Appendix 9A

Geochemical Testing Reports (KCB)

9A-1 Geochemical and Geotechnical Characterization of Tailings

9A-2 KCB Kinetic Interpretation

9A-3 KCB Aurora Static ARD-ML Interpretation

An Investigation into

GEOCHEMICAL AND GEOTECHNICAL CHARACTERISATION OF GUYANA GOLDFIELDS MINE TAILINGS

prepared for

AMEC EARTH AND ENVIRONMENTAL

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Table of Contents

List of Tables

Executive Summary

The purpose of the Guyana Goldfields environmental test program was to assess the geochemical, acid rock drainage (ARD) and geotechnical properties associated with two cyanide destruct (CND) tailings materials (one oxide and one sulphide). Interpretive analysis was not within the scope of SGS's environmental test program. This report has been provided to AMEC to summarise results of the environmental and geotechnical testwork completed.

We trust that the enclosed information meets your needs at this time.

Introduction

SGS was contracted by AMEC Earth and Environmental (AMEC) to complete environmental and geotechnical characterisation of cyanide destruct (CND) tailings from the Guyana Goldfields project. The purpose of the environmental test program, entitled "Environmental and Geotechnical Characterisation of Guyana Goldfields Mine Tailings", was to assess the geochemical, acid rock drainage (ARD) and geotechnical properties associated with the tailings materials.

The following report provides a summary of the environmental testwork completed and the results thereof.

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Scope of Work

The scope of test work completed on the tailings samples included:

- Semi-quantitative X-ray diffraction (XRD) analyses.
- Borate fusion X-ray fluorescence (XRF) whole rock analyses.
- Inductively coupled plasma-optical emission spectroscopy/mass spectroscopy (ICP-OES/MS) *aqua regia* digest elemental analyses.
- Shake flask extraction testing (SFE).
- ICP-OES/MS analyses of the tailings decant solutions.
- Modified acid base accounting (ABA).
- Net acid generation (NAG) testing.
- Humidity cell testing – ASTM D 5744-96 (2001).
- Rietveld XRD analysis.
- Particle size distribution by sieve and hydrometer (ASTM D 422).
- Atterberg limits (ASTM D 4318-05).
- Standard and drained settling tests.
- Hydraulic conductivity testing.
- Consolidation (oedometer) testing (ASTM D 2435-04).

Sample Descriptions and Test Methods

The following sections provide brief overviews of the samples received and the test methods included in the environmental characterisation program.

1. Sample Descriptions

Descriptions of the tailings samples received are provided in Table 1 below.

Table 1: Samples Received from Metallurgical Operations

Reporting Sample Identifier	Description	SGS Reference Project No	Sample Type
Oxide Comp Tls	CND 1 Composite	*12088-001*	pulp
Sulphide Comp Tls	CND 2 Composite	*12088-001*	pulp

2. Sample Preparation

Upon receipt, aliquots of each of the tailings supernatant solutions were decanted from the settled tailings pulps and submitted for analysis. The individual tailings pulps were subsequently mixed for 1 hour at 200 rpm to ensure all solids were thoroughly recombined prior to the extraction and filtration of the solids on No. 1 Whatman filter papers. Representative portions of the resultant tailings filter cake solids were then prepared for the proposed geochemical and geotechnical testwork and analyses according to SGS Standard Operating Procedures and the individual test method protocols. Aliquots of each of the Oxide Comp and Sulphide Comp filtrate solution generated during the filtration of the solids were reserved for use in the settled density tests.

3. Test Methods

The following sections provide a brief overview of the test methods included in the environmental characterisation program.

3.1. Semi-Quantitative X-ray Diffraction Analyses

Representative portions of the tailings samples were submitted for semi quantitative XRD analyses in order to identify the bulk mineralogy, crystalline assemblages and the relative proportions of the mineral phases (as wt.%). In this method, x-rays are used to bombard a powdered sample. The x-rays, which penetrate a very thin layer of the sample, are diffracted by lattice planes of minerals. These unique diffraction patterns were used to semi quantitatively identify the minerals contained within the sample. The mineral abundances determined by XRD (in wt.%) were reconciled with the whole rock analyses.

3.2. X-ray Fluorescence Whole Rock Analyses

Whole rock analyses were completed on the samples using a semi-quantitative XRF method in order to determine the elemental concentrations of the major rock forming constituents. This method quantifies major elements present and reports them as oxides to permit a mass balance assessment against the component of a sample that is amenable to oxidization (loss on ignition).

3.3. ICP-OES/MS *Aqua Regia* Digest Elemental Analyses

The standard *aqua regia* digestion consists of treating the sample with a 3:1 mixture of hydrochloric (HCl) and nitric (HNO_3) acids. This digestion was designed to dissolve labile elements from silicate, sulphide and oxide matrices. *Aqua regia* is an effective solvent for most base metal sulphates, sulphides, oxides and carbonates but only provides a partial digestion for most rock forming elements and elements of a refractory nature. Silicates and refractory minerals will remain essentially un-dissolved. ICP-OES/MS trace metal scans were performed to provide quantitative analyses of the elemental components of the sample material. Analyses requested included: Ag, Al, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Sr, Ti, Tl, U, V, W, Y and Zn. Mercury analyses were completed by cold vapour atomic absorption spectroscopy (CVAAS).

3.4. Shake Flask Extraction Testing

The shake flask extraction is used to determine the mobility of contaminants under the chemical environment dictated by the samples intrinsic properties. Deionised (DI) water leachant was added to the samples at a 3:1 liquid to solid ratio. The samples were rotated end over end at 29 ± 2 rpm for a period of 24 hours prior to being filtered through a 0.45 µm cellulose acetate membrane filter. The resultant filtrates were submitted for pH, acidity, alkalinity, conductivity and anion (Cl, F, NO_2, NO_3 and SO_4) analysis. Dissolved metals analyses were completed as per the aforementioned suite of parameters.

3.5. ICP-OES/MS Analysis of the Tailings Decant Solutions

ICP-OES/MS elemental analyses were completed on the tailings decant solutions to provide quantitative analysis of both the total and the dissolved elemental components and to aid in the identification of elements present at potential environmentally significant concentrations. ICP-OES/MS analyses were completed as per the aforementioned suite of parameters. Analysis of pH, acidity, alkalinity, conductivity, anions (Cl, F, NO_2, NO_3 and SO_4,), thiosalts, cyanide speciation (CNT, CNF, CNO, CNS and CN_{WAD}) and NH_3 and NH_4 were also included in the analytical suite.

3.6. Modified Acid Base Accounting

The modified ABA test provided quantification of the total sulphur, sulphide sulphur, and sulphate concentrations present and the potential acid generation (AP) related to the oxidation of the sulphide sulphur concentration. The test method determined the neutralization potential (NP) of the samples by initiating a reaction with excess acid and then identified the quantity of acid neutralized by the samples NP by back-titrating to pH 8.3 with NaOH. The balance between the AP and NP assists in defining the potential of the sample to generate acid drainage. In addition, quantification of the extent of carbonate mineral content permitted calculation of the theoretical carbonate NP.

3.7. Net Acid Generation Testing

NAG tests were conducted to determine the balance between the acid consuming and acid producing components of the tailings materials tested. The NAG test initiated a reaction between the sample and concentrated hydrogen peroxide in order to force complete oxidation and reaction of the acidity produced with the neutralizing minerals present within the sample. After the reaction ceased, the pH of the solution was measured (NAG pH). The acid remaining after the reaction was titrated with standardized NaOH to pH 4.5 and the net acid generated by the reaction was calculated and expressed in units of kg H_2SO_4 equivalent per tonne. The $NAG_{4.5}$ value is indicative of the contribution from free acid, Al and Fe. Titration from pH 4.5 to pH 7.0 can provide additional information for sample characterisation as, under certain conditions, the $NAG_{7.0}$ is indicative of the presence of metallic ions that consume alkalinity over this pH range, such as Cu and Zn.

3.8. Humidity Cell Testing – ASTM D 5744-96 (2001)

The humidity cell test is used to predict the potential for acidic leachate generation and the primary rates of reaction under aerobic weathering conditions. Following the standard ASTM D5744-96 (2001) method, humidity cell testing was initiated on the tailings at the as-received particle size in a test cell with dimensions of 20.3 cm (8”) ID by 10.2 cm (4”) height. A perforated disk was located approximately 12.5 mm (1/2”) above the cell bottom to support the solid sample. A filter media was placed on the perforated disk to transmit air and to allow leachate to drain and collect in the cell bottom. A valve located at the bottom of the cell allowed leachate to pass into the collection vessel.

A 1000 g dry equivalent weight of sample was loaded into the cell. The first leach, designated as the Week 0 leach, initiated the humidity cell test and established the initial characteristics of the leachate. The first leach was performed by flooding the sample with 1000 mL of deionised (DI) water for one hour, followed by the collection of leachate for analyses.

Subsequent steps of the humidity cell test involved three stages over a 7-day cycle: (1) dry air (which entered from the side of the test cell and flowed across the sample) continued for 3 days; (2) humid air

was passed through the cell in the same manner as the dry air for 3 days; and (3) on the last day of the cycle, DI water was added through the top of the cell and allowed to flood the cell for one hour prior to the leachate being collected. Weekly leachate samples from the humidity cell test were submitted for general analyses including: pH, acidity, alkalinity, conductivity and sulphate. ICP-OES/MS trace metal scans were initially performed on a weekly basis (Weeks 0 through 5) with subsequent metal scans completed every five weeks thereafter.

3.9. Rietveld XRD

A representative portion of the washed humidity cell test residues were submitted for Rietveld X-ray diffraction (XRD) analysis in order to identify the bulk mineralogy, crystalline assemblages and the relative proportions of the mineral phases (as wt.%). This analysis was subcontracted to the Department of Earth and Ocean Sciences at the University of British Columbia.

3.10. Particle Size Distribution Analyses (ASTM D 422-63 (2007))

The Micromeritics Model 1305 multivolume gas pycnometer measures the volume of powdery, granular, porous and irregularly shaped solids in the solids using Boyle's Law. The test used a known weight of solids to quantitatively determine the specific gravity of the solids.

Standard screen sieve sizes (Tyler) were used to determine the particle sizes of the solid tailings particles. The weights of the percent retained and passing on each respective screen size were determined. The test determined the particle size distribution of the plus 200 mesh fraction of the products being investigated.

The particle size distribution for the minus 200 mesh fraction of the products was established using the hydrometer (sedimentation) method. A 50 g (dry equivalent) sample was placed into solution (dispersing agent) with 1 L of distilled water in a standardized glass cylinder. The solution was agitated, and the particles were permitted to settle out of suspension. As settling occurred over time, the average specific gravity of the mixture decreased, causing the height of the suspended hydrometer to drop. Reading of the hydrometer at specific time intervals provided (though established relationships) the weight of the soil remaining in suspension, and the size of the particles that had settled out of solution. The percent finer weight was calculated based on the hydrometer readings, using Stokes Law for spheres falling freely in a fluid of known properties.

3.11. Atterberg Limits (ASTM D 4318-05)

Testing was completed to determine the liquid limit, plastic limit, and plasticity index of the minus 0.425 mm (-40 mesh) fraction of the tailings solids. The liquid limit was determined by performing a number of

trials in which a moist sample was spread in a brass cup and divided by a grooving tool. The sample was then allowed to flow together, closing the groove, as a result of the impacts from the repeated dropping of the cup in a standardized mechanical device. The plastic limit was determined by rolling a portion of the test sample into a 3-mm diameter thread until the water content of the sample was reduced to the point where the thread crumbled and the sample could no longer be rolled. The plasticity index was then calculated based on the liquid and plastic limit results.

3.12. Standard and Drained Settling Tests

Standard and drained settling tests were conducted at 45, 55 and 65% solids content to determine if the tailings would settle adequately without flocculant or rakes and to provide an estimate of the settled terminal density. Two litres of pulp were prepared to the desired density and poured into a two litre graduated cylinder (standard settling test). The slurry was then vigorously agitated. A stopwatch was started immediately at the cessation of agitation, and the height of the liquid-solid interface (or mud line) was recorded at given time intervals for a period of 24 hours. The settled pulp and bulk densities were then calculated.

The drained settling test was conducted in the same manner as the standard settling test. This test also utilised two litres of pulp which was poured into a rigid-wall permeameter cell fitted with porous stone and drainage port in the bottom of the permeameter. The height of the liquid-solid interface and drainage volume were recorded at given time intervals and the settled pulp and bulk densities were calculated.

3.13. Hydraulic Conductivity Testing

The hydraulic conductivity (permeability) of the tailings was determined by the falling head method using the drained settling test tailings in the rigid-wall permeameter cell. A porous stone was placed on top on the settled tailings and the sample was sealed into the permeameter and saturated with deionised water.

Once fully saturated, the sample was tested using an appropriate hydraulic head based on the characteristics of the sample. Changes in hydraulic head were monitored over time as the water flowed through the sample. The hydraulic conductivity was determined based on Darcy's Law. Corrections for the viscosity of water at ambient temperatures were made and the results were expressed as a result at 20°C in units of cm/s.

3.14. Consolidation (Oedometer) Testing (ASTM D 2435-04)

One-dimensional consolidation testing was conducted to determine the behaviour of the tailing samples under changing load. The tailings samples were placed in an oedometer which restrains the sample laterally while loading the sample axially. Each stress increment was maintained until excess pore pressure was totally dissipated. This testwork was subcontracted to Golder Associates Ltd.

Test Results

Results of the testwork completed on the Guyana Goldfields tailings samples are presented in the following sections and also shown in Appendix A. Certificates of analysis are provided in Appendix B.

1. Semi-Quantitative X-ray Diffraction Analyses

Table 2 below provides results of the semi-quantitative XRD analyses completed on the Guyana Goldfield tailings samples. Complete test reports are shown in Appendix C.

Table 2: Semi-Quantitative XRD Results

Mineral	Oxide Comp Tls (wt %)	Sulphide Comp Tls (wt %)
Quartz	40.7	32.9
Albite	9.6	29.8
Orthoclase	3.2	-
Muscovite	15.4	12.9
Kaolinite	16.5	-
Chamosite	-	1.0
Diopside	1.6	-
Forsterite	-	2.9
Ankerite	-	8.4
Dolomite	-	9.2
Goethite	8.9	-
Hematite	2.1	-
Pyrite	0.4	2.5
Rutile	1.6	0.4
TOTAL	100	100

2. X-ray Fluorescence Whole Rock Analyses

Results of the XRF whole rock analyses conducted on tailings samples are presented in Table 3 below.

Table 3: XRF Whole Rock Analyses Results

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
LIMS		10176-SEP09	10176-SEP09
SiO_2	%	63.0	56.8
Al_2O_3	%	15.0	12.5
Fe_2O_3	%	11.4	6.29
MgO	%	0.26	2.99
CaO	%	0.31	5.13
Na_2O	%	0.94	3.29
K_2O	%	1.94	1.95
TiO_2	%	1.01	0.61
P_2O_5	%	0.15	0.18
MnO	%	0.06	0.10
Cr_2O_3	%	0.05	0.02
V_2O_5	%	0.04	0.03
LOI	%	5.69	8.57
Sum	%	99.9	98.5

3. ICP-OES/MS *Aqua Regia* Digest Elemental Analyses

ICP-OES/MS *aqua regia* digest elemental analyses results for the tailings samples are provided in Table 4.

Table 4: ICP-OES/MS *Aqua Regia* Digest Elemental Analyses Results

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
LIMS		10177-SEP09	10177-SEP09
Hg	µg/g	< 0.1	< 0.1
Ag	µg/g	1.3	0.51
Al	µg/g	5600	2600
As	µg/g	4.3	6.4
Ba	µg/g	37	82
Be	µg/g	0.21	0.12
Bi	µg/g	0.39	0.62
Ca	µg/g	1900	32000
Cd	µg/g	< 0.02	0.05
Co	µg/g	19	16
Cr	µg/g	140	43
Cu	µg/g	120	280
Fe	µg/g	67000	37000
K	µg/g	430	700
Li	µg/g	< 2	< 2
Mg	µg/g	450	15000
Mn	µg/g	380	610
Mo	µg/g	17	7.9
Na	µg/g	390	350
Ni	µg/g	82	28
Pb	µg/g	7.9	6.6
Sb	µg/g	0.9	2.0
Se	µg/g	< 0.7	< 0.7
Sn	µg/g	0.7	0.7
Sr	µg/g	8.3	170
Ti	µg/g	43	6.9
Tl	µg/g	< 0.02	< 0.02
U	µg/g	0.23	0.11
V	µg/g	63	9.9
W	µg/g	32	0.64
Y	µg/g	3.9	3.1
Zn	µg/g	70	99

4. Shake Flask Extraction Testing

Results of the SFE conducted on the tailings are shown in Table 5.

Table 5: Shake Flask Extraction Results

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
LIMS		10111-SEP09	10111-SEP09
Sample weight	g	250	250
Volume D.I. H_2O	mL	750	750
Initial pH	units	9.30	9.21
Final pH	units	9.01	8.80
pH	units	7.74	8.48
Alkalinity	mg/L as $CaCO_3$	37	68
Acidity	mg/L as $CaCO_3$	< 2	< 2
Conductivity	µS/cm	522	360
F	mg/L	0.24	0.06
Cl	mg/L	1.4	0.9
SO_4	mg/L	210	120
NO_2	as N mg/L	< 0.06	< 0.06
NO_3	as N mg/L	0.92	< 0.05
Hg	mg/L	< 0.0001	< 0.0001
Ag	mg/L	0.00009	0.00048
Al	mg/L	0.11	0.11
As	mg/L	0.0011	0.0014
B	mg/L	0.0050	0.0043
Ba	mg/L	0.0144	0.117
Be	mg/L	< 0.00002	< 0.00002
Bi	mg/L	< 0.00001	< 0.00001
Ca	mg/L	34.8	18.5
Cd	mg/L	0.000019	0.000005
Co	mg/L	0.0437	0.00377
Cr	mg/L	0.0015	< 0.0005
Cu	mg/L	0.0069	0.0061
Fe	mg/L	0.03	0.09
K	mg/L	3.19	4.84
Li	mg/L	< 0.001	< 0.001
Mg	mg/L	0.421	5.97
Mn	mg/L	0.00137	0.00914
Mo	mg/L	0.0435	0.0155
Na	mg/L	137	71.0
Ni	mg/L	0.0019	0.0006
Pb	mg/L	< 0.00002	< 0.00002
Sb	mg/L	0.0014	0.0086
Se	mg/L	0.002	< 0.001
Sn	mg/L	0.00004	0.00001
Sr	mg/L	0.0493	1.14
Ti	mg/L	0.0011	0.0007
Tl	mg/L	0.00002	< 0.00002
U	mg/L	0.000155	0.000207
V	mg/L	0.00073	0.00025
W	mg/L	0.212	0.00350
Y	mg/L	0.000006	0.000008
Zn	mg/L	0.001	< 0.001

5. ICP-OES/MS Analysis of the Tailings Decant Solutions

Table 6 provides results of the ICP-OES/MS analyses completed on the tailings decant solutions.

Table 6: ICP-OES/MS Fresh and Aged Decant Solution Results

Parameter		Oxide Comp Decant		Sulphide Comp Decant	
LIMS		10085-SEP09		10085-SEP09	
Temp Upon Rec	°C	19	19	19	19
F	mg/L	0.20	---	0.12	---
TDS	mg/L	4020	---	3000	---
pH	units	8.47	---	8.07	---
Alkalinity	mg/L as $CaCO_3$	98	---	131	---
Acidity	mg/L as $CaCO_3$	< 2	---	< 2	---
Conductivity	µS/cm	4460	---	3760	---
NH_3+NH_4	as N mg/L	8.9	---	26.2	---
SO_4	mg/L	2400	---	1900	---
Cl	mg/L	15	---	13	---
NO_2	as N mg/L	< 0.06	---	0.09	---
NO_3	as N mg/L	0.11	---	0.09	---
Tot Thiosalts	as S_2O_3 mg/L	250	---	< 20	---
CN(T)	mg/L	0.29	---	0.02	---
CN(F)	mg/L	0.02	---	< 0.02	---
CNO	mg/L	330	---	170	---
CNS	mg/L	2.1	---	9.2	---
CN_{WAD}	mg/L	0.02	---	< 0.01	---
Metals		**Total**	**Dissolved**	**Total**	**Dissolved**
Hg	mg/L	0.0001	< 0.0001	0.0002	< 0.0001
Ag	mg/L	0.00020	0.00008	0.00016	0.00003
Al	mg/L	0.44	0.01	0.37	< 0.01
As	mg/L	0.0047	0.0047	0.0032	0.0026
Ba	mg/L	0.0614	0.0596	0.0359	0.0208
Be	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.00002
B	mg/L	0.0054	0.0058	0.0179	0.0182
Bi	mg/L	0.00001	< 0.00001	0.00009	< 0.00001
Ca	mg/L	388	391	165	157
Cd	mg/L	0.000878	0.00279	0.0188	0.0494
Co	mg/L	0.404	0.417	0.0463	0.0456
Cr	mg/L	0.0117	0.0098	0.0059	0.0036
Cu	mg/L	0.0421	0.0364	0.0976	0.0365
Fe	mg/L	1.63	0.09	1.82	0.01
K	mg/L	13.0	13.2	30.0	28.9
Li	mg/L	0.003	< 0.002	< 0.002	< 0.002
Mg	mg/L	4.41	4.47	31.5	29.7
Mn	mg/L	0.0274	0.0168	0.124	0.164
Mo	mg/L	0.222	0.249	0.242	0.239
Na	mg/L	1150	1150	990	954
Ni	mg/L	0.0064	0.0061	0.0041	0.0032
Pb	mg/L	0.00026	< 0.00002	0.00075	< 0.00002
Sb	mg/L	0.0010	0.0012	0.0217	0.0213
Se	mg/L	0.009	0.010	0.003	0.002
Sn	mg/L	0.00004	0.00009	0.00013	0.00003
Sr	mg/L	0.440	0.448	4.66	4.58
Ti	mg/L	0.0043	0.0002	0.0017	0.0003
Tl	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
U	mg/L	0.00215	0.00215	0.000852	0.000795
V	mg/L	0.00334	0.00036	0.00113	0.00009
W	mg/L	0.173	0.196	0.00248	0.00325
Y	mg/L	0.000240	< 0.000001	0.000209	0.000101
Zn	mg/L	0.074	0.130	0.749	1.36

6. Modified Acid Base Accounting and Net Acid Generation Testing

Modified ABA and NAG tests results for the tailings are shown in Tables 7 and 8, respectively.

Table 7: Modified Acid Base Accounting Results

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
		10178-SEP09	10178-SEP09
Paste pH	units	8.34	8.68
Fizz Rate	---	1	2
Sample weight	g	1.98	1.96
HCl added	mL	20.00	81.90
HCl	Normality	0.10	0.10
NaOH	Normality	0.10	0.10
NaOH to pH=8.3	mL	17.50	26.10
Final pH	units	1.13	1.77
NP[1]	t $CaCO_3$/1000 t	6.3	142
AP	t $CaCO_3$/1000 t	0.64	18.1
Net NP	t $CaCO_3$/1000 t	5.66	124
NP/AP	ratio	9.88	7.85
S	%	0.048	0.689
SO_4	%	0.03	0.11
Sulphide	%	0.02	0.58
C	%	0.177	2.41
Carbonate	%	0.121	8.82
CO_3 NP[2]	t $CaCO_3$/1000 t	2.0	146
CO_3 Net NP	t $CaCO_3$/1000 t	1.4	128
CO_3 NP/AP	ratio	3.14	8.09

Table 8: Net Acid Generation Test Results

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
LIMS		10179-SEP09	10179-SEP09
Sample weight	g	1.47	1.54
Vol H_2O_2	mL	150	150
Final pH	units	8.22	8.49
NaOH	Normality	0.10	0.10
Vol NaOH to pH 4.5	mL	0.00	0.00
Vol NaOH to pH 7.0	mL	0.00	0.00
NAG@pH4.5	kg H_2SO_4/t	0	0
NAG@pH7	kg H_2SO_4/t	0	0

7. Humidity Cell Testing – ASTM D 5744-96 (2001)

Results of pH, conductivity, acidity, alkalinity and sulphate analyses, sulphate production, NP consumption and calculated cumulative depletion rates for the *Oxide Comp Tls* and *Sulphide Comp Tls* humidity cell tests are summarised in Tables 9 and 11, respectively. Summary results of the dissolved metal concentrations in the *Oxide Comp Tls* and *Sulphide Comp Tls* leachates are presented in Tables 10 and 12, respectively. Complete test reports are provided in Appendix D. Humidity cell certificates of analysis are included in Appendix E.

Table 9: Humidity Cell Test – Weekly Leachate Results and Cumulative Depletion Rates – Oxide Comp Tls

Week	pH	Acidity	Alkalinity	Conductivity	SO_4	SO_4 Prod Rate	Cum $S^=$ Depl	NP Cons	Cum NP Depl	Cum CO_3 NP Depl
	units	$CaCO_3$ eq. mg/L	$CaCO_3$ eq. mg/L	µmhos/cm	mg/L	g/t/wk	%	$CaCO_3$, g/t/wk	%	%
0	8.07	<2	54	1130	480	159.8	26.64	166.50	2.64	8.33
1	8.22	<2	125	1400	550	517.0	112.81	538.54	11.19	35.25
2	7.84	<2	26	80	11	9.5	114.39	9.88	11.35	35.75
3	7.35	<2	13	33	2.6	2.4	114.78	2.46	11.39	35.87
4	7.95	<2	50	130	20	14.7	117.22	15.27	11.63	36.63
5	7.76	<2	34	85	7.4	6.5	118.31	6.78	11.74	36.97
6	7.39	<2	10	24	2.0	2.0	118.64	2.05	11.77	37.07
7	7.17	<2	7	21	1.0	0.9	118.78	0.90	11.78	37.12
8	7.08	<2	5	15	0.8	0.7	118.90	0.73	11.80	37.16
9	7.06	<2	5	16	0.8	0.7	119.01	0.71	11.81	37.19
10	6.98	<2	6	17	1.0	0.9	119.16	0.90	11.82	37.24
11	7.13	<2	6	14	0.9	0.8	119.28	0.80	11.83	37.28
12	7.18	<2	7	17	0.9	0.7	119.41	0.77	11.85	37.31
13	7.24	<2	7	20	0.8	0.7	119.52	0.69	11.86	37.35
14	7.21	<2	7	17	0.7	0.6	119.61	0.61	11.87	37.38
15	6.98	<2	6	15	0.7	0.6	119.72	0.64	11.88	37.41
16	7.12	<2	5	13	0.6	0.5	119.80	0.53	11.88	37.44
17	7.45	<2	6	16	0.7	0.6	119.90	0.64	11.90	37.47
18	7.06	<2	5	15	0.6	0.5	119.99	0.53	11.90	37.50
19	8.13	<2	64	179	8.5	7.0	121.15	7.30	12.02	37.86
20	7.22	<2	8	21	0.5	0.4	121.23	0.45	12.03	37.88
21	8.01	<2	49	120	3.0	2.6	121.66	2.73	12.07	38.02
22	8.09	<2	58	127	2.5	2.1	122.01	2.15	12.10	38.13
23	8.10	<2	60	128	2.1	1.8	122.30	1.83	12.13	38.22
24	8.18	<2	71	150	2.0	1.5	122.55	1.53	12.16	38.30
25	8.14	<2	68	143	2.1	1.9	122.86	1.93	12.19	38.39
26	7.90	<2	46	100	1.8	1.7	123.13	1.74	12.22	38.48
27	7.92	<2	52	116	1.7	1.4	123.37	1.48	12.24	38.55
28	8.06	<2	51	110	1.6	1.3	123.59	1.36	12.26	38.62
29	8.20	<2	51	102	1.6	1.3	123.80	1.35	12.28	38.69
30	7.79	<2	52	124	1.7	1.5	124.05	1.51	12.31	38.76

Table 10: Humidity Cell Test – Dissolved Metals Concentrations – Oxide Comp Tls

Parameter	Units	0	1	2	3	4	5	10	15	20	25	30
Hg	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
As	mg/L	0.0014	0.0017	< 0.0002	< 0.0002	0.0002	0.0003	0.0005	< 0.0002	< 0.0002	0.0002	< 0.0002
Ca	mg/L	55.6	67.6	4.90	3.90	15.1	9.68	2.17	1.99	2.88	28.0	19.8
Cu	mg/L	0.0186	0.0181	0.0028	0.0018	0.0038	0.0024	0.0009	0.0006	0.0015	0.0026	0.0023
Fe	mg/L	0.11	0.13	0.02	0.13	0.07	0.03	0.04	0.02	0.02	< 0.01	0.02
K	mg/L	5.36	6.25	0.69	0.34	1.16	0.81	0.19	0.16	0.20	1.19	0.68
Mg	mg/L	0.694	1.13	0.079	0.054	0.265	0.186	0.059	0.060	0.082	0.850	0.605
Na	mg/L	191	219	9.75	2.67	14.8	7.46	0.96	0.69	0.59	0.94	0.42
Ni	mg/L	0.0018	0.0029	0.0006	0.0005	0.0008	0.0003	0.0001	< 0.0001	< 0.0001	0.0004	0.0002
Pb	mg/L	0.00007	0.00003	< 0.00002	0.00003	0.00004	< 0.00002	0.00004	0.00005	0.00025	0.00035	0.00006
Zn	mg/L	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Table 11: Humidity Cell Test – Weekly Leachate Results and Cumulative Depletion Rates – Sulphide Comp Tls

Week	pH	Acidity	Alkalinity	Conductivity	SO_4	SO_4 Prod Rate	Cum $S^=$ Depl	NP Cons	Cum NP Depl	Cum CO_3 NP Depl
	units	$CaCO_3$ eq. mg/L	$CaCO_3$ eq. mg/L	µmhos/cm	mg/L	g/t/wk	%	$CaCO_3$, g/t/wk	%	%
0	8.07	<2	51	1330	640	281.0	1.61	292.67	0.21	0.20
1	8.16	<2	63	368	110	101.0	2.20	105.19	0.28	0.27
2	8.54	<2	69	134	39	31.1	2.37	32.42	0.30	0.29
3	8.08	<2	75	204	31	23.8	2.51	24.80	0.32	0.31
4	8.18	<2	101	270	40	32.4	2.70	33.71	0.34	0.33
5	8.22	<2	109	266	33	29.2	2.86	30.46	0.37	0.36
6	7.90	<2	40	88	8.9	8.1	2.91	8.48	0.37	0.36
7	7.91	<2	56	143	18	15.9	3.00	16.61	0.38	0.37
8	7.67	<2	76	74	7.8	6.8	3.04	7.04	0.39	0.38
9	7.64	<2	28	73	8.1	7.0	3.08	7.33	0.39	0.38
10	7.61	<2	31	81	9.8	8.4	3.13	8.78	0.40	0.39
11	7.70	<2	31	82	13	11.4	3.20	11.85	0.41	0.40
12	8.08	<2	32	93	13	11.1	3.26	11.56	0.42	0.40
13	8.05	<2	37	106	18	14.8	3.35	15.43	0.43	0.42
14	7.97	<2	30	96	14	11.8	3.41	12.31	0.44	0.42
15	7.77	<2	36	104	15	13.2	3.49	13.80	0.45	0.43
16	8.06	<2	34	100	12	10.1	3.55	10.51	0.45	0.44
17	8.14	<2	38	115	16	14.1	3.63	14.70	0.46	0.45
18	8.07	<2	36	106	16	13.8	3.71	14.42	0.47	0.46
19	7.76	<2	30	90	12	9.9	3.76	10.26	0.48	0.47
20	7.82	<2	30	96	14	12.0	3.83	12.45	0.49	0.48
21	7.73	<2	26	84	12	10.6	3.89	11.05	0.50	0.48
22	8.03	<2	38	112	13	12.9	3.97	13.41	0.51	0.49
23	7.90	<2	40	122	16	15.9	4.06	16.60	0.52	0.50
24	7.85	<2	34	105	14	13.2	4.14	13.80	0.53	0.51
25	7.94	<2	32	94	12	10.2	4.19	10.59	0.54	0.52
26	8.14	<2	48	138	19	17.0	4.29	17.67	0.55	0.53
27	7.97	<2	44	135	18	14.7	4.38	15.34	0.56	0.54
28	8.16	<2	56	166	22	17.9	4.48	18.61	0.57	0.56
29	8.37	<2	68	174	22	18.2	4.58	18.98	0.59	0.57
30	8.03	<2	80	203	21	16.8	4.68	17.52	0.60	0.58

Table 12: Humidity Cell Test – Dissolved Metals Concentrations – Sulphide Comp Tls

Parameter	Units	0	1	2	3	4	5	10	15	20	25	30
Hg	mg/L	0.0006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
As	mg/L	0.0018	0.0012	0.0008	0.0006	0.0005	0.0004	0.0003	< 0.0002	0.0002	< 0.0002	< 0.0002
Ca	mg/L	44.5	15.0	15.4	18.1	26.8	27.7	9.30	10.4	9.31	9.99	20.0
Cu	mg/L	**1.68**	0.0948	0.0055	0.0030	0.0023	0.0020	0.0020	0.0015	0.0015	0.0025	0.0017
Fe	mg/L	0.49	0.21	0.24	0.12	0.12	0.09	0.01	0.02	0.01	0.02	0.06
K	mg/L	12.7	3.49	2.72	2.24	2.24	1.80	0.29	0.32	0.28	0.31	0.70
Mg	mg/L	11.4	6.86	9.21	12.3	17.1	16.7	4.28	5.42	5.19	4.99	12.1
Na	mg/L	221	57.1	14.5	5.48	3.93	2.39	0.38	0.45	0.40	0.41	0.92
Ni	mg/L	0.016	0.0031	0.0004	0.0010	0.0011	0.0006	0.0002	< 0.0001	< 0.0001	0.0002	0.0002
Pb	mg/L	0.00004	0.00004	0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	0.00003	0.00023	< 0.00002	0.00094
Zn	mg/L	0.003	0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	0.001	< 0.001	0.001

8. Shake Flask Extraction Testing – Humidity Cell Residues

Results of the SFE conducted on the humidity cell residues are shown in Table 13 below.

Table 13: Shake Flask Extraction Results – Humidity Cell Residues

Parameter	Unit	Oxide Comp Tls Residue	Sulphide Comp Tls Residue
LIMS		10231-MAY10	10231-MAY10
Sample weight	g	964	976
Volume mL	D.I. H_2O	2891	2927
Initial pH	units	8.94	9.31
Final pH	units	8.57	8.84
pH	units	7.92	8.06
Conductivity	µS/cm	97	129
Acidity	mg/L as $CaCO_3$	< 2	< 2
Alkalinity	mg/L as $CaCO_3$	57	52
F	mg/L	0.13	< 0.06
Cl	mg/L	0.4	0.4
SO_4	mg/L	1.5	11
NO_2	as N mg/L	< 0.06	< 0.06
NO_3	as N mg/L	< 0.05	< 0.05
Hg	mg/L	< 0.0001	< 0.0001
Ag	mg/L	0.00081	0.00053
Al	mg/L	< 0.01	0.01
As	mg/L	0.0004	0.0004
B	mg/L	0.0263	0.0136
Ba	mg/L	0.314	0.229
Bi	mg/L	0.00004	< 0.00001
Be	mg/L	< 0.00002	< 0.00002
Ca	mg/L	18.4	14.7
Cd	mg/L	0.000015	0.000020
Co	mg/L	0.00299	0.00123
Cr	mg/L	0.0005	< 0.0005
Cu	mg/L	0.0020	0.0098
Fe	mg/L	0.01	0.58
K	mg/L	0.15	0.49
Li	mg/L	< 0.001	< 0.001
Mg	mg/L	0.459	7.11
Mn	mg/L	0.00267	0.00966
Mo	mg/L	0.00299	0.00479
Na	mg/L	1.40	1.27
Ni	mg/L	0.0003	0.0002
Pb	mg/L	0.00051	0.00027
Sb	mg/L	0.0006	0.0049
Se	mg/L	< 0.001	< 0.001
Sn	mg/L	0.00003	0.00009
Sr	mg/L	0.0325	0.529
Ti	mg/L	0.0003	< 0.0001
Tl	mg/L	< 0.0002	< 0.0002
U	mg/L	0.000095	0.000196
V	mg/L	0.00050	0.00008
W	mg/L	0.0658	0.00152
Y	mg/L	0.000013	0.000007
Zn	mg/L	0.004	0.006

9. Rietveld X-ray Diffraction Analyses – Humidity Cell Residues

Table 14 below provides results of the Rietveld XRD analyses completed on the washed humidity cell test residues. Complete test reports are shown in Appendix C.

Table 14: Rietveld XRD Results – Humidity Cell Residues

Mineral	Sulphide Comp Tls Residue	Oxide Comp Tls Residue
Quartz	29.6	45.8
Plagioclase	27.6	6.0
K-feldspar	1.0	-
Muscovite	17.4	21.6
Kaolinite	-	12.4
Clinochlore	1.5	-
Paragonite	-	4.0
Calcite	0.5	-
Dolomite	17.1	-
Siderite	3.1	-
Goethite	-	7.5
Hematite	-	0.9
Pyrite	1.4	-
Rutile	0.7	1.8
Total	100	100

10. X-ray Fluorescence Whole Rock Analyses – Humidity Cell Residues

Results of the XRF whole rock analyses conducted on the washed humidity cell residue samples are presented in Table 15.

Table 15: XRF Whole Rock Analyses Results – Humidity Cell Residues

Parameter	Unit	Oxide Comp Tls Residue	Sulphide Comp Tls Residue
LIMS		10234-MAY10	10234-MAY10
SiO_2	%	62.5	56.4
Al_2O_3	%	15.1	12.4
Fe_2O_3	%	11.4	6.39
MgO	%	0.27	2.99
CaO	%	0.25	5.14
Na_2O	%	0.92	3.31
K_2O	%	1.95	1.92
TiO_2	%	1.01	0.60
P_2O_5	%	0.15	0.18
MnO	%	0.06	0.10
Cr_2O_3	%	0.05	0.03
V_2O_5	%	0.04	0.02
LOI	%	5.98	9.16
Sum	%	99.6	98.7

11. ICP-OES/MS *Aqua Regia* Digest Elemental Analyses – Humidity Cell Residues

ICP-OES/MS *aqua regia* digest elemental analyses results for the washed humidity cell residues are provided in Table 16.

Table 16: ICP-OES/MS *Aqua Regia* Digest Elemental Analyses Results – Humidity Cell Residues

Parameter	Unit	Oxide Comp Tls Residue	Sulphide Comp Tls Residue
LIMS		10233-MAY10	10233-MAY10
Hg	µg/g	< 0.1	< 0.1
Ag	µg/g	0.59	0.23
Al	µg/g	7100	3800
As	µg/g	3.7	4.3
Ba	µg/g	45	97
Be	µg/g	0.25	0.16
Bi	µg/g	0.39	0.69
Ca	µg/g	1500	32000
Cd	µg/g	0.09	< 0.02
Co	µg/g	19	18
Cr	µg/g	160	68
Cu	µg/g	120	280
Fe	µg/g	66000	37000
K	µg/g	680	1300
Li	µg/g	< 2	< 2
Mg	µg/g	490	11000
Mn	µg/g	390	670
Mo	µg/g	18	8.7
Na	µg/g	150	340
Ni	µg/g	91	32
Pb	µg/g	8.4	7.5
Sb	µg/g	1.1	1.9
Se	µg/g	0.7	< 0.7
Sn	µg/g	0.8	0.8
Sr	µg/g	9.5	180
Ti	µg/g	55	17
Tl	µg/g	< 0.02	0.02
U	µg/g	0.24	0.14
V	µg/g	69	14
W	µg/g	27	0.80
Y	µg/g	4.4	3.6
Zn	µg/g	74	100

12. Modified Acid Base Accounting – Humidity Cell Residues

Modified ABA tests results for the washed humidity cell residue samples are shown in Table 17.

Table 17: Modified Acid Base Accounting Results – Humidity Cell Residues

Parameter	Unit	Oxide Comp Tls Residue	Sulphide Comp Tls Residue
LIMS		10232-MAY10	10232-MAY10
Paste pH	units	7.99	9.28
Fizz Rate	---	1	2
Sample weight	g	1.96	1.99
HCl added	mL	20.00	97.70
HCl	Normality	0.10	0.10
NaOH	Normality	0.10	0.10
NaOH to pH=8.3	mL	18.20	41.30
Final pH	units	1.14	1.57
NP	t $CaCO_3$/1000 t	4.6	142
AP	t $CaCO_3$/1000 t	0.31	17.3
Net NP	t $CaCO_3$/1000 t	4.29	124
NP/AP	ratio	14.8	8.19
S	%	0.020	0.593
SO_4S	%	0.02	0.04
Sulphide-S	%	< 0.01	0.55
C	%	0.170	2.37
CO_3	%	0.073	8.23
CO_3 NP	t $CaCO_3$/1000 t	1.21	137
CO_3 Net NP	t $CaCO_3$/1000 t	0.90	119
CO_3 NP/AP	Ratio	3.91	7.90

13. Particle Size Distribution Analyses (ASTM D 422-63 (2007))

Table 18 shows summary results of the PSD (sieve and hydrometer analyses) completed on the Guyana Goldfield tailings products prior to humidity cell testing. Results of the PSD analyses completed on the washed humidity cell residues are provided in Table 19. Results of the specific gravity determinations are presented in Table 20. Complete test reports are presented in Appendix F.

