0.10	0.019	0.000040	50	0.000024	0.00024	0.00020	0.0022	0.0016	0.000020	8.6
	Sep	8.2	45	54	0.7	0.43	0.000007	0.011	0.050	0.07	0.013	0.000028	36	0.000017	0.00017	0.00014	0.0015	0.0015	0.000014	6.0
	Oct	8.2	49	27	0.35	0.21	0.0000035	0.012	0.024	0.034	0.0066	0.000014	18	0.000008	0.000083	0.00007	0.00076	0.0015	0.000007	3.0
	Mar	8.2	49	13	0.18	0.11	0.0000018	0.012	0.013	0.018	0.0034	0.0000070	9.1	0.0000040	0.000041	0.000036	0.00039	0.0014	0.0000040	1.5
	Apr	8.2	43	62	0.9	0.51	0.000009	0.010	0.064	0.08	0.016	0.000034	42	0.000021	0.00020	0.00017	0.0019	0.0016	0.000017	7.2
	May	8.1	37	95	1.3	0.78	0.000013	0.0087	0.099	0.13	0.025	0.000052	63	0.000032	0.00030	0.00026	0.0029	0.0017	0.000026	11
	Jun	8.1	39	81	1.1	0.67	0.000011	0.0092	0.084	0.11	0.021	0.000044	54	0.000027	0.00026	0.00023	0.0025	0.0016	0.000022	9.5
	Jul	8.1	37	95	1.3	0.79	0.000013	0.0087	0.100	0.13	0.025	0.000052	63	0.000032	0.00030	0.00027	0.0029	0.0017	0.000026	11
Year 9	Aug	8.1	40	74	1.0	0.61	0.000010	0.0096	0.077	0.10	0.020	0.000040	49	0.000025	0.00024	0.00021	0.0022	0.0016	0.000020	8.6
	Sep	8.2	46	52	0.7	0.43	0.000007	0.011	0.054	0.07	0.014	0.000028	36	0.000017	0.00017	0.00015	0.0016	0.0015	0.000014	6.1
	Oct	8.2	49	26	0.36	0.21	0.0000035	0.012	0.027	0.035	0.0068	0.000014	18	0.000009	0.000082	0.00007	0.00078	0.0015	0.000007	3.0
	Mar	8.2	49	13	0.19	0.11	0.0000019	0.012	0.015	0.018	0.0036	0.0000070	9.1	0.0000050	0.000041	0.000037	0.00041	0.0014	0.0000040	1.6
	Apr	8.2	43	60	0.9	0.51	0.000009	0.010	0.071	0.09	0.017	0.000035	41	0.000022	0.00020	0.00018	0.0019	0.0016	0.000018	7.4
	May	8.1	37	92	1.4	0.78	0.000014	0.0087	0.11	0.13	0.026	0.000054	62	0.000034	0.00030	0.00027	0.0030	0.0017	0.000027	11
	Jun	8.1	39	78	1.2	0.67	0.000012	0.0093	0.093	0.11	0.022	0.000046	53	0.000029	0.00026	0.00023	0.0025	0.0016	0.000023	9.6
	Jul	8.1	37	92	1.4	0.78	0.000014	0.0087	0.11	0.13	0.026	0.000054	62	0.000034	0.00030	0.00027	0.0030	0.0017	0.000027	11
	Aug	8.1	41	71	1.1	0.60	0.000010	0.0096	0.084	0.10	0.020	0.000041	48	0.000026	0.00023	0.00021	0.0023	0.0016	0.000021	8.7
	Sep	8.2	46	49	0.7	0.42	0.000007	0.011	0.059	0.07	0.014	0.000029	35	0.000018	0.00016	0.00015	0.0016	0.0015	0.000015	6.1
PC	Oct	8.2	49	24	0.36	0.21	0.0000036	0.012	0.029	0.036	0.0069	0.000014	18	0.000009	0.000079	0.00007	0.00078	0.0015	0.000007	3.0
	Mar	8.3	49	7.5	0.14	0.060	0.0000014	0.012	0.0087	0.014	0.0022	0.0000060	5.3	0.0000020	0.000023	0.000047	0.00028	0.0014	0.0000030	0.81
	Apr	8.2	48	36	0.7	0.28	0.000007	0.012	0.041	0.07	0.011	0.000027	25	0.000009	0.00011	0.00022	0.0013	0.0015	0.000013	3.9
	May	8.2	45	55	1.0	0.44	0.000010	0.011	0.063	0.10	0.016	0.000041	37	0.000013	0.00017	0.00034	0.0021	0.0015	0.000021	5.9
	Jun	8.2	47	47	0.9	0.37	0.000009	0.011	0.054	0.09	0.014	0.000035	33	0.000011	0.00014	0.00029	0.0018	0.0015	0.000018	5.0
	Jul	8.2	45	55	1.0	0.44	0.000010	0.011	0.064	0.10	0.016	0.000041	38	0.000013	0.00017	0.00034	0.0021	0.0015	0.000021	5.9
	Aug	8.2	48	42	0.8	0.34	0.000008	0.011	0.049	0.08	0.013	0.000032	30	0.000010	0.00013	0.00026	0.0016	0.0015	0.000016	4.6
	Sep	8.2	49	30	0.6	0.24	0.000006	0.012	0.034	0.06	0.0088	0.000022	21	0.000007	0.000092	0.00018	0.0011	0.0015	0.000011	3.2
	Oct	8.2	49	14	0.27	0.12	0.0000027	0.012	0.017	0.027	0.0043	0.000011	10	0.0000040	0.000045	0.00009	0.00055	0.0014	0.000005	1.6
	Scenario 2 (75th PCTL)																			
Year 1	Mar	8.3	49	3.4	0.060	0.022	0.0000004	0.0085	0.0040	0.0037	0.00083	0.0000010	2.0	0.0000010	0.000011	0.000010	0.00011	0.0012	0.0000010	0.47
	Apr	8.2	49	32	0.56	0.21	0.0000035	0.012	0.038	0.035	0.0079	0.000014	19	0.000011	0.00010	0.00010	0.00010	0.0015	0.000007	4.5
	May	8.2	48	54	1.0	0.36	0.000006	0.011	0.064	0.06	0.013	0.000024	32	0.000018	0.00018	0.00016	0.0017	0.0015	0.000012	7.6
	Jun	8.2	49	50	0.9	0.33	0.000006	0.012	0.059	0.05	0.012	0.000022	30	0.000016	0.00016	0.00015	0.0016	0.0015	0.000011	7.0
	Jul	8.2	45	67	1.2	0.44	0.000007	0.011	0.078	0.07	0.016	0.000029	38	0.000022	0.00022	0.00020	0.0021	0.0015	0.000015	9.3
	Aug	8.2	47	57	1.0	0.38	0.000006	0.011	0.067	0.06	0.014	0.000025	34	0.000019	0.00019	0.00017	0.0018	0.0015	0.000013	8.0
	Sep	8.2	49	45	0.8	0.29	0.000005	0.012	0.052	0.049	0.011	0.000019	26	0.000015	0.00014	0.00013	0.0014	0.0015	0.000010	6.2
	Oct	8.2	49	23	0.41	0.15	0.0000025	0.012	0.027	0.025	0.0057	0.000010	14	0.0000080	0.000076	0.00007	0.00073	0.0015	0.000005	3.2
	Mar	8.2	49	16	0.27	0.11	0.0000017	0.012	0.017	0.016	0.0039	0.0000070	9.4	0.0000050	0.000048	0.000048	0.00049	0.0014	0.0000030	2.1
	Apr	8.2	43	77	1.3	0.55	0.000008	0.010	0.080	0.08	0.019	0.000032	44	0.000026	0.00023	0.00023	0.0024	0.0016	0.000016	10
Year 2	May	8.1	37	118	2.0	0.84	0.000012	0.0087	0.12	0.12	0.023	0.000049	66	0.000039	0.00036	0.00036	0.0036	0.0017	0.000025	16
	Jun	8.1	39	101	1.7	0.72	0.000011	0.0092	0.11	0.10	0.025	0.000042	56	0.000033	0.00031	0.00031	0.0031	0.0017	0.000021	13
	Jul	8.1	37	120	2.0	0.85	0.000013	0.0086	0.12	0.12	0.023	0.000050	67	0.000040	0.00036	0.00036	0.0037	0.0017	0.000025	16
	Aug	8.1	40	93	1.6	0.66	0.000010	0.0095	0.097	0.10	0.023	0.000039	52	0.000031	0.00028	0.00028	0.0029	0.0016	0.000019	12
	Sep	8.2	45	66	1.1	0.47	0.000007	0.011	0.069	0.07	0.016	0.000027	38	0.000022	0.00020	0.00020	0.0020	0.0015	0.000014	8.7
	Oct	8.2	49	33	0.55	0.23	0.0000034	0.012	0.034	0.034	0.0080	0.000014	19	0.000011	0.000100	0.00010	0.0010	0.0015	0.000007	4.3
	Mar	8.2	49	17	0.27	0.13	0.0000017	0.012	0.015	0.017	0.0041	0.0000070	9.8	0.0000060	0.000047	0.000051	0.00050	0.0014	0.0000030	2.1
	Apr	8.2	42	81	1.3	0.62	0.000008	0.0100	0.075	0.08	0.020	0.000032	46	0.000027	0.00023	0.00025	0.0025	0.0016	0.000016	10
	May	8.1	36	125	2.0	0.95	0.000013	0.0085	0.12	0.12	0.023	0.000050	69	0.000042	0.00036	0.00039	0.0038	0.0017	0.000025	16
	Jun	8.1	38	106	1.7	0.81	0.000011	0.0090	0.098	0.11	0.025	0.000043	59	0.000036	0.00030	0.00033	0.0032	0.0017	0.000021	13
Year 3	Jul	8.1	36	126	2.0	0.96	0.000013	0.0085	0.12	0.13	0.022	0.000050	70	0.000042	0.00036	0.00039	0.0038	0.0017	0.000025	16
	Aug	8.1	39	98	1.6	0.75	0.000010	0.0093	0.091	0.10	0.024	0.000039	55	0.000033	0.00028	0.00031	0.0030	0.0016	0.000020	12
	Sep	8.2	44																	

Appendix D.3 - Pit Wall Runoff Chemistry Predictions

Pit walls	Month	Li	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	Si	Sn	Sr	Tl	U	V	Zn
Year		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Year 8	Jun	0.014	6.5	0.049	0.0090	2.0	0.0012	0.006	0.00015	0.11	0.0046	5.2	0.00020	1.2	0.000056	0.058	0.0007	0.0023
	Jul	0.017	7.7	0.057	0.011	2.3	0.0014	0.007	0.00017	0.13	0.0055	5.2	0.00024	1.4	0.000067	0.069	0.0009	0.0027
	Aug	0.013	5.9	0.044	0.0082	1.8	0.0011	0.0053	0.00013	0.10	0.0042	4.9	0.00019	1.1	0.000051	0.053	0.00068	0.0021
	Sep	0.0091	4.2	0.031	0.0058	1.3	0.00078	0.0038	0.000095	0.071	0.0030	3.4	0.00013	0.75	0.000036	0.037	0.00048	0.0015
	Oct	0.0045	2.1	0.015	0.0028	0.63	0.00039	0.0019	0.000047	0.035	0.0015	1.7	0.000064	0.37	0.000018	0.018	0.00024	0.00073
	Mar	0.0022	1.0	0.0073	0.0017	0.32	0.00019	0.0010	0.000025	0.018	0.00072	0.85	0.000029	0.18	0.000010	0.0092	0.00012	0.00037
	Apr	0.011	5.0	0.035	0.0080	1.5	0.00092	0.0048	0.00012	0.085	0.0034	4.1	0.00014	0.89	0.000049	0.044	0.00056	0.0018
	May	0.016	7.6	0.054	0.012	2.4	0.0014	0.007	0.00018	0.13	0.0053	5.2	0.00022	1.4	0.000076	0.068	0.0009	0.0027
	Jun	0.014	6.5	0.046	0.011	2.0	0.0012	0.006	0.00016	0.11	0.0045	5.2	0.00018	1.2	0.000065	0.058	0.0007	0.0023
	Jul	0.017	7.7	0.054	0.012	2.4	0.0014	0.007	0.00019	0.13	0.0053	5.2	0.00022	1.4	0.000076	0.069	0.0009	0.0027
Year 9	Aug	0.013	5.9	0.042	0.0096	1.8	0.0011	0.0058	0.00014	0.10	0.0041	4.9	0.00017	1.1	0.000059	0.053	0.00067	0.0021
	Sep	0.0090	4.2	0.030	0.0068	1.3	0.00077	0.0040	0.00010	0.072	0.0029	3.4	0.00012	0.75	0.000041	0.037	0.00047	0.0015
	Oct	0.0044	2.1	0.015	0.0033	0.63	0.00038	0.0020	0.000050	0.035	0.0014	1.7	0.000058	0.37	0.000020	0.018	0.00023	0.00073
	Mar	0.0022	1.1	0.0071	0.0020	0.33	0.00019	0.0011	0.000027	0.018	0.00071	0.87	0.000027	0.19	0.000012	0.0095	0.00012	0.00038
	Apr	0.011	5.0	0.034	0.0094	1.6	0.00092	0.0053	0.00013	0.088	0.0034	4.2	0.00013	0.90	0.000056	0.045	0.00057	0.0018
	May	0.016	7.7	0.052	0.014	2.4	0.0014	0.008	0.00020	0.13	0.0052	5.2	0.00020	1.4	0.000086	0.069	0.0009	0.0028
	Jun	0.014	6.6	0.044	0.012	2.1	0.0012	0.007	0.00017	0.11	0.0044	5.2	0.00017	1.2	0.000074	0.059	0.0007	0.0024
	Jul	0.016	7.7	0.052	0.014	2.4	0.0014	0.008	0.00020	0.13	0.0052	5.2	0.00020	1.4	0.000087	0.069	0.0009	0.0028
	Aug	0.013	5.9	0.040	0.011	1.9	0.0011	0.006	0.00015	0.10	0.0040	4.9	0.00015	1.1	0.000067	0.053	0.0007	0.0021
	Sep	0.0088	4.2	0.028	0.0078	1.3	0.00076	0.0043	0.00011	0.072	0.0028	3.4	0.00011	0.75	0.000047	0.037	0.00047	0.0015
PC	Oct	0.0043	2.0	0.014	0.0038	0.64	0.00037	0.0021	0.000052	0.036	0.0014	1.7	0.000052	0.37	0.000023	0.018	0.00023	0.00074
	Mar	0.0012	0.65	0.0039	0.00085	0.13	0.00012	0.0007	0.000015	0.0085	0.00042	0.52	0.000018	0.11	0.0000080	0.0036	0.00010	0.00023
	Apr	0.0057	3.1	0.018	0.0040	0.60	0.00057	0.0035	0.000074	0.040	0.0020	2.5	0.000086	0.51	0.000039	0.017	0.00047	0.0011
	May	0.0088	4.8	0.028	0.0062	0.92	0.00087	0.0054	0.00011	0.062	0.0031	3.8	0.00013	0.79	0.000059	0.026	0.00072	0.0017
	Jun	0.0075	4.1	0.024	0.0053	0.79	0.00075	0.0046	0.000096	0.053	0.0026	3.2	0.00011	0.67	0.000050	0.022	0.00061	0.0015
	Jul	0.0088	4.8	0.028	0.0062	0.93	0.00088	0.0054	0.00011	0.062	0.0031	3.8	0.00013	0.79	0.000059	0.026	0.00072	0.0017
	Aug	0.0068	3.7	0.022	0.0048	0.71	0.00067	0.0042	0.000087	0.048	0.0024	2.9	0.00010	0.61	0.000046	0.020	0.00055	0.0013
	Sep	0.0047	2.6	0.015	0.0033	0.50	0.00047	0.0029	0.000061	0.033	0.0017	2.1	0.000072	0.43	0.000032	0.014	0.00039	0.00092
	Oct	0.0023	1.3	0.0075	0.0016	0.24	0.00023	0.0014	0.000030	0.016	0.00082	1.0	0.000035	0.21	0.000016	0.0069	0.00019	0.00045
	Scenario 2 (75th PCTL)																	
Year 1	Mar	0.00061	0.21	0.0017	0.00071	0.15	0.000055	0.00020	0.0000090	0.0014	0.00020	0.21	0.000013	0.022	0.0000020	0.00082	0.000031	0.000096
	Apr	0.0058	2.0	0.016	0.0067	1.4	0.00053	0.0019	0.000086	0.013	0.00012	2.0	0.00012	0.26	0.000017	0.0078	0.00029	0.00091
	May	0.0098	3.4	0.027	0.011	2.4	0.00089	0.0033	0.00015	0.022	0.0032	3.4	0.00020	0.36	0.000029	0.013	0.00049	0.0015
	Jun	0.0090	3.1	0.025	0.010	2.2	0.00082	0.0030	0.00013	0.021	0.0029	3.1	0.00019	0.33	0.000026	0.012	0.00045	0.0014
	Jul	0.012	4.2	0.033	0.014	2.9	0.0011	0.0040	0.00018	0.027	0.0039	4.1	0.00025	0.44	0.000035	0.016	0.00060	0.0019
	Aug	0.010	3.6	0.028	0.012	2.5	0.00094	0.0034	0.00015	0.024	0.0034	3.6	0.00021	0.38	0.000030	0.014	0.00052	0.0016
	Sep	0.0081	2.8	0.022	0.0093	1.9	0.00073	0.0027	0.00012	0.018	0.0026	2.8	0.00017	0.29	0.000024	0.011	0.00040	0.0013
	Oct	0.0042	1.4	0.011	0.0048	1.0	0.00038	0.0014	0.000062	0.0095	0.0014	1.4	0.000086	0.15	0.000012	0.0056	0.00021	0.00065
	Mar	0.0029	1.0	0.0080	0.0031	0.83	0.00024	0.0010	0.000040	0.010	0.00095	0.95	0.000054	0.13	0.0000080	0.0066	0.00015	0.00044
	Apr	0.014	5.0	0.039	0.015	4.1	0.0012	0.0047	0.00020	0.050	0.0046	4.6	0.00026	0.66	0.000040	0.032	0.00071	0.0021
Year 2	May	0.021	7.6	0.059	0.023	6.2	0.0018	0.007	0.00030	0.077	0.0071	5.2	0.00040	1.0	0.000060	0.050	0.0011	0.0033
	Jun	0.018	6.5	0.051	0.019	5.3	0.0015	0.0062	0.00026	0.066	0.0060	5.2	0.00034	0.86	0.000052	0.042	0.0009	0.0028
	Jul	0.022	7.7	0.060	0.023	6.3	0.0018	0.007	0.00031	0.078	0.0072	5.2	0.00041	1.0	0.000061	0.050	0.0011	0.0033
	Aug	0.017	6.0	0.047	0.018	4.9	0.0014	0.0057	0.00024	0.061	0.0056	5.2	0.00032	0.79	0.000048	0.039	0.0009	0.0026
	Sep	0.012	4.2	0.033	0.013	3.5	0.0010	0.0041	0.00017	0.043	0.0039	4.0	0.00022	0.56	0.000034	0.028	0.00060	0.0018
	Oct	0.0059	2.1	0.016	0.0063	1.7	0.00050	0.0020	0.000083	0.021	0.0020	2.0	0.00011	0.28	0.000017	0.014	0.00030	0.00090
	Mar	0.0030	1.1	0.0085	0.0030	1.0	0.00024	0.0010	0.000041	0.015	0.0010	0.97	0.000051	0.17	0.0000080	0.0097	0.00015	0.00045
	Apr	0.015	5.4	0.042	0.015	5.0	0.0012	0.0051	0.00020	0.071	0.0050	4.8	0.00025	0.84	0.000040	0.047	0.00076	0.0022
	May	0.023	8.2	0.064	0.023	7.6	0.0018	0.008	0.00031	0.11	0.0077	5.2	0.00039	1.3	0.000062	0.073	0.0012	0.0034
	Jun	0.019	7.0	0.055	0.019	6.5	0.0015	0.007	0.00026	0.093	0.0065	5.2	0.00033	1.1	0.000053	0.062	0.0010	0.0029
Year 3	Jul	0.023	8.3	0.065	0.023	7.7	0.0018	0.008	0.00031	0.11	0.0078	5.2	0.00039	1.3	0.000063	0.074	0.0012	0.0034
	Aug	0.018	6.5	0.050	0.018	6.0	0.0014	0.0062	0.00024	0.086	0.0060	5.2	0.00030	1.0	0.000049	0.057	0.0009	0.0027
	Sep	0.013	4.6	0.036	0.013	4.2	0.0010	0.0044	0.00017	0.061	0.0043	4.1	0.00022	0.72	0.000035	0.041	0.00065	0.0019
	Oct	0.0062	2.3	0.018	0.0062	2.1	0.00050	0.0022	0.000085	0.030	0.0021	2.0	0.00011	0.36	0.000017	0.020	0.00032	0.00094
	Mar	0.0033	1.2	0.0096	0.0029	1.1	0.00026	0.0012	0.000045	0.017	0.0011	1.0	0.000060	0.20	0.000010	0.011	0.00017	0.00049
	Apr	0.016	6.0	0.047	0.014	5.3	0.0013	0.0057	0.00022	0.085	0.0054	5.1	0.00029	0.96	0.000046	0.054	0.00081	0.0024
	May	0.024	9.2	0.072	0.021	8.1	0.0019	0.009	0.00033	0.13	0.0082	5.2	0.00045	1.5	0.000071	0.083	0.0012	0.0037
	Jun	0.019	7.0	0.055	0.019	6.5	0.0015	0.007	0									