Table 18: Particle Size Distribution Results

Oxide Comp Tls		Sulphide Comp Tls	
Particle Size	**Weight Passing**	**Particle Size**	**Weight Passing**
mm	%	mm	%
0.425	100.0	0.425	100.0
0.212	99.4	0.212	99.9
0.150	95.2	0.150	97.7
0.075	78.9	0.075	67.0
0.040	65.2	0.040	58.8
0.029	57.5	0.030	46.5
0.021	52.8	0.021	41.7
0.015	46.0	0.016	34.1
0.011	40.3	0.012	25.6
0.008	32.6	0.008	17.1
0.006	26.9	0.006	13.3
0.004	23.0	0.004	9.5
0.001	11.5	0.001	5.7

Table 19: Particle Size Distribution Results – Humidity Cell Residues

Oxide Comp Tls		Sulphide Comp Tls	
Particle Size	**Weight Passing**	**Particle Size**	**Weight Passing**
(mm)	%	(mm)	%
0.425	100.0	0.425	100.0
0.212	100.0	0.212	100.0
0.150	100.0	0.150	100.0
0.075	97.4	0.075	98.5
0.037	73.9	0.035	80.5
0.027	66.3	0.026	74.0
0.020	62.5	0.019	68.5
0.014	55.9	0.014	61.1
0.011	49.2	0.010	53.7
0.008	40.7	0.008	45.3
0.006	33.1	0.006	37.0
0.004	25.6	0.004	27.8
0.001	8.5	0.001	11.1

Table 20: Specific Gravity Determination Results

Parameter	Oxide Comp Tls	Sulphide Comp Tls
Specific Gravity	2.79	2.81

14. Atterberg Limits (ASTM D 4318-05)

Results of the Atterberg limit testing conducted on the tailings samples are summarised in Table 21. Test reports are included in Appendix G.

Table 21: Atterberg Limit Test Results

Parameter	Oxide Comp Tls	Sulphide Comp Tls
Liquid Limit (LL)	33	CNBD**
Plastic Limit (PL)	NP*	NP*
Plasticity Index (PI)	NP*	NP*

**NP=not plastic*

***CNBD=could not be determined*

15. Standard and Drained Settling Tests

Summary results of the standard and drained settling tests completed on the *Oxide Comp Tls* and *Sulphide Comp Tls* samples are shown in Tables 22 and 23, respectively. Detailed test reports are provided in Appendix H.

Table 22: Standard and Drained Settling Test Results – Oxide Comp Tls

Parameter	Unit	Oxide Comp Tls 45% Solids		Oxide Comp Tls 55% Solids		Oxide Comp Tls 65% Solids	
		Standard	Drained	Standard	Drained	Standard	Drained
Feed pulp density	g/L	1406	1406	1545	1545	1716	1716
Feed percent solids*	%	45.0	45.0	55.0	55.0	65.0	65.0
Total settling time	min	10300	11964	10314	10073	10307	8600
Final mudline	mL	1245	1074	1540	1374	1850	1762
Final percent solids	%	61.5	67.1	64.6	69.0	68.0	69.9
Final settled density	g/L	1652	1756	1708	1793	1774	1812

Table 23: Standard and Drained Settling Test Results – Sulphide Comp Tls

Parameter	Unit	Sulphide Comp Tls 45% Solids		Sulphide Comp Tls 55% Solids		Sulphide Comp Tls 65% Solids	
		Standard	Drained	Standard	Drained	Standard	Drained
Feed pulp density	g/L	1408	1408	1549	1549	1721	1721
Feed percent solids*	%	45.0	45.0	55.0	55.0	65.0	65.0
Total settling time	min	2905	3075	2913	3104	2954	4634
Final mudline	mL	1075	963	1297	1215	1610	1505
Final percent solids	%	67.0	71.2	71.2	73.7	73.3	75.9
Final settled density	g/L	1760	1848	1846	1903	1895	1957

16. Hydraulic Conductivity Testing

Results of the hydraulic conductivity test completed on the *Oxide Comp Tls* and *Sulphide Comp Tls* drained settling test solids are summarised in Tables 24 and 25, respectively. The complete test report is included in Appendix I.

Table 24: Hydraulic Conductivity Test Results – Oxide Comp Tls

Parameter	Unit	Trial	Oxide Comp Tls 45% Solids	Oxide Comp Tls 55% Solids	Oxide Comp Tls 65% Solids
Hydraulic Conductivity @ 20°C	m/sec	Trial 1	2.93E-07	1.33E-07	1.13E-07
Hydraulic Conductivity @ 20°C	m/sec	Trial 2	1.86E-07	1.03E-07	9.52E-08
Hydraulic Conductivity @ 20°C	m/sec	Trial 3	1.44E-07	8.49E-08	8.30E-08
Average Hydraulic Conductivity @ 20°C	m/sec		2.08E-07	1.07E-07	9.72E-08

Table 25: Hydraulic Conductivity Test Results – Sulphide Comp Tls

Parameter	Unit	Trial	Sulphide Comp Tls 45% Solids	Sulphide Comp Tls 55% Solids	Sulphide Comp Tls 65% Solids
Hydraulic Conductivity @ 20°C	m/sec	Trial 1	4.22E-07	4.58E-07	3.57E-07
Hydraulic Conductivity @ 20°C	m/sec	Trial 2	4.41E-07	4.53E-07	3.35E-07
Hydraulic Conductivity @ 20°C	m/sec	Trial 3	4.22E-07	4.44E-07	3.31E-07
Average Hydraulic Conductivity @ 20°C	m/sec		4.28E-07	4.52E-07	3.41E-07

17. Consolidation (Oedometer) Testing (ASTM D 2435-04)

The consolidation test results for the tailings samples are summarised in Table 26. The comprehensive test report indicating the coefficient of consolidation versus pressure is shown in Appendix J.

Table 26: Consolidation (Oedometer) Test Results

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
Initial Sample Properties			
Sample Height	cm	2.54	2.54
Volume of Solids	cm^3	80.19	80.09
Water Content	%	41.32	32.35
Wet Mass	g	145.79	155.87
Dry Mass	g	103.16	117.77
Unit Weight	kN/m^3	17.83	19.09
Dry Unit Weight	kN/m^3	12.62	14.42
Volume of Voids	cm^3	43.34	38.48
Void Ratio	ratio	1.176	0.925
Final Sample Properties			
Sample Height	cm	1.99	2.27
Water Content	%	24.30	19.76
Wet Mass	g	128.23	141.04
Unit Weight - final	kN/m^3	20.05	19.31
Dry Unit Weight - final	kN/m^3	16.13	16.13
Volume of Voids - final	cm^3	25.87	30.00
Void Ratio	ratio	0.702	0.721

Closing

This report has been provided to AMEC to summarise results of the environmental and geotechnical testwork completed on the CND tailings from the Guyana Goldfield project. Interpretive analysis was not within the scope of SGS's environmental test program. All analytical results and test reports are appended to this report.

We trust that the enclosed information meets your needs at this time.

Appendix A – Analytical Summary Tables

XRF Whole Rock Analysis

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
LIMS		10176-SEP09	10176-SEP09
SiO_2	%	63.0	56.8
Al_2O_3	%	15.0	12.5
Fe_2O_3	%	11.4	6.29
MgO	%	0.26	2.99
CaO	%	0.31	5.13
Na_2O	%	0.94	3.29
K_2O	%	1.94	1.95
TiO_2	%	1.01	0.61
P_2O_5	%	0.15	0.18
MnO	%	0.06	0.10
Cr_2O_3	%	0.05	0.02
V_2O_5	%	0.04	0.03
LOI	%	5.69	8.57
Sum	%	99.9	98.5

Aqua Regia Digest Elemental Analyses

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
LIMS		10177-SEP09	10177-SEP09
Hg	µg/g	< 0.1	< 0.1
Ag	µg/g	1.3	0.51
Al	µg/g	5600	2600
As	µg/g	4.3	6.4
Ba	µg/g	37	82
Be	µg/g	0.21	0.12
Bi	µg/g	0.39	0.62
Ca	µg/g	1900	32000
Cd	µg/g	< 0.02	0.05
Co	µg/g	19	16
Cr	µg/g	140	43
Cu	µg/g	120	280
Fe	µg/g	67000	37000
K	µg/g	430	700
Li	µg/g	< 2	< 2
Mg	µg/g	450	15000
Mn	µg/g	380	610
Mo	µg/g	17	7.9
Na	µg/g	390	350
Ni	µg/g	82	28
Pb	µg/g	7.9	6.6
Sb	µg/g	0.9	2.0
Se	µg/g	< 0.7	< 0.7
Sn	µg/g	0.7	0.7
Sr	µg/g	8.3	170
Ti	µg/g	43	6.9
Tl	µg/g	< 0.02	< 0.02
U	µg/g	0.23	0.11
V	µg/g	63	9.9
W	µg/g	32	0.64
Y	µg/g	3.9	3.1
Zn	µg/g	70	99

Shake Flask Extraction (Price, 1997)
24 hr, 3:1 L:S Ratio

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
LIMS		10111-SEP09	10111-SEP09
Sample weight	g	250	250
Volume D.I. H_2O	mL	750	750
Initial pH	units	9.30	9.21
Final pH	units	9.01	8.80
pH	units	7.74	8.48
Alkalinity	mg/L as $CaCO_3$	37	68
Acidity	mg/L as $CaCO_3$	< 2	< 2
Conductivity	uS/cm	522	360
F	mg/L	0.24	0.06
Cl	mg/L	1.4	0.9
SO_4	mg/L	210	120
NO_2	as N mg/L	< 0.06	< 0.06
NO_3	as N mg/L	0.92	< 0.05
Hg	mg/L	< 0.0001	< 0.0001
Ag	mg/L	0.00009	0.00048
Al	mg/L	0.11	0.11
As	mg/L	0.0011	0.0014
B	mg/L	0.0050	0.0043
Ba	mg/L	0.0144	0.117
Be	mg/L	< 0.00002	< 0.00002
Bi	mg/L	< 0.00001	< 0.00001
Ca	mg/L	34.8	18.5
Cd	mg/L	0.000019	0.000005
Co	mg/L	0.0437	0.00377
Cr	mg/L	0.0015	< 0.0005
Cu	mg/L	0.0069	0.0061
Fe	mg/L	0.03	0.09
K	mg/L	3.19	4.84
Li	mg/L	< 0.001	< 0.001
Mg	mg/L	0.421	5.97
Mn	mg/L	0.00137	0.00914
Mo	mg/L	0.0435	0.0155
Na	mg/L	137	71.0
Ni	mg/L	0.0019	0.0006
Pb	mg/L	< 0.00002	< 0.00002
Sb	mg/L	0.0014	0.0086
Se	mg/L	0.002	< 0.001
Sn	mg/L	0.00004	0.00001
Sr	mg/L	0.0493	1.14
Ti	mg/L	0.0011	0.0007
Tl	mg/L	0.00002	< 0.00002
U	mg/L	0.000155	0.000207
V	mg/L	0.00073	0.00025
W	mg/L	0.212	0.00350
Y	mg/L	0.000006	0.000008
Zn	mg/L	0.001	< 0.001

ICP-OES/MS Decant Solution Analyses

Parameter		Oxide Comp Decant		Sulphide Comp Decant	
LIMS		10085-SEP09		10085-SEP09	
Temperature Upon Receip	°C	19	19	19	19
F	mg/L	0.20	---	0.12	---
Tot. Dissolved Solids	mg/L	4020	---	3000	---
pH	units	8.47	---	8.07	---
Alkalinity	mg/L as $CaCO_3$	98	---	131	---
Acidity	mg/L as $CaCO_3$	< 2	---	< 2	---
Conductivity	uS/cm	4460	---	3760	---
NH_3+NH_4	as N mg/L	8.9	---	26.2	---
SO_4	mg/L	2400	---	1900	---
Cl	mg/L	15	---	13	---
NO_2	as N mg/L	< 0.06	---	0.09	---
NO_3	as N mg/L	0.11	---	0.09	---
Tot Thiosalts	as S_2O_3 mg/L	250	---	< 20	---
CN(T)	mg/L	0.29	---	0.02	---
CN(F)	mg/L	0.02	---	< 0.02	---
CNO	mg/L	330	---	170	---
CNS	mg/L	2.1	---	9.2	---
CN_{WAD}	mg/L	0.02	---	< 0.01	---
Metals		**Total**	**Dissolved**	**Total**	**Dissolved**
Hg	mg/L	0.0001	< 0.0001	0.0002	< 0.0001
Ag	mg/L	0.00020	0.00008	0.00016	0.00003
Al	mg/L	0.44	0.01	0.37	< 0.01
As	mg/L	0.0047	0.0047	0.0032	0.0026
Ba	mg/L	0.0614	0.0596	0.0359	0.0208
Be	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.00002
B	mg/L	0.0054	0.0058	0.0179	0.0182
Bi	mg/L	0.00001	< 0.00001	0.00009	< 0.00001
Ca	mg/L	388	391	165	157
Cd	mg/L	0.000878	0.00279	0.0188	0.0494
Co	mg/L	0.404	0.417	0.0463	0.0456
Cr	mg/L	0.0117	0.0098	0.0059	0.0036
Cu	mg/L	0.0421	0.0364	0.0976	0.0365
Fe	mg/L	1.63	0.09	1.82	0.01
K	mg/L	13.0	13.2	30.0	28.9
Li	mg/L	0.003	< 0.002	< 0.002	< 0.002
Mg	mg/L	4.41	4.47	31.5	29.7
Mn	mg/L	0.0274	0.0168	0.124	0.164
Mo	mg/L	0.222	0.249	0.242	0.239
Na	mg/L	1150	1150	990	954
Ni	mg/L	0.0064	0.0061	0.0041	0.0032
Pb	mg/L	0.00026	< 0.00002	0.00075	< 0.00002
Sb	mg/L	0.0010	0.0012	0.0217	0.0213
Se	mg/L	0.009	0.010	0.003	0.002
Sn	mg/L	0.00004	0.00009	0.00013	0.00003
Sr	mg/L	0.440	0.448	4.66	4.58
Ti	mg/L	0.0043	0.0002	0.0017	0.0003
Tl	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
U	mg/L	0.00215	0.00215	0.000852	0.000795
V	mg/L	0.00334	0.00036	0.00113	0.00009
W	mg/L	0.173	0.196	0.00248	0.00325
Y	mg/L	0.000240	< 0.000001	0.000209	0.000101
Zn	mg/L	0.074	0.130	0.749	1.36

Modified Acid Base Accounting

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
		10178-SEP09	10178-SEP09
Paste pH	units	8.34	8.68
Fizz Rate	---	1	2
Sample	weight(g)	1.98	1.96
HCl added	mL	20.00	81.90
HCl	Normality	0.10	0.10
NaOH	Normality	0.10	0.10
NaOH to	pH=8.3 mL	17.50	26.10
Final pH	units	1.13	1.77
NP[1]	t $CaCO_3$/1000 t	6.3	142
AP	t $CaCO_3$/1000 t	0.64	18.1
Net NP	t $CaCO_3$/1000 t	5.66	124
NP/AP	ratio	9.88	7.85
S	%	0.048	0.689
SO_4	%	0.03	0.11
Sulphide	%	0.02	0.58
C	%	0.177	2.41
Carbonate	%	0.121	8.82
CO_3 NP[2]	t $CaCO_3$/1000 t	2.0	146
CO_3 Net NP	t $CaCO_3$/1000 t	1.4	128
CO_3 NP/AP	Ratio	3.14	8.09

Net Acid Generation Test

Parameter	Unit	Oxide Comp Tls	Sulphide Comp Tls
LIMS		10179-SEP09	10179-SEP09
Sample weight	g	1.47	1.54
Vol H_2O_2	mL	150	150
Final pH	units	8.22	8.49
NaOH	Normality	0.10	0.10
Vol NaOH to pH 4	mL	0.00	0.00
Vol NaOH to pH 7	mL	0.00	0.00
NAG@pH4.5	kg H_2SO_4/t	0	0
NAG@pH7	kg H_2SO_4/t	0	0

Humidity Cell Residue Shake Flask Extraction (Price, 1997)
24 hr, 3:1 L:S Ratio

Parameter	Unit	Oxide Comp Tls Residue	Sulphide Comp Tls Residue
LIMS		10231-MAY10	10231-MAY10
Sample weight	g	964	976
Volume mL	D.I. H_2O	2891	2927
Initial pH	units	8.94	9.31
Final pH	units	8.57	8.84
pH	units	7.92	8.06
Conductivity	µS/cm	97	129
Acidity	mg/L as $CaCO_3$	< 2	< 2
Alkalinity	mg/L as $CaCO_3$	57	52
F	mg/L	0.13	< 0.06
Cl	mg/L	0.4	0.4
SO_4	mg/L	1.5	11
NO_2	as N mg/L	< 0.06	< 0.06
NO_3	as N mg/L	< 0.05	< 0.05
Hg	mg/L	< 0.0001	< 0.0001
Ag	mg/L	0.00081	0.00053
Al	mg/L	< 0.01	0.01
As	mg/L	0.0004	0.0004
B	mg/L	0.0263	0.0136
Ba	mg/L	0.314	0.229
Bi	mg/L	0.00004	< 0.00001
Be	mg/L	< 0.00002	< 0.00002
Ca	mg/L	18.4	14.7
Cd	mg/L	0.000015	0.000020
Co	mg/L	0.00299	0.00123
Cr	mg/L	0.0005	< 0.0005
Cu	mg/L	0.0020	0.0098
Fe	mg/L	0.01	0.58
K	mg/L	0.15	0.49
Li	mg/L	< 0.001	< 0.001
Mg	mg/L	0.459	7.11
Mn	mg/L	0.00267	0.00966
Mo	mg/L	0.00299	0.00479
Na	mg/L	1.40	1.27
Ni	mg/L	0.0003	0.0002
Pb	mg/L	0.00051	0.00027
Sb	mg/L	0.0006	0.0049
Se	mg/L	< 0.001	< 0.001
Sn	mg/L	0.00003	0.00009
Sr	mg/L	0.0325	0.529
Ti	mg/L	0.0003	< 0.0001
Tl	mg/L	< 0.0002	< 0.0002
U	mg/L	0.000095	0.000196
V	mg/L	0.00050	0.00008
W	mg/L	0.0658	0.00152
Y	mg/L	0.000013	0.000007
Zn	mg/L	0.004	0.006

XRF Whole Rock Analysis-Washed Humidity Cell Residue

Parameter	Unit	Oxide Comp Tls Residue	Sulphide Comp Tls Residue
LIMS		10234-MAY10	10234-MAY10
SiO_2	%	62.5	56.4
Al_2O_3	%	15.1	12.4
Fe_2O_3	%	11.4	6.39
MgO	%	0.27	2.99
CaO	%	0.25	5.14
Na_2O	%	0.92	3.31
K_2O	%	1.95	1.92
TiO_2	%	1.01	0.60
P_2O_5	%	0.15	0.18
MnO	%	0.06	0.10
Cr_2O_3	%	0.05	0.03
V_2O_5	%	0.04	0.02
LOI	%	5.98	9.16
Sum	%	99.6	98.7

Aqua Regia Digest Elemental Analyses-Washed Humidity Cell R

Parameter	Unit	Oxide Comp Tls Residue	Sulphide Comp Tls Residue
LIMS		10233-MAY10	10233-MAY10
Hg	µg/g	< 0.1	< 0.1
Ag	µg/g	0.59	0.23
Al	µg/g	7100	3800
As	µg/g	3.7	4.3
Ba	µg/g	45	97
Be	µg/g	0.25	0.16
Bi	µg/g	0.39	0.69
Ca	µg/g	1500	32000
Cd	µg/g	0.09	< 0.02
Co	µg/g	19	18
Cr	µg/g	160	68
Cu	µg/g	120	280
Fe	µg/g	66000	37000
K	µg/g	680	1300
Li	µg/g	< 2	< 2
Mg	µg/g	490	11000
Mn	µg/g	390	670
Mo	µg/g	18	8.7
Na	µg/g	150	340
Ni	µg/g	91	32
Pb	µg/g	8.4	7.5
Sb	µg/g	1.1	1.9
Se	µg/g	0.7	< 0.7
Sn	µg/g	0.8	0.8
Sr	µg/g	9.5	180
Ti	µg/g	55	17
Tl	µg/g	< 0.02	0.02
U	µg/g	0.24	0.14
V	µg/g	69	14
W	µg/g	27	0.80
Y	µg/g	4.4	3.6
Zn	µg/g	74	100

Modified Acid Base Accounting-Washed Humidity Cell Residue

Parameter	Unit	Oxide Comp Tls Residue	Sulphide Comp Tls Residue
LIMS		10232-MAY10	10232-MAY10
Paste pH	units	7.99	9.28
Fizz Rate	---	1	2
Sample weight	g	1.96	1.99
HCl added	mL	20.00	97.70
HCl	Normality	0.10	0.10
NaOH	Normality	0.10	0.10
NaOH to pH=8.3	mL	18.20	41.30
Final pH	units	1.14	1.57
NP	t $CaCO_3$/1000 t	4.6	142
AP	t $CaCO_3$/1000 t	0.31	17.3
Net NP	t $CaCO_3$/1000 t	4.29	124
NP/AP	ratio	14.8	8.19
S	%	0.020	0.593
SO_4^-S	%	0.02	0.04
Sulphide-S	%	< 0.01	0.55
C	%	0.170	2.37
CO_3	%	0.073	8.23
CO_3 NP	t $CaCO_3$/1000 t	1.21	137
CO_3 Net NP	t $CaCO_3$/1000 t	0.90	119
CO_3 NP/AP	Ratio	3.91	7.90

Appendix B – Analytical Certificates of Analysis

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Wednesday, September 23, 2009

Date Rec. : 08 September 2009
LR Report: **CA10176-SEP09**
Reference: Whole Rock Analysis

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Sample Date & Time			Date:n/a	Date:n/a
SiO2 [%]	22-Sep-09	13:29	63.0	56.8
Al2O3 [%]	22-Sep-09	13:29	15.0	12.5
Fe2O3 [%]	22-Sep-09	13:29	11.4	6.29
MgO [%]	22-Sep-09	13:29	0.26	2.99
CaO [%]	22-Sep-09	13:29	0.31	5.13
Na2O [%]	22-Sep-09	13:29	0.94	3.29
K2O [%]	22-Sep-09	13:29	1.94	1.95
TiO2 [%]	22-Sep-09	13:29	1.01	0.61
P2O5 [%]	22-Sep-09	13:29	0.15	0.18
MnO [%]	22-Sep-09	13:29	0.06	0.10
Cr2O3 [%]	22-Sep-09	13:29	0.05	0.02
V2O5 [%]	22-Sep-09	13:29	0.04	0.03
LOI [%]	22-Sep-09	13:29	5.69	8.57
Sum [%]	22-Sep-09	13:29	99.9	98.5

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Thursday, September 24, 2009

Date Rec. : 08 September 2009
LR Report: **CA10177-SEP09**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Sample Date & Time			Date:n/a	Date:n/a
Mercury [µg/g]	22-Sep-09	10:59	< 0.1	< 0.1
Silver [µg/g]	22-Sep-09	11:51	1.3	0.51
Aluminum [µg/g]	24-Sep-09	09:00	5600	2600
Arsenic [µg/g]	22-Sep-09	11:51	4.3	6.4
Barium [µg/g]	22-Sep-09	11:51	37	82
Beryllium [µg/g]	22-Sep-09	11:51	0.21	0.12
Bismuth [µg/g]	22-Sep-09	11:51	0.39	0.62
Calcium [µg/g]	24-Sep-09	09:00	1900	32000
Cadmium [µg/g]	22-Sep-09	11:51	< 0.02	0.05
Cobalt [µg/g]	22-Sep-09	11:51	19	16
Chromium [µg/g]	22-Sep-09	11:51	140	43
Copper [µg/g]	24-Sep-09	09:00	120	280
Iron [µg/g]	24-Sep-09	09:00	67000	37000
Potassium [µg/g]	24-Sep-09	09:00	430	700
Lithium [µg/g]	22-Sep-09	11:51	< 2	< 2
Magnesium [µg/g]	24-Sep-09	09:00	450	15000
Manganese [µg/g]	22-Sep-09	11:51	380	610
Molybdenum [µg/g]	22-Sep-09	11:51	17	7.9
Sodium [µg/g]	24-Sep-09	09:00	390	350
Nickel [µg/g]	22-Sep-09	11:51	82	28
Lead [µg/g]	22-Sep-09	11:51	7.9	6.6
Antimony [µg/g]	22-Sep-09	11:51	0.9	2.0
Selenium [µg/g]	22-Sep-09	11:51	< 0.7	< 0.7
Tin [µg/g]	22-Sep-09	11:51	0.7	0.7
Strontium [µg/g]	24-Sep-09	09:00	8.3	170
Titanium [µg/g]	24-Sep-09	09:00	43	6.9
Thallium [µg/g]	22-Sep-09	11:51	< 0.02	< 0.02
Uranium [µg/g]	22-Sep-09	11:51	0.23	0.11
Vanadium [µg/g]	24-Sep-09	09:00	63	9.9

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

LR Report : **CA10177-SEP09**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Tungsten [µg/g]	22-Sep-09	11:51	32	0.64
Yttrium [µg/g]	22-Sep-09	11:51	3.9	3.1
Zinc [µg/g]	24-Sep-09	09:00	70	99

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Thursday, September 17, 2009

Date Rec. : 02 September 2009
LR Report: **CA10111-SEP09**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

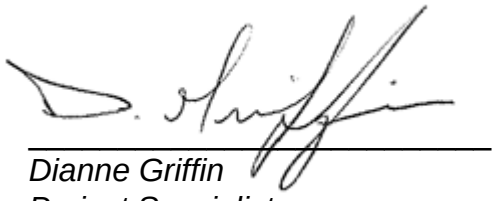
Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Sample Date & Time			Date:NA	Date:NA
Sample [weight(g)]	09-Sep-09	10:07	250	250
Volume mL [D.I. H2O]	09-Sep-09	10:07	750	750
InitialpH [units]	09-Sep-09	10:07	9.30	9.21
Final pH [units]	09-Sep-09	10:07	9.01	8.80
pH [no unit]	15-Sep-09	07:55	7.74	8.48
Alkalinity [mg/L as CaCO3]	15-Sep-09	07:55	37	68
Acidity [mg/L as CaCO3]	15-Sep-09	07:55	< 2	< 2
Conductivity [uS/cm]	15-Sep-09	07:55	522	360
Fluoride [mg/L]	14-Sep-09	08:39	0.24	0.06
Chloride [mg/L]	15-Sep-09	14:35	1.4	0.9
Sulphate [mg/L]	15-Sep-09	14:35	210	120
Nitrite (as nitrogen) [mg/L]	15-Sep-09	14:35	< 0.06	< 0.06
Nitrate (as nitrogen) [mg/L]	15-Sep-09	14:35	0.92	< 0.05
Mercury [mg/L]	14-Sep-09	15:29	< 0.0001	< 0.0001
Silver [mg/L]	14-Sep-09	15:38	0.00009	0.00048
Aluminum [mg/L]	14-Sep-09	15:38	0.11	0.11
Arsenic [mg/L]	14-Sep-09	15:38	0.0011	0.0014
Boron [mg/L]	14-Sep-09	15:38	0.0050	0.0043
Barium [mg/L]	14-Sep-09	15:38	0.0144	0.117
Beryllium [mg/L]	14-Sep-09	15:38	< 0.00002	< 0.00002
Bismuth [mg/L]	14-Sep-09	15:38	< 0.00001	< 0.00001
Calcium [mg/L]	14-Sep-09	15:38	34.8	18.5
Cadmium [mg/L]	14-Sep-09	15:38	0.000019	0.000005
Cobalt [mg/L]	14-Sep-09	15:38	0.0437	0.00377
Chromium [mg/L]	14-Sep-09	15:38	0.0015	< 0.0005
Copper [mg/L]	14-Sep-09	15:38	0.0069	0.0061
Iron [mg/L]	14-Sep-09	15:38	0.03	0.09
Potassium [mg/L]	14-Sep-09	15:38	3.19	4.84
Lithium [mg/L]	14-Sep-09	15:38	< 0.001	< 0.001

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

LR Report : **CA10111-SEP09**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Magnesium [mg/L]	14-Sep-09	15:38	0.421	5.97
Manganese [mg/L]	14-Sep-09	15:38	0.00137	0.00914
Molybdenum [mg/L]	14-Sep-09	15:38	0.0435	0.0155
Sodium [mg/L]	14-Sep-09	15:38	137	71.0
Nickel [mg/L]	14-Sep-09	15:38	0.0019	0.0006
Lead [mg/L]	14-Sep-09	15:38	< 0.00002	< 0.00002
Antimony [mg/L]	14-Sep-09	15:38	0.0014	0.0086
Selenium [mg/L]	14-Sep-09	15:38	0.002	< 0.001
Tin [mg/L]	14-Sep-09	15:38	0.00004	0.00001
Strontium [mg/L]	14-Sep-09	15:38	0.0493	1.14
Titanium [mg/L]	14-Sep-09	15:38	0.0011	0.0007
Thallium [mg/L]	14-Sep-09	15:38	0.00002	< 0.00002
Uranium [mg/L]	14-Sep-09	15:38	0.000155	0.000207
Vanadium [mg/L]	14-Sep-09	15:38	0.00073	0.00025
Tungsten [mg/L]	14-Sep-09	15:38	0.212	0.00350
Yttrium [mg/L]	14-Sep-09	15:38	0.000006	0.000008
Zinc [mg/L]	14-Sep-09	15:38	0.001	< 0.001



Dianne Griffin
Project Specialist

OnLine LIMS

Project : CALR-12088-003

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Environmental Met
Attn : Barb Bowman

Monday, September 14, 2009

Date Rec. : 01 September 2009
LR Report: **CA10085-SEP09**
Reference: 12088-003-01

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Decant	6: Sulphide Comp Decant	7: Oxide Comp Decant Diss	8: Sulphide Comp Decant Diss
Sample Date & Time			Date:N/A	Date:N/A	Date:N/A	Date:N/A
Temperature Upon Receipt [°C]	---	---	19.0	19.0	19.0	19.0
Fluoride [mg/L]	04-Sep-09	08:20	0.20	0.12	---	---
Solids (Total Dissolved) [mg/L]	08-Sep-09	09:05	4020	3000	---	---
pH [no unit]	03-Sep-09	09:16	8.47	8.07	---	---
Alkalinity [mg/L as CaCO3]	03-Sep-09	09:16	98	131	---	---
Acidity [mg/L as CaCO3]	03-Sep-09	09:16	< 2	< 2	---	---
Conductivity [uS/cm]	03-Sep-09	09:16	4460	3760	---	---
Ammonia+Ammonium (N) [mg/L]	03-Sep-09	22:41	8.9	26.2	---	---
Sulphate [mg/L]	08-Sep-09	16:19	2400	1900	---	---
Chloride [mg/L]	10-Sep-09	15:03	15	13	---	---
Nitrite (as nitrogen) [mg/L]	10-Sep-09	12:00	< 0.06	0.09	---	---
Nitrate (as nitrogen) [mg/L]	10-Sep-09	12:00	0.11	0.09	---	---
Total Thiosalts [as S2O3 mg/L]	09-Sep-09	14:54	250	< 20	---	---
Cyanide [mg/L]	04-Sep-09	12:21	0.29	0.02	---	---
Free Cyanide [mg/L]	04-Sep-09	13:28	0.02	< 0.02	---	---
Cyanate [mg/L]	02-Sep-09	15:15	330	170	---	---
Thiocyanate [mg/L]	04-Sep-09	13:02	2.1	9.2	---	---
Cyanide WAD [mg/L]	04-Sep-09	13:28	0.02	< 0.01	---	---
Mercury [mg/L]	10-Sep-09	08:53	0.0001	0.0002	< 0.0001	< 0.0001
Silver [mg/L]	11-Sep-09	11:43	0.00020	0.00016	0.00008	0.00003
Aluminum [mg/L]	10-Sep-09	14:06	0.44	0.37	0.01	< 0.01
Arsenic [mg/L]	11-Sep-09	11:43	0.0047	0.0032	0.0047	0.0026
Barium [mg/L]	11-Sep-09	11:43	0.0614	0.0359	0.0596	0.0208
Beryllium [mg/L]	11-Sep-09	11:43	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Boron [mg/L]	11-Sep-09	11:43	0.0054	0.0179	0.0058	0.0182
Bismuth [mg/L]	11-Sep-09	11:43	0.00001	0.00009	< 0.00001	< 0.00001
Calcium [mg/L]	10-Sep-09	14:06	388	165	391	157
Cadmium [mg/L]	11-Sep-09	11:43	0.000878	0.0188	0.00279	0.0494

Project : CALR-12088-003

LR Report : **CA10085-SEP09**

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Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Decant	6: Sulphide Comp Decant	7: Oxide Comp Decant Diss	8: Sulphide Comp Decant Diss
Cobalt [mg/L]	11-Sep-09	11:43	0.404	0.0463	0.417	0.0456
Chromium [mg/L]	11-Sep-09	11:43	0.0117	0.0059	0.0098	0.0036
Copper [mg/L]	11-Sep-09	11:43	0.0421	0.0976	0.0364	0.0365
Iron [mg/L]	10-Sep-09	14:06	1.63	1.82	0.09	0.01
Potassium [mg/L]	10-Sep-09	14:06	13.0	30.0	13.2	28.9
Lithium [mg/L]	10-Sep-09	14:06	0.003	< 0.002	< 0.002	< 0.002
Magnesium [mg/L]	10-Sep-09	14:06	4.41	31.5	4.47	29.7
Manganese [mg/L]	11-Sep-09	11:43	0.0274	0.124	0.0168	0.164
Molybdenum [mg/L]	11-Sep-09	11:43	0.222	0.242	0.249	0.239
Sodium [mg/L]	10-Sep-09	14:06	1150	990	1150	954
Nickel [mg/L]	11-Sep-09	11:43	0.0064	0.0041	0.0061	0.0032
Lead [mg/L]	11-Sep-09	11:43	0.00026	0.00075	< 0.00002	< 0.00002
Antimony [mg/L]	11-Sep-09	11:43	0.0010	0.0217	0.0012	0.0213
Selenium [mg/L]	11-Sep-09	11:43	0.009	0.003	0.010	0.002
Tin [mg/L]	11-Sep-09	11:43	0.00004	0.00013	0.00009	0.00003
Strontium [mg/L]	10-Sep-09	14:06	0.440	4.66	0.448	4.58
Titanium [mg/L]	11-Sep-09	11:43	0.0043	0.0017	0.0002	0.0003
Thallium [mg/L]	11-Sep-09	11:43	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Uranium [mg/L]	11-Sep-09	11:43	0.00215	0.000852	0.00215	0.000795
Vanadium [mg/L]	11-Sep-09	11:43	0.00334	0.00113	0.00036	0.00009
Tungsten [mg/L]	11-Sep-09	11:43	0.173	0.00248	0.196	0.00325
Yttrium [mg/L]	11-Sep-09	11:43	0.000240	0.000209	< 0.000001	0.000101
Zinc [mg/L]	11-Sep-09	11:43	0.074	0.749	0.130	1.36

Dianne Griffin
Project Specialist

OnLine LIMS

Project : CALR-12088-003

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Environmental Met
Attn : Barb Bowman

Monday, September 28, 2009

Date Rec. : 08 September 2009
LR Report: **CA10178-SEP09**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Sample Date & Time			Date:n/a	Date:n/a
Paste pH [units]	23-Sep-09	12:05	8.34	8.68
Fizz Rate [---]	23-Sep-09	12:05	1	2
Sample [weight(g)]	23-Sep-09	12:05	1.98	1.96
HCl added [mL]	23-Sep-09	12:05	20.00	81.90
HCl [Normality]	23-Sep-09	12:05	0.10	0.10
NaOH [Normality]	23-Sep-09	12:05	0.10	0.10
NaOH to [pH=8.3 mL]	23-Sep-09	12:05	17.50	26.10
Final pH [units]	23-Sep-09	12:05	1.13	1.77
NP [t CaCO3/1000t]	23-Sep-09	12:05	6.3	142
AP [t CaCO3/1000 t]	27-Sep-09	14:36	0.64	18.1
Net NP [t CaCO3/1000 t]	27-Sep-09	14:36	5.66	124
NP/AP [ratio]	27-Sep-09	14:36	9.88	7.85
Total Sulphur [%]	27-Sep-09	14:36	0.048	0.689
Acid Leachable SO4-S [%]	27-Sep-09	14:22	0.03	0.11
Sulphide-S [%]	25-Sep-09	16:11	0.02	0.58
Total Carbon [%]	27-Sep-09	14:36	0.177	2.41
Carbonate (CO3) [%]	27-Sep-09	14:36	0.121	8.82

OnLine LIMS

Project : CALR-12088-003
LR Report : **CA10178-SEP09**

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*NP (Neutralization Potential)

$$= \frac{50 \times (\text{N of HCL} \times \text{Total HCL added} - \text{N NaOH} \times \text{NaOH added})}{\text{Weight of Sample}}$$

*AP (Acid Potential) = % Sulphide Sulphur x 31.25
*Net NP (Net Neutralization Potential) = NP-AP
NP/AP Ratio = NP/AP
*Results expressed as tonnes CaCO3 equivalent/1000 tonnes of material
Samples with a % Sulphide value of <0.01 will be calculated using a 0.01 value.

Sulphur analysis performed following BC ARD Guidelines (Price 1997)

Dianne Griffin
Project Specialist

OnLine LIMS

Project : CALR-12088-003

SGS Lakefield Research Limited
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Environmental Met
Attn : Barb Bowman

Tuesday, September 29, 2009

Date Rec. : 08 September 2009
LR Report: **CA10179-SEP09**

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Sample Date & Time			Date:n/a	Date:n/a
Sample [weight(g)]	28-Sep-09	15:35	1.47	1.54
vol H2O2 [mL]	28-Sep-09	15:35	150	150
Final pH [units]	28-Sep-09	15:35	8.22	8.49
NaOH [Normality]	28-Sep-09	15:35	0.10	0.10
Vol NaOH to PH 4.5 [mL]	28-Sep-09	15:35	0.00	0.00
Vol NaOH to PH 7.0 [mL]	28-Sep-09	15:35	0.00	0.00
NAG [@pH4.5]	28-Sep-09	15:35	0	0
NAG [@pH7]	28-Sep-09	15:35	0	0

NAG = (49 x Vol. of base x N of base)/sample weight
kg H2SO4/tonne

Dianne Griffin
Project Specialist

OnLine LIMS

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Project : CALR-12088-003

Monday, May 31, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 13 May 2010
LR Report: **CA10231-MAY10**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Sample Date & Time				
Sample [weight(g)]	14-May-10	14:43	964	976
Volume mL [D.I. H2O]	14-May-10	14:43	2891	2927
InitialpH [units]	14-May-10	14:43	8.94	9.31
Final pH [units]	14-May-10	14:43	8.57	8.84
pH [no unit]	19-May-10	09:09	7.92	8.06
Conductivity [uS/cm]	19-May-10	09:09	97	129
Acidity [mg/L as CaCO3]	31-May-10	15:21	< 2	< 2
Alkalinity [mg/L as CaCO3]	31-May-10	15:20	57	52
Fluoride [mg/L]	19-May-10	08:46	0.13	< 0.06
Chloride [mg/L]	20-May-10	11:38	0.4	0.4
Sulphate [mg/L]	21-May-10	14:05	1.5	11
Nitrite (as nitrogen) [mg/L]	20-May-10	09:19	< 0.06	< 0.06
Nitrate (as nitrogen) [mg/L]	20-May-10	09:19	< 0.05	< 0.05
Mercury [mg/L]	18-May-10	14:40	< 0.0001	< 0.0001
Silver [mg/L]	20-May-10	15:25	0.00081	0.00053
Aluminum [mg/L]	18-May-10	15:38	< 0.01	0.01
Arsenic [mg/L]	20-May-10	15:25	0.0004	0.0004
Boron [mg/L]	20-May-10	15:25	0.0263	0.0136
Barium [mg/L]	20-May-10	15:25	0.314	0.229
Bismuth [mg/L]	20-May-10	15:25	0.00004	< 0.00001
Beryllium [mg/L]	20-May-10	15:25	< 0.00002	< 0.00002
Calcium [mg/L]	18-May-10	15:38	18.4	14.7
Cadmium [mg/L]	20-May-10	15:25	0.000015	0.000020
Cobalt [mg/L]	20-May-10	15:25	0.00299	0.00123
Chromium [mg/L]	20-May-10	15:25	0.0005	< 0.0005
Copper [mg/L]	20-May-10	15:25	0.0020	0.0098
Iron [mg/L]	18-May-10	15:38	0.01	0.58
Potassium [mg/L]	18-May-10	15:38	0.15	0.49
Lithium [mg/L]	20-May-10	15:25	< 0.001	< 0.001

Project : CALR-12088-003

LR Report : **CA10231-MAY10**

SGS Canada Inc.
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Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Magnesium [mg/L]	18-May-10	15:38	0.459	7.11
Manganese [mg/L]	20-May-10	15:25	0.00267	0.00966
Molybdenum [mg/L]	20-May-10	15:25	0.00299	0.00479
Sodium [mg/L]	18-May-10	15:38	1.40	1.27
Nickel [mg/L]	20-May-10	15:25	0.0003	0.0002
Lead [mg/L]	20-May-10	15:25	0.00051	0.00027
Antimony [mg/L]	20-May-10	15:25	0.0006	0.0049
Selenium [mg/L]	20-May-10	15:25	< 0.001	< 0.001
Tin [mg/L]	20-May-10	15:25	0.00003	0.00009
Strontium [mg/L]	18-May-10	15:38	0.0325	0.529
Titanium [mg/L]	20-May-10	15:25	0.0003	< 0.0001
Thallium [mg/L]	20-May-10	15:25	< 0.0002	< 0.0002
Uranium [mg/L]	20-May-10	15:25	0.000095	0.000196
Vanadium [mg/L]	20-May-10	15:25	0.00050	0.00008
Tungsten [mg/L]	20-May-10	15:25	0.0658	0.00152
Yttrium [mg/L]	20-May-10	15:25	0.000013	0.000007
Zinc [mg/L]	20-May-10	15:25	0.004	0.006

Dianne Griffin
Project Specialist

OnLine LIMS

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Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Wednesday, June 02, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 13 May 2010
LR Report: **CA10234-MAY10**
Reference: Whole Rock Analysis

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	5: Oxide Comp Tls	6: Sulphide Comp Tls
SiO2 [%]	62.5	56.4
Al2O3 [%]	15.1	12.4
Fe2O3 [%]	11.4	6.39
MgO [%]	0.27	2.99
CaO [%]	0.25	5.14
Na2O [%]	0.92	3.31
K2O [%]	1.95	1.92
TiO2 [%]	1.01	0.60
P2O5 [%]	0.15	0.18
MnO [%]	0.06	0.10
Cr2O3 [%]	0.05	0.03
V2O5 [%]	0.04	0.02
LOI [%]	5.98	9.16
Sum [%]	99.6	98.7

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
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Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Wednesday, June 02, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 13 May 2010
LR Report: **CA10233-MAY10**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Sample Date & Time			Date:n/a	Date:n/a
Mercury [µg/g]	02-Jun-10	09:41	< 0.1	< 0.1
Silver [µg/g]	01-Jun-10	14:39	0.59	0.23
Aluminum [µg/g]	01-Jun-10	15:44	7100	3800
Arsenic [µg/g]	01-Jun-10	14:39	3.7	4.3
Barium [µg/g]	01-Jun-10	14:39	45	97
Beryllium [µg/g]	01-Jun-10	14:39	0.25	0.16
Bismuth [µg/g]	01-Jun-10	14:39	0.39	0.69
Calcium [µg/g]	01-Jun-10	15:44	1500	32000
Cadmium [µg/g]	01-Jun-10	14:39	0.09	< 0.02
Cobalt [µg/g]	01-Jun-10	14:39	19	18
Chromium [µg/g]	01-Jun-10	14:39	160	68
Copper [µg/g]	01-Jun-10	15:44	120	280
Iron [µg/g]	01-Jun-10	15:44	66000	37000
Potassium [µg/g]	01-Jun-10	15:44	680	1300
Lithium [µg/g]	01-Jun-10	14:39	< 2	< 2
Magnesium [µg/g]	01-Jun-10	15:44	490	11000
Manganese [µg/g]	01-Jun-10	14:39	390	670
Molybdenum [µg/g]	01-Jun-10	14:39	18	8.7
Sodium [µg/g]	01-Jun-10	15:44	150	340
Nickel [µg/g]	01-Jun-10	14:39	91	32
Lead [µg/g]	01-Jun-10	14:39	8.4	7.5
Antimony [µg/g]	01-Jun-10	14:39	1.1	1.9
Selenium [µg/g]	01-Jun-10	14:39	0.7	< 0.7
Tin [µg/g]	01-Jun-10	14:39	0.8	0.8
Strontium [µg/g]	01-Jun-10	15:44	9.5	180
Titanium [µg/g]	01-Jun-10	15:44	55	17
Thallium [µg/g]	01-Jun-10	14:39	< 0.02	0.02
Uranium [µg/g]	01-Jun-10	14:39	0.24	0.14
Vanadium [µg/g]	01-Jun-10	15:44	69	14

SGS Canada Inc.
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Project : CALR-12088-003

LR Report : **CA10233-MAY10**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Tungsten [µg/g]	01-Jun-10	14:39	27	0.80
Yttrium [µg/g]	01-Jun-10	14:39	4.4	3.6
Zinc [µg/g]	01-Jun-10	15:44	74	100

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Canada Inc.
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Phone: 705-652-2000 FAX: 705-652-6365

Modified ABA (Price 1997)

Project : CALR-12088-003

Wednesday, June 02, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 13 May 2010
LR Report: **CA10232-MAY10**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls	6: Sulphide Comp Tls
Sample Date & Time				
Paste pH [units]	01-Jun-10	14:09	7.99	9.28
Fizz Rate [---]	01-Jun-10	14:09	1	2
Sample [weight(g)]	01-Jun-10	14:09	1.96	1.99
HCl added [mL]	01-Jun-10	14:09	20.00	97.70
HCl [Normality]	01-Jun-10	14:09	0.10	0.10
NaOH [Normality]	01-Jun-10	14:09	0.10	0.10
NaOH to [pH=8.3 mL]	01-Jun-10	14:09	18.20	41.30
Final pH [units]	01-Jun-10	14:09	1.14	1.57
NP [t CaCO3/1000t]	01-Jun-10	14:09	4.6	142
AP [t CaCO3/1000 t]	01-Jun-10	14:10	0.31	17.3
Net NP [t CaCO3/1000 t]	01-Jun-10	14:10	4.29	124
NP/AP [ratio]	01-Jun-10	14:10	14.8	8.19
Total Sulphur [%]	31-May-10	13:06	0.020	0.593
Acid Leachable SO4-S [%]	31-May-10	13:08	0.02	0.04
Sulphide-S [%]	31-May-10	13:06	< 0.01	0.55
Total Carbon [%]	31-May-10	13:08	0.170	2.37
Carbonate (CO3) [%]	31-May-10	13:07	0.073	8.23

Project : CALR-12088-003
LR Report : **CA10232-MAY10**

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

*NP (Neutralization Potential)

$$= \frac{50 \times (N \text{ of HCL} \times \text{Total HCL added} - N \text{ NaOH} \times \text{NaOH added})}{\text{Weight of Sample}}$$

*AP (Acid Potential) = % Sulphide Sulphur x 31.25
*Net NP (Net Neutralization Potential) = NP-AP
NP/AP Ratio = NP/AP
*Results expressed as tonnes CaCO3 equivalent/1000 tonnes of material
Samples with a % Sulphide value of <0.01 will be calculated using a 0.01 value.

Sulphur analysis performed following BC ARD Guidelines (Price 1997)

Dianne Griffin
Project Specialist

OnLine LIMS

Appendix C – Semi-Quantitative XRD Report

Semi-Quantitative X-Ray Diffraction

Report Prepared for:	*Guyana Goldfields*
Project Number/ LIMS No.	*12088-003/MI4506-SEP09*
Reporting Date:	*September 30, 2009*

Instrument:	BRUKER AXS D8 Advance Diffractometer
Test Conditions:	Co radiation, 40 kV, 35 mA Regular Scanning: Step: 0.02°, Step time:0.2s, 2θ range: 3-70°
Interpretations:	PDF2/PDF4 (ICDD) powder diffraction database. DiffracPlus Eva software.
Detection Limit:	0.5-2%. Strongly dependent on crystallinity.

Contents:

Jennifer LaBelle-Brown, A.Sc.T
Mineralogical Technologist

Huyun Zhou, Ph.D.
Senior Mineralogist

Method Summary

Mineral Identification and Interpretation:

Mineral identification and interpretation involve matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the JCPDS-ICDD database and released on software as Powder Diffraction File (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds. Mineral proportions are based on relative peak heights and may be strongly influenced by crystallinity, structural group or preferred orientations. Interpretations and relative proportions should be accompanied by supporting petrographic and geochemical data (WRA, ICP-OES).

Semi-Quantitative Analysis:

The Semi-Quantitative analysis (RIR method) is performed based on each mineral's relative peak heights and of their respective I/Icor values, which are available from the PDF database. Mineral abundances for the bulk sample (in weight %) are generated by Bruker-EVA Software. These data are reconciled with a bulk chemistry (e.g. whole rock analysis including SiO_2, Al_2O_3, Na_2O, K_2O, CaO, MgO, Fe_2O_3, Cr_2O_3, MnO, TiO_2, P_2O_5, V_2O_5 or other chemical data). A chemical balance table shows the difference between the assay results and elemental concentrations determined by XRD.

Summary of Semi-Quantitative X-ray Diffraction Results

Crystalline Mineral Assemblage (relative proportions based on peak height)

Sample	Major (>30% Wt)	Moderate (10% -30% Wt)	Minor (2% -10% Wt)	Trace (<2% Wt)
Sulphide Comp Tls	quartz	plagioclase, potassium feldspar	dolomite, ankerite, olivine, pyrite	*chlorite, *rutile
Oxide Comp Tls	quartz	kaolinite, mica	plagioclase, goethite, potassium feldspar, hematite	*pyroxene, *rutile, *pyrite

** tentative identification due to low concentrations, diffraction line overlap or poor crystallinity*

Mineral	Composition
Ankerite	$CaFe(CO_3)_2$
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$
Dolomite	$CaMg(CO_3)_2$
Goethite	$\alpha FeO{\cdot}OH$
Hematite	Fe_2O_3
Kaolinite	$Al_2Si_2O_5(OH)_4$
Mica	$K(Mg,Fe)Al_2Si_3AlO_{10}(OH)_2$
Olivine	$(Mg,Fe)_2SiO_4$
Plagioclase	$(NaSi,CaAl)AlSi_2O_8$
Potassium Feldspar	$KAlSi_3O_8$
Pyrite	FeS_2
Pyroxene	$CaMgSi_2O_6$
Quartz	SiO_2
Rutile	TiO_2

Semi-Quantitative X-ray Diffraction Results

Mineral	Sulphide Comp Tls (wt %)	Oxide Comp Tls (wt %)
Quartz	32.9	40.7
Albite	29.8	9.6
Orthoclase	-	3.2
Muscovite	12.9	15.4
Kaolinite	-	16.5
Chamosite	1.0	-
Diopside	-	1.6
Forsterite	2.9	-
Ankerite	8.4	-
Dolomite	9.2	-
Goethite	-	8.9
Hematite	-	2.1
Pyrite	2.5	0.4
Rutile	0.4	1.6
TOTAL	100.0	100.0

The Qualitative XRD method (METH # 8-8-1) used by SGS Minerals Services, P.O. Box 4300, 185 Concession Street, Lakefield, Ontario, Canada K0L 2H0.
Tel: (705) 652-2000 Fax: (705) 652-6365 Mini-method available upon request.

Chemical Balance

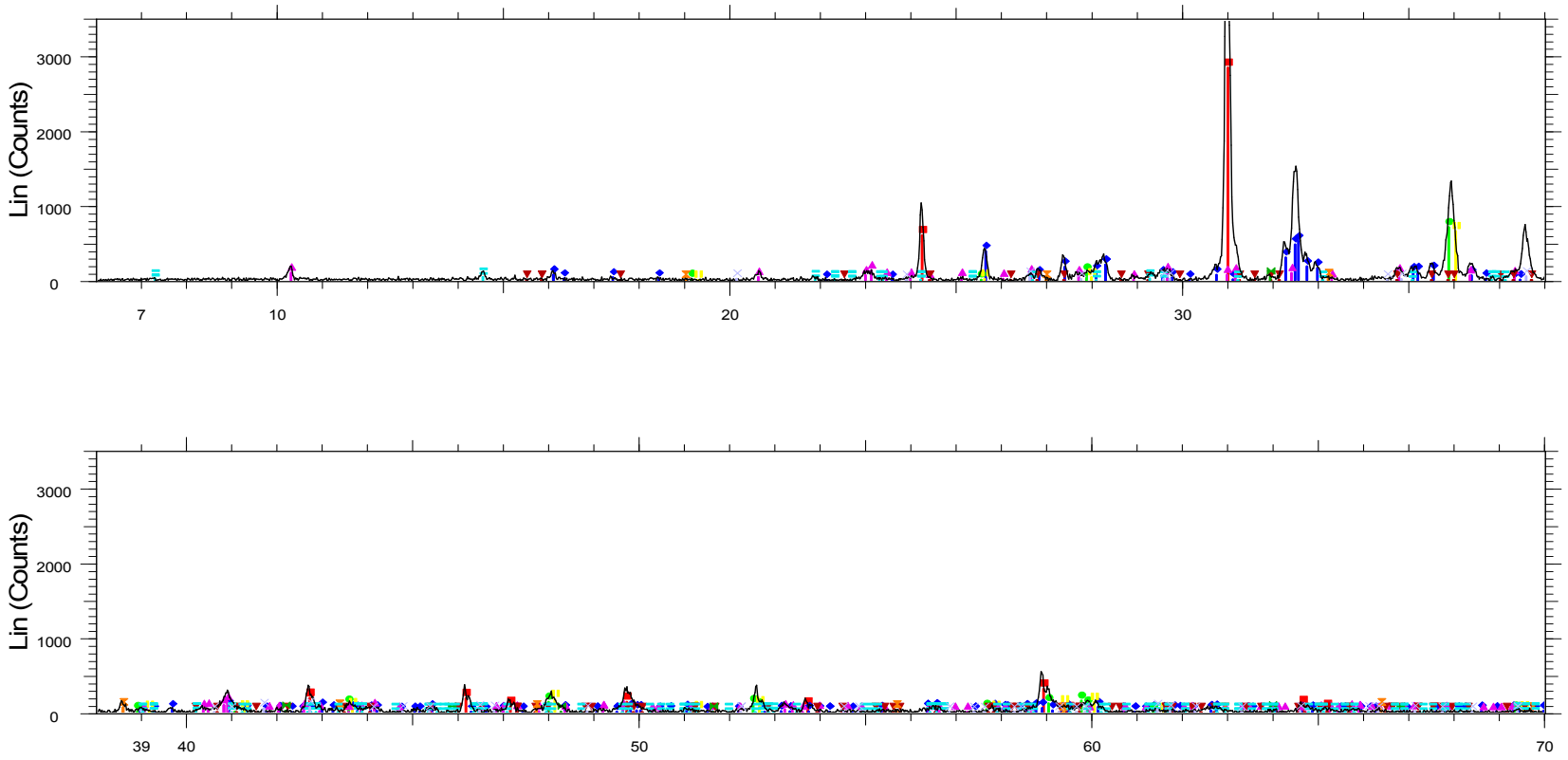
Sulphide Comp Tls

Name	Assay	SQD	Delta	Status
Oxygen	49.3	48.9	0.38	Both
Silicon	26.6	28.4	-1.80	Both
Aluminum	6.62	5.78	0.83	Both
Iron	4.40	2.89	1.51	Both
Calcium	3.67	3.68	-0.02	Both
Sodium	2.44	2.61	-0.17	Both
Magnesium	1.80	2.62	-0.81	Both
Carbon	1.77	2.20	-0.43	Both
Potassium	1.62	1.27	0.35	Both
Sulfur	0.58	1.36	-0.78	Both
Titanium	0.37	0.25	0.11	Both
Phosphorus	0.08	-	0.08	XRF
Manganese	0.08	-	0.08	XRF
Vanadium	0.02	-	0.02	XRF
Chromium	0.01	-	0.01	XRF
Hydrogen	-	0.08	0.08	SQD

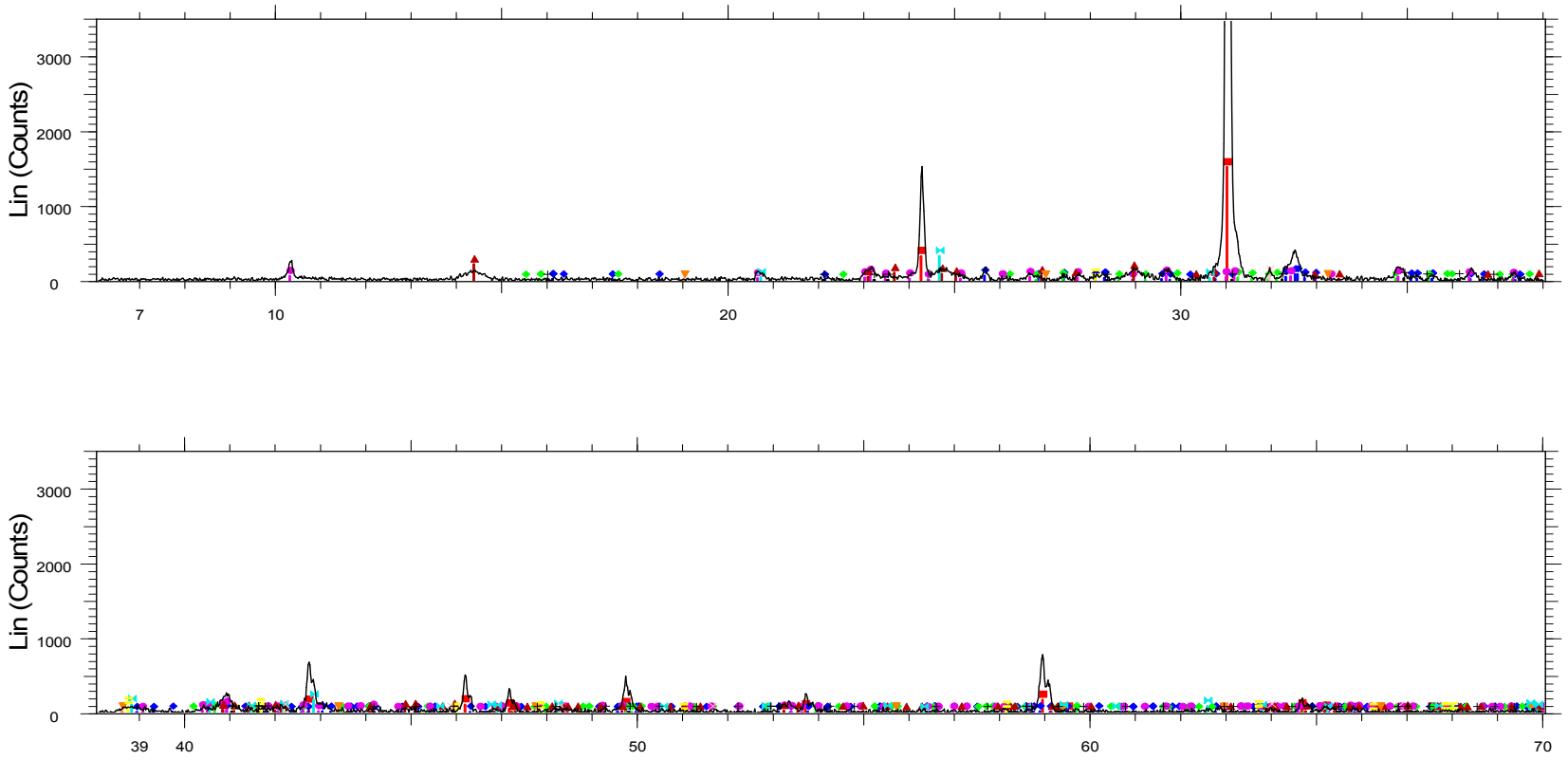
Oxide Comp Tls

Name	Assay	SQD	Delta	Status
Oxygen	45.4	49.6	-4.18	Both
Silicon	29.4	30.3	-0.81	Both
Iron	7.97	7.21	0.77	Both
Aluminum	7.94	7.96	-0.02	Both
Potassium	1.61	1.97	-0.36	Both
Sodium	0.70	0.91	-0.22	Both
Titanium	0.61	0.94	-0.33	Both
Calcium	0.22	0.30	-0.08	Both
Magnesium	0.16	0.19	-0.03	Both
Phosphorus	0.07	-	0.07	XRF
Manganese	0.05	-	0.05	XRF
Chromium	0.03	-	0.03	XRF
Carbon	0.02	-	0.02	XRF
Vanadium	0.02	-	0.02	XRF
Sulfur	0.02	0.22	-0.20	Both
Hydrogen	-	0.44	-0.44	SQD

Sulphide Comp Tails



Oxide Comp Tails



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

(Project: 12088-003 – PO# 61809)

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June 7, 2010

EXPERIMENTAL METHOD

The two samples of **Project 12088-003** were reduced to the optimum grain-size range for quantitative X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone Micronising Mill for 7 minutes. Step-scan X-ray powder-diffraction data were collected over a range 3-80°2θ with CoKa radiation on a Bruker D8 Focus Bragg-Brentano diffractometer equipped with an Fe monochromator foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6°.

RESULTS

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 and Search-Match software by Siemens (Bruker). X-ray powder-diffraction data of the samples were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1. These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots are shown in Figures 1 – 2.

Table 1. Results of quantitative phase analysis (wt.%)

Mineral	**Ideal Formula**	**Oxide Comp Tls Residue**	**Sulphide Comp Tls Residue**
Quartz	SiO_2	45.8	29.6
Clinochlore	$(Mg,Fe^{2+})_5Al(Si_3Al)O_{10}(OH)_8$		1.5
Kaolinite	$Al_2Si_2O_5(OH)_4$	12.4	
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$	21.6	17.4
Paragonite	$NaAl_2AlSi_3O_{10}(OH)_2$	4.0	
Plagioclase	$NaAlSi_3O_8 – CaAl_2Si_2O_8$	6.0	27.6
K-feldspar	$KAlSi_3O_8$		1.0
Calcite	$CaCO_3$		0.5
Dolomite	$CaMg(CO_3)_2$		17.1
Siderite	$Fe^{2+}CO_3$		3.1
Hematite	α-Fe_2O_3	0.9	
Goethite	$\alpha Fe^{3+}O(OH)$	7.5	
Pyrite	FeS_2		1.4
Rutile	TiO_2	1.8	0.7
Total		100.0	100.0

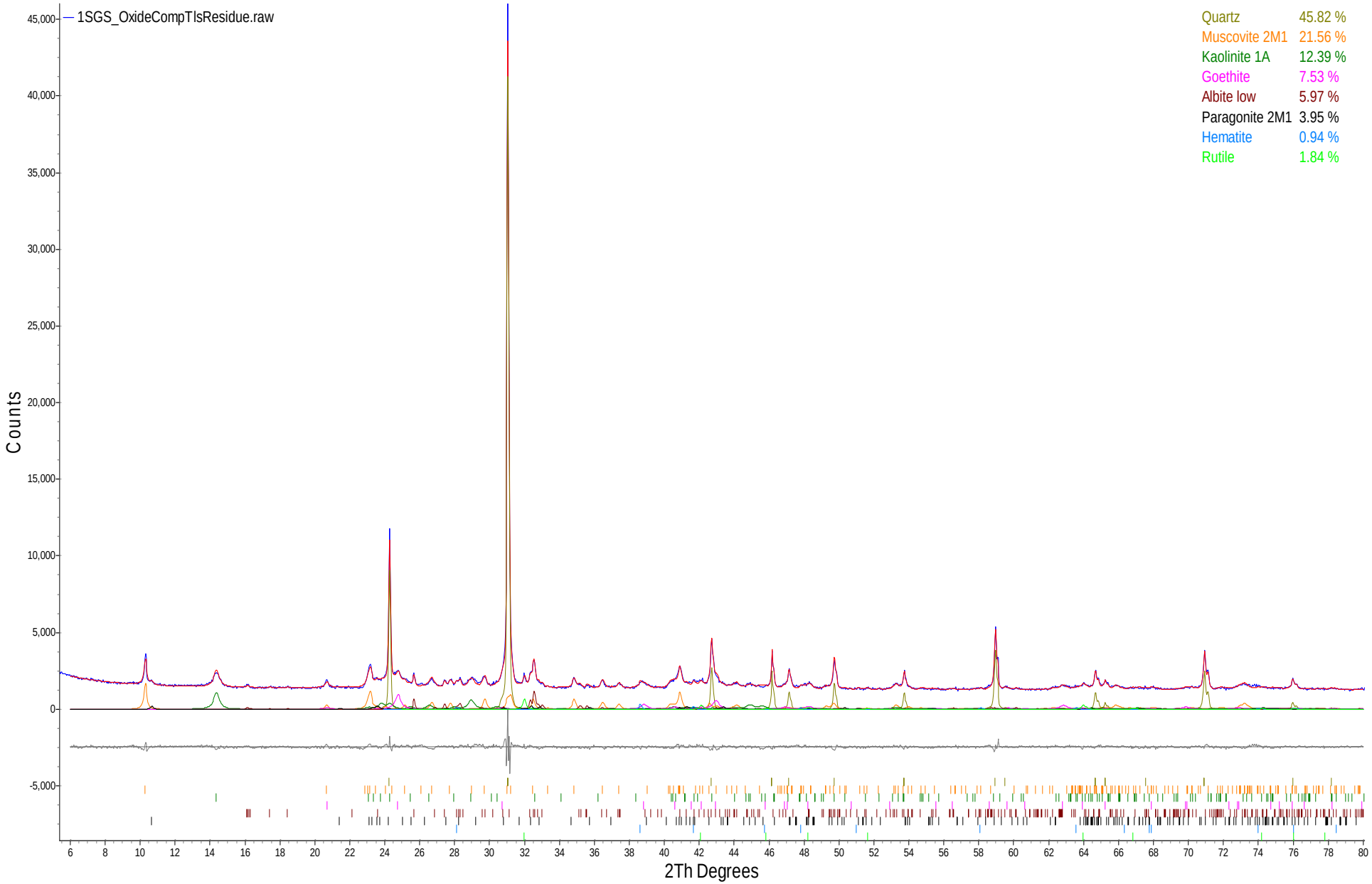


Figure 1. Rietveld refinement plot of sample **SGS Lakefield "Oxide Comp Tls Residue"** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured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

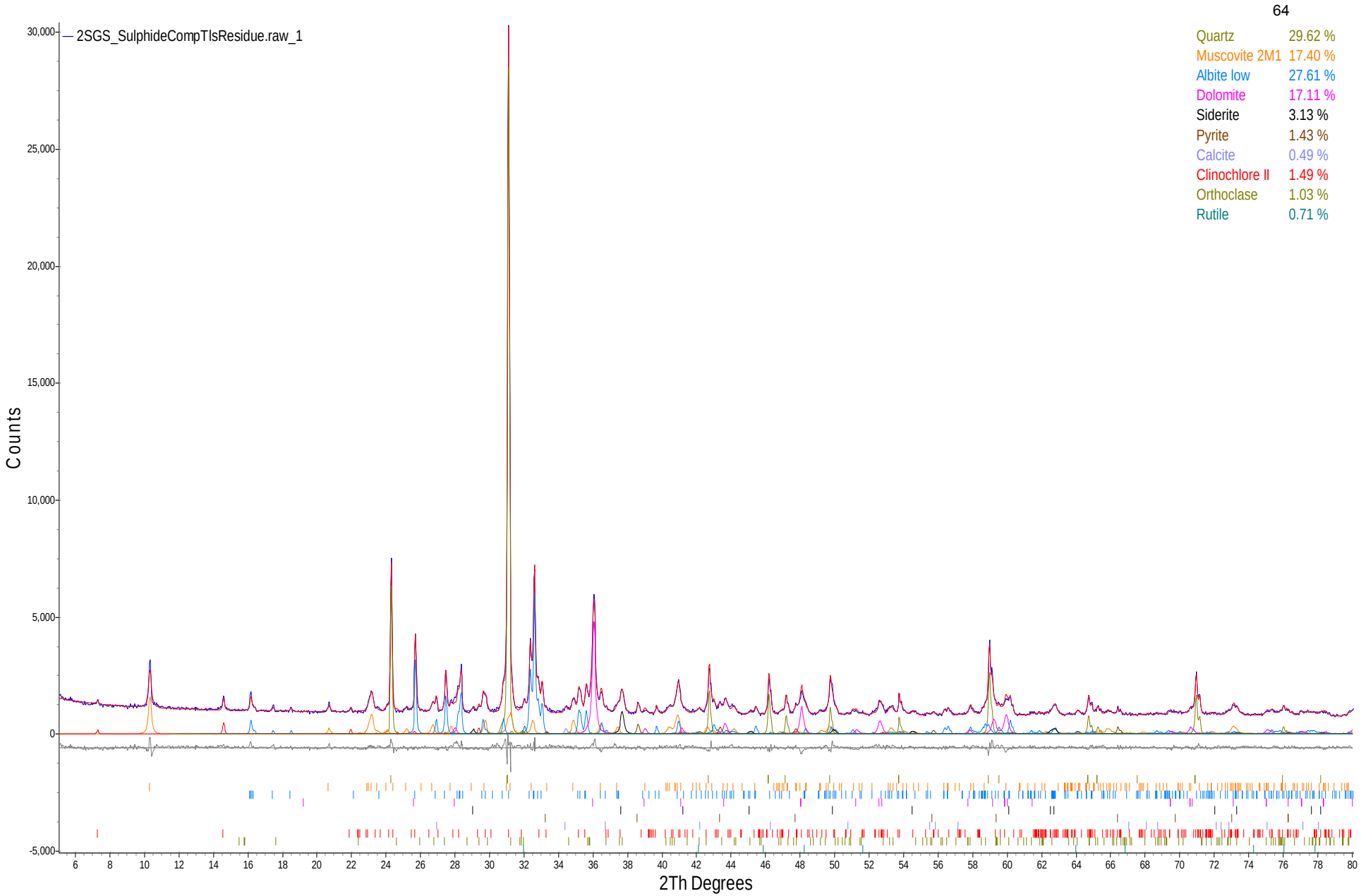


Figure 2. Rietveld refinement plot of sample **SGS "Sulphide Comp Tls Residue"** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines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

Appendix D – Humidity Cell Test Reports

Test Specimen

Sample	Weight (g)
Oxide Comp Tls	1000

Analysis of Weekly Humidity Cell Leachate

Parameter	Units	0	1	2	3	4	5	6	7	8	9
LIMS		11043-OCT09	11046-OCT09	11056-OCT09	11164-OCT09	10005-NOV09	11041-NOV09	11122-NOV09	11143-NOV09	10001-DEC09	10026-DEC09
Hum Cell Leachate Vo	mLs	333	940	862	909	733	880	982	865	878	857
pH	units	8.07	8.22	7.84	7.35	7.95	7.76	7.39	7.17	7.08	7.06
Conductivity	µS/cm	1130	1400	80	33	130	85	24	21	15	16
Acidity	mg/L as $CaCO_3$	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Alkalinity	mg/L as $CaCO_3$	54	125	26	13	50	34	10	7	5	5
SO_4	mg/L	480	550	11	2.6	20	7.4	2.0	1.0	0.8	0.8
Hg	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	---	---	---	---
Ag	mg/L	0.00149	0.00006	< 0.00001	0.00001	0.00001	< 0.00001	---	---	---	---
Al	mg/L	0.06	0.01	0.04	0.16	0.09	0.05	---	---	---	---
As	mg/L	0.0014	0.0017	< 0.0002	< 0.0002	0.0002	0.0003	---	---	---	---
B	mg/L	0.0056	0.0144	0.0029	0.0007	0.0034	0.0035	---	---	---	---
Ba	mg/L	0.0263	0.0280	0.00251	0.00197	0.00541	0.00387	---	---	---	---
Bi	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00003	< 0.00001	---	---	---	---
Be	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---	---	---	---
Ca	mg/L	55.6	67.6	4.90	3.90	15.1	9.68	---	---	---	---
Cd	mg/L	0.000009	0.000073	0.000016	< 0.000003	0.000010	0.000005	---	---	---	---
Co	mg/L	0.0708	0.101	0.00749	0.00194	0.0102	0.00565	---	---	---	---
Cr	mg/L	0.0217	0.0329	0.0018	< 0.0005	0.0026	0.0012	---	---	---	---
Cu	mg/L	0.0186	0.0181	0.0028	0.0018	0.0038	0.0024	---	---	---	---
Fe	mg/L	0.11	0.13	0.02	0.13	0.07	0.03	---	---	---	---
K	mg/L	5.36	6.25	0.69	0.34	1.16	0.81	---	---	---	---
Li	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---	---	---	---
Mg	mg/L	0.694	1.13	0.079	0.054	0.265	0.186	---	---	---	---
Mn	mg/L	0.00238	0.00451	0.00288	0.00079	0.00187	0.00189	---	---	---	---
Mo	mg/L	0.0322	0.103	0.0185	0.00402	0.0197	0.0128	---	---	---	---
Na	mg/L	191	219	9.75	2.67	14.8	7.46	---	---	---	---
Ni	mg/L	0.0018	0.0029	0.0006	0.0005	0.0008	0.0003	---	---	---	---
Pb	mg/L	0.00007	0.00003	< 0.00002	0.00003	0.00004	< 0.00002	---	---	---	---
Sb	mg/L	0.0024	0.0031	0.0009	0.0003	0.0014	0.0009	---	---	---	---
Se	mg/L	0.003	0.004	< 0.001	< 0.001	0.001	< 0.001	---	---	---	---
Sn	mg/L	0.00263	0.00122	0.00019	0.00012	0.00030	0.00010	---	---	---	---
Sr	mg/L	0.0748	0.0913	0.0064	0.0046	0.0198	0.0132	---	---	---	---
Ti	mg/L	0.0004	0.0002	0.0003	0.0009	0.0011	0.0004	---	---	---	---
Tl	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---
U	mg/L	0.000845	0.00159	0.000089	0.000002	0.000231	0.000102	---	---	---	---
V	mg/L	0.00004	0.00005	0.00030	0.00046	0.00042	0.00037	---	---	---	---
W	mg/L	0.0649	0.172	0.0618	0.0225	0.0666	0.0567	---	---	---	---
Y	mg/L	0.000008	0.000030	0.000006	0.000006	< 0.000001	0.000007	---	---	---	---
Zn	mg/L	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	---	---	---	---

Test Specimen

Sample	Weight (g)
Oxide Comp Tls	1000

NOTE: Week 19 leachate reassay LIMS 10873-MAR10 reported similar results. Lab noted that this sample drained overnight on Week 19.

Increased concentrations are likely due to the much longer leachate residence time.

Analysis of Weekly Humidity Cell Lea

Parameter	Units	10	11	12	13	14	15	16	17	18	19	20
LIMS		10051-DEC09	11199-DEC09	11232-DEC09	10001-JAN10	10026-JAN10	10051-JAN10	10076-JAN10	10001-FEB10	10026-FEB10	10055-FEB10	10081-FEB10
Hum Cell Leachate Vo	mLs	865	852	865	827	830	872	843	877	852	824	860
pH	units	6.98	7.13	*7.18	7.24	7.21	6.98	7.12	7.45	7.06	8.13	7.22
Conductivity	µS/cm	17	14	*17	20	17	15	13	16	15	179	21
Acidity	mg/L as $CaCO_3$	<2	<2	* <2	<2	<2	<2	<2	<2	<2	<2	<2
Alkalinity	mg/L as $CaCO_3$	6	6	*7	7	7	6	5	6	5	64	8
SO_4	mg/L	1.0	0.9	*0.9	0.8	0.7	0.7	0.6	0.7	0.6	8.5	0.5
Hg	mg/L	< 0.0001	---	---	---	---	< 0.0001	---	---	---	---	< 0.0001
Ag	mg/L	0.00002	---	---	---	---	0.00001	---	---	---	---	< 0.00001
Al	mg/L	0.03	---	---	---	---	0.01	---	---	---	---	0.02
As	mg/L	0.0005	---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
B	mg/L	0.0202	---	---	---	---	0.0005	---	---	---	---	0.0007
Ba	mg/L	0.00178	---	---	---	---	0.00071	---	---	---	---	0.00097
Bi	mg/L	< 0.00001	---	---	---	---	0.00004	---	---	---	---	< 0.00001
Be	mg/L	< 0.00002	---	---	---	---	< 0.00002	---	---	---	---	< 0.00002
Ca	mg/L	2.17	---	---	---	---	1.99	---	---	---	---	2.88
Cd	mg/L	< 0.000003	---	---	---	---	0.000006	---	---	---	---	< 0.000003
Co	mg/L	0.000776	---	---	---	---	0.000387	---	---	---	---	0.00115
Cr	mg/L	< 0.0005	---	---	---	---	< 0.0005	---	---	---	---	< 0.0005
Cu	mg/L	0.0009	---	---	---	---	0.0006	---	---	---	---	0.0015
Fe	mg/L	0.04	---	---	---	---	0.02	---	---	---	---	0.02
K	mg/L	0.19	---	---	---	---	0.16	---	---	---	---	0.20
Li	mg/L	< 0.001	---	---	---	---	< 0.001	---	---	---	---	< 0.001
Mg	mg/L	0.059	---	---	---	---	0.060	---	---	---	---	0.082
Mn	mg/L	0.00211	---	---	---	---	0.00120	---	---	---	---	0.00172
Mo	mg/L	0.00422	---	---	---	---	0.00163	---	---	---	---	0.00258
Na	mg/L	0.96	---	---	---	---	0.69	---	---	---	---	0.59
Ni	mg/L	0.0001	---	---	---	---	< 0.0001	---	---	---	---	< 0.0001
Pb	mg/L	0.00004	---	---	---	---	0.00005	---	---	---	---	0.00025
Sb	mg/L	0.0002	---	---	---	---	0.0003	---	---	---	---	0.0002
Se	mg/L	< 0.001	---	---	---	---	< 0.001	---	---	---	---	< 0.001
Sn	mg/L	0.00006	---	---	---	---	< 0.00001	---	---	---	---	0.00004
Sr	mg/L	0.0025	---	---	---	---	0.0027	---	---	---	---	0.0039
Ti	mg/L	0.0006	---	---	---	---	0.0003	---	---	---	---	0.0003
Tl	mg/L	< 0.0002	---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
U	mg/L	0.000001	---	---	---	---	0.000014	---	---	---	---	0.000005
V	mg/L	0.00029	---	---	---	---	0.00017	---	---	---	---	0.00022
W	mg/L	0.00740	---	---	---	---	0.00517	---	---	---	---	0.00894
Y	mg/L	0.000011	---	---	---	---	0.000008	---	---	---	---	0.000004
Zn	mg/L	< 0.001	---	---	---	---	< 0.001	---	---	---	---	< 0.001

**Due to an anaytical error, assay results are not available for Week 12*

Results shown are averages based on the preceeding and following weeks data

Test Specimen

Sample	Weight (g)
Oxide Comp Tls	1000

NOTE: Week 21 leachate again had to drain overnight.

Increased concentrations are likely due to the much longer leachate residence time.