Appendix D.3 - Pit Wall Runoff Chemistry Predictions

Pit walls	Month	pH	Alkal.	SO ₄	Cl	F	Ag	Al	As	B	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Hg	K
Year			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Year 5	Jun	8.1	37	119	1.8	0.88	0.000011	0.0087	0.10	0.11	0.023	0.000044	65	0.000039	0.00034	0.00034	0.0034	0.0017	0.000022	14
	Jul	8.1	35	141	2.2	1.0	0.000013	0.0082	0.12	0.13	0.021	0.000052	77	0.000047	0.00040	0.00041	0.0041	0.0018	0.000026	17
	Aug	8.1	38	109	1.7	0.81	0.000010	0.0090	0.093	0.10	0.024	0.000040	60	0.000036	0.00031	0.00031	0.0032	0.0017	0.000020	13
	Sep	8.2	43	77	1.2	0.57	0.000007	0.010	0.066	0.07	0.018	0.000028	43	0.000025	0.00022	0.00022	0.0022	0.0016	0.000014	9.2
	Oct	8.2	49	38	0.59	0.28	0.0000035	0.012	0.032	0.035	0.0088	0.000014	22	0.000013	0.00011	0.00011	0.0011	0.0015	0.000007	4.5
	Mar	8.2	49	21	0.31	0.15	0.0000018	0.012	0.016	0.017	0.0045	0.0000070	12	0.0000070	0.000058	0.000055	0.00057	0.0014	0.0000030	2.3
	Apr	8.1	39	99	1.5	0.72	0.000009	0.0093	0.079	0.08	0.022	0.000034	54	0.000033	0.00028	0.00027	0.0028	0.0016	0.000017	11
	May	8.1	34	152	2.3	1.1	0.000013	0.0080	0.12	0.13	0.020	0.000052	83	0.000050	0.00043	0.00041	0.0042	0.0018	0.000026	17
	Jun	8.1	36	130	1.9	0.94	0.000011	0.0085	0.10	0.11	0.022	0.000044	71	0.000043	0.00037	0.00035	0.0036	0.0017	0.000022	15
	Jul	8.1	34	154	2.3	1.1	0.000013	0.0080	0.12	0.13	0.020	0.000052	84	0.000050	0.00043	0.00041	0.0043	0.0018	0.000026	17
Year 6	Aug	8.1	37	119	1.8	0.86	0.000010	0.0088	0.095	0.10	0.023	0.000041	65	0.000039	0.00034	0.00032	0.0033	0.0017	0.000020	13
	Sep	8.2	42	84	1.3	0.61	0.000007	0.0099	0.067	0.07	0.018	0.000029	46	0.000027	0.00024	0.00022	0.0023	0.0016	0.000014	9.5
	Oct	8.2	49	41	0.62	0.30	0.0000035	0.012	0.033	0.035	0.0090	0.000014	24	0.000014	0.00012	0.00011	0.0012	0.0015	0.000007	4.7
	Mar	8.2	49	21	0.31	0.15	0.0000018	0.012	0.016	0.018	0.0045	0.0000070	12	0.0000070	0.000059	0.000057	0.00058	0.0015	0.0000040	2.3
	Apr	8.1	39	101	1.5	0.74	0.000009	0.0093	0.079	0.09	0.022	0.000034	55	0.000033	0.00028	0.00028	0.0028	0.0016	0.000017	11
	May	8.1	34	155	2.3	1.1	0.000013	0.0080	0.12	0.13	0.020	0.000052	84	0.000051	0.00043	0.00042	0.0043	0.0018	0.000026	17
	Jun	8.1	36	132	2.0	0.97	0.000011	0.0084	0.10	0.11	0.022	0.000045	72	0.000043	0.00037	0.00036	0.0037	0.0017	0.000022	15
	Jul	8.0	34	156	2.3	1.1	0.000013	0.0079	0.12	0.13	0.020	0.000053	85	0.000051	0.00044	0.00042	0.0043	0.0018	0.000026	17
	Aug	8.1	37	121	1.8	0.88	0.000010	0.0087	0.094	0.10	0.023	0.000041	66	0.000039	0.00034	0.00033	0.0033	0.0017	0.000020	13
	Sep	8.2	42	85	1.3	0.62	0.000007	0.0099	0.066	0.07	0.018	0.000029	47	0.000028	0.00024	0.00023	0.0024	0.0016	0.000014	9.4
Year 7	Oct	8.2	49	42	0.62	0.31	0.0000036	0.012	0.033	0.036	0.0090	0.000014	24	0.000014	0.00012	0.00011	0.0012	0.0015	0.000007	4.6
	Mar	8.2	49	21	0.31	0.16	0.0000018	0.012	0.016	0.018	0.0045	0.0000070	12	0.0000070	0.000059	0.000058	0.00059	0.0015	0.0000040	2.3
	Apr	8.1	39	102	1.5	0.75	0.000009	0.0093	0.078	0.09	0.022	0.000034	55	0.000033	0.00028	0.00028	0.0028	0.0016	0.000017	11
	May	8.0	34	156	2.3	1.2	0.000013	0.0079	0.12	0.13	0.019	0.000053	85	0.000051	0.00044	0.00043	0.0043	0.0018	0.000026	17
	Jun	8.1	36	134	2.0	0.99	0.000011	0.0084	0.10	0.11	0.021	0.000045	72	0.000044	0.00037	0.00037	0.0037	0.0017	0.000023	14
	Jul	8.0	34	158	2.3	1.2	0.000013	0.0079	0.12	0.13	0.019	0.000053	86	0.000051	0.00044	0.00044	0.0044	0.0018	0.000027	17
	Aug	8.1	37	122	1.8	0.90	0.000010	0.0087	0.093	0.10	0.023	0.000041	66	0.000040	0.00034	0.00034	0.0034	0.0017	0.000021	13
	Sep	8.2	42	86	1.3	0.63	0.000007	0.0099	0.065	0.07	0.018	0.000029	47	0.000028	0.00024	0.00024	0.0024	0.0016	0.000014	9.3
	Oct	8.2	49	42	0.62	0.31	0.0000036	0.012	0.032	0.036	0.0089	0.000014	24	0.000014	0.00012	0.00012	0.0012	0.0015	0.000007	4.6
	Mar	8.2	49	20	0.31	0.15	0.0000018	0.012	0.018	0.018	0.0045	0.0000070	12	0.0000070	0.000057	0.000059	0.00059	0.0015	0.0000040	2.3
Year 8	Apr	8.1	40	98	1.5	0.75	0.000009	0.0094	0.085	0.09	0.022	0.000035	54	0.000034	0.00028	0.00028	0.0028	0.0016	0.000018	11
	May	8.1	34	150	2.3	1.1	0.000014	0.0080	0.13	0.13	0.020	0.000054	83	0.000052	0.00042	0.00043	0.0044	0.0018	0.000027	17
	Jun	8.1	36	128	2.0	0.98	0.000012	0.0085	0.11	0.11	0.022	0.000046	70	0.000044	0.00036	0.00037	0.0037	0.0017	0.000023	14
	Jul	8.1	34	151	2.3	1.2	0.000014	0.0080	0.13	0.14	0.020	0.000054	83	0.000052	0.00043	0.00044	0.0044	0.0018	0.000027	17
	Aug	8.1	37	117	1.8	0.89	0.000011	0.0088	0.10	0.10	0.024	0.000042	64	0.000040	0.00033	0.00034	0.0034	0.0017	0.000021	13
	Sep	8.2	42	82	1.3	0.63	0.000007	0.0100	0.071	0.07	0.018	0.000029	46	0.000028	0.00023	0.00024	0.0024	0.0016	0.000015	9.2
	Oct	8.2	49	40	0.62	0.31	0.0000036	0.012	0.035	0.036	0.0090	0.000014	24	0.000014	0.00011	0.00012	0.0012	0.0015	0.000007	4.5
	Mar	8.2	49	20	0.32	0.16	0.0000019	0.012	0.020	0.019	0.0047	0.0000080	12	0.0000070	0.000057	0.000060	0.00061	0.0015	0.0000040	2.3
	Apr	8.1	40	94	1.5	0.75	0.000009	0.0094	0.093	0.09	0.022	0.000036	53	0.000035	0.00027	0.00029	0.0029	0.0016	0.000018	11
	May	8.1	34	145	2.3	1.1	0.000014	0.0080	0.14	0.14	0.021	0.000055	81	0.000053	0.00042	0.00044	0.0045	0.0018	0.000028	17
Year 9	Jun	8.1	36	123	2.0	0.98	0.000012	0.0085	0.12	0.12	0.023	0.000047	69	0.000046	0.00036	0.00038	0.0038	0.0017	0.000024	14
	Jul	8.1	34	145	2.4	1.1	0.000014	0.0080	0.14	0.14	0.021	0.000055	81	0.000054	0.00042	0.00044	0.0045	0.0018	0.000028	17
	Aug	8.1	37	112	1.8	0.88	0.000011	0.0088	0.11	0.11	0.024	0.000043	63	0.000041	0.00032	0.00034	0.0034	0.0017	0.000021	13
	Sep	8.2	42	78	1.3	0.62	0.000008	0.010	0.077	0.07	0.018	0.000030	44	0.000029	0.00022	0.00024	0.0024	0.0016	0.000015	9.1
	Oct	8.2	49	38	0.62	0.30	0.0000037	0.012	0.038	0.037	0.0090	0.000015	23	0.000014	0.00011	0.00012	0.0012	0.0015	0.000007	4.5
	Mar	8.3	49	8.6	0.18	0.068	0.0000019	0.012	0.010	0.015	0.0024	0.0000060	5.9	0.0000030	0.000026	0.000063	0.00032	0.0014	0.0000030	0.92
	Apr	8.2	48	41	0.8	0.33	0.000009	0.012	0.049	0.07	0.012	0.000028	28	0.000015	0.00013	0.00030	0.0015	0.0015	0.000014	4.4
	May	8.2	43	63	1.3	0.50	0.000014	0.010	0.075	0.11	0.018	0.000042	41	0.000024	0.00019	0.00046	0.0024	0.0016	0.000021	6.7
	Jun	8.2	46	53	1.1	0.43	0.000012	0.011	0.064	0.09	0.015	0.000036	36	0.000020	0.00016	0.00039	0.0020	0.0015	0.000018	5.7
	Jul	8.2	43	63	1.3	0.50	0.000014	0.010	0.076	0.11	0.018	0.000042	41	0.000024	0.00019	0.00046	0.0024	0.0016	0.000021	6.7
PC	Aug	8.2	47	48	1.0	0.38	0.000011	0.011	0.058	0.08	0.014	0.000033	33	0.000018	0.00015	0.00035	0.0018	0.0015	0.000016	5.2
	Sep	8.2	48	34	0.7	0.27	0.000008	0.012	0.041	0.06	0.0096	0.000023	23	0.000013	0.00010	0.00025	0.0013	0.0015	0.000011	3.6
	Oct	8.2	49	17	0.34	0.13	0.0000037	0.012	0.020	0.028	0.0047	0.000011	11	0.0000060	0.000051	0.00012	0.00062	0.0014	0.000006	1.8