Analysis of Weekly Humidity Cell Lea

Parameter	Units	21	22	23	24	25	26	27	28	29	30
LIMS		10001-MAR10	10027-MAR10	10053-MAR10	10078-MAR10	10122-MAR10	10001-APR10	10028-APR10	11070-APR10	11094-APR10	10001-MAY10
Hum Cell Leachate Vo	mLs	875	827	838	736	884	927	833	816	812	853
pH	units	8.01	8.09	8.10	8.18	8.14	7.90	7.92	8.06	8.20	7.79
Conductivity	µS/cm	120	127	128	150	143	100	116	110	102	124
Acidity	mg/L as $CaCO_3$	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Alkalinity	mg/L as $CaCO_3$	49	58	60	71	68	46	52	51	51	52
SO_4	mg/L	3.0	2.5	2.1	2.0	2.1	1.8	1.7	1.6	1.6	1.7
Hg	mg/L	---	---	---	---	< 0.0001	---	---	---	---	< 0.0001
Ag	mg/L	---	---	---	---	< 0.00001	---	---	---	---	0.00001
Al	mg/L	---	---	---	---	0.01	---	---	---	---	0.02
As	mg/L	---	---	---	---	0.0002	---	---	---	---	< 0.0002
B	mg/L	---	---	---	---	0.0063	---	---	---	---	0.0036
Ba	mg/L	---	---	---	---	0.00971	---	---	---	---	0.00587
Bi	mg/L	---	---	---	---	0.00003	---	---	---	---	0.00004
Be	mg/L	---	---	---	---	< 0.00002	---	---	---	---	< 0.00002
Ca	mg/L	---	---	---	---	28.0	---	---	---	---	19.8
Cd	mg/L	---	---	---	---	0.000008	---	---	---	---	0.000024
Co	mg/L	---	---	---	---	0.00744	---	---	---	---	0.00502
Cr	mg/L	---	---	---	---	0.0006	---	---	---	---	0.0007
Cu	mg/L	---	---	---	---	0.0026	---	---	---	---	0.0023
Fe	mg/L	---	---	---	---	< 0.01	---	---	---	---	0.02
K	mg/L	---	---	---	---	1.19	---	---	---	---	0.68
Li	mg/L	---	---	---	---	< 0.001	---	---	---	---	< 0.001
Mg	mg/L	---	---	---	---	0.850	---	---	---	---	0.605
Mn	mg/L	---	---	---	---	0.00340	---	---	---	---	0.00266
Mo	mg/L	---	---	---	---	0.0119	---	---	---	---	0.00564
Na	mg/L	---	---	---	---	0.94	---	---	---	---	0.42
Ni	mg/L	---	---	---	---	0.0004	---	---	---	---	0.0002
Pb	mg/L	---	---	---	---	0.00035	---	---	---	---	0.00006
Sb	mg/L	---	---	---	---	0.0010	---	---	---	---	0.0009
Se	mg/L	---	---	---	---	< 0.001	---	---	---	---	< 0.001
Sn	mg/L	---	---	---	---	0.00001	---	---	---	---	0.00003
Sr	mg/L	---	---	---	---	0.0384	---	---	---	---	0.0271
Ti	mg/L	---	---	---	---	< 0.0001	---	---	---	---	0.0004
Tl	mg/L	---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
U	mg/L	---	---	---	---	0.000185	---	---	---	---	0.000110
V	mg/L	---	---	---	---	0.00031	---	---	---	---	0.00044
W	mg/L	---	---	---	---	0.0404	---	---	---	---	0.0389
Y	mg/L	---	---	---	---	0.000003	---	---	---	---	0.000009
Zn	mg/L	---	---	---	---	< 0.001	---	---	---	---	< 0.001

TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Test Specimen

Sample	Weight (g)
Oxide Comp Tls	1000

Summary of ABA Test Data

Parameter	Units	Reference No.: 10178-SEP09
Sulphur (S)	%	0.05
Sulphide ($S^{=}$)	%	0.02
NP	t $CaCO_3$/1000 t	6.3
CO_3 NP	t $CaCO_3$/1000 t	2.0

Leachate Paremeters Measured | ***Acid Generation*** [1] | ***Acid Neutralization*** [1]

Weekly Leach No.	Volume Collected mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	SO_4 mg/L	SO_4 Production Rate g/t/wk	Cumulative SO_4 Production g/t	Weekly S= Depletion %	Cumulative S= Depletion %	NP Consumption $CaCO_3$, g/t/wk	Cumulative NP Depletion %	Cumulative CO_3 NP Depletion %
0	333	8.07	<2	54	1130	480	159.8	159.84	26.64	26.64	166.50	2.64	8.33
1	940	8.22	<2	125	1400	550	517.0	676.84	86.17	112.81	538.54	11.19	35.25
2	862	7.84	<2	26	80	11	9.5	686.32	1.58	114.39	9.88	11.35	35.75
3	909	7.35	<2	13	33	2.6	2.4	688.69	0.39	114.78	2.46	11.39	35.87
4	733	7.95	<2	50	130	20	14.7	703.35	2.44	117.22	15.27	11.63	36.63
5	880	7.76	<2	34	85	7.4	6.5	709.86	1.09	118.31	6.78	11.74	36.97
6	982	7.39	<2	10	24	2.0	2.0	711.82	0.33	118.64	2.05	11.77	37.07
7	865	7.17	<2	7	21	1.0	0.9	712.69	0.14	118.78	0.90	11.78	37.12
8	878	7.08	<2	5	15	0.8	0.7	713.39	0.12	118.90	0.73	11.80	37.16
9	857	7.06	<2	5	16	0.8	0.7	714.07	0.11	119.01	0.71	11.81	37.19
10	865	6.98	<2	6	17	1.0	0.9	714.94	0.14	119.16	0.90	11.82	37.24
11	852	7.13	<2	6	14	0.9	0.8	715.71	0.13	119.28	0.80	11.83	37.28
12	865	7.18	<2	7	17	0.9	0.7	716.44	0.12	119.41	0.77	11.85	37.31
13	827	7.24	<2	7	20	0.8	0.7	717.10	0.11	119.52	0.69	11.86	37.35
14	830	7.21	<2	7	17	0.7	0.6	717.68	0.10	119.61	0.61	11.87	37.38
15	872	6.98	<2	6	15	0.7	0.6	718.29	0.10	119.72	0.64	11.88	37.41
16	843	7.12	<2	5	13	0.6	0.5	718.80	0.08	119.80	0.53	11.88	37.44
17	877	7.45	<2	6	16	0.7	0.6	719.41	0.10	119.90	0.64	11.90	37.47
18	852	7.06	<2	5	15	0.6	0.5	719.93	0.09	119.99	0.53	11.90	37.50
19	824	8.13	<2	64	179	8.5	7.0	726.93	1.17	121.15	7.30	12.02	37.86
20	860	7.22	<2	8	21	0.5	0.4	727.36	0.07	121.23	0.45	12.03	37.88

** Initial Week 0 leachate may included soluble sulphate, and may not indicate oxidation of sulphide in the sample material has occurred.*

[1] *Calculated values*

Summary - Weeks 0 to 20

Maximum Value	8.22	<2	125	1400	550	517.0	-	86.17	-	539	-	-
Minimum Value	6.98	<2	5	13	0.5	0.4	-	0.07	-	0.4	-	-
Average Value	7.27	<2	22	156	52	34.6	-	5.77	-	36.08	-	-

TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Test Specimen

Sample	Weight (g)
Oxide Comp Tls	1000

Changes to Head Sample after 20 Weeks [1]

Parameter	Units	Reference No.: 10178-SEP09
Sulphide ($S^{=}$) Remaining	%	0.00
NP Remaining	t $CaCO_3$/1000 t	5.54
CO_3 NP Remaining	t $CaCO_3$/1000 t	1.24

Leachate Paremeters Measured | ***Acid Generation*** [1] | ***Acid Neutralization*** [1]

Weekly Leach No.	Volume Collected mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	SO_4 mg/L	SO_4 Production Rate g/t/wk	Cumulative SO_4 Production g/t	Weekly S= Depletion %	Cumulative S= Depletion %	NP Consumption $CaCO_3$, g/t/wk	Cumulative NP Depletion %	Cumulative CO_3 NP Depletion %
21	875	8.01	<2	49	120	3.0	2.6	729.98	0.44	121.66	2.73	12.07	38.02
22	827	8.09	<2	58	127	2.5	2.1	732.05	0.34	122.01	2.15	12.10	38.13
23	838	8.10	<2	60	128	2.1	1.8	733.81	0.29	122.30	1.83	12.13	38.22
24	736	8.18	<2	71	150	2.0	1.5	735.28	0.25	122.55	1.53	12.16	38.30
25	884	8.14	<2	68	143	2.1	1.9	737.14	0.31	122.86	1.93	12.19	38.39
26	927	7.90	<2	46	100	1.8	1.7	738.81	0.28	123.13	1.74	12.22	38.48
27	833	7.92	<2	52	116	1.7	1.4	740.22	0.24	123.37	1.48	12.24	38.55
28	816	8.06	<2	51	110	1.6	1.3	741.53	0.22	123.59	1.36	12.26	38.62
29	812	8.20	<2	51	102	1.6	1.3	742.83	0.22	123.80	1.35	12.28	38.69
30	853	7.79	<2	52	124	1.7	1.5	744.28	0.24	124.05	1.51	12.31	38.76

[1] *Calculated values*

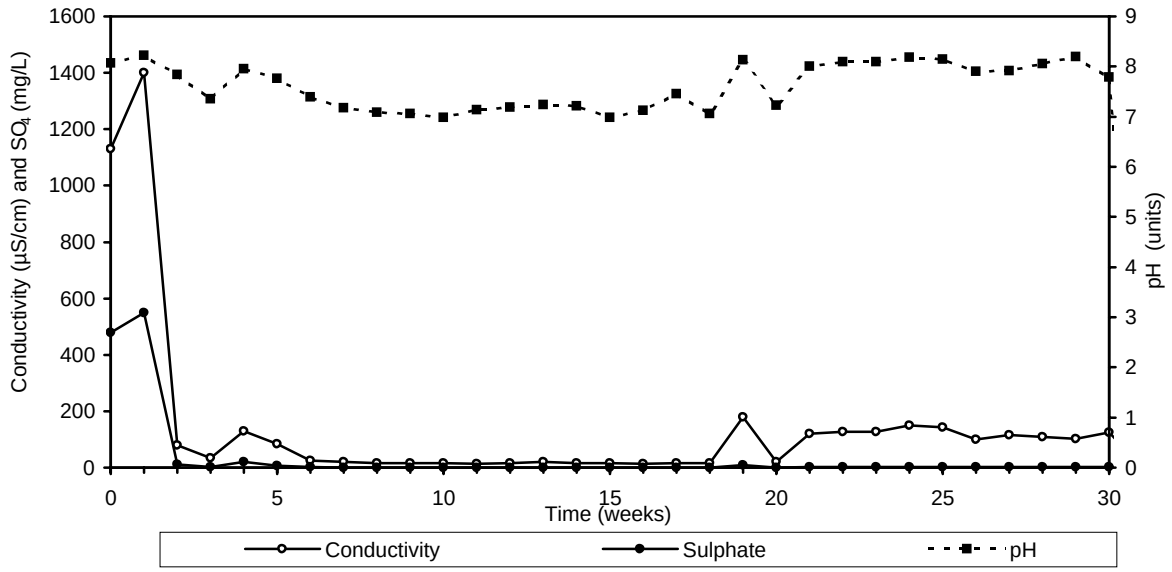
Summary - Weeks 0 to 40

Maximum Value	8.22	<2	125	1400	550	517.00	-	0.44	-	539	-	-
Minimum Value	6.98	<2	5	13	0.5	0.43	-	0.07	-	0.4	-	-
Average Value	7.41	<2	33	145	36	24.01	-	4.00	-	25.01	-	-

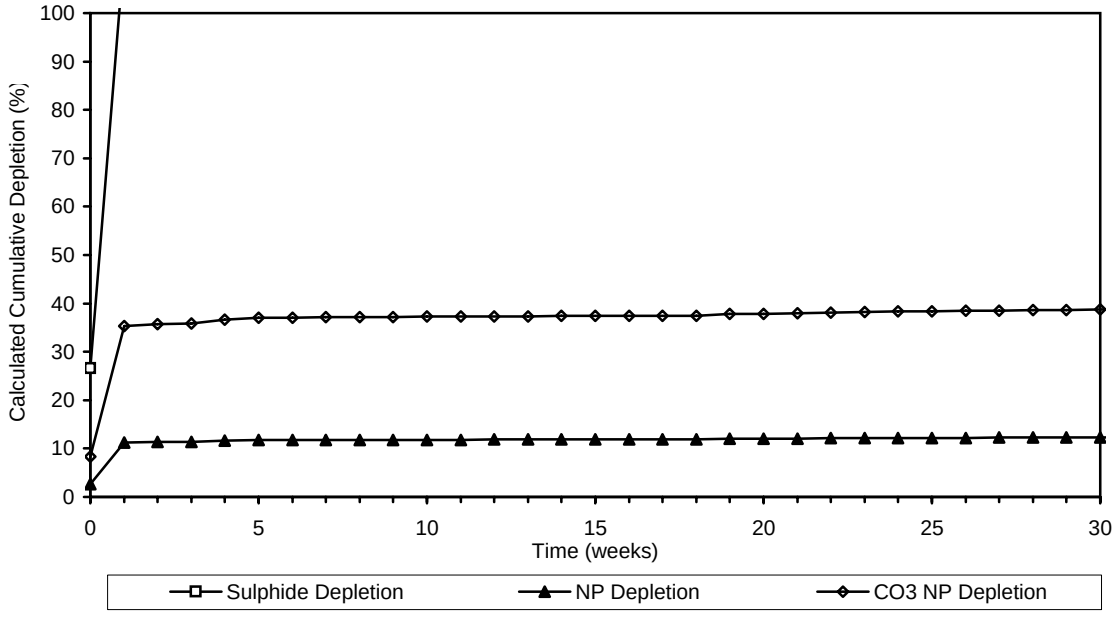
TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Conductivity, Sulphate, and pH in Weekly Humidity Cell Leachate Oxide Comp Tls



Cumulative Sulphide and NP Depletion Oxide Comp Tls

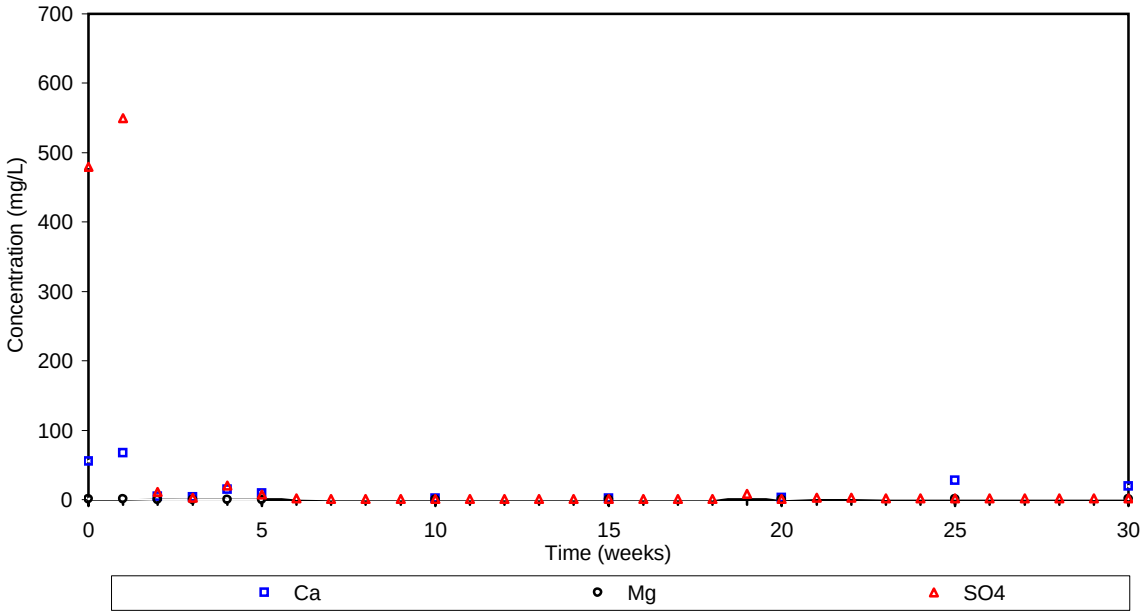


Note: NP depletion calculated based on sulphate assay.

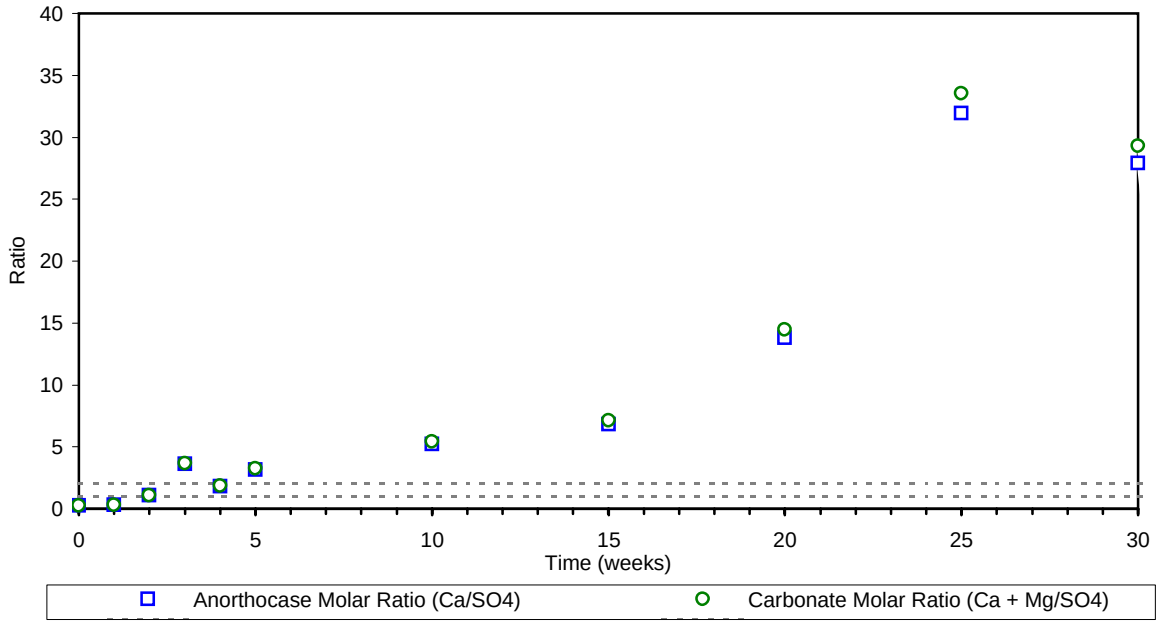
TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Selected Parameters in Weekly Humidity Cell Leachate Oxide Comp Tls



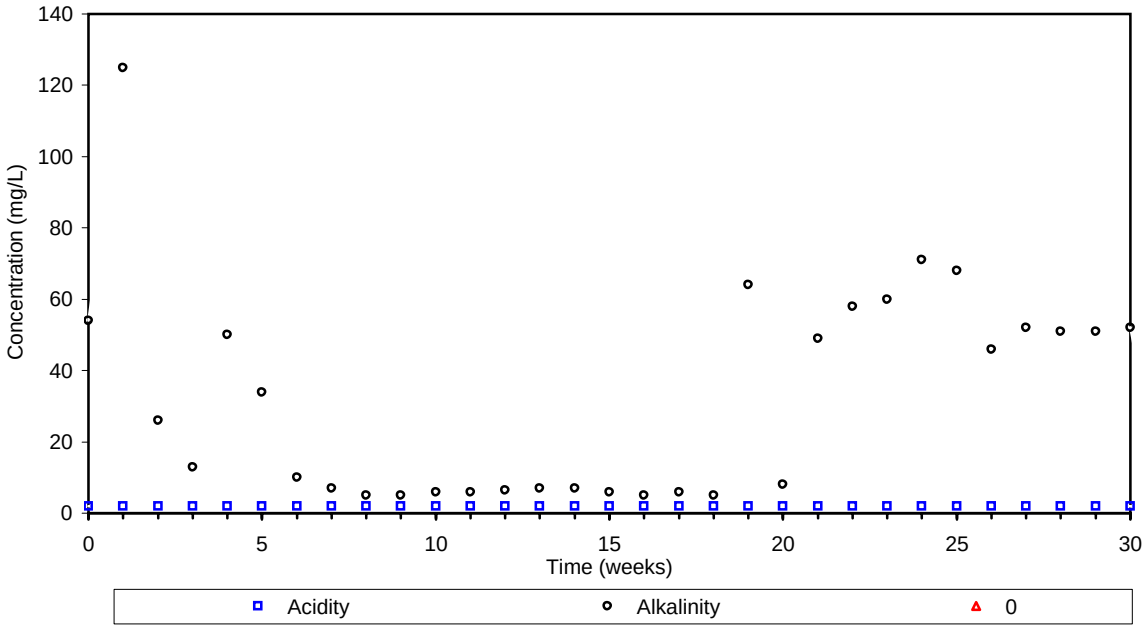
Carbonate (Ca + Mg/SO$_4$) and Anorthoclase (Ca/SO$_4$) Molar Ratio Oxide Comp Tls



TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Selected Parameters in Weekly Humidity Cell Leachate Oxide Comp Tls



Note: Acidity and alkalinity have detection limit of 2 mg/L.

Test Specimen

Sample	Weight (g)
Sulphide Comp Tls	1000

Analysis of Weekly Humidity Cell Leachate

Parameter	Units	0	1	2	3	4	5	6	7	8	9
LIMS		11043-OCT09	11046-OCT09	11056-OCT09	11164-OCT09	10005-NOV09	11041-NOV09	11122-NOV09	11143-NOV09	10001-DEC09	10026-DEC09
Hum Cell Leachate Vo	mLs	439	918	798	768	809	886	915	886	866	869
pH	units	8.07	8.16	8.54	8.08	8.18	8.22	7.90	7.91	7.67	7.64
Conductivity	µS/cm	1330	368	134	204	270	266	88	143	74	73
Acidity	mg/L as $CaCO_3$	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Alkalinity	mg/L as $CaCO_3$	51	63	69	75	101	109	40	56	76	28
SO_4	mg/L	640	110	39	31	40	33	8.9	18	7.8	8.1
Hg	mg/L	0.0006	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	---	---	---	---
Ag	mg/L	0.0107	0.00211	0.00023	0.00021	0.00001	< 0.00001	---	---	---	---
Al	mg/L	0.03	0.04	0.06	0.08	0.05	0.03	---	---	---	---
As	mg/L	0.0018	0.0012	0.0008	0.0006	0.0005	0.0004	---	---	---	---
B	mg/L	0.0109	0.0114	0.0299	0.0071	0.0070	0.0060	---	---	---	---
Ba	mg/L	0.0963	0.0735	0.0962	0.118	0.150	0.163	---	---	---	---
Bi	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	---	---	---	---
Be	mg/L	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	< 0.00002	---	---	---	---
Ca	mg/L	44.5	15.0	15.4	18.1	26.8	27.7	---	---	---	---
Cd	mg/L	0.000023	0.000024	0.000015	< 0.000003	< 0.000003	< 0.000003	---	---	---	---
Co	mg/L	0.0162	0.00680	0.00290	0.00173	0.00189	0.00164	---	---	---	---
Cr	mg/L	0.0007	0.0005	0.0007	< 0.0005	< 0.0005	< 0.0005	---	---	---	---
Cu	mg/L	**1.68**	0.0948	0.0055	0.0030	0.0023	0.0020	---	---	---	---
Fe	mg/L	0.49	0.21	0.24	0.12	0.12	0.09	---	---	---	---
K	mg/L	12.7	3.49	2.72	2.24	2.24	1.80	---	---	---	---
Li	mg/L	0.001	0.001	0.001	0.001	0.001	0.001	---	---	---	---
Mg	mg/L	11.4	6.86	9.21	12.3	17.1	16.7	---	---	---	---
Mn	mg/L	0.00579	0.00926	0.0130	0.0153	0.0293	0.0337	---	---	---	---
Mo	mg/L	0.0823	0.0290	0.0173	0.00811	0.00853	0.00628	---	---	---	---
Na	mg/L	221	57.1	14.5	5.48	3.93	2.39	---	---	---	---
Ni	mg/L	0.016	0.0031	0.0004	0.0010	0.0011	0.0006	---	---	---	---
Pb	mg/L	0.00004	0.00004	0.00002	< 0.00002	< 0.00002	< 0.00002	---	---	---	---
Sb	mg/L	0.0080	0.0043	0.0047	0.0039	0.0046	0.0048	---	---	---	---
Se	mg/L	0.002	0.001	0.004	0.001	< 0.001	< 0.001	---	---	---	---
Sn	mg/L	0.00477	0.00323	0.0013	0.00055	0.00068	0.00050	---	---	---	---
Sr	mg/L	1.85	0.936	1.09	1.38	1.73	1.71	---	---	---	---
Ti	mg/L	0.0003	< 0.0001	< 0.0001	0.0003	0.0005	0.0002	---	---	---	---
Tl	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---
U	mg/L	0.000179	0.000104	0.000170	0.000056	0.000051	0.000066	---	---	---	---
V	mg/L	0.00016	0.00033	0.00027	0.00012	0.00014	0.00011	---	---	---	---
W	mg/L	0.00059	0.00347	0.00035	0.00080	0.00215	0.00228	---	---	---	---
Y	mg/L	0.000008	0.000037	0.000006	0.000003	0.000005	0.000009	---	---	---	---
Zn	mg/L	0.003	0.001	< 0.001	< 0.001	0.001	0.001	---	---	---	---

Test Specimen

Sample	Weight (g)
Sulphide Comp Tls	1000

Analysis of Weekly Humidity Cell Le

Parameter	Units	10	11	12	13	14	15	16	17	18	19
LIMS		10051-DEC09	11199-DEC09	11232-DEC09	10001-JAN10	10026-JAN10	10051-JAN10	10076-JAN10	10001-FEB10	10026-FEB10	10055-FEB10
Hum Cell Leachate Vo	mLs	860	875	854	823	844	883	841	882	865	821
pH	units	7.61	7.70	8.08	8.05	7.97	7.77	8.06	8.14	8.07	*7.76
Conductivity	µS/cm	81	82	93	106	96	104	100	115	106	*90
Acidity	mg/L as $CaCO_3$	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Alkalinity	mg/L as $CaCO_3$	31	31	32	37	30	36	34	38	36	*30
SO_4	mg/L	9.8	13	13	18	14	15	12	16	16	*12
Hg	mg/L	< 0.0001	---	---	---	---	< 0.0001	---	---	---	---
Ag	mg/L	< 0.00001	---	---	---	---	< 0.00001	---	---	---	---
Al	mg/L	0.02	---	---	---	---	0.02	---	---	---	---
As	mg/L	0.0003	---	---	---	---	< 0.0002	---	---	---	---
B	mg/L	0.0047	---	---	---	---	0.0009	---	---	---	---
Ba	mg/L	0.0338	---	---	---	---	0.0277	---	---	---	---
Bi	mg/L	< 0.00001	---	---	---	---	0.00002	---	---	---	---
Be	mg/L	< 0.00002	---	---	---	---	< 0.00002	---	---	---	---
Ca	mg/L	9.30	---	---	---	---	10.4	---	---	---	---
Cd	mg/L	< 0.000003	---	---	---	---	0.000003	---	---	---	---
Co	mg/L	0.000256	---	---	---	---	0.000439	---	---	---	---
Cr	mg/L	< 0.0005	---	---	---	---	< 0.0005	---	---	---	---
Cu	mg/L	0.0020	---	---	---	---	0.0015	---	---	---	---
Fe	mg/L	0.01	---	---	---	---	0.02	---	---	---	---
K	mg/L	0.29	---	---	---	---	0.32	---	---	---	---
Li	mg/L	< 0.001	---	---	---	---	< 0.001	---	---	---	---
Mg	mg/L	4.28	---	---	---	---	5.42	---	---	---	---
Mn	mg/L	0.0284	---	---	---	---	0.0321	---	---	---	---
Mo	mg/L	0.00141	---	---	---	---	0.00163	---	---	---	---
Na	mg/L	0.38	---	---	---	---	0.45	---	---	---	---
Ni	mg/L	0.0002	---	---	---	---	< 0.0001	---	---	---	---
Pb	mg/L	< 0.00002	---	---	---	---	0.00003	---	---	---	---
Sb	mg/L	0.0005	---	---	---	---	0.0006	---	---	---	---
Se	mg/L	< 0.001	---	---	---	---	< 0.001	---	---	---	---
Sn	mg/L	0.00020	---	---	---	---	0.00010	---	---	---	---
Sr	mg/L	0.322	---	---	---	---	0.277	---	---	---	---
Ti	mg/L	< 0.0001	---	---	---	---	< 0.0001	---	---	---	---
Tl	mg/L	< 0.0002	---	---	---	---	< 0.0002	---	---	---	---
U	mg/L	0.000009	---	---	---	---	0.000024	---	---	---	---
V	mg/L	0.00005	---	---	---	---	0.00006	---	---	---	---
W	mg/L	0.00010	---	---	---	---	0.00053	---	---	---	---
Y	mg/L	0.000002	---	---	---	---	0.000005	---	---	---	---
Zn	mg/L	< 0.001	---	---	---	---	< 0.001	---	---	---	---

**Reassay LIMS 10873-MAR10*

Test Specimen

Sample	Weight (g)
Sulphide Comp Tls	1000

Analysis of Weekly Humidity Cell Le

Parameter	Units	20	21	22	23	24	25	26	27	28	29	30
LIMS		10081-FEB10	10001-MAR10	10027-MAR10	10053-MAR10	10078-MAR10	10122-MAR10	10001-APR10	10028-APR10	11070-APR10	11094-APR10	10001-MAY10
Hum Cell Leachate Vo	mLs	854	884	990	996	946	847	893	818	812	828	801
pH	units	7.82	7.73	8.03	7.90	7.85	7.94	8.14	7.97	8.16	8.37	8.03
Conductivity	µS/cm	96	84	112	122	105	94	138	135	166	174	203
Acidity	mg/L as $CaCO_3$	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Alkalinity	mg/L as $CaCO_3$	30	26	38	40	34	32	48	44	56	68	80
SO_4	mg/L	14	12	13	16	14	12	19	18	22	22	21
Hg	mg/L	< 0.0001	---	---	---	---	< 0.0001	---	---	---	---	< 0.0001
Ag	mg/L	0.00002	---	---	---	---	< 0.00001	---	---	---	---	< 0.00001
Al	mg/L	< 0.01	---	---	---	---	0.01	---	---	---	---	< 0.01
As	mg/L	0.0002	---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
B	mg/L	0.0007	---	---	---	---	0.0007	---	---	---	---	0.0018
Ba	mg/L	0.0222	---	---	---	---	0.0172	---	---	---	---	0.0487
Bi	mg/L	0.00002	---	---	---	---	< 0.00001	---	---	---	---	< 0.00001
Be	mg/L	0.00002	---	---	---	---	< 0.00002	---	---	---	---	< 0.00002
Ca	mg/L	9.31	---	---	---	---	9.99	---	---	---	---	20.0
Cd	mg/L	0.000028	---	---	---	---	< 0.000003	---	---	---	---	0.000007
Co	mg/L	0.000343	---	---	---	---	0.000603	---	---	---	---	0.00115
Cr	mg/L	< 0.0005	---	---	---	---	< 0.0005	---	---	---	---	< 0.0005
Cu	mg/L	0.0015	---	---	---	---	0.0025	---	---	---	---	0.0017
Fe	mg/L	0.01	---	---	---	---	0.02	---	---	---	---	0.06
K	mg/L	0.28	---	---	---	---	0.31	---	---	---	---	0.70
Li	mg/L	< 0.001	---	---	---	---	< 0.001	---	---	---	---	< 0.001
Mg	mg/L	5.19	---	---	---	---	4.99	---	---	---	---	12.1
Mn	mg/L	0.0279	---	---	---	---	0.0224	---	---	---	---	0.0394
Mo	mg/L	0.00184	---	---	---	---	0.00266	---	---	---	---	0.00846
Na	mg/L	0.40	---	---	---	---	0.41	---	---	---	---	0.92
Ni	mg/L	< 0.0001	---	---	---	---	0.0002	---	---	---	---	0.0002
Pb	mg/L	0.00023	---	---	---	---	< 0.00002	---	---	---	---	0.00094
Sb	mg/L	0.0006	---	---	---	---	0.0011	---	---	---	---	0.0036
Se	mg/L	< 0.001	---	---	---	---	< 0.001	---	---	---	---	< 0.001
Sn	mg/L	0.00013	---	---	---	---	0.00004	---	---	---	---	0.00023
Sr	mg/L	0.220	---	---	---	---	0.220	---	---	---	---	0.510
Ti	mg/L	0.0004	---	---	---	---	< 0.0001	---	---	---	---	< 0.0001
Tl	mg/L	< 0.0002	---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
U	mg/L	0.000046	---	---	---	---	0.000024	---	---	---	---	0.000067
V	mg/L	0.00012	---	---	---	---	< 0.00003	---	---	---	---	0.00016
W	mg/L	0.00014	---	---	---	---	0.00156	---	---	---	---	0.00279
Y	mg/L	0.000032	---	---	---	---	0.000002	---	---	---	---	0.000006
Zn	mg/L	0.001	---	---	---	---	< 0.001	---	---	---	---	0.001

TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Test Specimen

Sample	Weight (g)
Sulphide Comp Tls	1000

Summary of ABA Test Data

Parameter	Units	Reference No.: 10178-SEP09
Sulphur (S)	%	0.689
Sulphide ($S^{=}$)	%	0.58
NP	t $CaCO_3$/1000 t	142
CO_3 NP	t $CaCO_3$/1000 t	146

Leachate Paremeters Measured | ***Acid Generation*** [1] | ***Acid Neutralization*** [1]

Weekly Leach No.	Volume Collected mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	SO_4 mg/L	SO_4 Production Rate g/t/wk	Cumulative SO_4 Production g/t	Weekly S= Depletion %	Cumulative S= Depletion %	NP Consumption $CaCO_3$, g/t/wk	Cumulative NP Depletion %	Cumulative CO_3 NP Depletion %
0	439	8.07	<2	51	1330	640	281.0	280.96	1.61	1.61	292.67	0.21	0.20
1	918	8.16	<2	63	368	110	101.0	381.94	0.58	2.20	105.19	0.28	0.27
2	798	8.54	<2	69	134	39	31.1	413.06	0.18	2.37	32.42	0.30	0.29
3	768	8.08	<2	75	204	31	23.8	436.87	0.14	2.51	24.80	0.32	0.31
4	809	8.18	<2	101	270	40	32.4	469.23	0.19	2.70	33.71	0.34	0.33
5	886	8.22	<2	109	266	33	29.2	498.47	0.17	2.86	30.46	0.37	0.36
6	915	7.90	<2	40	88	8.9	8.1	506.61	0.05	2.91	8.48	0.37	0.36
7	886	7.91	<2	56	143	18	15.9	522.56	0.09	3.00	16.61	0.38	0.37
8	866	7.67	<2	76	74	7.8	6.8	529.31	0.04	3.04	7.04	0.39	0.38
9	869	7.64	<2	28	73	8.1	7.0	536.35	0.04	3.08	7.33	0.39	0.38
10	860	7.61	<2	31	81	9.8	8.4	544.78	0.05	3.13	8.78	0.40	0.39
11	875	7.70	<2	31	82	13	11.4	556.16	0.07	3.20	11.85	0.41	0.40
12	854	8.08	<2	32	93	13	11.1	567.26	0.06	3.26	11.56	0.42	0.40
13	823	8.05	<2	37	106	18	14.8	582.07	0.09	3.35	15.43	0.43	0.42
14	844	7.97	<2	30	96	14	11.8	593.89	0.07	3.41	12.31	0.44	0.42
15	883	7.77	<2	36	104	15	13.2	607.13	0.08	3.49	13.80	0.45	0.43
16	841	8.06	<2	34	100	12	10.1	617.23	0.06	3.55	10.51	0.45	0.44
17	882	8.14	<2	38	115	16	14.1	631.34	0.08	3.63	14.70	0.46	0.45
18	865	8.07	<2	36	106	16	13.8	645.18	0.08	3.71	14.42	0.47	0.46
19	821	7.76	<2	30	90	12	9.9	655.03	0.06	3.76	10.26	0.48	0.47
20	854	7.82	<2	30	96	14	12.0	666.99	0.07	3.83	12.45	0.49	0.48

** Initial Week 0 leachate may included soluble sulphate, and may not indicate oxidation of sulphide in the sample material has occurred.*

[1] *Calculated values*

Summary - Weeks 0 to 20

Maximum Value	8.54	<2	109	1330	640	281.0	-	1.61	-	293	-	-
Minimum Value	7.61	<2	28	73	7.8	6.8	-	0.04	-	7.0	-	-
Average Value	7.92	<2	49	191	52	31.8	-	0.18	-	33.08	-	-

TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Test Specimen

Sample	Weight (g)
Sulphide Comp Tls	1000

Changes to Head Sample after 20 Weeks [1]

Parameter	Units	Reference No.: 10178-SEP09
Sulphide ($S^{=}$) Remaining	%	0.56
NP Remaining	t $CaCO_3$/1000 t	141
CO_3 NP Remaining	t $CaCO_3$/1000 t	145

Leachate Paremeters Measured

Weekly Leach No.	Volume Collected mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	SO_4 mg/L
21	884	7.73	<2	26	84	12
22	990	8.03	<2	38	112	13
23	996	7.90	<2	40	122	16
24	946	7.85	<2	34	105	14
25	847	7.94	<2	32	94	12
26	893	8.14	<2	48	138	19
27	818	7.97	<2	44	135	18
28	812	8.16	<2	56	166	22
29	828	8.37	<2	68	174	22
30	801	8.03	<2	80	203	21

Acid Generation [1]

SO_4 Production Rate g/t/wk	Cumulative SO_4 Production g/t	Weekly S= Depletion %	Cumulative S= Depletion %
10.6	677.59	0.06	3.89
12.9	690.46	0.07	3.97
15.9	706.40	0.09	4.06
13.2	719.64	0.08	4.14
10.2	729.81	0.06	4.19
17.0	746.77	0.10	4.29
14.7	761.50	0.08	4.38
17.9	779.36	0.10	4.48
18.2	797.58	0.10	4.58
16.8	814.40	0.10	4.68

Acid Neutralization [1]

NP Consumption $CaCO_3$, g/t/wk	Cumulative NP Depletion %	Cumulative CO_3 NP Depletion %
11.05	0.50	0.48
13.41	0.51	0.49
16.60	0.52	0.50
13.80	0.53	0.51
10.59	0.54	0.52
17.67	0.55	0.53
15.34	0.56	0.54
18.61	0.57	0.56
18.98	0.59	0.57
17.52	0.60	0.58

[1] *Calculated values*

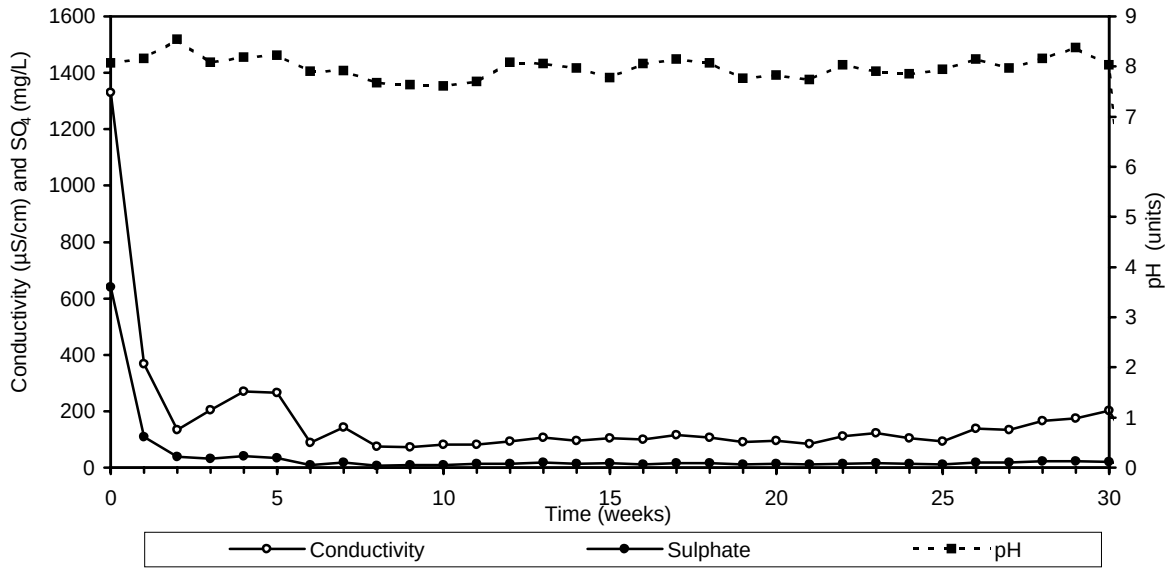
Summary - Weeks 0 to 40

Maximum Value	8.54	<2	109	1330	640	280.96	-	0.10	-	293	-	-
Minimum Value	7.61	<2	26	73	7.8	6.75	-	0.04	-	7.0	-	-
Average Value	7.94	<2	48	173	41	26.27	-	0.15	-	27.37	-	-

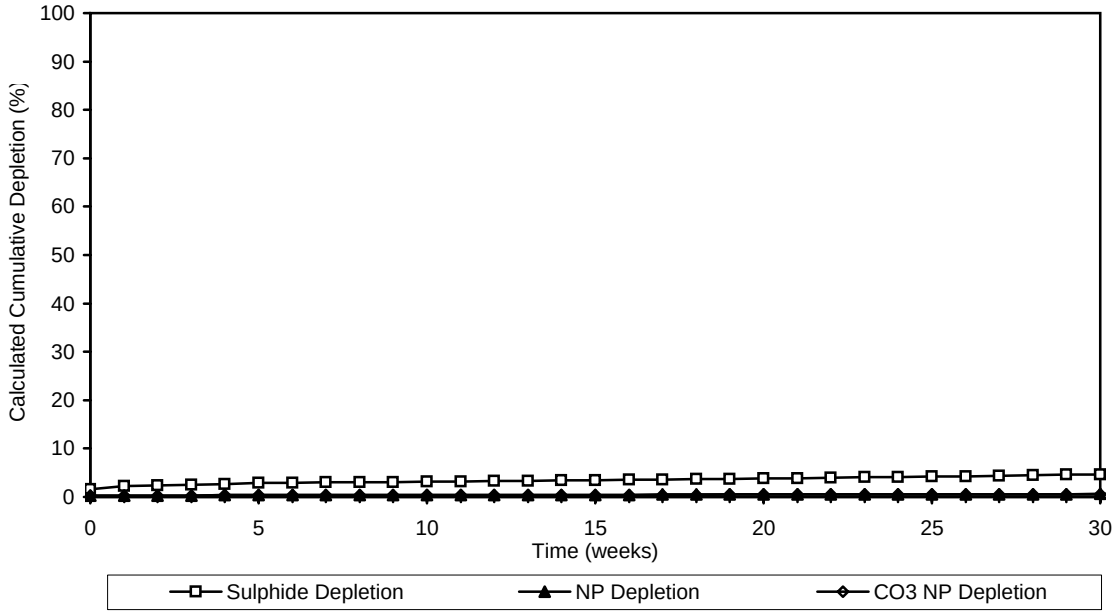
TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Conductivity, Sulphate, and pH in Weekly Humidity Cell Leachate Sulphide Comp Tls



Cumulative Sulphide and NP Depletion Sulphide Comp Tls

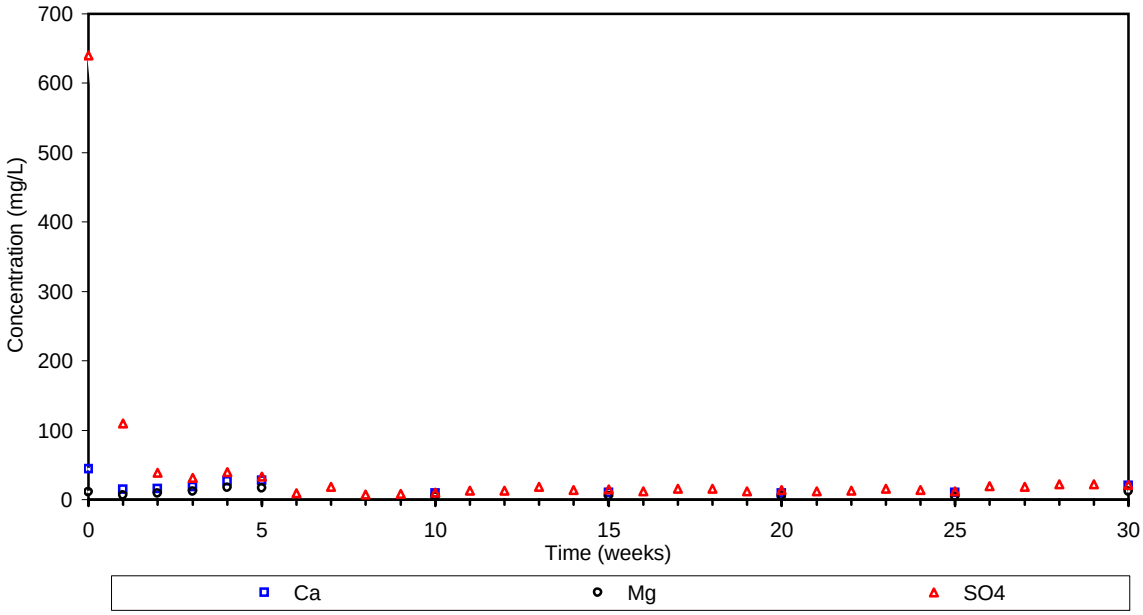


Note: NP depletion calculated based on sulphate assay.

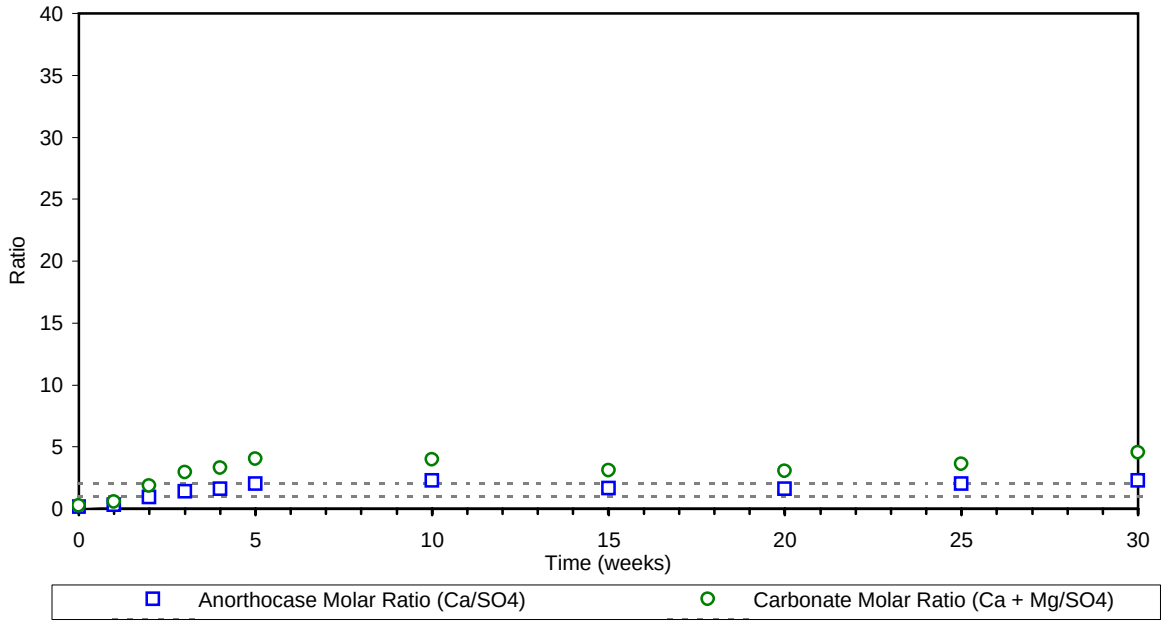
TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Selected Parameters in Weekly Humidity Cell Leachate Sulphide Comp Tls



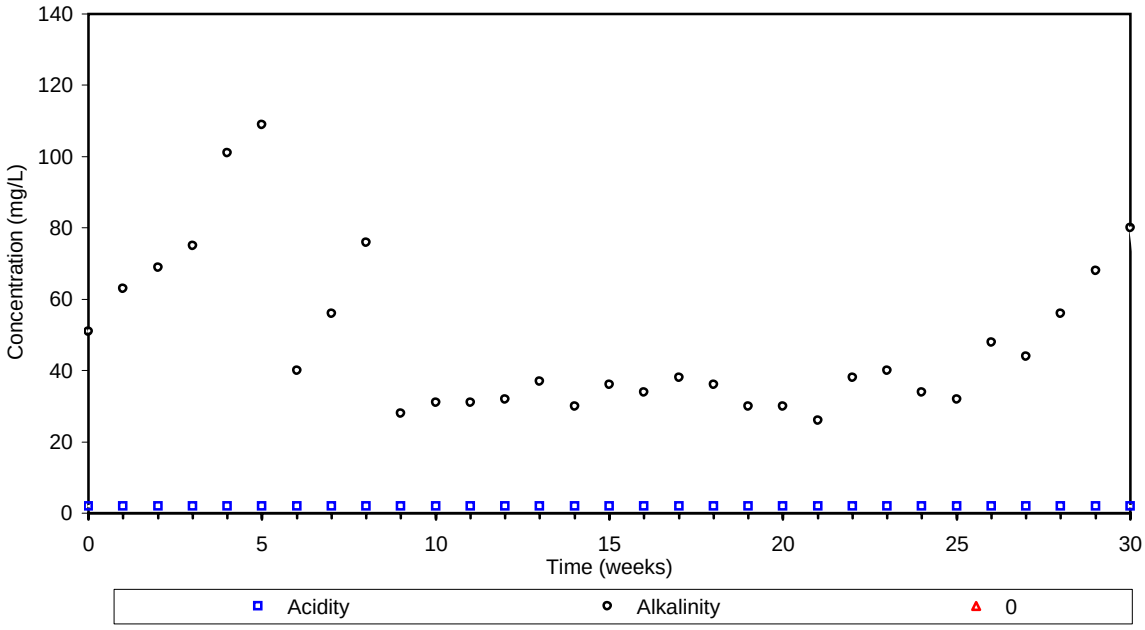
Carbonate (Ca + Mg/SO $_4$) and Anorthoclase (Ca/SO $_4$) Molar Ratio Sulphide Comp Tls



TEST REPORT

Humidity Cell Test (ASTM D 5744-96)

Selected Parameters in Weekly Humidity Cell Leachate Sulphide Comp Tls



Note: Acidity and alkalinity have detection limit of 2 mg/L.

Appendix E – Humidity Cell Certificates of Analysis

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Tuesday, October 20, 2009

Date Rec. : 06 October 2009
LR Report: **CA11043-OCT09**
Reference: WK#0

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#0	6: Sulphide Comp Tls Wk#0
Sample Date & Time			06-Oct-09	06-Oct-09
Hum Cell Leachate Volume [mLs]	---	---	333	439
pH [no unit]	07-Oct-09	14:01	8.07	8.07
Conductivity [uS/cm]	07-Oct-09	14:01	1130	1330
Acidity [mg/L as CaCO3]	07-Oct-09	14:01	< 2	< 2
Alkalinity [mg/L as CaCO3]	07-Oct-09	14:01	54	51
Sulphate [mg/L]	09-Oct-09	11:34	480	640
Mercury [mg/L]	08-Oct-09	12:59	0.0001	0.0006
Silver [mg/L]	13-Oct-09	07:54	0.00149	0.0107
Aluminum [mg/L]	13-Oct-09	07:54	0.06	0.03
Arsenic [mg/L]	13-Oct-09	07:54	0.0014	0.0018
Boron [mg/L]	13-Oct-09	07:54	0.0056	0.0109
Barium [mg/L]	13-Oct-09	07:54	0.0263	0.0963
Bismuth [mg/L]	13-Oct-09	07:54	< 0.00001	< 0.00001
Beryllium [mg/L]	13-Oct-09	07:54	< 0.00002	< 0.00002
Calcium [mg/L]	13-Oct-09	07:54	55.6	44.5
Cadmium [mg/L]	13-Oct-09	07:54	0.000009	0.000023
Cobalt [mg/L]	13-Oct-09	07:54	0.0708	0.0162
Chromium [mg/L]	13-Oct-09	07:54	0.0217	0.0007
Copper [mg/L]	13-Oct-09	07:54	0.0186	1.68
Iron [mg/L]	13-Oct-09	07:54	0.11	0.49
Potassium [mg/L]	13-Oct-09	07:54	5.36	12.7
Lithium [mg/L]	13-Oct-09	07:54	< 0.001	0.001
Magnesium [mg/L]	13-Oct-09	07:54	0.694	11.4
Manganese [mg/L]	13-Oct-09	07:54	0.00238	0.00579
Molybdenum [mg/L]	13-Oct-09	07:54	0.0322	0.0823
Sodium [mg/L]	13-Oct-09	15:21	191	221
Nickel [mg/L]	13-Oct-09	07:54	0.0018	0.0160
Lead [mg/L]	13-Oct-09	07:54	0.00007	0.00004
Antimony [mg/L]	13-Oct-09	07:54	0.0024	0.0080

SGS Lakefield Research Limited
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Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

LR Report : **CA11043-OCT09**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#0	6: Sulphide Comp Tls Wk#0
Selenium [mg/L]	13-Oct-09	07:54	0.003	0.002
Tin [mg/L]	13-Oct-09	07:54	0.00263	0.00477
Strontium [mg/L]	13-Oct-09	07:54	0.0748	1.85
Titanium [mg/L]	13-Oct-09	07:54	0.0004	0.0003
Thallium [mg/L]	13-Oct-09	07:54	< 0.0002	< 0.0002
Uranium [mg/L]	13-Oct-09	07:54	0.000845	0.000179
Vanadium [mg/L]	13-Oct-09	07:54	0.00004	0.00016
Tungsten [mg/L]	13-Oct-09	07:54	0.0649	0.00059
Yttrium [mg/L]	13-Oct-09	07:54	0.000008	0.000008
Zinc [mg/L]	13-Oct-09	07:54	0.002	0.003

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Tuesday, October 27, 2009

Date Rec. : 13 October 2009
LR Report: **CA11046-OCT09**
Reference: WK#1

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#1	6: Sulphide Comp Tls Wk#1
Sample Date & Time			13-Oct-09	13-Oct-09
Hum Cell Leachate Volume [mLs]	---	---	940	918
pH [no unit]	20-Oct-09	10:11	8.22	8.16
Conductivity [uS/cm]	20-Oct-09	10:11	1400	368
Acidity [mg/L as CaCO3]	20-Oct-09	10:11	< 2	< 2
Alkalinity [mg/L as CaCO3]	20-Oct-09	10:11	125	63
Sulphate [mg/L]	23-Oct-09	13:24	550	110
Mercury [mg/L]	22-Oct-09	14:17	< 0.0001	< 0.0001
Silver [mg/L]	22-Oct-09	12:19	0.00006	0.00211
Aluminum [mg/L]	25-Oct-09	14:27	0.01	0.04
Arsenic [mg/L]	22-Oct-09	12:19	0.0017	0.0012
Boron [mg/L]	22-Oct-09	12:19	0.0144	0.0114
Barium [mg/L]	22-Oct-09	12:19	0.0280	0.0735
Bismuth [mg/L]	22-Oct-09	12:19	< 0.00001	< 0.00001
Beryllium [mg/L]	22-Oct-09	12:19	< 0.00002	< 0.00002
Calcium [mg/L]	25-Oct-09	14:27	67.6	15.0
Cadmium [mg/L]	22-Oct-09	12:19	0.000073	0.000024
Cobalt [mg/L]	22-Oct-09	12:19	0.101	0.00680
Chromium [mg/L]	22-Oct-09	12:19	0.0329	0.0005
Copper [mg/L]	22-Oct-09	12:19	0.0181	0.0948
Iron [mg/L]	25-Oct-09	14:27	0.13	0.21
Potassium [mg/L]	25-Oct-09	14:27	6.25	3.49
Lithium [mg/L]	22-Oct-09	12:19	< 0.001	0.001
Magnesium [mg/L]	25-Oct-09	14:27	1.13	6.86
Manganese [mg/L]	22-Oct-09	12:19	0.00451	0.00926
Molybdenum [mg/L]	22-Oct-09	12:19	0.103	0.0290
Sodium [mg/L]	25-Oct-09	14:27	219	57.1
Nickel [mg/L]	22-Oct-09	12:19	0.0029	0.0031
Lead [mg/L]	22-Oct-09	12:19	0.00003	0.00004
Antimony [mg/L]	22-Oct-09	12:19	0.0031	0.0043
Selenium [mg/L]	22-Oct-09	12:19	0.004	0.001
Tin [mg/L]	22-Oct-09	12:19	0.00122	0.00323
Strontium [mg/L]	25-Oct-09	14:27	0.0913	0.936

SGS Lakefield Research Limited
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Project : CALR-12088-003

LR Report : **CA11046-OCT09**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#1	6: Sulphide Comp Tls Wk#1
Titanium [mg/L]	22-Oct-09	12:19	0.0002	< 0.0001
Thallium [mg/L]	22-Oct-09	12:19	< 0.0002	< 0.0002
Uranium [mg/L]	22-Oct-09	12:19	0.00159	0.000104
Vanadium [mg/L]	22-Oct-09	12:19	0.00005	0.00033
Tungsten [mg/L]	22-Oct-09	12:19	0.172	0.00347
Yttrium [mg/L]	22-Oct-09	12:19	0.000030	0.000037
Zinc [mg/L]	22-Oct-09	12:19	0.001	0.001

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Thursday, November 12, 2009

Date Rec. : 20 October 2009
LR Report: **CA11056-OCT09**
Reference: WK#2

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#2	6: Sulphide Comp Tls Wk#2
Sample Date & Time			20-Oct-09	20-Oct-09
Hum Cell Leachate Volume [mLs]	---	---	862	798
pH [no unit]	11-Nov-09	10:20	7.84	8.54
Conductivity [uS/cm]	11-Nov-09	10:20	80	134
Acidity [mg/L as CaCO3]	11-Nov-09	10:20	< 2	< 2
Alkalinity [mg/L as CaCO3]	11-Nov-09	10:20	26	69
Sulphate [mg/L]	30-Oct-09	17:38	11	39
Mercury [mg/L]	26-Oct-09	18:02	< 0.0001	< 0.0001
Silver [mg/L]	27-Oct-09	09:41	< 0.00001	0.00023
Aluminum [mg/L]	27-Oct-09	09:41	0.04	0.06
Arsenic [mg/L]	27-Oct-09	09:41	< 0.0002	0.0008
Boron [mg/L]	27-Oct-09	09:41	0.0029	0.0299
Barium [mg/L]	27-Oct-09	09:41	0.00251	0.0962
Bismuth [mg/L]	27-Oct-09	09:41	< 0.00001	< 0.00001
Beryllium [mg/L]	27-Oct-09	09:41	< 0.00002	< 0.00002
Calcium [mg/L]	27-Oct-09	09:41	4.90	15.4
Cadmium [mg/L]	27-Oct-09	09:41	0.000016	0.000015
Cobalt [mg/L]	27-Oct-09	09:41	0.00749	0.00290
Chromium [mg/L]	27-Oct-09	09:41	0.0018	0.0007
Copper [mg/L]	27-Oct-09	09:41	0.0028	0.0055
Iron [mg/L]	27-Oct-09	09:41	0.02	0.24
Potassium [mg/L]	27-Oct-09	09:41	0.69	2.72
Lithium [mg/L]	27-Oct-09	09:41	< 0.001	0.001
Magnesium [mg/L]	27-Oct-09	09:41	0.079	9.21
Manganese [mg/L]	27-Oct-09	09:41	0.00288	0.0130
Molybdenum [mg/L]	27-Oct-09	09:41	0.0185	0.0173
Sodium [mg/L]	27-Oct-09	09:41	9.75	14.5
Nickel [mg/L]	27-Oct-09	09:41	0.0006	0.0004
Lead [mg/L]	27-Oct-09	09:41	< 0.00002	0.00002
Antimony [mg/L]	27-Oct-09	09:41	0.0009	0.0047

SGS Lakefield Research Limited
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Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

LR Report : **CA11056-OCT09**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#2	6: Sulphide Comp Tls Wk#2
Selenium [mg/L]	27-Oct-09	09:41	< 0.001	0.004
Tin [mg/L]	27-Oct-09	09:41	0.00019	0.0013
Strontium [mg/L]	27-Oct-09	09:41	0.0064	1.09
Titanium [mg/L]	27-Oct-09	09:41	0.0003	< 0.0001
Thallium [mg/L]	27-Oct-09	09:41	< 0.0002	< 0.0002
Uranium [mg/L]	27-Oct-09	09:41	0.000089	0.000170
Vanadium [mg/L]	27-Oct-09	09:41	0.00030	0.00027
Tungsten [mg/L]	27-Oct-09	09:41	0.0618	0.00035
Yttrium [mg/L]	27-Oct-09	09:41	0.000006	0.000006
Zinc [mg/L]	27-Oct-09	09:41	< 0.001	< 0.001

Dianne Griffin
Project Specialist

OnLine LIMS

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Thursday, November 12, 2009

Date Rec. : 27 October 2009
LR Report: **CA11164-OCT09**
Reference: WK# 3

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 3	6: Sulphide Comp Tls Wk# 3
Sample Date & Time			27-Oct-09	27-Oct-09
Hum Cell Leachate Volume [mLs]	---	---	909	768
pH [no unit]	03-Nov-09	09:31	7.35	8.08
Conductivity [uS/cm]	03-Nov-09	09:31	33	204
Acidity [mg/L as CaCO3]	03-Nov-09	09:31	< 2	< 2
Alkalinity [mg/L as CaCO3]	03-Nov-09	09:31	13	75
Sulphate [mg/L]	02-Nov-09	15:52	2.6	31
Mercury [mg/L]	28-Oct-09	12:39	< 0.0001	< 0.0001
Silver [mg/L]	05-Nov-09	13:59	0.00001	0.00021
Aluminum [mg/L]	05-Nov-09	12:14	0.16	0.08
Arsenic [mg/L]	05-Nov-09	13:59	< 0.0002	0.0006
Boron [mg/L]	05-Nov-09	13:59	0.0007	0.0071
Barium [mg/L]	05-Nov-09	13:59	0.00197	0.118
Bismuth [mg/L]	05-Nov-09	13:59	< 0.00001	< 0.00001
Beryllium [mg/L]	05-Nov-09	13:59	< 0.00002	< 0.00002
Calcium [mg/L]	05-Nov-09	12:14	3.90	18.1
Cadmium [mg/L]	05-Nov-09	13:59	< 0.000003	< 0.000003
Cobalt [mg/L]	05-Nov-09	13:59	0.00194	0.00173
Chromium [mg/L]	05-Nov-09	13:59	< 0.0005	< 0.0005
Copper [mg/L]	05-Nov-09	13:59	0.0018	0.0030
Iron [mg/L]	05-Nov-09	12:15	0.13	0.12
Potassium [mg/L]	05-Nov-09	12:15	0.34	2.24
Lithium [mg/L]	05-Nov-09	13:59	< 0.001	0.001
Magnesium [mg/L]	05-Nov-09	12:16	0.054	12.3
Manganese [mg/L]	05-Nov-09	13:59	0.00079	0.0153
Molybdenum [mg/L]	05-Nov-09	13:59	0.00402	0.00811
Sodium [mg/L]	05-Nov-09	12:16	2.67	5.48
Nickel [mg/L]	05-Nov-09	13:59	0.0005	0.0010
Lead [mg/L]	05-Nov-09	13:59	0.00003	< 0.00002
Antimony [mg/L]	05-Nov-09	13:59	0.0003	0.0039

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Project : CALR-12088-003

LR Report : **CA11164-OCT09**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 3	6: Sulphide Comp Tls Wk# 3
Selenium [mg/L]	05-Nov-09	13:59	< 0.001	0.001
Tin [mg/L]	05-Nov-09	13:59	0.00012	0.00055
Strontium [mg/L]	05-Nov-09	12:16	0.0046	1.38
Titanium [mg/L]	05-Nov-09	13:59	0.0009	0.0003
Thallium [mg/L]	05-Nov-09	13:59	< 0.0002	< 0.0002
Uranium [mg/L]	05-Nov-09	13:59	0.000002	0.000056
Vanadium [mg/L]	05-Nov-09	13:59	0.00046	0.00012
Tungsten [mg/L]	05-Nov-09	13:59	0.0225	0.00080
Yttrium [mg/L]	05-Nov-09	13:59	0.000006	0.000003
Zinc [mg/L]	05-Nov-09	13:59	< 0.001	< 0.001

Dianne Griffin
Project Specialist

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Friday, November 13, 2009

Date Rec. : 03 November 2009
LR Report: **CA10005-NOV09**
Reference: WK# 4

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 4	6: Sulphide Comp Tls Wk# 4
Sample Date & Time			03-Nov-09	03-Nov-09
Hum Cell Leachate Volume [mLs]	---	---	733	809
pH [no unit]	06-Nov-09	08:29	7.95	8.18
Conductivity [uS/cm]	06-Nov-09	08:29	130	270
Acidity [mg/L as CaCO3]	06-Nov-09	08:29	< 2	< 2
Alkalinity [mg/L as CaCO3]	06-Nov-09	08:29	50	101
Sulphate [mg/L]	12-Nov-09	09:18	20	40
Mercury [mg/L]	07-Nov-09	10:43	< 0.0001	< 0.0001
Silver [mg/L]	09-Nov-09	09:35	0.00001	0.00001
Aluminum [mg/L]	06-Nov-09	10:57	0.09	0.05
Arsenic [mg/L]	09-Nov-09	09:35	0.0002	0.0005
Boron [mg/L]	09-Nov-09	09:35	0.0034	0.0070
Barium [mg/L]	09-Nov-09	09:35	0.00541	0.150
Bismuth [mg/L]	09-Nov-09	09:35	0.00003	< 0.00001
Beryllium [mg/L]	09-Nov-09	09:35	< 0.00002	< 0.00002
Calcium [mg/L]	06-Nov-09	10:57	15.1	26.8
Cadmium [mg/L]	09-Nov-09	09:36	0.000010	< 0.000003
Cobalt [mg/L]	09-Nov-09	09:36	0.0102	0.00189
Chromium [mg/L]	09-Nov-09	09:36	0.0026	< 0.0005
Copper [mg/L]	09-Nov-09	09:36	0.0038	0.0023
Iron [mg/L]	06-Nov-09	10:57	0.07	0.12
Potassium [mg/L]	06-Nov-09	10:57	1.16	2.24
Lithium [mg/L]	09-Nov-09	09:36	< 0.001	0.001
Magnesium [mg/L]	06-Nov-09	10:58	0.265	17.1
Manganese [mg/L]	09-Nov-09	09:36	0.00187	0.0293
Molybdenum [mg/L]	09-Nov-09	09:36	0.0197	0.00853
Sodium [mg/L]	06-Nov-09	10:58	14.8	3.93
Nickel [mg/L]	09-Nov-09	09:36	0.0008	0.0011
Lead [mg/L]	09-Nov-09	09:36	0.00004	< 0.00002
Antimony [mg/L]	09-Nov-09	09:36	0.0014	0.0046

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Project : CALR-12088-003

LR Report : **CA10005-NOV09**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 4	6: Sulphide Comp Tls Wk# 4
Selenium [mg/L]	09-Nov-09	09:36	0.001	< 0.001
Tin [mg/L]	09-Nov-09	09:36	0.00030	0.00068
Strontium [mg/L]	06-Nov-09	10:58	0.0198	1.73
Titanium [mg/L]	09-Nov-09	09:36	0.0011	0.0005
Thallium [mg/L]	09-Nov-09	09:36	< 0.0002	< 0.0002
Uranium [mg/L]	09-Nov-09	09:36	0.000231	0.000051
Vanadium [mg/L]	09-Nov-09	09:36	0.00042	0.00014
Tungsten [mg/L]	09-Nov-09	09:36	0.0666	0.00215
Yttrium [mg/L]	09-Nov-09	09:36	< 0.000001	0.000005
Zinc [mg/L]	09-Nov-09	09:36	< 0.001	0.001

Dianne Griffin
Project Specialist

OnLine LIMS

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Wednesday, November 18, 2009

Date Rec. : 10 November 2009
LR Report: **CA11041-NOV09**
Reference: WK# 5

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 5	6: Sulphide Comp Tls Wk# 5
Sample Date & Time			10-Nov-09	10-Nov-09
Hum Cell Leachate Volume [mLs]	---	---	880	886
pH [no unit]	12-Nov-09	14:27	7.76	8.22
Conductivity [uS/cm]	12-Nov-09	14:27	85	266
Acidity [mg/L as CaCO3]	12-Nov-09	14:27	< 2	< 2
Alkalinity [mg/L as CaCO3]	12-Nov-09	14:27	34	109
Sulphate [mg/L]	13-Nov-09	11:39	7.4	33
Mercury [mg/L]	17-Nov-09	10:14	< 0.0001	< 0.0001
Silver [mg/L]	13-Nov-09	16:10	< 0.00001	< 0.00001
Aluminum [mg/L]	14-Nov-09	15:46	0.05	0.03
Arsenic [mg/L]	13-Nov-09	16:10	0.0003	0.0004
Boron [mg/L]	13-Nov-09	16:10	0.0035	0.0060
Barium [mg/L]	13-Nov-09	16:10	0.00387	0.163
Bismuth [mg/L]	13-Nov-09	16:10	< 0.00001	< 0.00001
Beryllium [mg/L]	13-Nov-09	16:10	< 0.00002	< 0.00002
Calcium [mg/L]	14-Nov-09	15:46	9.68	27.7
Cadmium [mg/L]	13-Nov-09	16:10	0.000005	< 0.000003
Cobalt [mg/L]	13-Nov-09	16:10	0.00565	0.00164
Chromium [mg/L]	13-Nov-09	16:10	0.0012	< 0.0005
Copper [mg/L]	13-Nov-09	16:10	0.0024	0.0020
Iron [mg/L]	14-Nov-09	15:46	0.03	0.09
Potassium [mg/L]	14-Nov-09	15:46	0.81	1.80
Lithium [mg/L]	13-Nov-09	16:11	< 0.001	0.001
Magnesium [mg/L]	14-Nov-09	15:46	0.186	16.7
Manganese [mg/L]	13-Nov-09	16:11	0.00189	0.0337
Molybdenum [mg/L]	13-Nov-09	16:11	0.0128	0.00628
Sodium [mg/L]	14-Nov-09	15:46	7.46	2.39
Nickel [mg/L]	13-Nov-09	16:11	0.0003	0.0006
Lead [mg/L]	13-Nov-09	16:11	< 0.00002	< 0.00002
Antimony [mg/L]	13-Nov-09	16:11	0.0009	0.0048

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Project : CALR-12088-003

LR Report : **CA11041-NOV09**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 5	6: Sulphide Comp Tls Wk# 5
Selenium [mg/L]	13-Nov-09	16:11	< 0.001	< 0.001
Tin [mg/L]	13-Nov-09	16:11	0.00010	0.00050
Strontium [mg/L]	14-Nov-09	15:46	0.0132	1.71
Titanium [mg/L]	13-Nov-09	16:11	0.0004	0.0002
Thallium [mg/L]	13-Nov-09	16:11	< 0.0002	< 0.0002
Uranium [mg/L]	13-Nov-09	16:11	0.000102	0.000066
Vanadium [mg/L]	13-Nov-09	16:11	0.00037	0.00011
Tungsten [mg/L]	13-Nov-09	16:11	0.0567	0.00228
Yttrium [mg/L]	13-Nov-09	16:11	0.000007	0.000009
Zinc [mg/L]	13-Nov-09	16:11	< 0.001	0.001

Dianne Griffin
Project Specialist

OnLine LIMS

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Thursday, November 19, 2009

Date Rec. : 17 November 2009
LR Report: **CA11122-NOV09**
Reference: WK#6

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#6	6: Sulphide Comp Tls Wk#6
Sample Date & Time			17-Nov-09	17-Nov-09
Hum Cell Leachate Volume [mLs]	---	---	982	915
pH [no unit]	19-Nov-09	09:36	7.39	7.90
Conductivity [uS/cm]	19-Nov-09	09:36	24	88
Acidity [mg/L as CaCO3]	19-Nov-09	09:36	< 2	< 2
Alkalinity [mg/L as CaCO3]	19-Nov-09	09:36	10	40
Sulphate [mg/L]	19-Nov-09	12:33	2.0	8.9

Dianne Griffin
Project Specialist

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Tuesday, December 01, 2009

Date Rec. : 24 November 2009
LR Report: **CA11143-NOV09**
Reference: WK#7

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#7	6: Sulphide Comp Tls Wk#7
Sample Date & Time			24-Nov-09	24-Nov-09
Hum Cell Leachate Volume [mLs]	---	---	865	886
pH [no unit]	25-Nov-09	12:13	7.17	7.91
Conductivity [uS/cm]	25-Nov-09	12:13	21	143
Acidity [mg/L as CaCO3]	25-Nov-09	12:13	< 2	< 2
Alkalinity [mg/L as CaCO3]	25-Nov-09	12:13	7	56
Sulphate [mg/L]	27-Nov-09	11:41	1.0	18

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Thursday, December 10, 2009

Date Rec. : 01 December 2009
LR Report: **CA10001-DEC09**
Reference: WK# 8

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 8	6: Sulphide Comp Tls Wk# 8
Sample Date & Time			01-Dec-09	01-Dec-09
Hum Cell Leachate Volume [mLs]	---	---	878	866
pH [no unit]	03-Dec-09	12:39	7.08	7.67
Conductivity [uS/cm]	03-Dec-09	12:39	15	74
Acidity [mg/L as CaCO3]	03-Dec-09	12:39	< 2	< 2
Alkalinity [mg/L as CaCO3]	03-Dec-09	12:39	5	76
Sulphate [mg/L]	10-Dec-09	11:35	0.8	7.8

Dianne Griffin
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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Friday, December 11, 2009

Date Rec. : 08 December 2009
LR Report: **CA10026-DEC09**
Reference: WK# 9

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 9	6: Sulphide Comp Tls Wk# 9
Sample Date & Time			08-Dec-09	08-Dec-09
HumCell Leachate Vol [mLs]	---	---	857	869
pH [units]	09-Dec-09	11:17	7.06	7.64
Conductivity [uS/cm]	09-Dec-09	11:17	16	73
Acidity [mg/L as CaCO3]	09-Dec-09	11:17	< 2	< 2
Alkalinity [mg/L as CaCO3]	09-Dec-09	11:17	5	28
SO4 [mg/L]	11-Dec-09	13:34	0.8	8.1

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Project Specialist

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Monday, December 21, 2009

Date Rec. : 15 December 2009
LR Report: **CA10051-DEC09**
Reference: WK# 10

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 10	6: Sulphide Comp Tls Wk# 10
Sample Date & Time			15-Dec-09	15-Dec-09
Hum Cell Leachate Volume [mLs]	---	---	865	860
pH [no unit]	17-Dec-09	11:26	6.98	7.61
Conductivity [uS/cm]	17-Dec-09	11:26	17	81
Acidity [mg/L as CaCO3]	17-Dec-09	11:26	< 2	< 2
Alkalinity [mg/L as CaCO3]	17-Dec-09	11:26	6	31
Sulphate [mg/L]	21-Dec-09	12:50	1.0	9.8
Mercury [mg/L]	17-Dec-09	13:47	< 0.0001	< 0.0001
Silver [mg/L]	17-Dec-09	13:42	0.00002	< 0.00001
Aluminum [mg/L]	21-Dec-09	10:37	0.03	0.02
Arsenic [mg/L]	17-Dec-09	13:42	0.0005	0.0003
Boron [mg/L]	17-Dec-09	13:42	0.0202	0.0047
Barium [mg/L]	17-Dec-09	13:42	0.00178	0.0338
Bismuth [mg/L]	17-Dec-09	13:42	< 0.00001	< 0.00001
Beryllium [mg/L]	17-Dec-09	13:42	< 0.00002	< 0.00002
Calcium [mg/L]	21-Dec-09	10:37	2.17	9.30
Cadmium [mg/L]	17-Dec-09	13:42	< 0.000003	< 0.000003
Cobalt [mg/L]	17-Dec-09	13:42	0.000776	0.000256
Chromium [mg/L]	17-Dec-09	13:42	< 0.0005	< 0.0005
Copper [mg/L]	17-Dec-09	13:42	0.0009	0.0020
Iron [mg/L]	21-Dec-09	10:37	0.04	0.01
Potassium [mg/L]	21-Dec-09	10:37	0.19	0.29
Lithium [mg/L]	17-Dec-09	13:42	< 0.001	< 0.001
Magnesium [mg/L]	21-Dec-09	10:37	0.059	4.28
Manganese [mg/L]	17-Dec-09	13:42	0.00211	0.0284
Molybdenum [mg/L]	17-Dec-09	13:42	0.00422	0.00141
Sodium [mg/L]	21-Dec-09	10:37	0.96	0.38
Nickel [mg/L]	17-Dec-09	13:42	0.0001	0.0002
Lead [mg/L]	17-Dec-09	13:42	0.00004	< 0.00002
Antimony [mg/L]	17-Dec-09	13:42	0.0002	0.0005

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Project : CALR-12088-003

LR Report : **CA10051-DEC09**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 10	6: Sulphide Comp Tls Wk# 10
Selenium [mg/L]	17-Dec-09	13:42	< 0.001	< 0.001
Tin [mg/L]	17-Dec-09	13:42	0.00006	0.00020
Strontium [mg/L]	21-Dec-09	10:37	0.0025	0.322
Titanium [mg/L]	17-Dec-09	13:42	0.0006	< 0.0001
Thallium [mg/L]	17-Dec-09	13:42	< 0.0002	< 0.0002
Uranium [mg/L]	17-Dec-09	13:42	0.000001	0.000009
Vanadium [mg/L]	17-Dec-09	13:42	0.00029	0.00005
Tungsten [mg/L]	17-Dec-09	13:42	0.00740	0.00010
Yttrium [mg/L]	17-Dec-09	13:42	0.000011	0.000002
Zinc [mg/L]	17-Dec-09	13:42	< 0.001	< 0.001

Dianne Griffin
Project Specialist

OnLine LIMS

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Tuesday, January 05, 2010

Date Rec. : 22 December 2009
LR Report: **CA11199-DEC09**
Reference: WK# 11

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 11	6: Sulphide Comp Tls Wk# 11
Sample Date & Time			22-Dec-09	22-Dec-09
Hum Cell Leachate Volume [mLs]	---	---	852	875
pH [no unit]	24-Dec-09	09:33	7.13	7.70
Conductivity [uS/cm]	24-Dec-09	09:33	14	82
Acidity [mg/L as CaCO3]	24-Dec-09	09:33	< 2	< 2
Alkalinity [mg/L as CaCO3]	24-Dec-09	09:33	6	31
Sulphate [mg/L]	30-Dec-09	13:22	0.9	13

Dianne Griffin
Project Specialist

OnLine LIMS

Project : CALR-12088-003

SGS Lakefield Research Limited
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Environmental Met
Attn : Barb Bowman

Tuesday, January 12, 2010

Date Rec. : 29 December 2009
LR Report: **CA11232-DEC09**
Reference: WK# 12

Copy: #2

CERTIFICATE OF ANALYSIS

Final Report - Reissue

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	6: Sulphide Comp Tls Wk# 12
Sample Date & Time			29-Dec-09
Hum Cell Leachate Volume [mLs]	---	---	854
pH [no unit]	08-Jan-10	15:40	8.08
Conductivity [uS/cm]	08-Jan-10	15:40	93
Acidity [mg/L as CaCO3]	08-Jan-10	15:40	< 2
Alkalinity [mg/L as CaCO3]	08-Jan-10	15:40	32
Sulphate [mg/L]	07-Jan-10	09:30	13

Please note: data not available for Oxide Comp Tls Wk# 12 due to laboratory error.