Appendix D.3 - Pit Wall Runoff Chemistry Predictions

Pit walls	Month	Li	Mg	Mn	Mo	Na	Ni	P	Pb	Sb	Se	Si	Sn	Sr	Tl	U	V	Zn
Year		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Year 5	Jun	0.021	7.8	0.061	0.018	6.9	0.0017	0.007	0.00029	0.11	0.0070	5.2	0.00038	1.3	0.000061	0.071	0.0011	0.0031
	Jul	0.025	9.3	0.072	0.021	8.2	0.0020	0.009	0.00034	0.13	0.0083	5.2	0.00045	1.5	0.000072	0.084	0.0013	0.0037
	Aug	0.019	7.2	0.056	0.017	6.4	0.0015	0.007	0.00026	0.10	0.0064	5.2	0.00035	1.1	0.000056	0.065	0.0010	0.0029
	Sep	0.013	5.1	0.039	0.012	4.5	0.0011	0.0048	0.00018	0.072	0.0045	4.3	0.00025	0.81	0.000039	0.046	0.00068	0.0020
	Oct	0.0067	2.5	0.019	0.0058	2.2	0.00053	0.0024	0.000091	0.035	0.0022	2.1	0.00012	0.40	0.000019	0.023	0.00034	0.0010
	Mar	0.0035	1.3	0.011	0.0026	1.1	0.00028	0.0013	0.000048	0.020	0.0012	1.1	0.000068	0.22	0.000011	0.012	0.00018	0.00053
	Apr	0.017	6.5	0.051	0.013	5.5	0.0013	0.0062	0.00023	0.097	0.0056	5.2	0.00033	1.1	0.000051	0.060	0.0008	0.0026
	May	0.026	10.0	0.078	0.020	8.5	0.0021	0.010	0.00036	0.15	0.0086	5.2	0.00050	1.6	0.000079	0.092	0.0013	0.0039
	Jun	0.022	8.5	0.067	0.017	7.3	0.0018	0.008	0.00031	0.13	0.0073	5.2	0.00043	1.4	0.000067	0.079	0.0011	0.0033
	Jul	0.026	10	0.079	0.020	8.6	0.0021	0.010	0.00036	0.15	0.0087	5.2	0.00051	1.6	0.000079	0.093	0.0013	0.0040
Year 6	Aug	0.020	7.8	0.061	0.015	6.6	0.0016	0.007	0.00028	0.12	0.0067	5.2	0.00039	1.3	0.000062	0.072	0.0010	0.0031
	Sep	0.014	5.5	0.043	0.011	4.7	0.0011	0.0052	0.00020	0.082	0.0047	4.5	0.00028	0.90	0.000043	0.051	0.00072	0.0022
	Oct	0.0071	2.7	0.021	0.0053	2.3	0.00056	0.0026	0.000097	0.041	0.0023	2.2	0.00014	0.44	0.000021	0.025	0.00035	0.0011
	Mar	0.0035	1.4	0.011	0.0025	1.2	0.00028	0.0013	0.000049	0.022	0.0012	1.1	0.000069	0.23	0.000011	0.013	0.00018	0.00054
	Apr	0.017	6.6	0.052	0.012	5.8	0.0014	0.0064	0.00024	0.10	0.0056	5.2	0.00033	1.1	0.000051	0.065	0.0009	0.0026
	May	0.026	10	0.080	0.018	8.8	0.0021	0.010	0.00036	0.16	0.0086	5.2	0.00051	1.7	0.000079	0.099	0.0013	0.0040
	Jun	0.022	8.7	0.068	0.016	7.5	0.0018	0.008	0.00031	0.14	0.0074	5.2	0.00044	1.5	0.000067	0.084	0.0011	0.0034
	Jul	0.026	10	0.080	0.019	8.9	0.0021	0.010	0.00036	0.16	0.0087	5.2	0.00051	1.7	0.000079	0.100	0.0013	0.0040
	Aug	0.020	7.9	0.062	0.014	6.9	0.0016	0.008	0.00028	0.12	0.0067	5.2	0.00040	1.3	0.000061	0.077	0.0010	0.0031
	Sep	0.014	5.6	0.044	0.010	4.9	0.0011	0.0053	0.00020	0.087	0.0047	4.5	0.00028	0.94	0.000043	0.054	0.00073	0.0022
Year 7	Oct	0.0071	2.7	0.022	0.0050	2.4	0.00057	0.0026	0.000097	0.043	0.0023	2.2	0.00014	0.46	0.000021	0.027	0.00036	0.0011
	Mar	0.0036	1.4	0.011	0.0023	1.2	0.00028	0.0013	0.000049	0.023	0.0012	1.1	0.000069	0.24	0.000011	0.014	0.00018	0.00054
	Apr	0.017	6.7	0.053	0.011	6.0	0.0014	0.0065	0.00024	0.11	0.0056	5.2	0.00034	1.2	0.000051	0.069	0.0009	0.0026
	May	0.026	10	0.081	0.017	9.1	0.0021	0.010	0.00036	0.17	0.0086	5.2	0.00051	1.8	0.000078	0.11	0.0013	0.0040
	Jun	0.022	8.8	0.069	0.015	7.8	0.0018	0.008	0.00031	0.14	0.0074	5.2	0.00044	1.5	0.000067	0.090	0.0011	0.0034
	Jul	0.027	10	0.082	0.017	9.2	0.0021	0.010	0.00036	0.17	0.0087	5.2	0.00052	1.8	0.000079	0.11	0.0013	0.0041
	Aug	0.021	8.0	0.063	0.013	7.1	0.0016	0.008	0.00028	0.13	0.0067	5.2	0.00040	1.4	0.000061	0.082	0.0010	0.0031
	Sep	0.014	5.6	0.044	0.0094	5.0	0.0012	0.0054	0.00020	0.092	0.0047	4.5	0.00028	0.98	0.000043	0.058	0.00073	0.0022
	Oct	0.0071	2.8	0.022	0.0047	2.5	0.00057	0.0027	0.000098	0.045	0.0023	2.2	0.00014	0.48	0.000021	0.028	0.00036	0.0011
	Mar	0.0035	1.4	0.010	0.0027	1.2	0.00028	0.0014	0.000050	0.023	0.0011	1.1	0.000064	0.24	0.000012	0.014	0.00018	0.00054
Year 8	Apr	0.017	6.6	0.050	0.013	5.9	0.0013	0.0069	0.00024	0.11	0.0054	5.2	0.00031	1.2	0.000058	0.068	0.0009	0.0026
	May	0.026	10	0.077	0.020	9.1	0.0020	0.011	0.00037	0.17	0.0084	5.2	0.00047	1.8	0.000089	0.10	0.0013	0.0040
	Jun	0.022	8.7	0.066	0.017	7.7	0.0017	0.009	0.00032	0.15	0.0071	5.2	0.00040	1.5	0.000076	0.089	0.0011	0.0034
	Jul	0.026	10	0.078	0.020	9.1	0.0021	0.011	0.00038	0.17	0.0084	5.2	0.00048	1.8	0.000089	0.11	0.0013	0.0040
	Aug	0.020	7.9	0.060	0.015	7.0	0.0016	0.008	0.00029	0.13	0.0065	5.2	0.00037	1.4	0.000069	0.081	0.0010	0.0031
	Sep	0.014	5.6	0.042	0.011	5.0	0.0011	0.0058	0.00020	0.093	0.0046	4.5	0.00026	0.97	0.000049	0.057	0.00072	0.0022
	Oct	0.0069	2.7	0.021	0.0054	2.4	0.00055	0.0028	0.00010	0.046	0.0023	2.2	0.00013	0.48	0.000024	0.028	0.00036	0.0011
	Mar	0.0035	1.4	0.010	0.0031	1.2	0.00028	0.0016	0.000053	0.024	0.0011	1.1	0.000059	0.25	0.000014	0.014	0.00018	0.00055
	Apr	0.017	6.6	0.049	0.015	5.9	0.0013	0.007	0.00025	0.11	0.0053	5.2	0.00028	1.2	0.000066	0.069	0.0009	0.0026
	May	0.025	10	0.075	0.023	9.1	0.0020	0.011	0.00039	0.17	0.0081	5.2	0.00043	1.8	0.00010	0.11	0.0013	0.0040
Year 9	Jun	0.022	8.6	0.064	0.019	7.7	0.0017	0.010	0.00033	0.15	0.0069	5.2	0.00037	1.5	0.000086	0.090	0.0011	0.0034
	Jul	0.025	10	0.075	0.023	9.1	0.0020	0.011	0.00039	0.17	0.0082	5.2	0.00043	1.8	0.00010	0.11	0.0013	0.0040
	Aug	0.020	7.8	0.057	0.018	7.0	0.0016	0.009	0.00030	0.13	0.0063	5.2	0.00033	1.4	0.000078	0.081	0.0010	0.0031
	Sep	0.014	5.5	0.040	0.012	4.9	0.0011	0.0061	0.00021	0.094	0.0044	4.4	0.00023	0.96	0.000054	0.057	0.00071	0.0022
	Oct	0.0067	2.7	0.020	0.0061	2.4	0.00053	0.0030	0.00010	0.046	0.0022	2.2	0.00012	0.47	0.000027	0.028	0.00035	0.0011
	Mar	0.0014	0.72	0.0043	0.00095	0.15	0.00015	0.0008	0.000063	0.012	0.00048	0.59	0.000048	0.13	0.0000090	0.0049	0.00010	0.00033
	Apr	0.0066	3.4	0.020	0.0045	0.71	0.00070	0.0036	0.00030	0.055	0.0023	2.8	0.00023	0.62	0.000042	0.023	0.00049	0.0015
	May	0.010	5.2	0.031	0.0069	1.1	0.0011	0.0055	0.00046	0.084	0.0035	4.3	0.00035	0.95	0.000064	0.036	0.0008	0.0024
	Jun	0.0087	4.5	0.026	0.0059	0.92	0.00091	0.0047	0.00039	0.072	0.0030	3.7	0.00030	0.81	0.000055	0.030	0.00064	0.0020
	Jul	0.010	5.2	0.031	0.0069	1.1	0.0011	0.0056	0.00046	0.084	0.0035	4.3	0.00035	0.95	0.000065	0.036	0.0008	0.0024
PC	Aug	0.0078	4.0	0.024	0.0053	0.84	0.00083	0.0043	0.00036	0.065	0.0027	3.3	0.00027	0.73	0.000050	0.027	0.00058	0.0018
	Sep	0.0055	2.8	0.017	0.0037	0.59	0.00058	0.0030	0.00025	0.046	0.0019	2.3	0.00019	0.51	0.000035	0.019	0.00041	0.0013
	Oct	0.0027	1.4	0.0082	0.0018	0.29	0.00028	0.0015	0.00012	0.022	0.00093	1.1	0.000092	0.25	0.000017	0.0094	0.00020	0.00063