Dianne Griffin
Project Specialist

OnLine LIMS

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Tuesday, January 12, 2010

Date Rec. : 05 January 2010
LR Report: **CA10001-JAN10**
Reference: WK#13

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#13	6: Sulphide Comp Tls Wk#13
Sample Date & Time			05-Jan-10	05-Jan-10
Hum Cell Leachate Volume [mLs]	---	---	827	823
pH [no unit]	06-Jan-10	10:51	7.24	8.05
Conductivity [uS/cm]	06-Jan-10	10:51	20	106
Acidity [mg/L as CaCO3]	06-Jan-10	10:51	< 2	< 2
Alkalinity [mg/L as CaCO3]	06-Jan-10	10:51	7	37
Sulphate [mg/L]	07-Jan-10	15:40	0.8	18

Dianne Griffin
Project Specialist

OnLine LIMS

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Thursday, January 14, 2010

Date Rec. : 12 January 2010
LR Report: **CA10026-JAN10**
Reference: WK#14

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#14	6: Sulphide Comp Tls Wk#14
Sample Date & Time			12-Jan-10	12-Jan-10
Hum Cell Leachate Volume [mLs]	---	---	830	844
pH [no unit]	14-Jan-10	08:25	7.21	7.97
Conductivity [uS/cm]	14-Jan-10	08:25	17	96
Acidity [mg/L as CaCO3]	14-Jan-10	08:25	< 2	< 2
Alkalinity [mg/L as CaCO3]	14-Jan-10	08:25	7	30
Sulphate [mg/L]	13-Jan-10	15:48	0.7	14

Dianne Griffin
Project Specialist

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Project : CALR-12088-003

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Environmental Met
Attn : Barb Bowman

Tuesday, January 26, 2010

Date Rec. : 19 January 2010
LR Report: **CA10051-JAN10**
Reference: WK#15

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#15	6: Sulphide Comp Tls Wk#15
Sample Date & Time			19-Jan-09	19-Jan-09
Hum Cell Leachate Volume [mLs]	---	---	872	883
pH [no unit]	20-Jan-10	11:29	6.98	7.77
Conductivity [uS/cm]	20-Jan-10	11:29	15	104
Acidity [mg/L as CaCO3]	20-Jan-10	11:29	< 2	< 2
Alkalinity [mg/L as CaCO3]	20-Jan-10	11:29	6	36
Sulphate [mg/L]	25-Jan-10	13:13	0.7	15
Mercury [mg/L]	20-Jan-10	16:12	< 0.0001	< 0.0001
Silver [mg/L]	25-Jan-10	10:56	0.00001	< 0.00001
Aluminum [mg/L]	25-Jan-10	10:56	0.01	0.02
Arsenic [mg/L]	25-Jan-10	10:56	< 0.0002	< 0.0002
Boron [mg/L]	25-Jan-10	10:56	0.0005	0.0009
Barium [mg/L]	25-Jan-10	10:56	0.00071	0.0277
Bismuth [mg/L]	25-Jan-10	10:56	0.00004	0.00002
Beryllium [mg/L]	25-Jan-10	10:56	< 0.00002	< 0.00002
Calcium [mg/L]	25-Jan-10	10:56	1.99	10.4
Cadmium [mg/L]	25-Jan-10	10:56	0.000006	0.000003
Cobalt [mg/L]	25-Jan-10	10:56	0.000387	0.000439
Chromium [mg/L]	25-Jan-10	10:56	< 0.0005	< 0.0005
Copper [mg/L]	25-Jan-10	10:56	0.0006	0.0015
Iron [mg/L]	25-Jan-10	10:56	0.02	0.02
Potassium [mg/L]	25-Jan-10	10:56	0.16	0.32
Lithium [mg/L]	25-Jan-10	10:56	< 0.001	< 0.001
Magnesium [mg/L]	25-Jan-10	10:56	0.060	5.42
Manganese [mg/L]	25-Jan-10	10:56	0.00120	0.0321
Molybdenum [mg/L]	25-Jan-10	10:56	0.00163	0.00163
Sodium [mg/L]	25-Jan-10	10:56	0.69	0.45
Nickel [mg/L]	25-Jan-10	10:56	< 0.0001	< 0.0001
Lead [mg/L]	25-Jan-10	10:56	0.00005	0.00003
Antimony [mg/L]	25-Jan-10	10:56	0.0003	0.0006

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Project : CALR-12088-003

LR Report : **CA10051-JAN10**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#15	6: Sulphide Comp Tls Wk#15
Selenium [mg/L]	25-Jan-10	10:56	< 0.001	< 0.001
Tin [mg/L]	25-Jan-10	10:56	< 0.00001	0.00010
Strontium [mg/L]	25-Jan-10	10:56	0.0027	0.277
Titanium [mg/L]	25-Jan-10	10:56	0.0003	< 0.0001
Thallium [mg/L]	25-Jan-10	10:56	< 0.0002	< 0.0002
Uranium [mg/L]	25-Jan-10	10:56	0.000014	0.000024
Vanadium [mg/L]	25-Jan-10	10:56	0.00017	0.00006
Tungsten [mg/L]	25-Jan-10	10:56	0.00517	0.00053
Yttrium [mg/L]	25-Jan-10	10:56	0.000008	0.000005
Zinc [mg/L]	25-Jan-10	10:56	< 0.001	< 0.001

Dianne Griffin
Project Specialist

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Project : CALR-12088-003

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Environmental Met
Attn : Barb Bowman

Friday, January 29, 2010

Date Rec. : 26 January 2010
LR Report: **CA10076-JAN10**
Reference: WK#16

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#16	6: Sulphide Comp Tls Wk#16
Sample Date & Time			26-Jan-09	26-Jan-09
Hum Cell Leachate Volume [mLs]	---	---	843	841
pH [no unit]	27-Jan-10	14:05	7.12	8.06
Conductivity [uS/cm]	27-Jan-10	14:05	13	100
Acidity [mg/L as CaCO3]	27-Jan-10	14:05	< 2	< 2
Alkalinity [mg/L as CaCO3]	27-Jan-10	14:05	5	34
Sulphate [mg/L]	29-Jan-10	13:05	0.6	12

Dianne Griffin
Project Specialist

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Project : CALR-12088-003

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Environmental Met
Attn : Barb Bowman

Wednesday, February 10, 2010

Date Rec. : 02 February 2010
LR Report: **CA10001-FEB10**
Reference: WK#17

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#17	6: Sulphide Comp Tls Wk#17
Sample Date & Time			02-Feb-09	02-Feb-09
Hum Cell Leachate Volume [mLs]	---	---	877	882
pH [no unit]	03-Feb-10	12:29	7.45	8.14
Conductivity [uS/cm]	03-Feb-10	12:29	16	115
Acidity [mg/L as CaCO3]	03-Feb-10	12:29	< 2	< 2
Alkalinity [mg/L as CaCO3]	03-Feb-10	12:29	6	38
Sulphate [mg/L]	10-Feb-10	15:34	0.7	16

Dianne Griffin
Project Specialist

OnLine LIMS

Project : CALR-12088-003

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Environmental Met
Attn : Barb Bowman

Tuesday, February 16, 2010

Date Rec. : 09 February 2010
LR Report: **CA10026-FEB10**
Reference: WK#18

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#18	6: Sulphide Comp Tls Wk#18
Sample Date & Time			09-Feb-10	09-Feb-10
Hum Cell Leachate Volume [mLs]	---	---	852	865
pH [no unit]	10-Feb-10	12:10	7.06	8.07
Conductivity [uS/cm]	10-Feb-10	12:10	15	106
Acidity [mg/L as CaCO3]	10-Feb-10	12:10	< 2	< 2
Alkalinity [mg/L as CaCO3]	10-Feb-10	12:10	5	36
Sulphate [mg/L]	12-Feb-10	12:06	0.6	16

Dianne Griffin
Project Specialist

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Tuesday, February 23, 2010

Date Rec. : 16 February 2010
LR Report: **CA10055-FEB10**
Reference: WK#19

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#19	6: Sulphide Comp Tls Wk#19
Sample Date & Time			16-Feb-10	16-Feb-10
Hum Cell Leachate Volume [mLs]	---	---	824	821
pH [no unit]	19-Feb-10	13:21	8.13	8.12
Conductivity [uS/cm]	19-Feb-10	13:21	179	93
Acidity [mg/L as CaCO3]	19-Feb-10	13:21	< 2	< 2
Alkalinity [mg/L as CaCO3]	19-Feb-10	13:21	64	32
Sulphate [mg/L]	22-Feb-10	15:39	8.5	12

Dianne Griffin
Project Specialist

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Thursday, February 25, 2010

Date Rec. : 23 February 2010
LR Report: **CA10081-FEB10**
Reference: WK#20

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#20	6: Sulphide Comp Tls Wk#20
Sample Date & Time			23-Feb-10	23-Feb-10
Hum Cell Leachate Volume [mLs]	---	---	860	854
pH [no unit]	25-Feb-10	08:05	7.22	7.82
Conductivity [uS/cm]	25-Feb-10	08:05	21	96
Acidity [mg/L as CaCO3]	25-Feb-10	08:05	< 2	< 2
Alkalinity [mg/L as CaCO3]	25-Feb-10	08:05	8	30
Sulphate [mg/L]	25-Feb-10	13:00	0.5	14
Mercury [mg/L]	25-Feb-10	11:44	< 0.0001	< 0.0001
Silver [mg/L]	25-Feb-10	11:44	< 0.00001	0.00002
Aluminum [mg/L]	25-Feb-10	11:44	0.02	< 0.01
Arsenic [mg/L]	25-Feb-10	11:44	< 0.0002	0.0002
Boron [mg/L]	25-Feb-10	11:44	0.0007	0.0007
Barium [mg/L]	25-Feb-10	11:44	0.00097	0.0222
Bismuth [mg/L]	25-Feb-10	11:44	< 0.00001	0.00002
Beryllium [mg/L]	25-Feb-10	11:44	< 0.00002	0.00002
Calcium [mg/L]	25-Feb-10	11:44	2.88	9.31
Cadmium [mg/L]	25-Feb-10	11:44	< 0.000003	0.000028
Cobalt [mg/L]	25-Feb-10	11:44	0.00115	0.000343
Chromium [mg/L]	25-Feb-10	11:44	< 0.0005	< 0.0005
Copper [mg/L]	25-Feb-10	11:44	0.0015	0.0015
Iron [mg/L]	25-Feb-10	11:44	0.02	0.01
Potassium [mg/L]	25-Feb-10	11:44	0.20	0.28
Lithium [mg/L]	25-Feb-10	11:44	< 0.001	< 0.001
Magnesium [mg/L]	25-Feb-10	11:44	0.082	5.19
Manganese [mg/L]	25-Feb-10	11:44	0.00172	0.0279
Molybdenum [mg/L]	25-Feb-10	11:44	0.00258	0.00184
Sodium [mg/L]	25-Feb-10	11:44	0.59	0.40
Nickel [mg/L]	25-Feb-10	11:44	< 0.0001	< 0.0001
Lead [mg/L]	25-Feb-10	11:44	0.00025	0.00023
Antimony [mg/L]	25-Feb-10	11:44	0.0002	0.0006

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Project : CALR-12088-003

LR Report : **CA10081-FEB10**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#20	6: Sulphide Comp Tls Wk#20
Selenium [mg/L]	25-Feb-10	11:44	< 0.001	< 0.001
Tin [mg/L]	25-Feb-10	11:44	0.00004	0.00013
Strontium [mg/L]	25-Feb-10	11:44	0.0039	0.220
Titanium [mg/L]	25-Feb-10	11:44	0.0003	0.0004
Thallium [mg/L]	25-Feb-10	11:44	< 0.0002	< 0.0002
Uranium [mg/L]	25-Feb-10	11:44	0.000005	0.000046
Vanadium [mg/L]	25-Feb-10	11:44	0.00022	0.00012
Tungsten [mg/L]	25-Feb-10	11:44	0.00894	0.00014
Yttrium [mg/L]	25-Feb-10	11:44	0.000004	0.000032
Zinc [mg/L]	25-Feb-10	11:44	< 0.001	0.001

Dianne Griffin
Project Specialist

OnLine LIMS

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Project : CALR-12088-003

Environmental Met
Attn : Barb Bowman

Thursday, March 11, 2010

Date Rec. : 02 March 2010
LR Report: **CA10001-MAR10**
Reference: WK#21

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#21	6: Sulphide Comp Tls Wk#21
Sample Date & Time			02-Mar-10	02-Mar-10
Hum Cell Leachate Volume [mLs]	---	---	875	884
pH [no unit]	11-Mar-10	08:53	8.01	7.73
Conductivity [uS/cm]	11-Mar-10	08:53	120	84
Acidity [mg/L as CaCO3]	11-Mar-10	08:53	< 2	< 2
Alkalinity [mg/L as CaCO3]	11-Mar-10	08:53	49	26
Sulphate [mg/L]	08-Mar-10	15:07	3.0	12

Dianne Griffin
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Project : CALR-12088-003

Tuesday, March 16, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 09 March 2010
LR Report: **CA10027-MAR10**
Reference: WK#22

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#22	6: Sulphide Comp Tls Wk#22
Sample Date & Time			09-Mar-10	09-Mar-10
Hum Cell Leachate Volume [mLs]	---	---	827	990
pH [no unit]	11-Mar-10	10:07	8.09	8.03
Conductivity [uS/cm]	11-Mar-10	10:07	127	112
Acidity [mg/L as CaCO3]	11-Mar-10	10:07	< 2	< 2
Alkalinity [mg/L as CaCO3]	11-Mar-10	10:07	58	38
Sulphate [mg/L]	16-Mar-10	08:30	2.5	13

Dianne Griffin
Project Specialist

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Project : CALR-12088-003

Tuesday, March 23, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 16 March 2010
LR Report: **CA10053-MAR10**
Reference: WK#23

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#23	6: Sulphide Comp Tls Wk#23
Sample Date & Time			16-Mar-10	16-Mar-10
Hum Cell Leachate Volume [mLs]	---	---	838	996
pH [no unit]	22-Mar-10	16:51	8.10	7.90
Conductivity [uS/cm]	22-Mar-10	16:51	128	122
Acidity [mg/L as CaCO3]	22-Mar-10	16:51	< 2	< 2
Alkalinity [mg/L as CaCO3]	22-Mar-10	16:51	60	40
Sulphate [mg/L]	19-Mar-10	09:50	2.1	16

Dianne Griffin
Project Specialist

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Project : CALR-12088-003

Wednesday, March 31, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 23 March 2010
LR Report: **CA10078-MAR10**
Reference: WK# 24

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 24	6: Sulphide Comp Tls Wk# 24
Sample Date & Time			23-Mar-10	23-Mar-10
Hum Cell Leachate Volume [mLs]	---	---	736	946
pH [no unit]	26-Mar-10	13:22	8.18	7.85
Conductivity [uS/cm]	26-Mar-10	13:22	150	105
Acidity [mg/L as CaCO3]	26-Mar-10	13:22	< 2	< 2
Alkalinity [mg/L as CaCO3]	26-Mar-10	13:22	71	34
Sulphate [mg/L]	30-Mar-10	13:31	2.0	14

Dianne Griffin
Project Specialist

OnLine LIMS

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Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Wednesday, April 14, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 30 March 2010
LR Report: **CA10122-MAR10**
Reference: WK#25

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#25	6: Sulphide Comp Tls Wk#25
Sample Date & Time			30-Mar-10	30-Mar-10
Hum Cell Leachate Volume [mLs]	---	---	884	847
pH [no unit]	07-Apr-10	10:16	8.14	7.94
Conductivity [uS/cm]	07-Apr-10	10:16	143	94
Acidity [mg/L as CaCO3]	07-Apr-10	10:16	< 2	< 2
Alkalinity [mg/L as CaCO3]	07-Apr-10	10:17	68	32
Sulphate [mg/L]	06-Apr-10	12:58	2.1	12
Mercury [mg/L]	05-Apr-10	13:07	< 0.0001	< 0.0001
Silver [mg/L]	06-Apr-10	14:21	< 0.00001	< 0.00001
Aluminum [mg/L]	07-Apr-10	11:02	0.01	0.01
Arsenic [mg/L]	06-Apr-10	14:21	0.0002	< 0.0002
Boron [mg/L]	06-Apr-10	14:21	0.0063	0.0007
Barium [mg/L]	06-Apr-10	14:21	0.00971	0.0172
Bismuth [mg/L]	06-Apr-10	14:21	0.00003	< 0.00001
Beryllium [mg/L]	06-Apr-10	14:21	< 0.00002	< 0.00002
Calcium [mg/L]	07-Apr-10	11:02	28.0	9.99
Cadmium [mg/L]	06-Apr-10	14:22	0.000008	< 0.000003
Cobalt [mg/L]	06-Apr-10	14:22	0.00744	0.000603
Chromium [mg/L]	06-Apr-10	14:22	0.0006	< 0.0005
Copper [mg/L]	06-Apr-10	14:22	0.0026	0.0025
Iron [mg/L]	07-Apr-10	11:02	< 0.01	0.02
Potassium [mg/L]	07-Apr-10	11:02	1.19	0.31
Lithium [mg/L]	06-Apr-10	14:22	< 0.001	< 0.001
Magnesium [mg/L]	07-Apr-10	11:03	0.850	4.99
Manganese [mg/L]	06-Apr-10	14:22	0.00340	0.0224
Molybdenum [mg/L]	06-Apr-10	14:22	0.0119	0.00266
Sodium [mg/L]	07-Apr-10	11:03	0.94	0.41
Nickel [mg/L]	06-Apr-10	14:22	0.0004	0.0002
Lead [mg/L]	06-Apr-10	14:22	0.00035	< 0.00002

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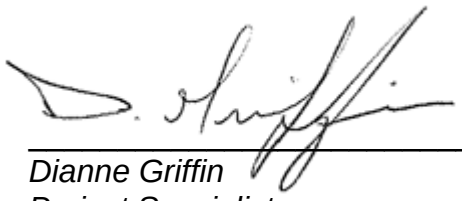
Project : CALR-12088-003

LR Report : **CA10122-MAR10**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#25	6: Sulphide Comp Tls Wk#25
Antimony [mg/L]	06-Apr-10	14:22	0.0010	0.0011
Selenium [mg/L]	06-Apr-10	14:22	< 0.001	< 0.001
Tin [mg/L]	06-Apr-10	14:22	0.00001	0.00004
Strontium [mg/L]	07-Apr-10	11:03	0.0384	0.220
Titanium [mg/L]	06-Apr-10	14:22	< 0.0001	< 0.0001
Thallium [mg/L]	06-Apr-10	14:22	< 0.0002	< 0.0002
Uranium [mg/L]	06-Apr-10	14:22	0.000185	0.000024
Vanadium [mg/L]	06-Apr-10	14:22	0.00031	< 0.00003
Tungsten [mg/L]	06-Apr-10	14:22	0.0404	0.00156
Yttrium [mg/L]	06-Apr-10	14:22	0.000003	0.000002
Zinc [mg/L]	06-Apr-10	14:22	< 0.001	< 0.001



Dianne Griffin
Project Specialist

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SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Tuesday, April 13, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 06 April 2010
LR Report: **CA10001-APR10**
Reference: Wk#26

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#26	6: Sulphide Comp Tls Wk#26
Sample Date & Time			06-Apr-10	06-Apr-10
Hum Cell Leachate Volume [mLs]	---	---	927	893
pH [no unit]	09-Apr-10	09:06	7.90	8.14
Conductivity [uS/cm]	09-Apr-10	09:06	100	138
Acidity [mg/L as CaCO3]	09-Apr-10	09:06	< 2	< 2
Alkalinity [mg/L as CaCO3]	09-Apr-10	09:06	46	48
Sulphate [mg/L]	12-Apr-10	15:56	1.8	19

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Tuesday, April 20, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 13 April 2010
LR Report: **CA10028-APR10**
Reference: Wk#27

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 27	6: Sulphide Comp Tls Wk# 27
Sample Date & Time			13-Apr-10	13-Apr-10
Hum Cell Leachate Volume [mLs]	---	---	833	818
pH [no unit]	16-Apr-10	11:54	7.92	7.97
Conductivity [uS/cm]	16-Apr-10	11:54	116	135
Acidity [mg/L as CaCO3]	16-Apr-10	11:54	< 2	< 2
Alkalinity [mg/L as CaCO3]	16-Apr-10	11:54	52	44
Sulphate [mg/L]	20-Apr-10	09:19	1.7	18

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Wednesday, April 28, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 20 April 2010
LR Report: **CA11070-APR10**
Reference: Wk#28

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#28	6: Sulphide Comp Tls Wk#28
Sample Date & Time			20-Apr-10	20-Apr-10
Hum Cell Leachate Volume [mLs]	---	---	816	812
pH [no unit]	23-Apr-10	14:43	8.06	8.16
Conductivity [uS/cm]	23-Apr-10	14:43	110	166
Acidity [mg/L as CaCO3]	23-Apr-10	14:43	< 2	< 2
Alkalinity [mg/L as CaCO3]	23-Apr-10	14:43	51	56
Sulphate [mg/L]	27-Apr-10	13:17	1.6	22

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Wednesday, May 05, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 27 April 2010
LR Report: **CA11094-APR10**
Reference: Wk#29

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk#29	6: Sulphide Comp Tls Wk#29
Sample Date & Time			27-Apr-10	27-Apr-10
Hum Cell Leachate Volume [mLs]	---	---	812	828
pH [no unit]	29-Apr-10	14:07	8.20	8.37
Conductivity [uS/cm]	05-May-10	10:35	102	174
Acidity [mg/L as CaCO3]	29-Apr-10	14:07	< 2	< 2
Alkalinity [mg/L as CaCO3]	29-Apr-10	14:07	51	68
Sulphate [mg/L]	03-May-10	19:41	1.6	22

Dianne Griffin
Project Specialist

OnLine LIMS

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Project : CALR-12088-003

Monday, May 10, 2010

Environmental Met
Attn : Barb Bowman

Date Rec. : 04 May 2010
LR Report: **CA10001-MAY10**
Reference: WK#30

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 30	6: Sulphide Comp Tls Wk# 30
Sample Date & Time			04-May-10	04-May-10
Hum Cell Leachate Volume [mLs]	---	---	853	801
pH [no unit]	06-May-10	13:22	7.79	8.03
Conductivity [uS/cm]	06-May-10	13:22	124	203
Acidity [mg/L as CaCO3]	06-May-10	13:22	< 2	< 2
Alkalinity [mg/L as CaCO3]	06-May-10	13:22	52	80
Sulphate [mg/L]	06-May-10	15:22	1.7	21
Mercury [mg/L]	07-May-10	13:12	< 0.0001	< 0.0001
Silver [mg/L]	07-May-10	13:19	0.00001	< 0.00001
Aluminum [mg/L]	07-May-10	15:38	0.02	< 0.01
Arsenic [mg/L]	07-May-10	13:19	< 0.0002	< 0.0002
Boron [mg/L]	07-May-10	13:19	0.0036	0.0018
Barium [mg/L]	07-May-10	13:19	0.00587	0.0487
Bismuth [mg/L]	07-May-10	13:19	0.00004	< 0.00001
Beryllium [mg/L]	07-May-10	13:19	< 0.00002	< 0.00002
Calcium [mg/L]	07-May-10	15:38	19.8	20.0
Cadmium [mg/L]	07-May-10	13:19	0.000024	0.000007
Cobalt [mg/L]	07-May-10	13:19	0.00502	0.00115
Chromium [mg/L]	07-May-10	13:19	0.0007	< 0.0005
Copper [mg/L]	07-May-10	13:19	0.0023	0.0017
Iron [mg/L]	07-May-10	15:38	0.02	0.06
Potassium [mg/L]	07-May-10	15:38	0.68	0.70
Lithium [mg/L]	07-May-10	13:19	< 0.001	< 0.001
Magnesium [mg/L]	07-May-10	15:38	0.605	12.1
Manganese [mg/L]	07-May-10	13:19	0.00266	0.0394
Molybdenum [mg/L]	07-May-10	13:19	0.00564	0.00846
Sodium [mg/L]	07-May-10	15:38	0.42	0.92
Nickel [mg/L]	07-May-10	13:19	0.0002	0.0002
Lead [mg/L]	07-May-10	13:19	0.00006	0.00094

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Project : CALR-12088-003

LR Report : **CA10001-MAY10**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Oxide Comp Tls Wk# 30	6: Sulphide Comp Tls Wk# 30
Antimony [mg/L]	07-May-10	13:19	0.0009	0.0036
Selenium [mg/L]	07-May-10	13:19	< 0.001	< 0.001
Tin [mg/L]	07-May-10	13:19	0.00003	0.00023
Strontium [mg/L]	07-May-10	15:38	0.0271	0.510
Titanium [mg/L]	07-May-10	13:19	0.0004	< 0.0001
Thallium [mg/L]	07-May-10	13:19	< 0.0002	< 0.0002
Uranium [mg/L]	07-May-10	13:19	0.000110	0.000067
Vanadium [mg/L]	07-May-10	13:19	0.00044	0.00016
Tungsten [mg/L]	07-May-10	13:19	0.0389	0.00279
Yttrium [mg/L]	07-May-10	13:19	0.000009	0.000006
Zinc [mg/L]	07-May-10	13:19	< 0.001	0.001

Dianne Griffin
Project Specialist

OnLine LIMS

Appendix F – Particle Size Distribution Test Reports

TEST REPORT

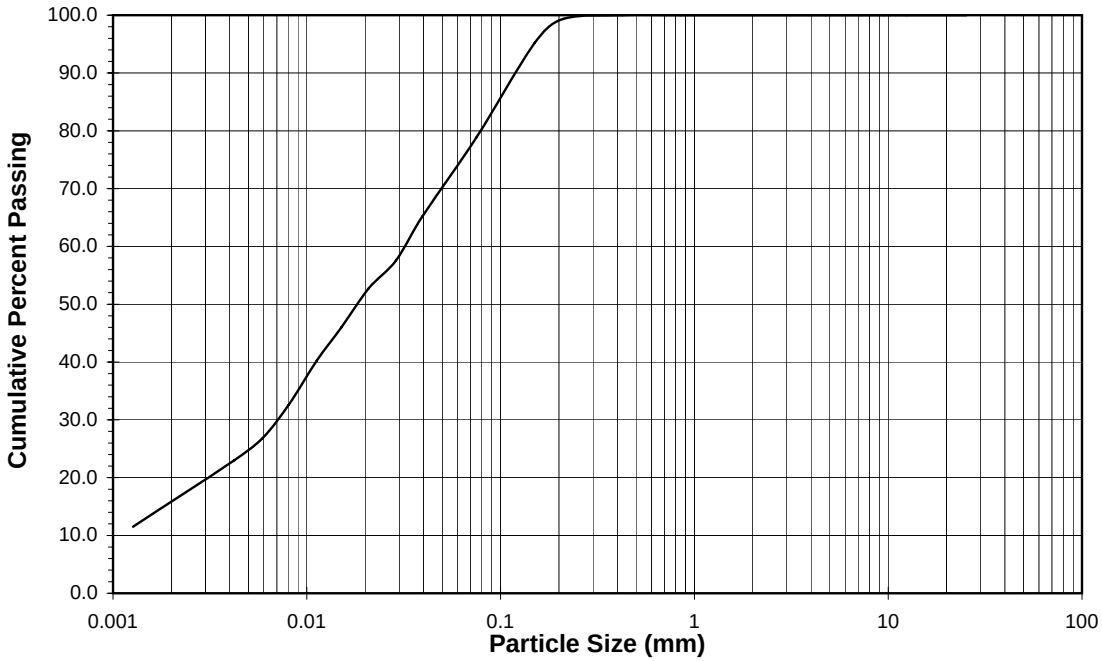
Particle Size Analysis by Hydrometer

Sample ID: Oxide Comp Tls
Date Completed: Sept 21/09
Reference: ASTM D 422, SOP 7-18-6

Specific Gravity: 2.79

Sieve Size (Tyler)	Particle Size (mm)	Weight Passing %
1"	25.400	100.0
1/2"	12.500	100.0
3/8"	9.500	100.0
#4	4.750	100.0
#9	2.000	100.0
#20	0.850	100.0
#35	0.425	100.0
#65	0.212	99.4
#100	0.150	95.2
#200	0.075	78.9
-	0.040	65.2
-	0.029	57.5
-	0.021	52.8
-	0.015	46.0
-	0.011	40.3
-	0.008	32.6
-	0.006	26.9
-	0.004	23.0
-	0.001	11.5

Particle Size Distribution



R. Caldwell
Project Manager, Environmental Testing

B. Bowman
Senior Technologist, Environmental Testing

TEST REPORT

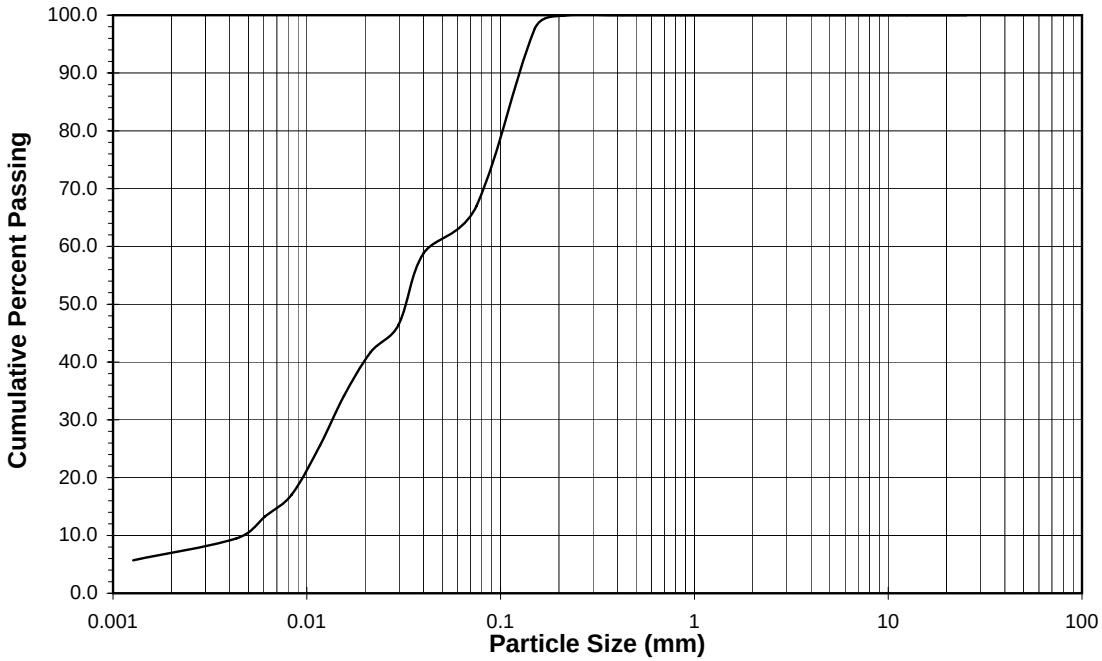
Particle Size Analysis by Hydrometer

Sample ID: Sulphide Comp Tls
Date Completed: Sept 21/09
Reference: ASTM D 422, SOP 7-18-6

Specific Gravity: 2.81

Sieve Size (Tyler)	Particle Size (mm)	Weight Passing %
1"	25.400	100.0
1/2"	12.500	100.0
3/8"	9.500	100.0
#4	4.750	100.0
#9	2.000	100.0
#20	0.850	100.0
#35	0.425	100.0
#65	0.212	99.9
#100	0.150	97.7
#200	0.075	67.0
-	0.040	58.8
-	0.030	46.5
-	0.021	41.7
-	0.016	34.1
-	0.012	25.6
-	0.008	17.1
-	0.006	13.3
-	0.004	9.5
-	0.001	5.7

Particle Size Distribution



R. Caldwell
Project Manager, Environmental Testing

B. Bowman
Senior Technologist, Environmental Testing

TEST REPORT

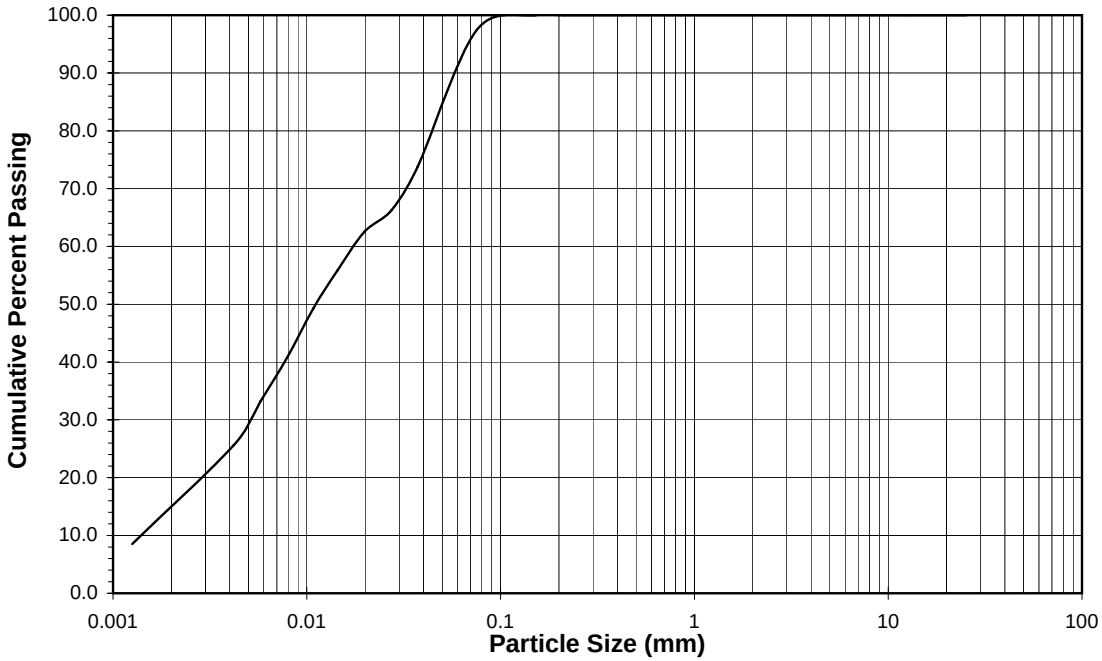
Particle Size Analysis by Hydrometer

Sample ID: Oxide Comp Tls Residue
Date Completed: 11-Jun-10
Reference: ASTM D 422, SOP 7-18-6

Specific Gravity: 2.79

Sieve Size (Tyler)	Particle Size (mm)	Weight Passing %
1"	25.400	100.0
1/2"	12.500	100.0
3/8"	9.500	100.0
#4	4.750	100.0
#9	2.000	100.0
#20	0.850	100.0
#35	0.425	100.0
#65	0.212	100.0
#100	0.150	100.0
#200	0.075	97.4
-	0.037	73.9
-	0.027	66.3
-	0.020	62.5
-	0.014	55.9
-	0.011	49.2
-	0.008	40.7
-	0.006	33.1
-	0.004	25.6
-	0.001	8.5

Particle Size Distribution



Note: Correction factors for SG's less than 2.45 and greater than 2.85 are calculated

R. Caldwell
Project Manager, Environmental Testing

B. Bowman
Senior Technologist, Environmental Testing

TEST REPORT

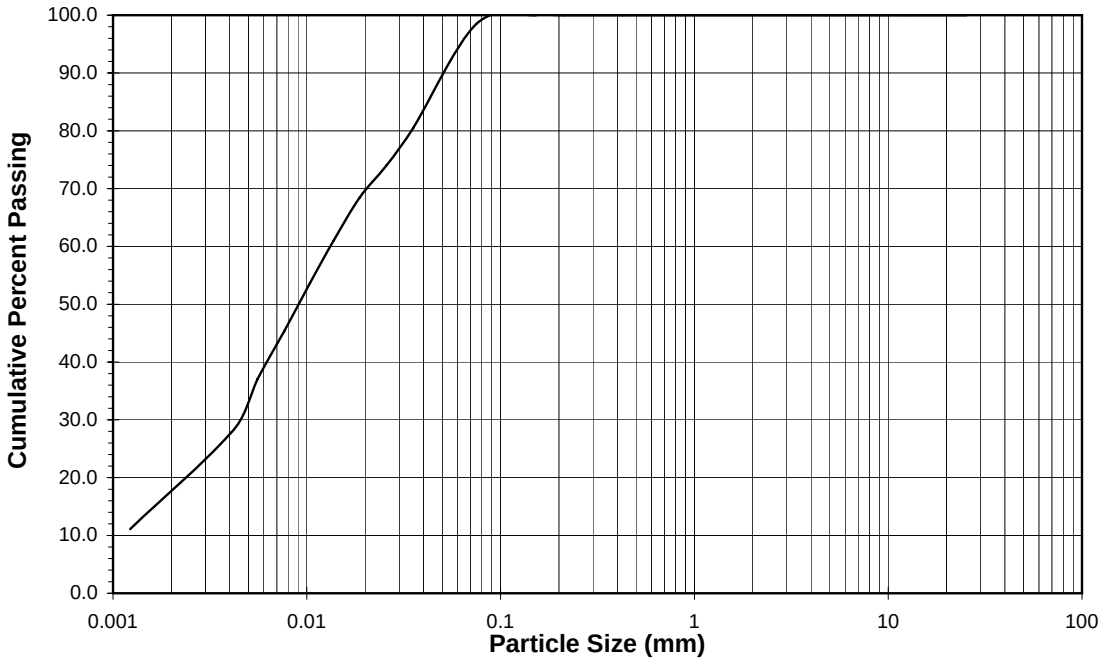
Particle Size Analysis by Hydrometer

Sample ID: Sulphide Comp Tls Residue
Date Completed: 11-Jun-10
Reference: ASTM D 422, SOP 7-18-6

Specific Gravity: 2.81

Sieve Size (Tyler)	Particle Size (mm)	Weight Passing %
1"	25.400	100.0
1/2"	12.500	100.0
3/8"	9.500	100.0
#4	4.750	100.0
#9	2.000	100.0
#20	0.850	100.0
#35	0.425	100.0
#65	0.212	100.0
#100	0.150	100.0
#200	0.075	98.5
-	0.035	80.5
-	0.026	74.0
-	0.019	68.5
-	0.014	61.1
-	0.010	53.7
-	0.008	45.3
-	0.006	37.0
-	0.004	27.8
-	0.001	11.1

Particle Size Distribution



Note: Correction factors for SG's less than 2.45 and greater than 2.85 are calculated

R. Caldwell
Project Manager, Environmental Testing

B. Bowman
Senior Technologist, Environmental Testing

Appendix G – Atterberg Limit Test Reports

TEST REPORT

Liquid Limit, Plastic Limit, and Plasticity Index

Sample ID: Oxide Comp Tls
Date Completed: 2009-SEP-28
Reference: ASTM D 4318, SOP 7-18-8

Liquid Limit Determination

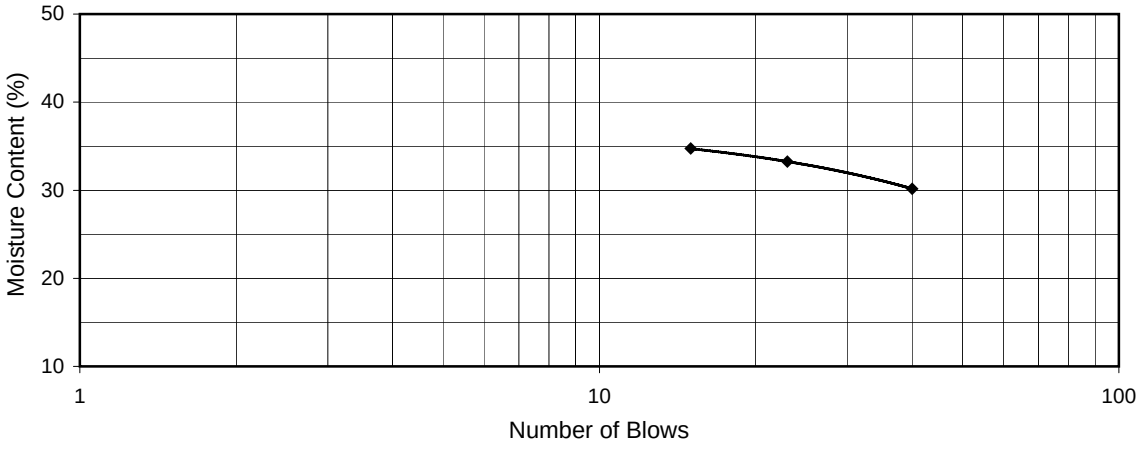
Parameter	Units	1	2	3
Tare ID Number	#	40	41	42
Tare Weight	g	2.05	2.03	1.94
Weight of Wet Soil + Tare	g	14.82	11.77	13.89
Weight of Dry Soil + Tare	g	11.86	9.34	10.81
Weight of Water	g	2.96	2.43	3.08
Weight of Dry Soil	g	9.81	7.31	8.87
Percent Moisture	%	30.17	33.24	34.72
Number of Blows	#	40	23	15

Plastic Limit Determination

Parameter	Units	1	2
Tare ID Number	#		
Tare Weight	g		
Weight of Wet Soil + Tare	g		
Weight of Dry Soil + Tare	g	Not plastic.	
Weight of Water	g		
Weight of Dry Soil	g		
Percent Moisture	%		

Flow Curve

y = -0.1818x + 37.439



Final Test Results

Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)
33	NP	NP

Note: Sample was oven dried.

B. Bowman
Senior Technologist

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Liquid Limit, Plastic Limit, and Plasticity Index

Sample ID: Sulphide Comp Tls
Date Completed: 2009-SEP-28
Reference: ASTM D 4318, SOP 7-18-8

Liquid Limit Determination

Parameter	Units	1	2	3	4	5
Tare ID Number	#					
Tare Weight	g	Could not be determined.				
Weight of Wet Soil + Tare	g	*Note: The liquid limit is determined by performing a number of trials in which a moist sample is spread in a brass cup and divided by a grooving tool. The groove is then allowed to flow together as a result of the impacts from the repeated dropping of the cup in a standardized mechanical device. ASTM D4318 states that if the soil pat slides on the surface of the brass cup, or if the number of blows required to close the groove is always less than 25, the liquid limit cannot be determined.*				
Weight of Dry Soil + Tare	g					
Weight of Water	g					
Weight of Dry Soil	g					
Percent Moisture	%					
Number of Blows	#					

Plastic Limit Determination

Parameter	Units	1	2
Tare ID Number	#		
Tare Weight	g		
Weight of Wet Soil + Tare	g	Not plastic.	
Weight of Dry Soil + Tare	g		
Weight of Water	g		
Weight of Dry Soil	g		
Percent Moisture	%		

Final Test Results

Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)
Could not be determined.	NP	NP

Note: Sample was oven dried.