Appendix D.4 - Heap Leach Facility Drainage Chemistry Predictions

Heap		pH	Alkal.	SO ₄	Cl	F	Total CN	Ag	Al	As	B	Ba	Be
	Month		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Scenario 1 (median)													
Early Draindown	Jan	7.9	128	670	0.093	1.5	0.52	0.00047	0.70	0.41	0.073	0.0076	0.00056
	Feb	7.9	128	670	0.087	1.4	0.49	0.00043	0.70	0.41	0.068	0.0074	0.00052
	Mar	7.9	128	670	0.10	1.6	0.56	0.00050	0.70	0.41	0.078	0.0071	0.00060
	Apr	-	-	-	-	-	-	-	-	-	-	-	-
	May	7.9	128	670	0.20	3.2	1.1	0.00100	0.74	0.41	0.16	0.0055	0.0012
	Jun	7.9	128	670	0.14	2.2	0.79	0.00070	0.73	0.41	0.11	0.0052	0.00084
	Jul	7.9	128	670	0.15	2.4	0.83	0.00074	0.74	0.41	0.12	0.0051	0.00089
	Aug	7.9	128	670	0.14	2.3	0.79	0.00070	0.73	0.41	0.11	0.0054	0.00085
	Sep	7.9	128	670	0.13	2.0	0.71	0.00064	0.72	0.41	0.100	0.0056	0.00077
	Oct	7.9	128	670	0.11	1.8	0.64	0.00057	0.71	0.41	0.089	0.0064	0.00068
	Nov	7.9	128	670	0.10	1.6	0.57	0.00051	0.71	0.41	0.080	0.0068	0.00061
	Dec	7.9	128	670	0.093	1.5	0.52	0.00047	0.70	0.41	0.073	0.0076	0.00056
Intermediate Draindown	Jan	7.6	139	670	0.12	1.4	0.39	0.0018	0.22	0.34	0.063	0.0081	0.00041
	Feb	7.6	139	670	0.11	1.3	0.36	0.0016	0.22	0.34	0.059	0.0078	0.00038
	Mar	7.6	139	670	0.13	1.5	0.41	0.0019	0.22	0.34	0.068	0.0076	0.00044
	Apr	7.6	139	670	0.15	1.8	0.48	0.0022	0.23	0.34	0.079	0.0064	0.00051
	May	7.6	139	670	0.17	2.0	0.55	0.0025	0.23	0.34	0.090	0.0060	0.00058
	Jun	7.6	139	670	0.18	2.1	0.58	0.0026	0.23	0.34	0.095	0.0056	0.00061
	Jul	7.6	139	670	0.19	2.2	0.61	0.0028	0.23	0.34	0.10	0.0055	0.00065
	Aug	7.6	139	670	0.18	2.1	0.58	0.0026	0.23	0.34	0.095	0.0057	0.00062
	Sep	7.6	139	670	0.16	1.9	0.53	0.0024	0.23	0.34	0.086	0.0060	0.00056
	Oct	7.6	139	670	0.14	1.7	0.47	0.0021	0.23	0.34	0.077	0.0068	0.00050
	Nov	7.6	139	670	0.13	1.5	0.42	0.0019	0.22	0.34	0.069	0.0072	0.00045
	Dec	7.6	139	670	0.12	1.4	0.38	0.0017	0.22	0.34	0.063	0.0081	0.00041
End Draindown/ Long-term	Jan	7.2	149	670	0.096	0.65	0.15	0.0013	0.064	0.27	0.030	0.0082	0.00035
	Feb	7.2	149	670	0.090	0.60	0.14	0.0012	0.065	0.27	0.028	0.0080	0.00033
	Mar	7.2	149	670	0.10	0.70	0.16	0.0014	0.064	0.27	0.032	0.0077	0.00038
	Apr	7.2	149	670	0.12	0.81	0.19	0.0016	0.062	0.27	0.037	0.0065	0.00044
	May	7.2	149	670	0.14	0.92	0.21	0.0019	0.060	0.27	0.042	0.0060	0.00050
	Jun	7.2	149	670	0.14	0.97	0.22	0.0020	0.059	0.27	0.045	0.0055	0.00053
	Jul	7.2	149	670	0.15	1.0	0.24	0.0021	0.059	0.27	0.047	0.0054	0.00056
	Aug	7.2	149	670	0.15	0.98	0.22	0.0020	0.059	0.27	0.045	0.0057	0.00053
	Sep	7.2	149	670	0.13	0.89	0.20	0.0018	0.061	0.27	0.041	0.0060	0.00048
	Oct	7.2	149	670	0.12	0.79	0.18	0.0016	0.062	0.27	0.036	0.0069	0.00043
	Nov	7.2	149	670	0.11	0.71	0.16	0.0014	0.063	0.27	0.033	0.0073	0.00038
	Dec	7.2	149	670	0.096	0.65	0.15	0.0013	0.064	0.27	0.030	0.0082	0.00035

Appendix D.4 - Heap Leach Facility Drainage Chemistry Predictions

Heap		Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Li	Mg	Mn	Mo	Na
	Month	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Scenario 1 (medic)														
Early Draindown	Jan	287	0.00037	0.0037	0.0024	0.00058	3.1	0.000023	3.8	0.019	52	0.056	0.016	224
	Feb	287	0.00035	0.0035	0.0023	0.00058	3.1	0.000023	3.6	0.017	52	0.052	0.015	209
	Mar	288	0.00040	0.0040	0.0026	0.00058	3.1	0.000023	4.1	0.020	52	0.060	0.017	241
	Apr	-	-	-	-	-	-	-	-	-	-	-	-	-
	May	291	0.00080	0.0080	0.0052	0.00058	3.1	0.000023	8.2	0.040	54	0.12	0.034	479
	Jun	291	0.00056	0.0056	0.0036	0.00058	3.1	0.000023	5.8	0.028	54	0.084	0.024	337
	Jul	291	0.00060	0.0060	0.0039	0.00058	3.1	0.000023	6.1	0.030	55	0.089	0.025	357
	Aug	291	0.00056	0.0056	0.0037	0.00058	3.1	0.000023	5.8	0.028	54	0.085	0.024	338
	Sep	290	0.00051	0.0051	0.0033	0.00058	3.1	0.000023	5.2	0.026	54	0.077	0.022	306
	Oct	289	0.00046	0.0045	0.0030	0.00058	3.1	0.000023	4.7	0.023	53	0.068	0.019	273
	Nov	288	0.00041	0.0041	0.0027	0.00058	3.1	0.000023	4.2	0.021	53	0.061	0.017	246
	Dec	287	0.00037	0.0037	0.0024	0.00058	3.1	0.000023	3.8	0.019	52	0.056	0.016	224
Intermediate Draindown	Jan	271	0.0011	0.0034	0.0029	0.00029	2.3	0.000012	4.3	0.023	52	0.067	0.013	222
	Feb	271	0.00098	0.0031	0.0027	0.00029	2.3	0.000012	4.0	0.022	52	0.062	0.012	206
	Mar	272	0.0011	0.0036	0.0031	0.00029	2.3	0.000012	4.6	0.025	53	0.072	0.014	239
	Apr	273	0.0013	0.0043	0.0037	0.00029	2.3	0.000012	5.4	0.029	54	0.084	0.016	279
	May	274	0.0015	0.0048	0.0042	0.00029	2.3	0.000012	6.2	0.033	54	0.095	0.018	317
	Jun	275	0.0016	0.0051	0.0044	0.00029	2.3	0.000012	6.5	0.035	55	0.100	0.019	333
	Jul	275	0.0017	0.0054	0.0047	0.00029	2.3	0.000012	6.9	0.037	55	0.11	0.020	354
	Aug	275	0.0016	0.0051	0.0044	0.00029	2.3	0.000012	6.5	0.035	55	0.10	0.019	335
	Sep	274	0.0014	0.0046	0.0040	0.00029	2.3	0.000012	5.9	0.032	54	0.091	0.018	303
	Oct	273	0.0013	0.0041	0.0036	0.00029	2.3	0.000012	5.3	0.028	53	0.081	0.016	270
	Nov	272	0.0012	0.0037	0.0032	0.00029	2.3	0.000012	4.7	0.026	53	0.073	0.014	243
	Dec	271	0.0010	0.0034	0.0029	0.00029	2.3	0.000012	4.3	0.023	52	0.066	0.013	221
End Draindown/ Long-term	Jan	250	0.00079	0.0020	0.0018	0.000013	1.6	0.00000052	3.6	0.018	50	0.042	0.0044	131
	Feb	250	0.00073	0.0019	0.0016	0.000013	1.6	0.00000052	3.3	0.016	50	0.039	0.0041	122
	Mar	250	0.00085	0.0022	0.0019	0.000013	1.6	0.00000052	3.9	0.019	50	0.045	0.0047	141
	Apr	250	0.00099	0.0025	0.0022	0.000013	1.6	0.00000052	4.5	0.022	50	0.053	0.0055	165
	May	250	0.0011	0.0029	0.0025	0.000013	1.6	0.00000052	5.1	0.025	50	0.060	0.0063	187
	Jun	250	0.0012	0.0030	0.0026	0.000013	1.6	0.00000052	5.4	0.026	50	0.063	0.0066	197
	Jul	250	0.0013	0.0032	0.0028	0.000013	1.6	0.00000052	5.7	0.028	50	0.067	0.0070	209
	Aug	250	0.0012	0.0030	0.0026	0.000013	1.6	0.00000052	5.4	0.026	50	0.063	0.0066	198
	Sep	250	0.0011	0.0027	0.0024	0.000013	1.6	0.00000052	4.9	0.024	50	0.057	0.0060	179
	Oct	250	0.00096	0.0025	0.0021	0.000013	1.6	0.00000052	4.4	0.021	50	0.051	0.0053	160
	Nov	250	0.00086	0.0022	0.0019	0.000013	1.6	0.00000052	3.9	0.019	50	0.046	0.0048	144
	Dec	250	0.00079	0.0020	0.0017	0.000013	1.6	0.00000052	3.6	0.017	50	0.042	0.0044	131

Appendix D.4 - Heap Leach Facility Drainage Chemistry Predictions

Heap		Ni	P	Pb	Sb	Se	Si	Sn	Sr	Tl	U	V	Zn
	Month	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Scenario 1 (medic)													
Early Draindown	Jan	0.0052	0.93	0.22	1.1	0.084	3.7	0.0093	0.10	0.00019	0.11	0.026	0.031
	Feb	0.0049	0.87	0.21	1.1	0.084	3.7	0.0087	0.096	0.00017	0.10	0.024	0.031
	Mar	0.0056	1.0	0.24	1.1	0.084	3.7	0.010	0.11	0.00020	0.12	0.028	0.031
	Apr	-	-	-	-	-	-	-	-	-	-	-	-
	May	0.011	2.0	0.48	1.1	0.084	3.7	0.020	0.22	0.00040	0.24	0.056	0.031
	Jun	0.0079	1.4	0.34	1.1	0.084	3.7	0.014	0.15	0.00028	0.17	0.039	0.031
	Jul	0.0083	1.5	0.36	1.1	0.084	3.7	0.015	0.16	0.00030	0.18	0.042	0.031
	Aug	0.0079	1.4	0.34	1.1	0.084	3.7	0.014	0.16	0.00028	0.17	0.039	0.031
	Sep	0.0071	1.3	0.31	1.1	0.084	3.7	0.013	0.14	0.00026	0.15	0.036	0.031
	Oct	0.0064	1.1	0.27	1.1	0.084	3.7	0.011	0.13	0.00023	0.14	0.032	0.031
	Nov	0.0057	1.0	0.25	1.1	0.084	3.7	0.010	0.11	0.00020	0.12	0.029	0.031
	Dec	0.0052	0.93	0.22	1.1	0.084	3.7	0.0093	0.10	0.00019	0.11	0.026	0.031
IntermediateDraindown	Jan	0.0050	1.1	0.32	1.3	0.072	3.7	0.012	0.12	0.00047	0.098	0.035	0.019
	Feb	0.0047	1.0	0.29	1.3	0.072	3.7	0.011	0.11	0.00043	0.091	0.033	0.019
	Mar	0.0054	1.2	0.34	1.3	0.072	3.7	0.013	0.13	0.00050	0.11	0.038	0.019
	Apr	0.0063	1.4	0.40	1.3	0.072	3.7	0.015	0.15	0.00059	0.12	0.044	0.019
	May	0.0072	1.6	0.45	1.3	0.072	3.7	0.017	0.17	0.00067	0.14	0.050	0.019
	Jun	0.0075	1.6	0.47	1.3	0.072	3.7	0.018	0.18	0.00070	0.15	0.053	0.019
	Jul	0.0080	1.7	0.50	1.3	0.072	3.7	0.019	0.19	0.00074	0.16	0.056	0.019
	Aug	0.0076	1.6	0.48	1.3	0.072	3.7	0.018	0.18	0.00070	0.15	0.053	0.019
	Sep	0.0069	1.5	0.43	1.3	0.072	3.7	0.016	0.16	0.00064	0.13	0.048	0.019
	Oct	0.0061	1.3	0.38	1.3	0.072	3.7	0.014	0.14	0.00057	0.12	0.043	0.019
	Nov	0.0055	1.2	0.35	1.3	0.072	3.7	0.013	0.13	0.00051	0.11	0.038	0.019
	Dec	0.0050	1.1	0.31	1.3	0.072	3.7	0.012	0.12	0.00047	0.098	0.035	0.019
End Draindown/ Long-term	Jan	0.0025	0.68	0.25	1.5	0.061	3.7	0.0088	0.096	0.00035	0.024	0.021	0.0080
	Feb	0.0023	0.64	0.24	1.5	0.061	3.7	0.0081	0.090	0.00033	0.022	0.020	0.0080
	Mar	0.0026	0.74	0.27	1.5	0.061	3.7	0.0094	0.10	0.00038	0.025	0.023	0.0080
	Apr	0.0031	0.86	0.32	1.5	0.061	3.7	0.011	0.12	0.00044	0.030	0.026	0.0080
	May	0.0035	0.97	0.36	1.5	0.061	3.7	0.012	0.14	0.00050	0.034	0.030	0.0080
	Jun	0.0037	1.0	0.38	1.5	0.061	3.7	0.013	0.14	0.00053	0.036	0.032	0.0080
	Jul	0.0039	1.1	0.40	1.5	0.061	3.7	0.014	0.15	0.00056	0.038	0.033	0.0080
	Aug	0.0037	1.0	0.38	1.5	0.061	3.7	0.013	0.15	0.00053	0.036	0.032	0.0080
	Sep	0.0033	0.93	0.35	1.5	0.061	3.7	0.012	0.13	0.00048	0.032	0.029	0.0080
	Oct	0.0030	0.83	0.31	1.5	0.061	3.7	0.011	0.12	0.00043	0.029	0.026	0.0080
	Nov	0.0027	0.75	0.28	1.5	0.061	3.7	0.0096	0.11	0.00038	0.026	0.023	0.0080
	Dec	0.0024	0.68	0.25	1.5	0.061	3.7	0.0087	0.096	0.00035	0.024	0.021	0.0080