B. Bowman
Senior Technologist

R. J. Caldwell B.Sc.,
Project Manager

Appendix H – Standard and Drained Settling Test Reports

TEST REPORT

Settled Density Test

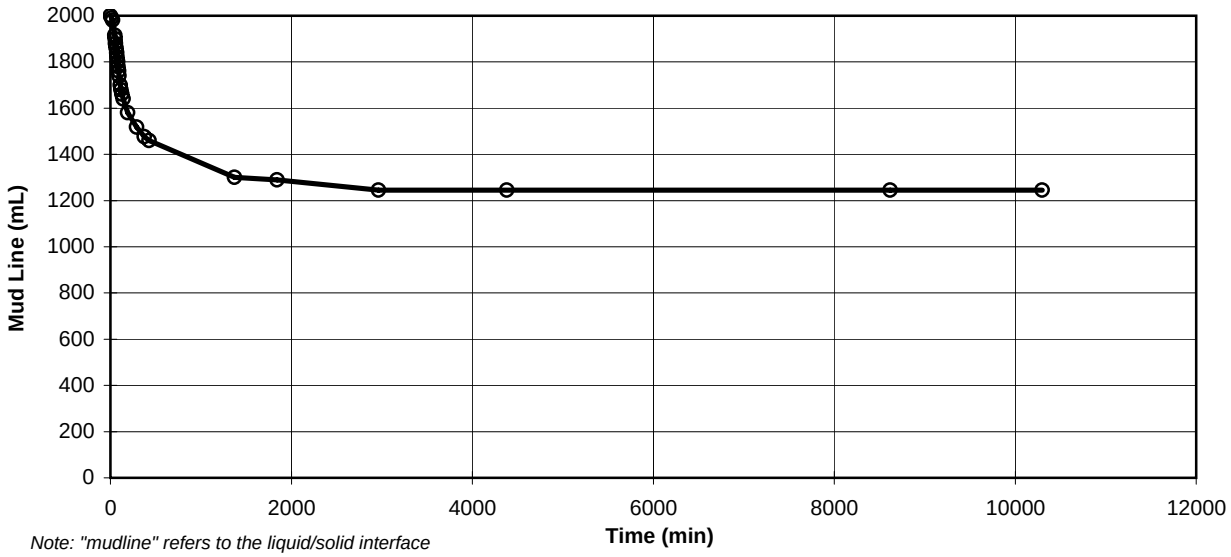
Sample ID: Oxide Comp Tls 45 % Solids
Date Completed: 2009-SEP-29
Reference: SOP 7-18-1

Test Details

Parameter	Unit	Value
Dry solid SG		2.79
Dry solid weight	g	1265.9
Liquid SG		1.00
Temperature	°C	21.5
Initial pulp height	mm	416.00
Initial pulp volume	mL	2000
Initial net pulp weight	g	2807.08
Feed pulp density	g/L	1406
Feed percent solids*	%	45.0

** Feed percent solids is based on measured dry solid weight*

Height of Mudline Over Time



Note: "mudline" refers to the liquid/solid interface

Final Test Results

Parameter	Unit	Value
Total settling time	min	10300
Final mudline	mL	1245
Final percent solids	%	61.5
Final settled density	g/L	1652

B. Bowman
Senior Technologist

R. Caldwell
Project Manager

TEST REPORT

Settled Density Test

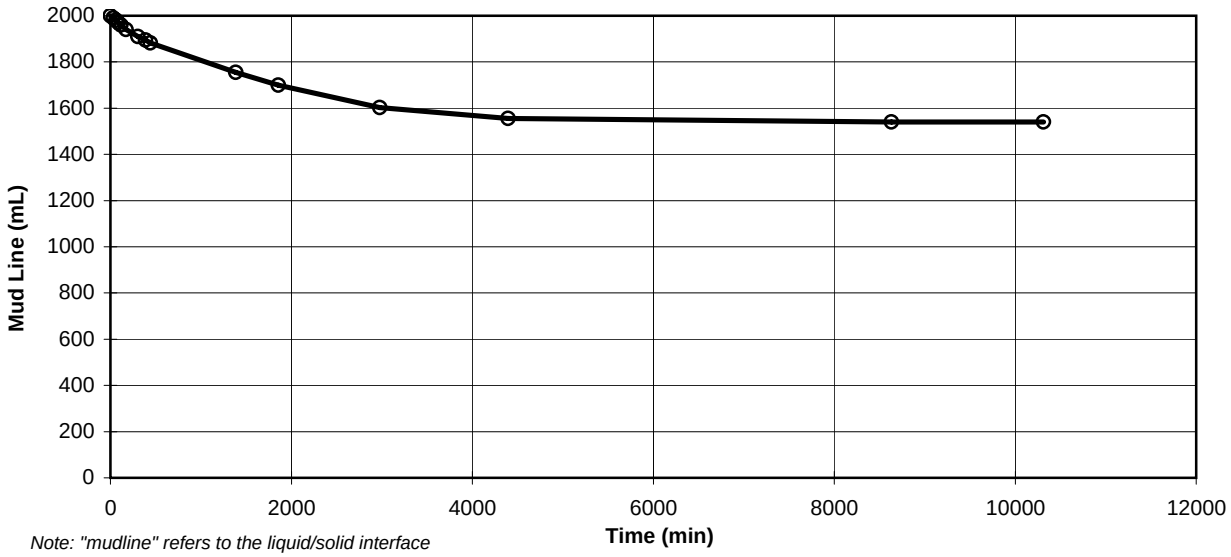
Sample ID: Oxide Comp Tls 55 % Solids
Date Completed: 2009-SEP-29
Reference: SOP 7-18-1

Test Details

Parameter	Unit	Value
Dry solid SG		2.79
Dry solid weight	g	1699.5
Liquid SG		1.00
Temperature	°C	21.5
Initial pulp height	mm	416.00
Initial pulp volume	mL	2000
Initial net pulp weight	g	3104.32
Feed pulp density	g/L	1545
Feed percent solids*	%	55.0

** Feed percent solids is based on measured dry solid weight*

Height of Mudline Over Time



Note: "mudline" refers to the liquid/solid interface

Final Test Results

Parameter	Unit	Value
Total settling time	min	10314
Final mudline	mL	1540
Final percent solids	%	64.6
Final settled density	g/L	1708

B. Bowman
Senior Technologist

R. Caldwell
Project Manager

TEST REPORT

Settled Density Test

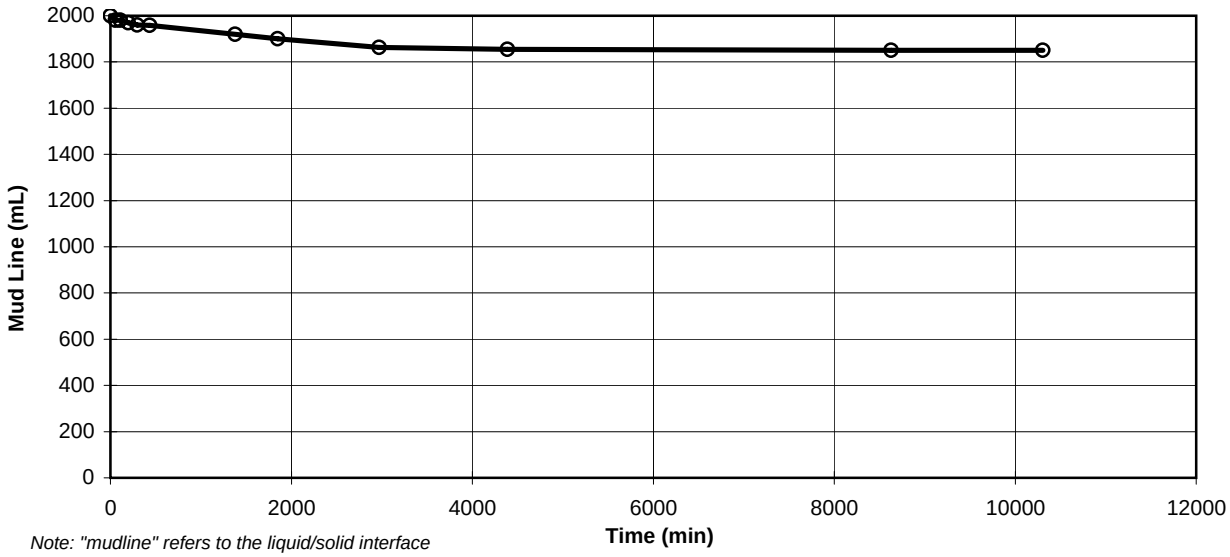
Sample ID: Oxide Comp Tls 65 % Solids
Date Completed: 2009-SEP-29
Reference: SOP 7-18-1

Test Details

Parameter	Unit	Value
Dry solid SG		2.79
Dry solid weight	g	2230.8
Liquid SG		1.00
Temperature	°C	21.5
Initial pulp height	mm	416.00
Initial pulp volume	mL	2000
Initial net pulp weight	g	3367.30
Feed pulp density	g/L	1716
Feed percent solids*	%	65.0

** Feed percent solids is based on measured dry solid weight*

Height of Mudline Over Time



Note: "mudline" refers to the liquid/solid interface

Final Test Results

Parameter	Unit	Value
Total settling time	min	10307
Final mudline	mL	1850
Final percent solids	%	68.0
Final settled density	g/L	1774

B. Bowman
Senior Technologist

R. Caldwell
Project Manager

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: Oxide Comp Tls 45% Solids
Project Number: 12088-003
Date Completed: 24-Nov-09

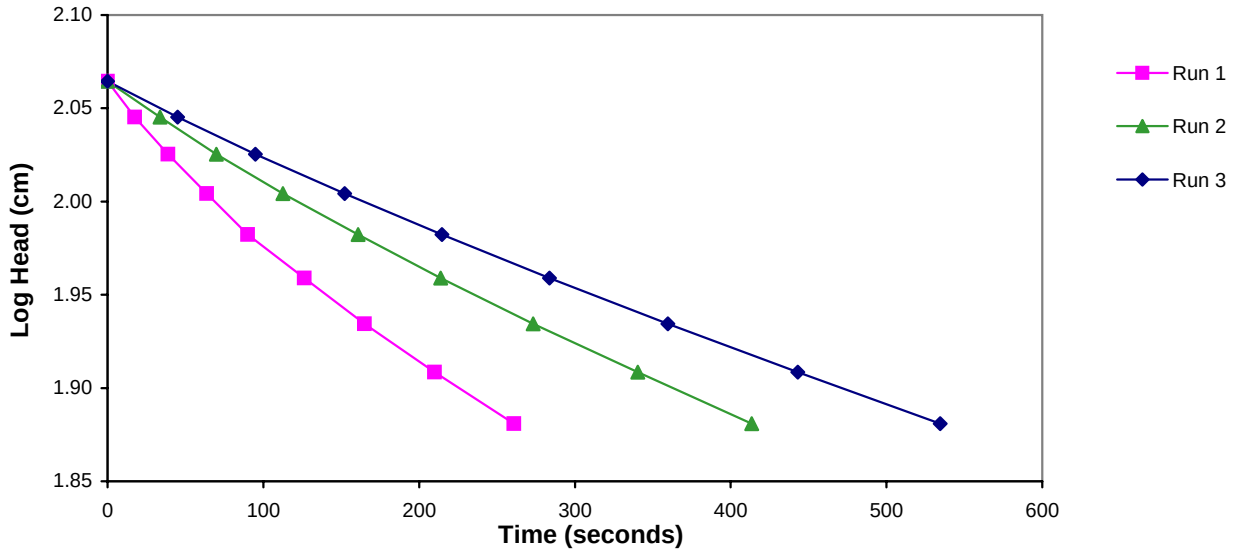
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Settling Test Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	67.1	67.1	67.1
Final Settled Density	g/L	1756	1756	1756

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-6.95E-04	-4.41E-04	-3.42E-04
Hydraulic Conductivity	m/sec	2.93E-07	1.86E-07	1.44E-07

B. Bowman
Senior Technologist

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: Oxide Comp Tls 55% Solids
Project Number: 12088-003
Date Completed: 19-Nov-09

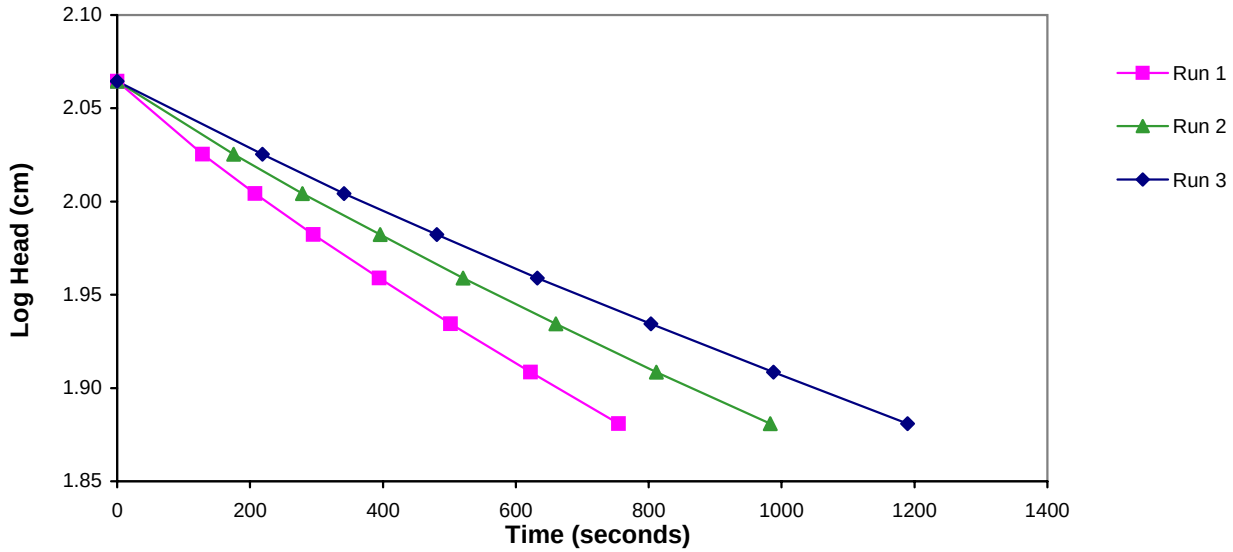
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Settling Test Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	69	69	69
Final Settled Density	g/L	1793	1793	1793

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-2.40E-04	-1.85E-04	-1.53E-04
Hydraulic Conductivity	m/sec	1.33E-07	1.03E-07	8.49E-08

B. Wadsworth
Project Technician

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Drained Settled Density Test

Sample ID: Oxide Comp Tls 65% Solids
Date Completed: 25-Oct-09
Reference: SOP 7-18-1

Test Details

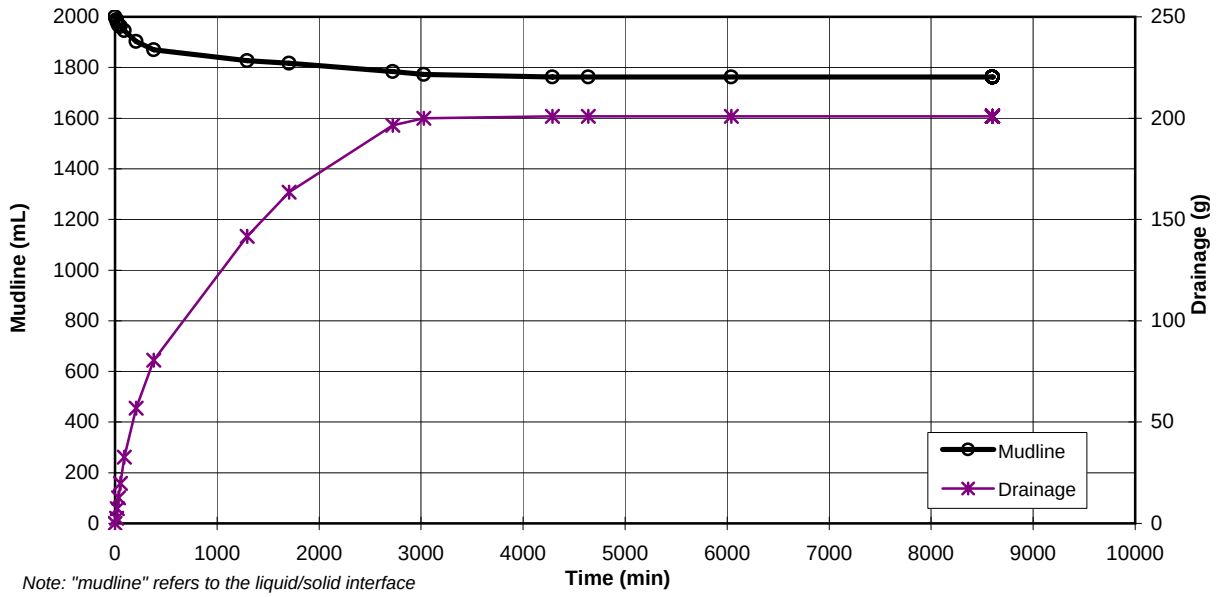
Parameter	Unit	Value
Dry solid SG		2.79
Dry solid weight	g	2230.8
Liquid SG		1.00
Temperature	°C	21
Initial pulp height	mm	185

Test Details

Parameter	Unit	Value
Initial pulp volume	mL	2000
Initial net pulp weight	g	3278.6
Feed pulp density	g/L	1716
Feed percent solids*	%	65.0

** Feed percent solids is based on measured dry solid weight*

Height of Mudline Over Time



Note: "mudline" refers to the liquid/solid interface

Final Test Results

Parameter	Unit	Value
Total settling time	min	8600
Final mudline	mL	1762
Final percent solids	%	69.9
Final settled density	g/L	1812
Total H_2O released	g	201
H_2O released/g solids	g/g	0.09
H_20 released (dry wt basis)	%	9.0

B. Wadsworth
Project Technician

B. Bowman
Senior Technologist

TEST REPORT

Settled Density Test

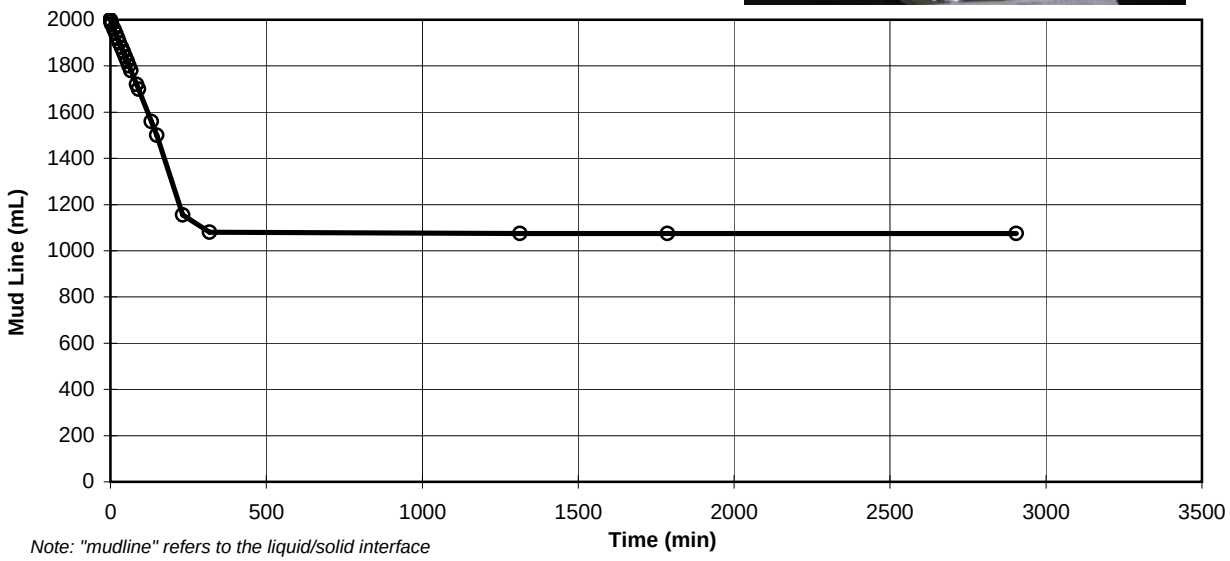
Sample ID: Sulphide Comp Tls 45 % Solids
Date Completed: 2009-SEP-29
Reference: SOP 7-18-1

Test Details

Parameter	Unit	Value
Dry solid SG		2.81
Dry solid weight	g	1267.7
Liquid SG		1.00
Temperature	°C	21.5
Initial pulp height	mm	416.00
Initial pulp volume	mL	2000
Initial net pulp weight	g	2782.68
Feed pulp density	g/L	1408
Feed percent solids*	%	45.0

** Feed percent solids is based on measured dry solid weight*

Height of Mudline Over Time



Note: "mudline" refers to the liquid/solid interface

Final Test Results

Parameter	Unit	Value
Total settling time	min	2905
Final mudline	mL	1075
Final percent solids	%	67.0
Final settled density	g/L	1760

B. Bowman
Senior Technologist

R. Caldwell
Project Manager

TEST REPORT

Settled Density Test

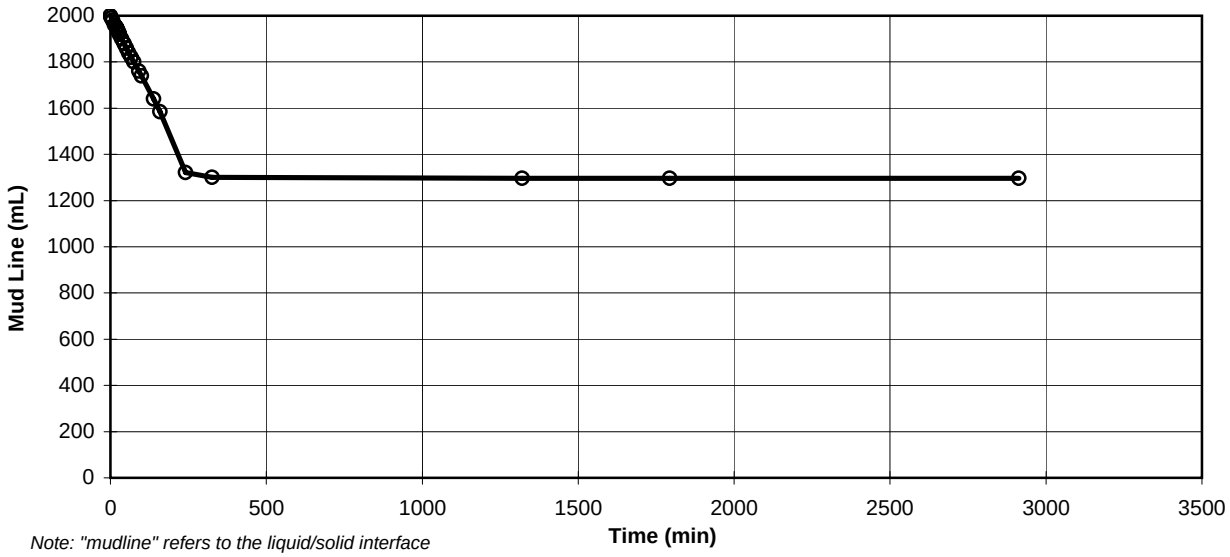
Sample ID: Sulphide Comp Tls 55 % Solids
Date Completed: 2009-SEP-29
Reference: SOP 7-18-1

Test Details

Parameter	Unit	Value
Dry solid SG		2.81
Dry solid weight	g	1703.7
Liquid SG		1.00
Temperature	°C	21.5
Initial pulp height	mm	416.00
Initial pulp volume	mL	2000
Initial net pulp weight	g	3096.10
Feed pulp density	g/L	1549
Feed percent solids*	%	55.0

** Feed percent solids is based on measured dry solid weight*

Height of Mudline Over Time



Note: "mudline" refers to the liquid/solid interface

Final Test Results

Parameter	Unit	Value
Total settling time	min	2913
Final mudline	mL	1297
Final percent solids	%	71.2
Final settled density	g/L	1846

B. Bowman
Senior Technologist

R. Caldwell
Project Manager

TEST REPORT

Settled Density Test

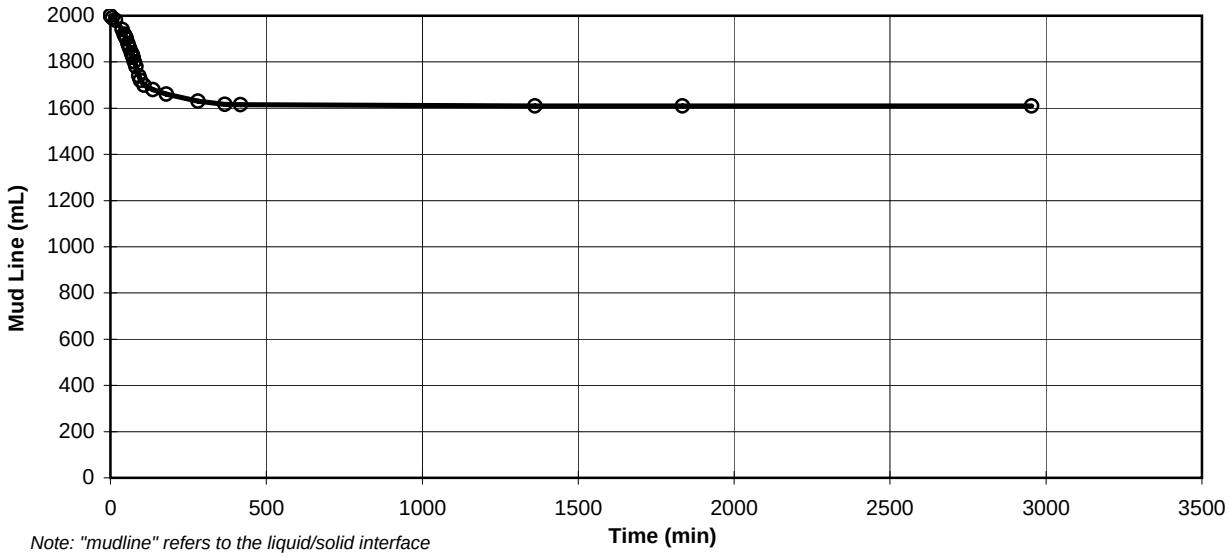
Sample ID: Sulphide Comp Tls 65 % Solids
Date Completed: 2009-SEP-29
Reference: SOP 7-18-1

Test Details

Parameter	Unit	Value
Dry solid SG		2.81
Dry solid weight	g	2237.3
Liquid SG		1.00
Temperature	°C	21.5
Initial pulp height	mm	416.00
Initial pulp volume	mL	2000
Initial net pulp weight	g	3447.43
Feed pulp density	g/L	1721
Feed percent solids*	%	65.0

** Feed percent solids is based on measured dry solid weight*

Height of Mudline Over Time



Note: "mudline" refers to the liquid/solid interface

Final Test Results

Parameter	Unit	Value
Total settling time	min	2954
Final mudline	mL	1610
Final percent solids	%	73.3
Final settled density	g/L	1895

B. Bowman
Senior Technologist

R. Caldwell
Project Manager

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: 12088-003
Project Number: Sulphide Comp Tls 45% Solids
Date Completed: 04-Nov-09

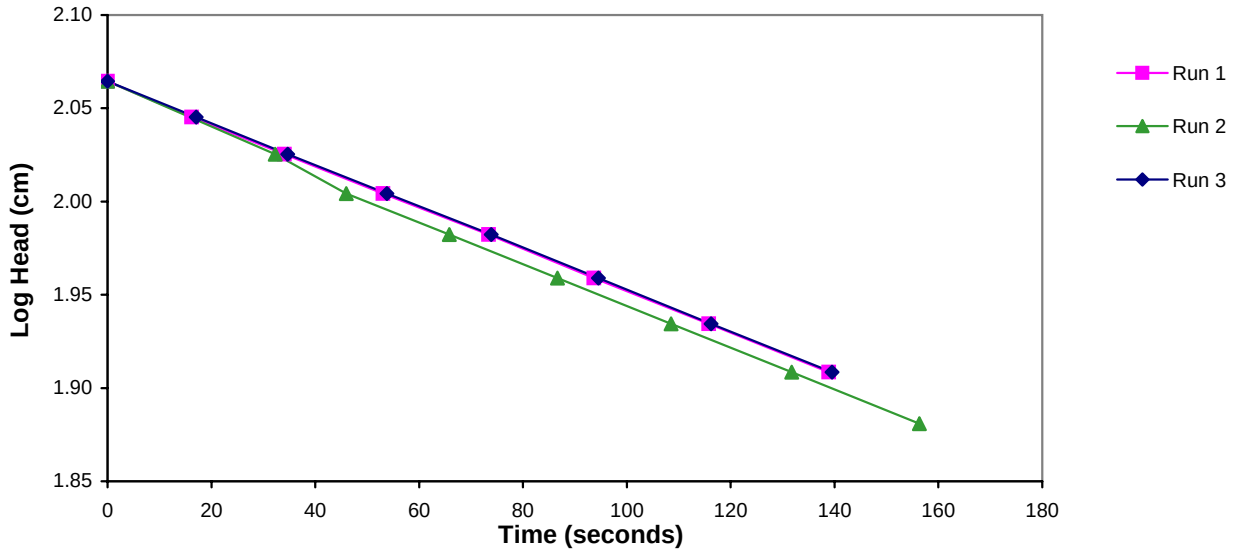
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Settling Test Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	71.2	71.2	71.2
Final Settled Density	g/L	1848	1848	1848

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-1.12E-03	-1.17E-03	-1.12E-03
Hydraulic Conductivity	m/sec	4.22E-07	4.41E-07	4.22E-07

Brooks Wadsworth
Senior Technologist

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: Sulphide Comp Tls 55%
Project Number: 12088-003
Date Completed: 10-Nov-09

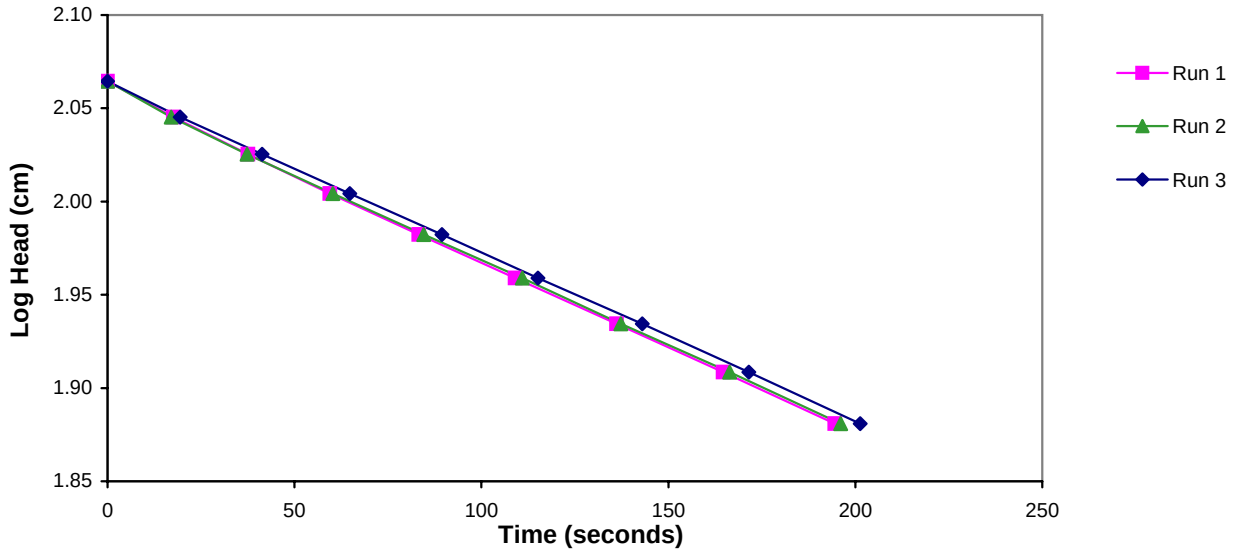
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Settling Test Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	73.7	73.7	73.7
Final Settled Density	g/L	1903	1903	1903

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-9.34E-04	-9.24E-04	-9.05E-04
Hydraulic Conductivity	m/sec	4.58E-07	4.53E-07	4.44E-07

Brooks Wadsworth
Project Technician

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Drained Settled Density Test

Sample ID: Sulphide Comp Tls 65% Solids
Date Completed: 06-Oct-09
Reference: SOP 7-18-1

Test Details

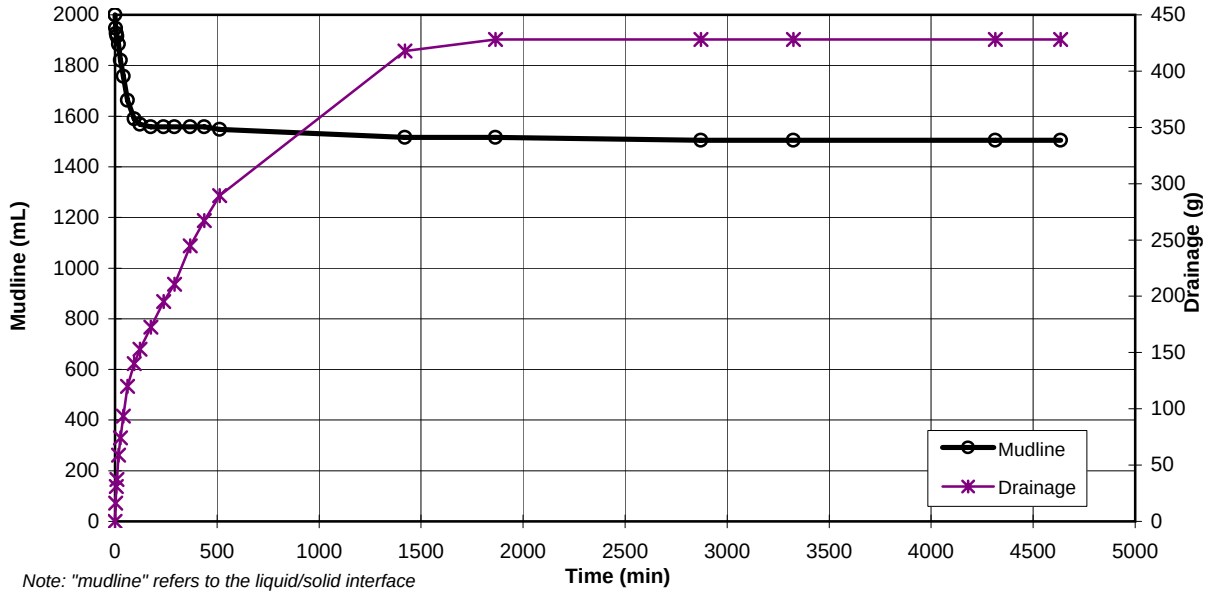
Parameter	Unit	Value
Dry solid SG		2.81
Dry solid weight	g	2237.3
Liquid SG		1.00
Temperature	°C	21.5
Initial pulp height	mm	190

Test Details

Parameter	Unit	Value
Initial pulp volume	mL	2000
Initial net pulp weight	g	3432.8
Feed pulp density	g/L	1721
Feed percent solids*	%	65.0

** Feed percent solids is based on measured dry solid weight*

Height of Mudline Over Time



Note: "mudline" refers to the liquid/solid interface

Final Test Results

Parameter	Unit	Value
Total settling time	min	4634
Final mudline	mL	1505
Final percent solids	%	75.9
Final settled density	g/L	1957
Total H_2O released	g	428
H_2O released/g solids	g/g	0.19
H_20 released (dry wt basis)	%	19

B. Wadsworth
Project Technician

B. Bowman
Senior Technologist

Appendix I – Hydraulic Conductivity Test Reports

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: Oxide Comp 45% Solids
Project Number: 12088-003
Date Completed: 24-Nov-09

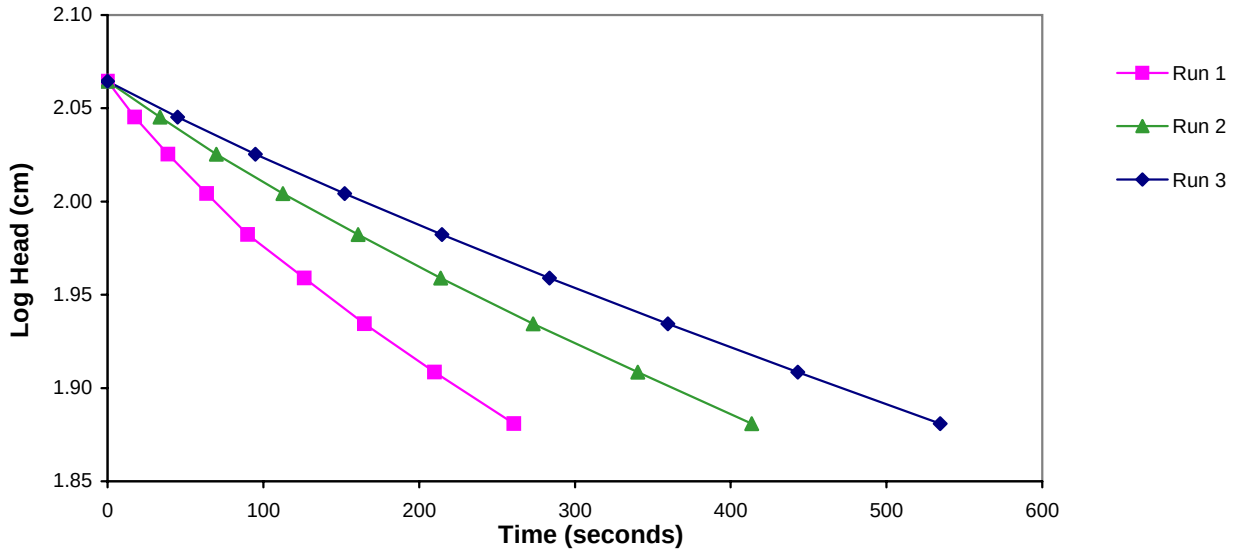
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Settling Test Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	67.1	67.1	67.1
Final Settled Density	g/L	1756	1756	1756

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-6.95E-04	-4.41E-04	-3.42E-04
Hydraulic Conductivity	m/sec	2.93E-07	1.86E-07	1.44E-07

B. Bowman
Senior Technologist

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: Oxide Comp 55% Solids
Project Number: 12088-003
Date Completed: 19-Nov-09

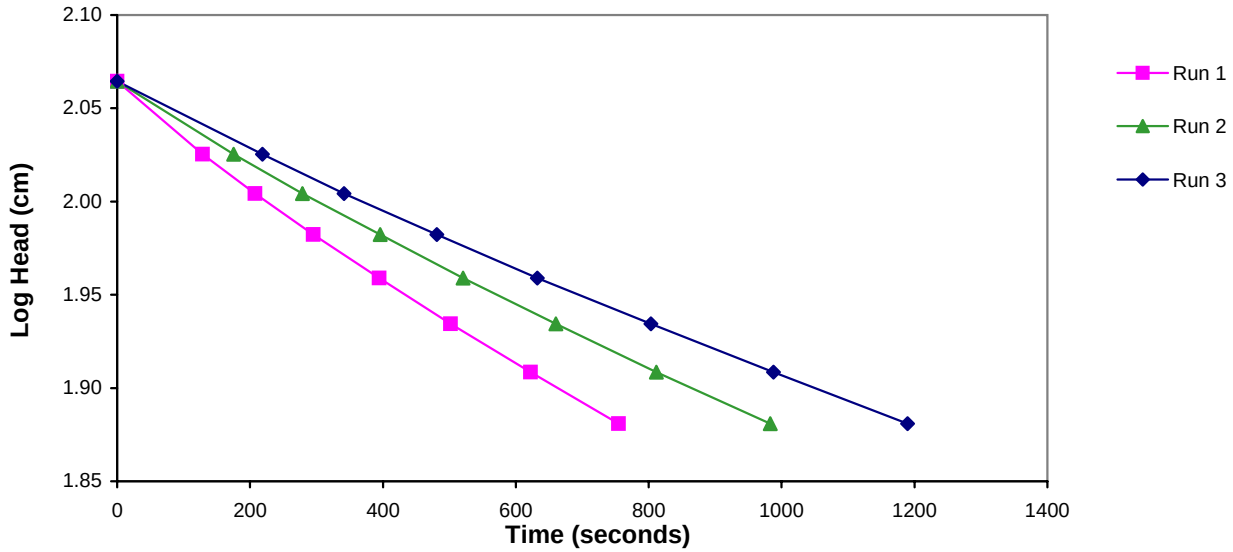
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Settling Test Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	69	69	69
Final Settled Density	g/L	1793	1793	1793

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-2.40E-04	-1.85E-04	-1.53E-04
Hydraulic Conductivity	m/sec	1.33E-07	1.03E-07	8.49E-08

B. Wadsworth
Project Technician

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: Oxide Comp Tls 65% Solids
Project Number: 12088-003
Date Completed: 27-Oct-09

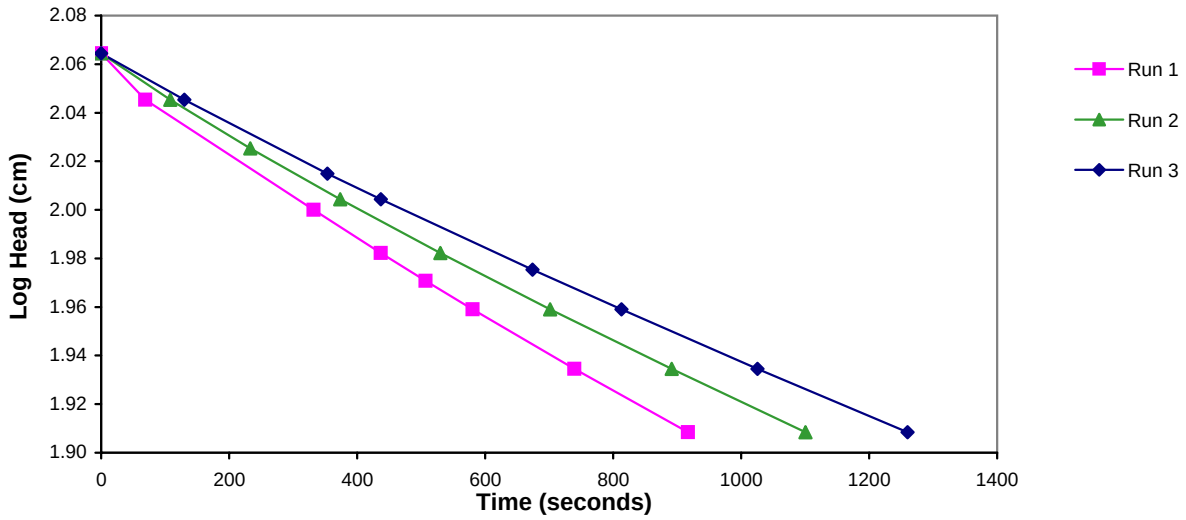
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Settling Test Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	69.9	69.9	69.9
Final Settled Density	g/L	1812	1812	1812

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-1.68E-04	-1.41E-04	-1.23E-04
Hydraulic Conductivity	m/sec	1.13E-07	9.52E-08	8.30E-08

B. Bowman
Senior Technologist

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: 12088-003
Project Number: Sulphide Comp 45% Solids
Date Completed: 04-Nov-09

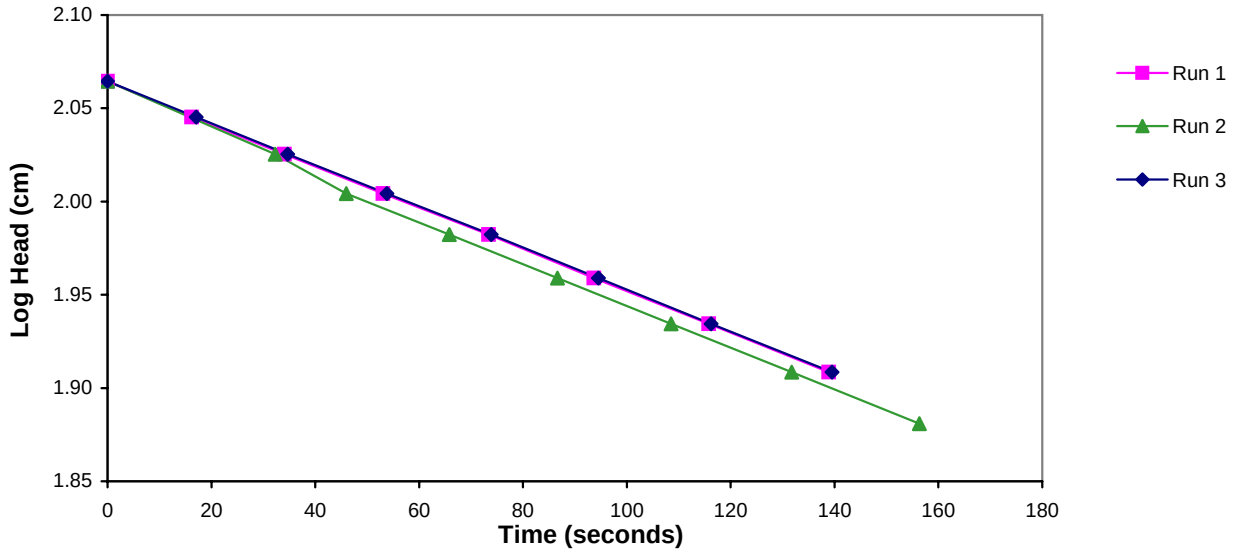
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Settling Test Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	71.2	71.2	71.2
Final Settled Density	g/L	1848	1848	1848

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-1.12E-03	-1.17E-03	-1.12E-03
Hydraulic Conductivity	m/sec	4.22E-07	4.41E-07	4.22E-07

Brooks Wadsworth
Senior Technologist

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: Sulphide Comp 55%
Project Number: 12088-003
Date Completed: 10-Nov-09

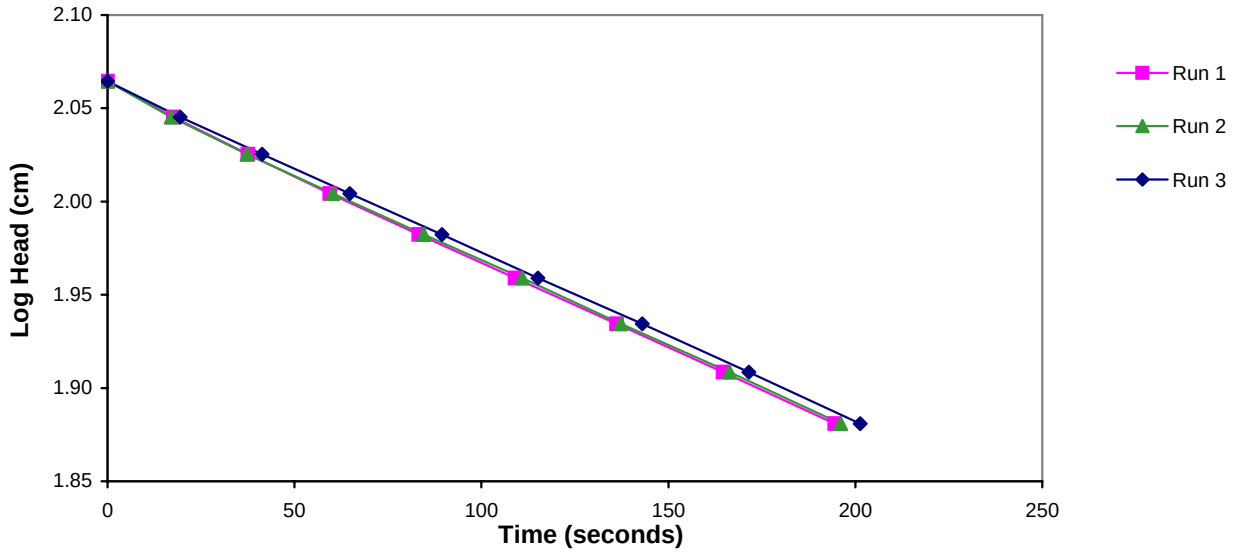
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Settling Test Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	73.7	73.7	73.7
Final Settled Density	g/L	1903	1903	1903

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-9.34E-04	-9.24E-04	-9.05E-04
Hydraulic Conductivity	m/sec	4.58E-07	4.53E-07	4.44E-07

Brooks Wadsworth
Project Technician

R. J. Caldwell B.Sc.,
Project Manager

TEST REPORT

Hydraulic Conductivity (Falling Head) after Drained Settling

Sample ID: Sulphide Comp Tls 65% Solids
Project Number: 12088-003
Date Completed: 13-Oct-09

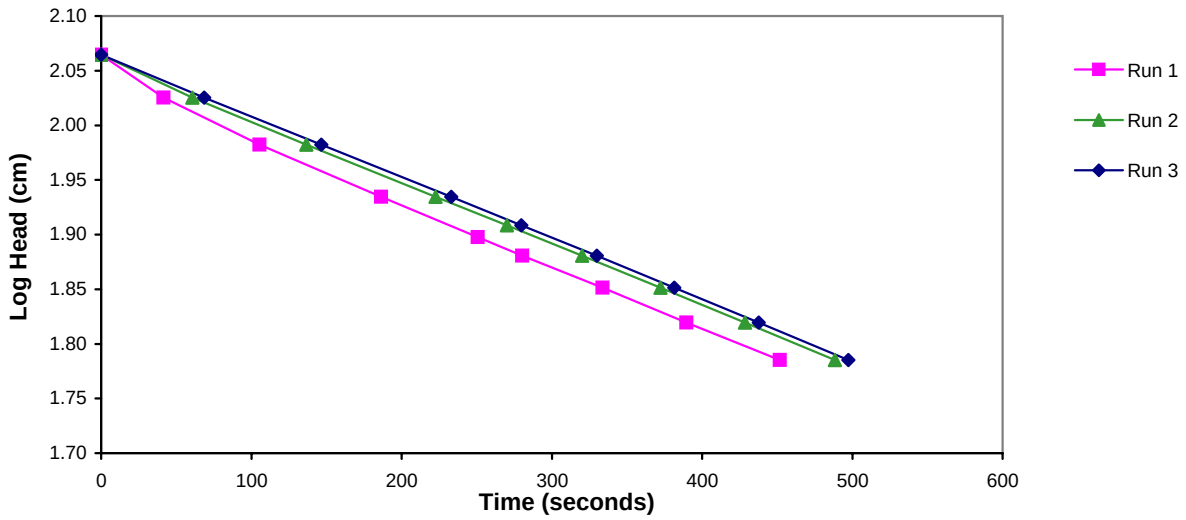
Test Method:

The slurried sample was pourred into a rigid wall permeameter cell previously loaded with a porous stone. The sample was permitted to settled under self-weight, in the free draining cell. When settlement was observed to have ceased, a second porous stone was placed on top of the sample. The sample was gravity saturated prior to having a falling head hydraulic conductivity test conducted on the sample. Due to the fine consistency of the sample the test had to be conducted in downflow rather than upflow in order to maintain the physical integrity of the sample.

Compaction Data

Parameter	Unit	Run 1	Run 2	Run 3
Final % Solids	%	75.9	75.9	75.9
Final Settled Density	g/L	1957	1957	1957

Log Head vs.Time



Permeability Data

Parameter	Unit	Run 1	Run 2	Run 3
Slope of Log Head vs. Time		-6.03E-04	-5.66E-04	-5.59E-04
Hydraulic Conductivity	m/sec	3.57E-07	3.35E-07	3.31E-07

B. Bowman
Senior Technologist

R. J. Caldwell B.Sc.,
Project Manager

Appendix J – Consolidation (Oedometer) Test Reports

CONSOLIDATION TEST SUMMARY

FIGURE

SAMPLE IDENTIFICATION

Project Number	09-1183-6006	Sample	Oxide Comp TIs
Client:	Guyana Goldfields	Sample Depth, m	-

TEST CONDITIONS

Test Type	Standard	Load Duration, hr	24
Oedometer Number	4		
Date Started	10/31/2009		
Date Completed	11/13/2009		

SAMPLE DIMENSIONS AND PROPERTIES - INITIAL

Sample Height, cm	2.54	Unit Weight, kN/m^3	17.83
Sample Diameter, cm	6.34	Dry Unit Weight, kN/m^3	12.62
Area, cm^2	31.57	Specific Gravity, measured	2.80
Volume, cm^3	80.19	Solids Height, cm	1.167
Water Content, %	41.32	Volume of Solids, cm^3	36.84
Wet Mass, g	145.79	Volume of Voids, cm^3	43.34
Dry Mass, g	103.16	Degree of Saturation, %	98.4

TEST COMPUTATIONS

Pressure kPa	Corr. Height cm	Void Ratio	Average Height cm	t_{90} sec	cv. cm^2/s	mv m^2/kN	k cm/s
0.00	2.540	1.176	2.540				
4.77	2.351	1.014	2.445	429	2.96E-03	1.56E-02	4.52E-06
9.58	2.318	0.986	2.334	171	6.76E-03	2.71E-03	1.79E-06
19.31	2.276	0.950	2.297	98	1.14E-02	1.69E-03	1.89E-06
38.80	2.240	0.920	2.258	20	5.41E-02	7.21E-04	3.82E-06
77.62	2.195	0.881	2.218	23	4.53E-02	4.61E-04	2.05E-06
155.17	2.139	0.833	2.167	10	9.95E-02	2.84E-04	2.77E-06
310.16	2.078	0.781	2.109	11	8.57E-02	1.54E-04	1.30E-06
620.24	2.008	0.721	2.043	12	7.37E-02	8.91E-05	6.44E-07
1240.49	1.936	0.659	1.972	22	3.75E-02	4.55E-05	1.67E-07
2479.91	1.851	0.586	1.894	8	9.50E-02	2.72E-05	2.53E-07
1240.49	1.853	0.588	1.852				
310.16	1.880	0.611	1.867				
77.62	1.912	0.639	1.896				
19.31	1.949	0.670	1.931				
4.77	1.987	0.702	1.968				

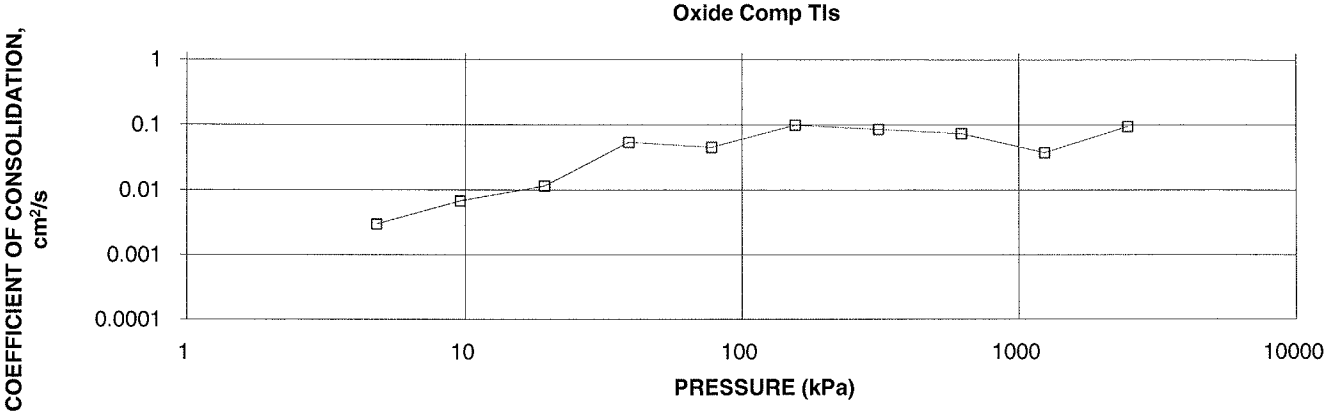
Note:
k calculated using cv based on t_{90} values.

SAMPLE DIMENSIONS AND PROPERTIES - FINAL

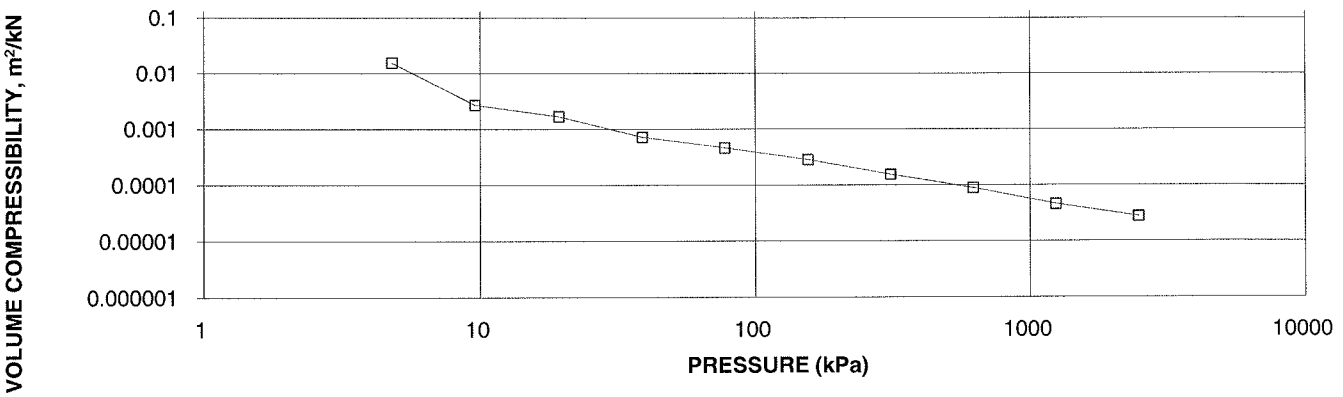
Sample Height, cm	1.99	Unit Weight, kN/m^3	20.05
Sample Diameter, cm	6.34	Dry Unit Weight, kN/m^3	16.13
Area, cm^2	31.57	Specific Gravity, measured	2.80
Volume, cm^3	62.71	Solids Height, cm	1.167
Water Content, %	24.30	Volume of Solids, cm^3	36.84
Wet Mass, g	128.23	Volume of Voids, cm^3	25.87
Dry Mass, g	103.16		

CONSOLIDATION TEST SUMMARY	FIGURE

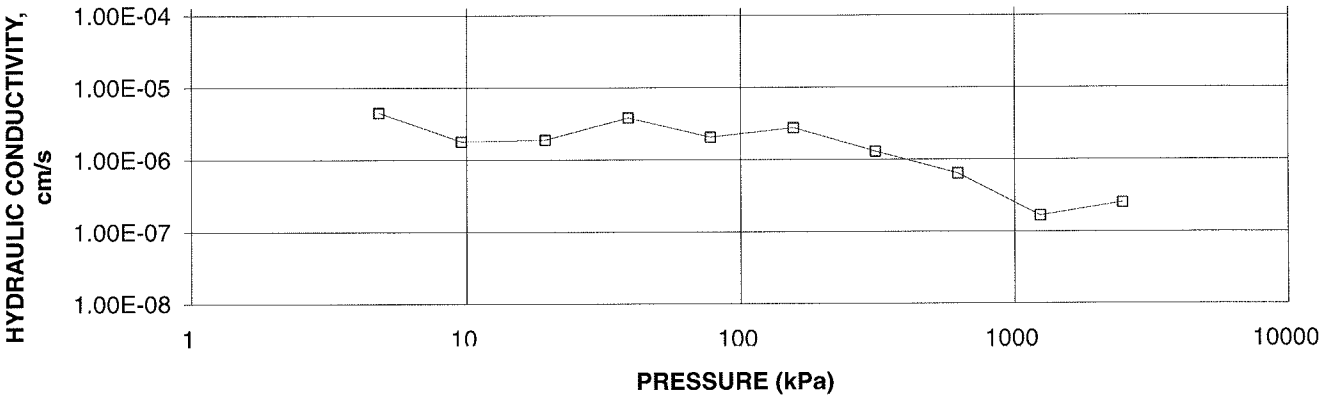
CONSOLIDATION TEST
CV cm^2/s VS PRESSURE (kPa)
Oxide Comp TIs



CONSOLIDATION TEST
MV m^2/kN vs PRESSURE (kPa)
Oxide Comp TIs



CONSOLIDATION TEST
HYDRAULIC CONDUCTIVITY vs PRESSURE
Oxide Comp TIs

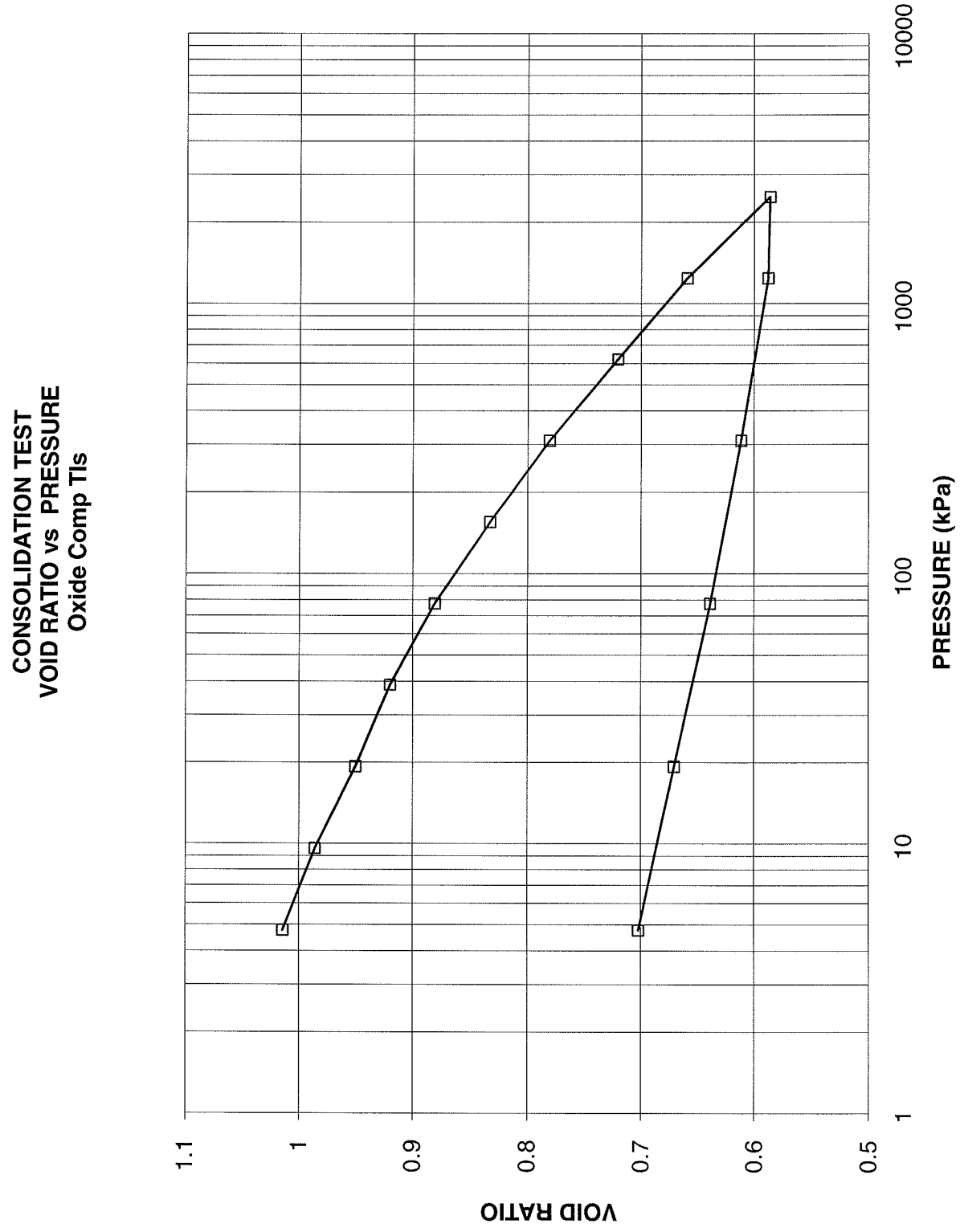


Project No. 09-1183-6006
Client: Guyana Goldfields
Prepared By: LFG

Golder Associates

Checked By: MM

CONSOLIDATION TEST VOID RATIO VS LOG PRESSURE	FIGURE



Project No. 09-1183-6006

Client: Guyana Goldfields

Prepared By: LFG

Golder Associates

Checked By: MM

CONSOLIDATION TEST SUMMARY

FIGURE

SAMPLE IDENTIFICATION

Project Number	09-1183-6006	Sample	Sulphide Comp Tls
Client:	Guyana Goldfields	Sample Depth, m	-

TEST CONDITIONS

Test Type	Standard	Load Duration, hr	24
Oedometer Number	10		
Date Started	10/31/2009		
Date Completed	11/12/2009		

SAMPLE DIMENSIONS AND PROPERTIES - INITIAL

Sample Height, cm	2.54	Unit Weight, kN/m^3	19.09
Sample Diameter, cm	6.34	Dry Unit Weight, kN/m^3	14.42
Area, cm^2	31.52	Specific Gravity, measured	2.83
Volume, cm^3	80.09	Solids Height, cm	1.320
Water Content, %	32.35	Volume of Solids, cm^3	41.61
Wet Mass, g	155.87	Volume of Voids, cm^3	38.48
Dry Mass, g	117.77	Degree of Saturation, %	99.0

TEST COMPUTATIONS

Pressure kPa	Corr. Height cm	Void Ratio	Average Height cm	t_{90} sec	cv. cm^2/s	mv m^2/kN	k cm/s
0.00	2.541	0.925	2.541				
4.72	2.464	0.866	2.503	20	6.64E-02	6.40E-03	4.17E-05
9.55	2.448	0.854	2.456	2	6.39E-01	1.30E-03	8.17E-05
19.59	2.428	0.839	2.438	8	1.58E-01	7.80E-04	1.20E-05
39.07	2.414	0.828	2.421	2	6.21E-01	2.99E-04	1.82E-05
77.88	2.393	0.812	2.403	4	3.06E-01	2.12E-04	6.36E-06
155.40	2.367	0.793	2.380	2	6.00E-01	1.29E-04	7.59E-06
310.81	2.339	0.771	2.353	2	5.87E-01	7.27E-05	4.18E-06
621.46	2.305	0.746	2.322	2	5.71E-01	4.19E-05	2.35E-06
1242.95	2.265	0.716	2.285	7	1.58E-01	2.55E-05	3.95E-07
2485.18	2.213	0.676	2.239	8	1.33E-01	1.65E-05	2.15E-07
1242.95	2.219	0.681	2.216				
310.81	2.236	0.694	2.227				
77.88	2.248	0.703	2.242				
19.59	2.260	0.712	2.254				
4.72	2.272	0.721	2.266				

Note:
k calculated using cv based on t_{90} values.

SAMPLE DIMENSIONS AND PROPERTIES - FINAL

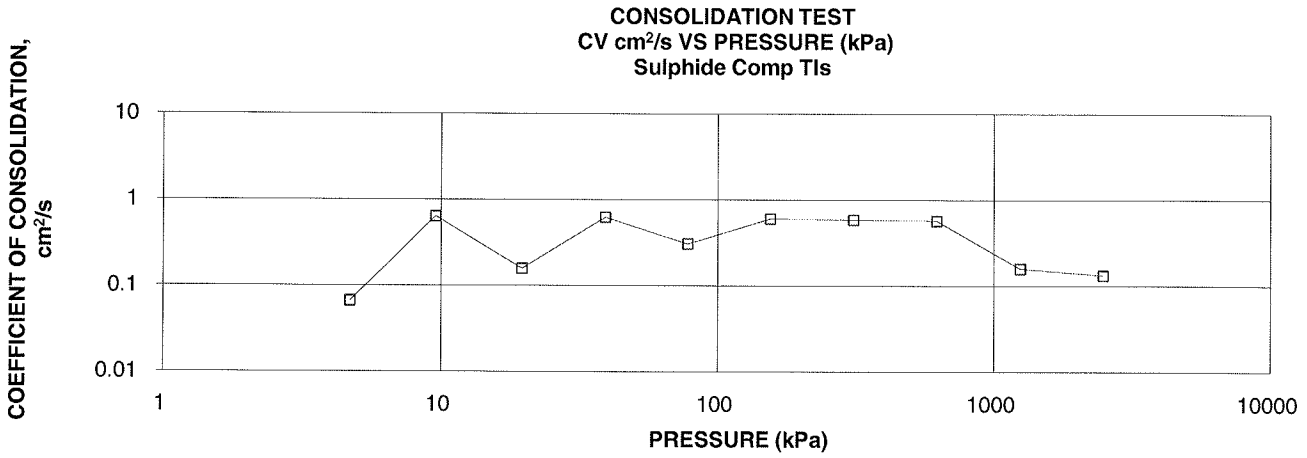
Sample Height, cm	2.27	Unit Weight, kN/m^3	19.31
Sample Diameter, cm	6.34	Dry Unit Weight, kN/m^3	16.13
Area, cm^2	31.52	Specific Gravity, measured	2.83
Volume, cm^3	71.62	Solids Height, cm	1.320
Water Content, %	19.76	Volume of Solids, cm^3	41.61
Wet Mass, g	141.04	Volume of Voids, cm^3	30.00
Dry Mass, g	117.77		

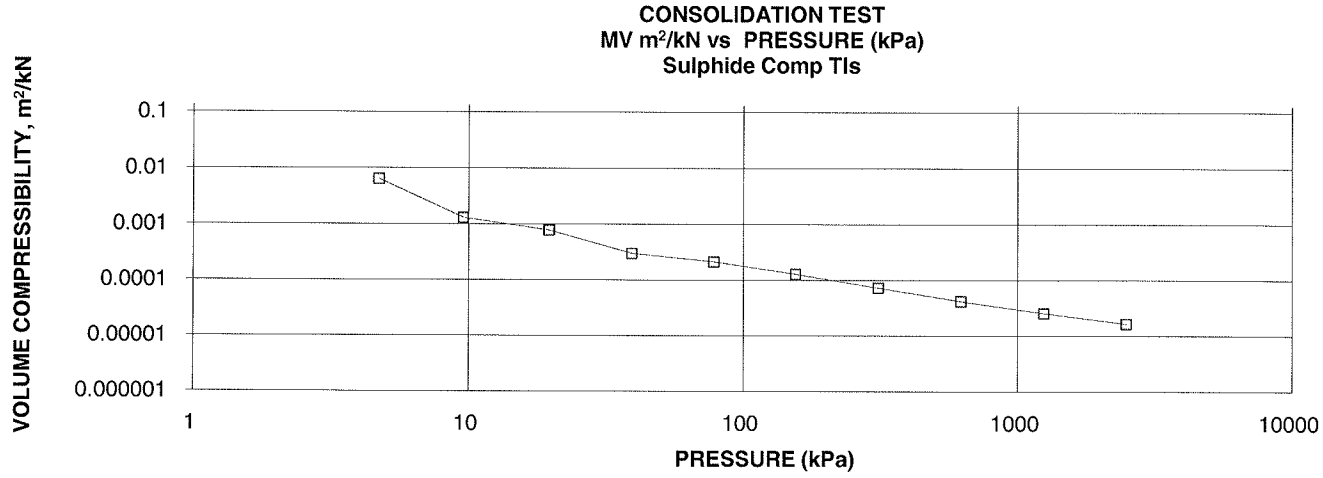
Prepared By: LFG

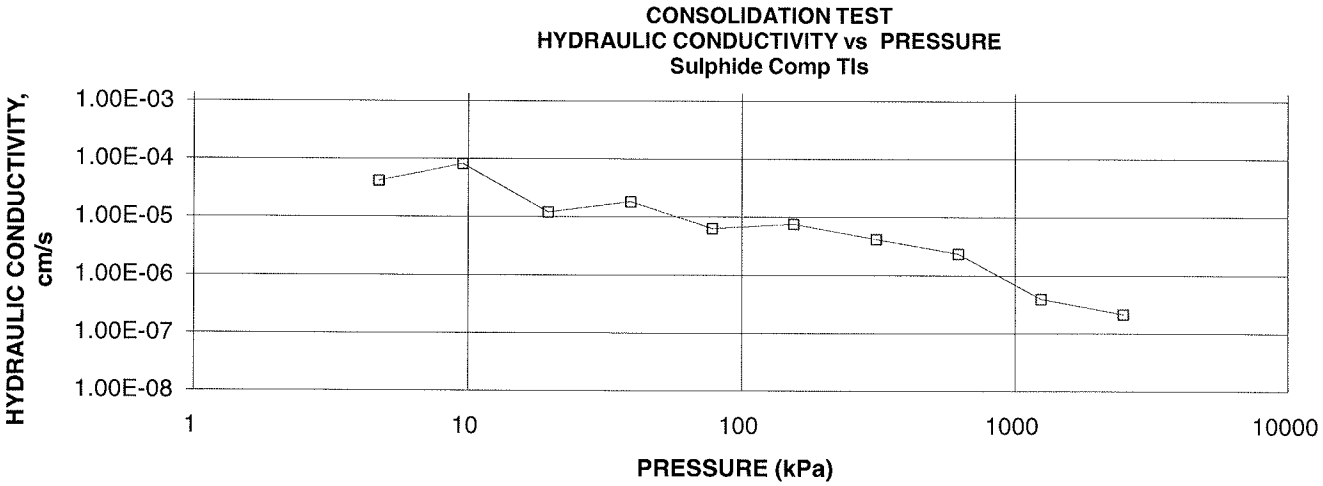
Golder Associates

Checked By: MM

CONSOLIDATION TEST SUMMARY	FIGURE





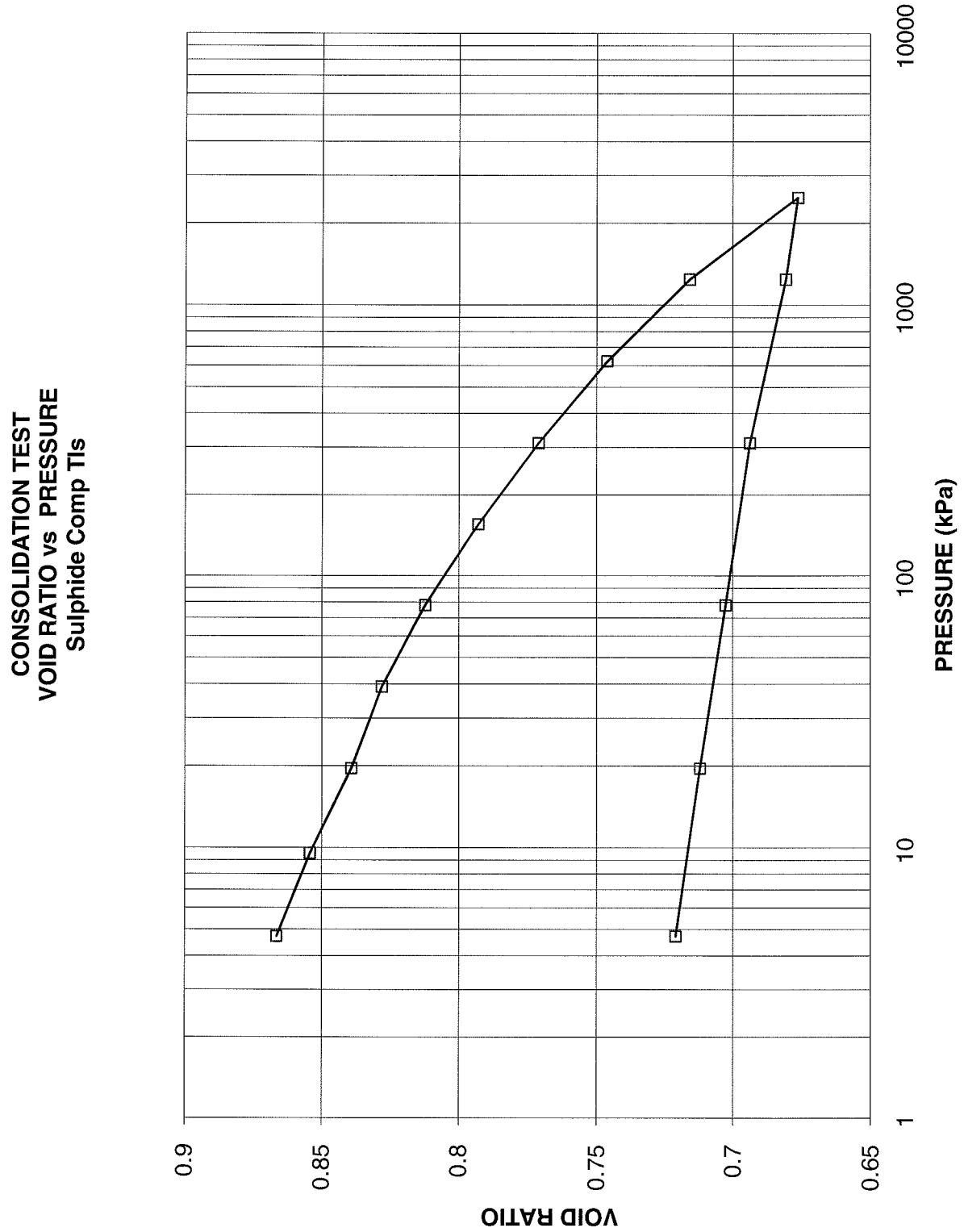


Project No. 09-1183-6006
Client: Guyana Goldfields
Prepared By: LFG

Golder Associates

Checked By: MM

CONSOLIDATION TEST VOID RATIO VS LOG PRESSURE	FIGURE



Project No. 09-1183-6006

Client: Guyana Goldfields

Prepared By: LFG

Golder Associates

Checked By: MM

Appendix K – Chain of Custody Forms

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 12088-003-01

P.O. Box 4300, 185 Concession St., Lakefield, ON. K0L 2H0, Phone (705) 652-2038, Fax (705) 652-6441

Report Results to:	Name: Barb Bowman	LRL LIMS No.: Sep 10085 R09
	Company: SGS Lakefield Research Ltd	Received by (Date & Time): 09/01/09
	Address:	Logged in by (Date):
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 12088-003
	Telephone Number: 2148 Fax:	Plant No.:
Send Invoice to:	Name: Rob Caldwell	Quote No.:
	Company:	Purchase Order No.:
	Address:	TAT (Turnaround Time) * Some exceptions apply, please contact lab
	City	Standard [X] RUSH [ ] Specify Date:
	Province, Postal Code	Time:
	Telephone Number: 2043 Fax:	**PLEASE CONTACT LAB PRIOR TO SUBMITTING RUSH PROJECTS**
Chain of Custody	Sampled by: B. Bowman	Sample condition upon receipt:
	Packed and Shipped by: Date /Time:	
	Shipment Method and WB#: Date /Time:	

Please specify any guideline or regulation that these samples may apply(I.e. ODWS, PWQO, Reg 558, GCSO, MISA, MMER, CBWA).

Guideline: **Regulation:** **initial:**

Temperature upon receipt: 19 °C X 3

CN Samples - Do Not Acidify

NOTE: All Sample Submitted Unpreserved

Metals analyses: Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Sr, Ti, Tl, U, V, W, Y, Zn + Hg

Analysis Requested (X) as Required

(Enter an "X" in the boxes to indicate which request(s) apply to each sample)

	Sample Matrix*	Sample Identifier	No. Bottles	Date Sampled	Time Sampled	pH, conductivity, acidity, alkalinity, TDS	Anions (Cl, F, NO2, NO3, SO4)	Ammonia	CN Speciation (CNT, CNWAD, CNF, CNS, CNO)	Thiosalts	Total Metals	Dissolved Metals
1		Oxide Comp Decant				X	X	X	X	X	X	X
2		Sulphide Comp Decant				X	X	X	X	X	X	X
3												
4												
5												
6												
7												
8												
9												
10												

* **Matrix Codes:** GW-ground water, SW-surface water, RES-Residential Water, EFF-Effluent, PROC-Process Water, SOIL-Soil, SED-Sediment, SWAB-Swabs, FILT-Filters

* **Regulated Water Codes:** GRW-ground raw water, SRW-surface raw water, TDW-Treated Drinking Water, DDW-Distribution Drinking Water

Work Authorized by(Client or representative signature must accompany request): Date: Sept 1/09

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 12088-003-02

P.O. Box 4300, 185 Concession St., Lakefield, ON. K0L 2H0, Phone (705) 652-2038, Fax (705) 652-6441

Report Results to:	Name: Barb Bowman Company: SGS Lakefield Research Ltd Address: City Province, Postal Code Telephone Number: 2148 Fax:
Send Invoice to:	Name: Rob Caldwell Company: Address: City Province, Postal Code Telephone Number: 2043 Fax:
Chain of Custody	Sampled by: B. Bowman Packed and Shipped by: Date /Time: Shipment Method and WB#: Date /Time:

LRL LIMS No.: EP10111
Received by (Date & Time): 09/02/09
Logged in by (Date):
Lab Batch ID:

Project No.: 12088-003
Plant No.:
Quote No.:
Purchase Order No.:

TAT (Turnaround Time) * Some exceptions apply, please contact lab
Standard [X] RUSH [ ] Specify Date:
Time:

PLEASE CONTACT LAB PRIOR TO SUBMITTING RUSH PROJECTS

Sample condition upon receipt:

Temperature upon receipt: °C

Please specify any guideline or regulation that these samples may apply(I.e. ODWS, PWQO, Reg 558, GCSO, MISA, MMER, CBWA).

Guideline: **Regulation:** **initial:**

SFE analyses: pH, acidity, alkalinity, conductivity, Cl, F, NO2, NO3, SO4, Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Sr, Ti, Tl, U, V, W, Y, Zn + Hg

Analysis Requested (X) as Required
(Enter an "X" in the boxes to indicate which request(s) apply to each sample)

	Sample Matrix*	Sample Identifier	No. Bottles	Date Sampled	Time Sampled	Shake Flask Extraction (Price, 1997)						
1		Oxide Comp Tls				X						
2		Sulphide Comp Tls				X						
3												
4												
5												
6												
7												
8												
9												
10												

* Matrix Codes: GW-ground water, SW-surface water, RES-Residential Water, EFF-Effluent, PROC-Process Water, SOIL-Soil, SED-Sediment, SWAB-Swabs, FILT-Filters

* Regulated Water Codes: GRW-ground raw water, SRW-surface raw water, TDW-Treated Drinking Water, DDW-Distribution Drinking Water

Work Authorized by(Client or representative signature must accompany request): **Date:** Sept 2/09

Part No. CofC-2(Email/Fax Copy)

Sep 10175-80

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 12088-003-03

P.O. Box 4300, 185 Concession St., Lakefield, ON. K0L 2H0, Phone (705) 652-2038, Fax (705) 652-6441

Report Results to:	Name: Barb Bowman	LRL LIMS No.:
	Company: SGS Lakefield Research Ltd	Received by (Date & Time): JB Sep 8/09
	Address:	Logged in by (Date):
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 12088-003
	Telephone Number: 2148 Fax:	Plant No.:
Send Invoice to:	Name: Rob Caldwell	Quote No.:
	Company:	Purchase Order No.:
	Address:	TAT (Turnaround Time) * Some exceptions apply, please contact lab
	City	Standard [X] RUSH [ ] Specify Date:
	Province, Postal Code	Time:
	Telephone Number: 2043 Fax:	**PLEASE CONTACT LAB PRIOR TO SUBMITTING RUSH PROJECTS**
Chain of Custody	Sampled by: B. Bowman	Sample condition upon receipt:
	Packed and Shipped by: Date /Time:	10175 return to B. Bowman after sample Map (*) 2148
	Shipment Method and WB#: Date /Time:	Temperature upon receipt: °C

Please specify any guideline or regulation that these samples may apply(i.e. ODWS, PWQO, Reg 558, GCSO, MISA, MMER, CBWA).

Guideline: **Regulation:** **initial:**

Aqua regia digest analyses: Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sn, Sr, Ti, Tl, U, V, W, Y, Zn + Hg
HUM Cell Analyses: Weekly pH, acidity, alkalinity, conductivity and SO4.
HUM Cell Metals Analyses (as per the above noted suite) to be completed weeks 0, 1, 2, 3, 4, 5, 10, 15, 20, etc.

Analysis Requested (X) as Required
(Enter an "X" in the boxes to indicate which request(s) apply to each sample)

	Sample Matrix*	Sample Identifier	No. Bottles	Date Sampled	Time Sampled	Semi- Quant XRD	Whole Rock 10176	Aqua Regia Digest Elemental Analyses 10177	Mod ABA 10178	NAG 10179	Humidity Cell Test 10180	
1		Oxide Comp Tls				X	X	X	X	X	X	
2		Sulphide Comp Tls				X	X	X	X	X	X	
3												
4												
5												
6												
7												
8												
9												
10												

* **Matrix Codes:** GW-ground water, SW-surface water, RES-Residential Water, EFF-Effluent, PROC-Process Water, SOIL-Soil, SED-Sediment, SWAB-Swabs, FILT-Filters

* **Regulated Water Codes:** GRW-ground raw water, SRW-surface raw water, TDW-Treated Drinking Water, DDW-Distribution Drinking Water

Work Authorized by(Client or representative signature must accompany request): **Date:** Sept 8/09

Part No. CofC-2(Email/Fax Copy)

SGS Lakefield Research Sample Control Sheet for Mineralogy Samples

Mineralogy LIMS Number:
Date Prepared: Sept 17/09
Department: ENVIROMET
Project Number: 12088-003
Test Number:
Met. Project Manager B Bowman

Date Required: Oct 1/09
Sample Description: Tails
Number of samples: 2
***Mineralogy Proj Manager:** Steph Downing
Quote/Proposal Number:

Quoted Price _____ BB *initialed by Project Manager* *Not to be exceeded without prior authorization*

Sample Description	Weight wt/g	Mineralogical Testing Information
SULPHIDE COMP TLS		Request from client:
OXIDE COMP TLS		SEMI-QUANTITATIVE XRD
		XRF Whole Rock = 10176-SEP09
		S+C = 10178-SEP09

* Please fill in Mineralogy Proj. Manager to speed up login of samples.
Attach proposal/quote if possible.