Appendix D.4 - Heap Leach Facility Drainage Chemistry Predictions

Heap		pH	Alkal.	SO ₄	Cl	F	Total CN	Ag	Al	As	B	Ba	Be
	Month		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Scenario 2 (75 th percentile)													
Early Draindown	Jan	7.8	84	670	0.51	1.7	0.58	0.00079	0.70	5.1	0.083	0.0076	0.00061
	Feb	7.8	84	670	0.48	1.6	0.54	0.00074	0.70	4.7	0.077	0.0074	0.00056
	Mar	7.8	85	670	0.55	1.9	0.63	0.00085	0.71	5.5	0.090	0.0071	0.00065
	Apr	-	-	-	-	-	-	-	-	-	-	-	-
	May	7.8	93	876	1.1	3.7	1.2	0.0017	0.74	7.3	0.18	0.0055	0.0013
	Jun	7.8	91	877	0.77	2.6	0.88	0.0012	0.73	7.6	0.12	0.0052	0.00091
	Jul	7.8	92	901	0.82	2.8	0.93	0.0013	0.74	8.1	0.13	0.0052	0.00097
	Aug	7.8	91	853	0.78	2.6	0.88	0.0012	0.73	7.7	0.13	0.0054	0.00092
	Sep	7.8	89	798	0.70	2.4	0.80	0.0011	0.72	7.0	0.11	0.0057	0.00083
	Oct	7.8	87	688	0.63	2.1	0.71	0.00097	0.71	6.2	0.10	0.0064	0.00074
	Nov	7.8	85	670	0.56	1.9	0.64	0.00087	0.71	5.6	0.091	0.0068	0.00067
	Dec	7.8	84	670	0.51	1.7	0.58	0.00079	0.70	5.1	0.083	0.0076	0.00061
Intermediate Draindown	Jan	7.8	81	670	0.12	1.5	0.48	0.0018	0.22	5.4	0.071	0.0082	0.00041
	Feb	7.8	81	670	0.11	1.4	0.45	0.0016	0.22	5.0	0.066	0.0080	0.00038
	Mar	7.8	82	670	0.13	1.6	0.52	0.0019	0.22	5.8	0.077	0.0077	0.00044
	Apr	7.8	85	672	0.15	1.9	0.60	0.0022	0.23	6.7	0.089	0.0065	0.00051
	May	7.8	87	740	0.17	2.2	0.68	0.0025	0.23	7.7	0.10	0.0061	0.00058
	Jun	7.8	87	804	0.18	2.3	0.72	0.0026	0.23	8.1	0.11	0.0057	0.00061
	Jul	7.8	85	826	0.19	2.4	0.76	0.0028	0.22	8.6	0.11	0.0056	0.00065
	Aug	7.8	87	782	0.18	2.3	0.72	0.0026	0.23	8.1	0.11	0.0058	0.00062
	Sep	7.8	87	731	0.16	2.1	0.65	0.0024	0.23	7.3	0.097	0.0061	0.00056
	Oct	7.8	84	670	0.14	1.8	0.58	0.0021	0.23	6.5	0.087	0.0069	0.00050
	Nov	7.8	83	670	0.13	1.7	0.53	0.0019	0.22	5.9	0.078	0.0073	0.00045
	Dec	7.8	81	670	0.12	1.5	0.48	0.0017	0.22	5.4	0.071	0.0082	0.00041
End Draindown/ Long-term	Jan	7.7	64	670	0.19	0.76	0.15	0.0013	0.062	2.1	0.030	0.0083	0.00045
	Feb	7.7	65	670	0.18	0.71	0.14	0.0012	0.063	2.0	0.028	0.0081	0.00042
	Mar	7.7	63	670	0.20	0.82	0.16	0.0014	0.061	2.3	0.032	0.0078	0.00048
	Apr	7.7	59	670	0.24	0.96	0.19	0.0017	0.059	2.6	0.037	0.0065	0.00056
	May	7.7	56	672	0.27	1.1	0.22	0.0019	0.057	3.0	0.043	0.0060	0.00064
	Jun	7.6	55	730	0.28	1.1	0.23	0.0020	0.057	3.2	0.045	0.0056	0.00067
	Jul	7.6	53	751	0.30	1.2	0.24	0.0021	0.056	3.3	0.047	0.0055	0.00071
	Aug	7.6	55	710	0.28	1.1	0.23	0.0020	0.057	3.2	0.045	0.0058	0.00067
	Sep	7.7	57	670	0.26	1.0	0.21	0.0018	0.058	2.9	0.041	0.0061	0.00061
	Oct	7.7	60	670	0.23	0.93	0.19	0.0016	0.060	2.6	0.036	0.0069	0.00054
	Nov	7.7	62	670	0.21	0.84	0.17	0.0014	0.061	2.3	0.033	0.0074	0.00049
	Dec	7.7	64	670	0.19	0.76	0.15	0.0013	0.062	2.1	0.030	0.0083	0.00045

Appendix D.4 - Heap Leach Facility Drainage Chemistry Predictions

Heap		Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Li	Mg	Mn	Mo	Na
	Month	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Scenario 2 (75 th)														
Early Draindown	Jan	288	0.00042	0.0042	0.0027	0.016	3.1	0.00051	3.9	0.019	52	0.064	0.018	229
	Feb	287	0.00039	0.0039	0.0025	0.015	3.1	0.00048	3.6	0.017	52	0.060	0.017	213
	Mar	288	0.00045	0.0045	0.0029	0.018	3.1	0.00055	4.2	0.020	53	0.069	0.019	246
	Apr	-	-	-	-	-	-	-	-	-	-	-	-	-
	May	292	0.00090	0.0090	0.0057	0.034	3.1	0.0011	8.4	0.040	55	0.14	0.038	489
	Jun	291	0.00063	0.0063	0.0040	0.025	3.1	0.00077	5.9	0.028	55	0.096	0.027	344
	Jul	292	0.00067	0.0067	0.0042	0.026	3.1	0.00082	6.3	0.030	55	0.10	0.028	365
	Aug	291	0.00063	0.0063	0.0040	0.025	3.1	0.00078	5.9	0.028	55	0.097	0.027	345
	Sep	291	0.00057	0.0057	0.0036	0.022	3.1	0.00070	5.4	0.026	54	0.087	0.024	313
	Oct	289	0.00051	0.0051	0.0032	0.020	3.1	0.00063	4.8	0.023	53	0.078	0.022	279
	Nov	289	0.00046	0.0046	0.0029	0.018	3.1	0.00056	4.3	0.021	53	0.070	0.019	251
	Dec	288	0.00042	0.0042	0.0027	0.016	3.1	0.00051	3.9	0.019	52	0.064	0.018	229
Intermediate Draindown	Jan	272	0.0011	0.0035	0.0032	0.020	2.3	0.0012	4.6	0.023	53	0.068	0.016	257
	Feb	271	0.00098	0.0033	0.0029	0.018	2.3	0.0011	4.2	0.022	53	0.063	0.015	239
	Mar	272	0.0011	0.0038	0.0034	0.021	2.3	0.0013	4.9	0.025	53	0.073	0.018	276
	Apr	274	0.0013	0.0044	0.0040	0.025	2.3	0.0015	5.7	0.029	54	0.085	0.021	323
	May	275	0.0015	0.0050	0.0045	0.029	2.3	0.0017	6.5	0.033	55	0.097	0.023	367
	Jun	275	0.0016	0.0053	0.0047	0.031	2.3	0.0018	6.8	0.035	55	0.10	0.025	386
	Jul	275	0.0017	0.0056	0.0050	0.033	2.3	0.0019	7.3	0.037	55	0.11	0.026	410
	Aug	275	0.0016	0.0053	0.0048	0.031	2.3	0.0018	6.9	0.035	55	0.10	0.025	388
	Sep	275	0.0014	0.0048	0.0043	0.028	2.3	0.0016	6.2	0.032	55	0.093	0.022	351
	Oct	273	0.0013	0.0043	0.0038	0.024	2.3	0.0014	5.5	0.028	54	0.083	0.020	313
	Nov	272	0.0012	0.0038	0.0035	0.022	2.3	0.0013	5.0	0.026	53	0.074	0.018	282
	Dec	272	0.0010	0.0035	0.0031	0.020	2.3	0.0012	4.5	0.023	53	0.068	0.016	256
End Draindown/ Long-term	Jan	250	0.00079	0.0021	0.0019	0.0084	1.6	0.000088	4.2	0.018	50	0.048	0.0058	153
	Feb	250	0.00073	0.0019	0.0018	0.0078	1.6	0.000081	4.0	0.016	50	0.044	0.0054	143
	Mar	250	0.00085	0.0022	0.0020	0.0090	1.6	0.000094	4.6	0.019	50	0.051	0.0063	165
	Apr	250	0.00099	0.0026	0.0024	0.011	1.6	0.00011	5.3	0.022	50	0.060	0.0073	192
	May	250	0.0011	0.0029	0.0027	0.012	1.6	0.00012	6.1	0.025	50	0.068	0.0083	219
	Jun	250	0.0012	0.0031	0.0028	0.013	1.6	0.00013	6.4	0.026	50	0.072	0.0087	230
	Jul	250	0.0013	0.0033	0.0030	0.013	1.6	0.00014	6.8	0.028	50	0.076	0.0093	244
	Aug	250	0.0012	0.0031	0.0028	0.013	1.6	0.00013	6.4	0.026	50	0.072	0.0088	231
	Sep	250	0.0011	0.0028	0.0026	0.011	1.6	0.00012	5.8	0.024	50	0.065	0.0080	209
	Oct	250	0.00096	0.0025	0.0023	0.010	1.6	0.00011	5.2	0.021	50	0.058	0.0071	187
	Nov	250	0.00086	0.0023	0.0021	0.0092	1.6	0.000096	4.7	0.019	50	0.052	0.0064	168
	Dec	250	0.00079	0.0021	0.0019	0.0084	1.6	0.000087	4.2	0.017	50	0.048	0.0058	153

Appendix D.4 - Heap Leach Facility Drainage Chemistry Predictions

Heap		Ni	P	Pb	Sb	Se	Si	Sn	Sr	Tl	U	V	Zn
	Month	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Scenario 2 (75 th)													
Early Draindown	Jan	0.0059	0.98	0.27	1.1	0.084	3.7	0.0093	0.11	0.00019	0.13	0.028	0.056
	Feb	0.0055	0.91	0.25	1.1	0.084	3.7	0.0087	0.10	0.00017	0.12	0.026	0.052
	Mar	0.0064	1.1	0.29	1.1	0.084	3.7	0.010	0.12	0.00020	0.14	0.030	0.060
	Apr	-	-	-	-	-	-	-	-	-	-	-	-
	May	0.013	2.1	0.57	1.7	0.084	3.7	0.020	0.24	0.00040	0.28	0.060	0.12
	Jun	0.0089	1.5	0.40	1.2	0.084	3.7	0.014	0.17	0.00028	0.20	0.042	0.084
	Jul	0.0095	1.6	0.42	1.3	0.084	3.7	0.015	0.18	0.00030	0.21	0.045	0.089
	Aug	0.0090	1.5	0.40	1.2	0.084	3.7	0.014	0.17	0.00028	0.20	0.042	0.085
	Sep	0.0081	1.3	0.36	1.1	0.084	3.7	0.013	0.15	0.00026	0.18	0.038	0.077
	Oct	0.0072	1.2	0.32	1.1	0.084	3.7	0.011	0.14	0.00023	0.16	0.034	0.068
	Nov	0.0065	1.1	0.29	1.1	0.084	3.7	0.010	0.12	0.00020	0.14	0.031	0.061
	Dec	0.0059	0.98	0.27	1.1	0.084	3.7	0.0093	0.11	0.00019	0.13	0.028	0.056
Intermediate Draindown	Jan	0.0056	1.2	0.35	1.3	0.072	3.7	0.012	0.13	0.00047	0.14	0.039	0.044
	Feb	0.0052	1.1	0.33	1.3	0.072	3.7	0.011	0.12	0.00043	0.13	0.036	0.041
	Mar	0.0060	1.3	0.38	1.3	0.072	3.7	0.013	0.14	0.00050	0.15	0.041	0.048
	Apr	0.0070	1.5	0.44	1.3	0.072	3.7	0.015	0.16	0.00059	0.18	0.048	0.056
	May	0.0080	1.7	0.50	1.3	0.072	3.7	0.017	0.18	0.00067	0.20	0.055	0.063
	Jun	0.0084	1.8	0.53	1.3	0.072	3.7	0.018	0.19	0.00070	0.21	0.058	0.067
	Jul	0.0089	1.9	0.56	1.3	0.072	3.7	0.019	0.20	0.00074	0.22	0.061	0.071
	Aug	0.0085	1.8	0.53	1.3	0.072	3.7	0.018	0.19	0.00070	0.21	0.058	0.067
	Sep	0.0077	1.6	0.48	1.3	0.072	3.7	0.016	0.18	0.00064	0.19	0.053	0.061
	Oct	0.0068	1.4	0.43	1.3	0.072	3.7	0.014	0.16	0.00057	0.17	0.047	0.054
	Nov	0.0061	1.3	0.38	1.3	0.072	3.7	0.013	0.14	0.00051	0.15	0.042	0.049
	Dec	0.0056	1.2	0.35	1.3	0.072	3.7	0.012	0.13	0.00047	0.14	0.038	0.044
End Draindown/ Long-term	Jan	0.0026	0.75	0.28	1.5	0.061	3.7	0.0088	0.11	0.00035	0.024	0.024	0.032
	Feb	0.0024	0.70	0.26	1.5	0.061	3.7	0.0081	0.098	0.00033	0.022	0.022	0.029
	Mar	0.0028	0.81	0.30	1.5	0.061	3.7	0.0094	0.11	0.00038	0.026	0.025	0.034
	Apr	0.0032	0.94	0.35	1.5	0.061	3.7	0.011	0.13	0.00044	0.030	0.030	0.040
	May	0.0037	1.1	0.39	1.5	0.061	3.7	0.012	0.15	0.00050	0.034	0.034	0.045
	Jun	0.0039	1.1	0.41	1.5	0.061	3.7	0.013	0.16	0.00053	0.036	0.036	0.047
	Jul	0.0041	1.2	0.44	1.5	0.061	3.7	0.014	0.17	0.00056	0.038	0.038	0.050
	Aug	0.0039	1.1	0.42	1.5	0.061	3.7	0.013	0.16	0.00053	0.036	0.036	0.048
	Sep	0.0035	1.0	0.38	1.5	0.061	3.7	0.012	0.14	0.00048	0.033	0.032	0.043
	Oct	0.0031	0.91	0.34	1.5	0.061	3.7	0.011	0.13	0.00043	0.029	0.029	0.038
	Nov	0.0028	0.82	0.30	1.5	0.061	3.7	0.0096	0.12	0.00038	0.026	0.026	0.035
	Dec	0.0026	0.75	0.28	1.5	0.061	3.7	0.0087	0.10	0.00035	0.024	0.024	0.031

Appendix D.5 - 100-Day Stockpile Drainage Chemistry Predictions

100-day ore SP	pH	Alkal.	SO ₄	Cl	F	Ag	Al	As	B	Ba	Be	Ca
Month		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<i>operational</i>												
Jan	8.0	34	459	4.4	1.13	0.000017	0.0079	0.37	0.16	0.0085	0.00010	118
Feb	8.0	34	459	4.4	1.18	0.000018	0.0079	0.38	0.17	0.0085	0.00010	118
Mar	8.0	34	459	4.4	1.4	0.000021	0.0079	0.46	0.21	0.0085	0.00010	118
Apr	8.0	34	459	4.4	1.6	0.000024	0.0077	0.52	0.23	0.0086	0.00010	124
May	8.0	32	459	4.4	1.8	0.000026	0.0074	0.58	0.26	0.0089	0.00010	138
Jun	8.0	33	459	4.4	1.7	0.000026	0.0074	0.57	0.25	0.0088	0.00010	135
Jul	8.0	34	459	4.4	1.6	0.000024	0.0077	0.53	0.24	0.0087	0.00010	126
Aug	8.0	34	459	4.4	1.3	0.000019	0.0079	0.41	0.18	0.0085	0.00010	118
Sep	8.0	34	459	4.4	0.83	0.000016	0.0079	0.27	0.12	0.0085	0.00010	117
Oct	8.0	34	459	4.4	0.80	0.000016	0.0079	0.20	0.058	0.0085	0.00010	117
Nov	8.0	34	459	4.4	0.80	0.000016	0.0079	0.20	0.08	0.0085	0.00010	117
Dec	8.0	34	459	4.4	0.88	0.000016	0.0079	0.29	0.13	0.0085	0.00010	118

Appendix D.5 - 100-Day Stockpile Drainage Chemistry Predictions

100-day ore SP	Cd	Co	Cr	Cu	Fe	Hg	K	Li	Mg	Mn	Mo	Na
Month	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<i>operational</i>												
Jan	0.00014	0.0022	0.00033	0.0086	0.0019	0.000033	14	0.024	21	0.040	0.049	46
Feb	0.00014	0.0022	0.00034	0.0086	0.0019	0.000034	15	0.025	21	0.040	0.049	46
Mar	0.00014	0.0022	0.00041	0.0086	0.0019	0.000041	18	0.030	21	0.040	0.049	46
Apr	0.00014	0.0022	0.00047	0.0093	0.0019	0.000047	20	0.034	21	0.041	0.049	46
May	0.00014	0.0022	0.00052	0.0103	0.0020	0.000051	23	0.038	21	0.046	0.053	46
Jun	0.00014	0.0022	0.00051	0.0101	0.0019	0.000050	22	0.037	21	0.045	0.052	46
Jul	0.00014	0.0022	0.00048	0.0094	0.0019	0.000047	21	0.035	21	0.042	0.049	46
Aug	0.00014	0.0022	0.00037	0.0086	0.0019	0.000037	16	0.027	21	0.040	0.049	46
Sep	0.00014	0.0022	0.00024	0.0086	0.0019	0.000024	10.5	0.018	21	0.040	0.049	46
Oct	0.00014	0.0022	0.00012	0.0086	0.0019	0.000012	5.4	0.017	21	0.040	0.049	46
Nov	0.00014	0.0022	0.00016	0.0086	0.0019	0.000016	7.0	0.017	21	0.040	0.049	46
Dec	0.00014	0.0022	0.00026	0.0086	0.0019	0.000025	11.2	0.019	21	0.040	0.049	46

Appendix D.5 - 100-Day Stockpile Drainage Chemistry Predictions

100-day ore SP	Ni	P	Pb	Sb	Se	Si	Sn	Sr	Tl	U	V	Zn
Month	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<i>operational</i>												
Jan	0.0070	0.30	0.00049	0.26	0.048	5.2	0.00089	2.8	0.000078	0.17	0.0019	0.0096
Feb	0.0070	0.30	0.00051	0.27	0.048	5.2	0.00092	2.8	0.000081	0.17	0.0019	0.0096
Mar	0.0070	0.30	0.00062	0.33	0.048	5.2	0.00111	3.0	0.000098	0.17	0.0023	0.0096
Apr	0.0070	0.30	0.00070	0.37	0.048	5.2	0.0013	3.3	0.000111	0.17	0.0026	0.0109
May	0.0070	0.30	0.00077	0.41	0.048	5.2	0.0014	3.7	0.00012	0.17	0.0029	0.0120
Jun	0.0070	0.30	0.00076	0.40	0.048	5.2	0.0014	3.6	0.000120	0.17	0.0029	0.0117
Jul	0.0070	0.30	0.00071	0.38	0.048	5.2	0.0013	3.4	0.000113	0.17	0.0027	0.0110
Aug	0.0070	0.30	0.00055	0.29	0.048	5.2	0.00100	2.8	0.000088	0.17	0.0021	0.0096
Sep	0.0070	0.30	0.00036	0.19	0.048	5.2	0.00065	2.8	0.000057	0.17	0.0014	0.0096
Oct	0.0070	0.30	0.00024	0.093	0.048	4.0	0.00032	2.8	0.000043	0.17	0.0010	0.0096
Nov	0.0070	0.30	0.00024	0.13	0.048	4.5	0.00043	2.8	0.000043	0.17	0.0010	0.0096
Dec	0.0070	0.30	0.00038	0.20	0.048	5.2	0.00069	2.8	0.000061	0.17	0.0014	0.0096