APPENDIX B

GEOTECHNICAL DRILLING AND MONITORING WELL INSTALLATION SUMMARY FOR THE SHAKESPEARE PROJECT (KNIGHT PIÉSOLD)

- Letter Ref. No. N5-0906 55 pages

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Our Reference: NB101-00222/1-A.01
Ref No.: N5-0906

October 28, 2005

Mr. Richard Sutcliffe
President & CEO
URSA Major Minerals Incorporated
8 King Street East, Suite No. 1300
Toronto, ON M5C 1B5

Dear Mr. Sutcliffe:

Re: Geotechnical Drilling and Monitoring Well Installation Summary for the Shakespeare Project

A geotechnical drilling and monitoring well installation program was completed by Knight Piésold at the URSA Major Mineral Incorporated Shakespeare Project from March 12 to April 1, 2005; June 27 to July 12, 2005; and August 14 to September 7, 2005. The program included the drilling and installation of a series of monitoring wells around the proposed east and west open pits, proposed process plant site, and proposed ARD (acid rock drainage) and non-ARD waste dumps. In addition, a number of geotechnical investigation drillholes were advanced to support work being completed by Golder Associates (Golder).

The drilling was completed by Downing Drilling of Hawkesbury, Ontario, using a Longyear LF-70 shack mounted rotary drill rig which was moved around the site by a Caterpillar 667 skidder. A wash boring method was used to advance the drillholes using core barrels. Standard penetration testing (SPT) with a splitspoon sampler was used to obtain overburden soil samples, while a diamond core bit was used to obtain bedrock core. Shelby tube samples were obtained in the silty clay at geotechnical drillholes GT-3 and GT-4.

The site investigation program is summarized below.

Field Program

A total of twenty-two (22) drillholes were advanced at the Shakespeare property in the vicinity of the proposed mine site. A total of seventeen (17) monitoring wells were installed, four (4) geotechnical investigation drillholes were completed, and one exploration drillhole was advanced.

Between March 12 and April 1, 2005, the exploratory drillhole (U-03-66) and six monitoring wells (MW-05-01 to MW-05-06) were installed. Between June 27 and July 12, 2005, two geotechnical investigation drillholes (GT-1A and GT-2A) and three monitoring wells (MW-05-07 to MW-05-09) were installed. Between August 14 and September 7, 2005, two geotechnical investigation drillholes (GT-3 and GT-4) and eight monitoring wells (MW-05-10 to MW-05-17) were installed. Logs for the 22 drillholes are attached. Figure 1 shows the location of the drillholes.

Exploration and Geotechnical Investigation Drillholes

Drillhole U-03-66 was advanced in order to provide a bedrock core sample in the vicinity of the proposed bulk sample location, as part of the advanced exploration stage of the project. The geotechnical investigation drillholes GT-1A, GT-2A, GT-3 and GT-4 were advanced in the vicinity of the proposed ARD and non-ARD waste dumps to assess the feasibility of using these locations as waste disposal sites for waste rock and tailings. Knight Piésold supervised the drilling and soil sample collection at these drillholes, and soil samples were submitted to Golder shortly after drilling was completed. In addition, three Shelby tube samples of soft clay were obtained from GT-3 (2.74 m to 3.35 m and 3.04 m to 3.66 m), and GT-4 (3.04 m to 3.66 m) and submitted to Golder for geotechnical testing.

Details of the exploratory and geotechnical investigation drillholes are provided below and summarized on Table 1.

Drillhole U-03-66

U-03-66 (WMS-12) was advanced at the juncture of the proposed east and west pit mineral deposits, in the vicinity of the proposed bulk sample. U-03-66 was advanced to a total depth of 21 m ending in bedrock. There was approximately 1.2 m of overburden consisting of cobbles (some gravel, trace coarse sand).

Drillhole GT-1A

GT-1A was advanced south of the west pit limit near the west end of the proposed ARD waste dump. GT-1A was advanced to a total depth of 4.1 m ending in bedrock. There was approximately 1.09 m of overburden consisting of 0.15 m of black organics underlain by 0.85 m of soft silt (trace clay, some sand and gravel) followed by 0.09 m of dense sand.

Drillhole GT-2A

GT-2A was advanced south of the east pit limit near the east end of the proposed ARD waste dump. GT-2A was advanced to a total depth of 11.5 m ending in bedrock. There was approximately 6.10 m of overburden consisting of 5.64 m of alternating silt and sand layers (0.3 to 1.2 m thick) underlain by 0.46 m of cobbles.

Drillhole GT-3

GT-3 was advanced at the north northwest end of the proposed non-ARD waste dump. GT-3 was advanced to a total depth of 7.32 m ending in bedrock. There was approximately 4.27 m of overburden consisting of 0.76 m of very loose, dark brown to black organics underlain by 1.37 m of loose, fine sand and silt (trace clay) followed by 2.14 m of soft, grey clay and silt.

Drillhole GT-4

GT-4 was advanced near the centre of the proposed non-ARD waste dump. GT-4 was advanced to a total depth of 7.32 m ending in bedrock. There was approximately 4.11 m of overburden consisting of 0.08 m of very loose, black organics underlain by 1.92 m of stiff silt (some clay, trace sand) followed by 2.0 m of soft to firm grey, silty clay, and 0.11 m of loose sand overlying the bedrock.

Monitoring Wells

Monitoring wells were installed in drillholes MW-05-01 to MW-05-17. The monitoring well installations utilized the following materials:

- Threaded PVC bottom cap
- Screen - 50 mm diameter PVC No. 10 slot size
- Solid riser - 50 mm diameter PVC pipe
- Backfill - No. 3 grain size well sand
- Seal - Hole Plug bentonite pellets (followed by bentonite grout slurry in most holes)
- Casing - Steel protective casing concreted in place

Monitoring well drilling and installation details are provided below and summarized on Table 2.

Drillhole MW-05-01

MW-05-01 (WMS-13) was installed approximately 400 m southwest of the proposed west pit limit. MW-05-01 was advanced to a total depth of 14.63 m ending in clay overburden. The overburden consisted of approximately 0.05 m of black organics underlain by 4.1 m of soft to firm, grey silt (some clay) followed by 10.4 m of very soft to firm, grey clay (some silt).

The monitoring well was installed on March 15, 2005. On March 18, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the clay. The K was estimated at 3.4×10^{-6} cm/s and the static groundwater level (SGL) was 0.32 m below ground surface (BGS). On September 20, 2005, after a dry summer, the SGL was 1.07 m BGS.

Drillhole MW-05-02

MW-05-02 (WMS-09) was installed southeast of the juncture of the proposed east and west pit limits near the northeast end of the proposed ARD waste dump. MW-05-02 was advanced to a total depth of 31.1 m ending in bedrock. There was approximately 1.5 m of overburden consisting of 0.45 m of black organics underlain by 1.05 m of gravel (some sand, trace silt).

The monitoring well was installed on March 16, 2005. On March 23, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 3.0×10^{-5} cm/s and the SGL was 3.24 m BGS. On September 20, 2005, after a dry summer, the SGL was 3.76 m BGS.

Drillhole MW-05-03

MW-05-03 (WMS-06) was installed approximately 650 m southeast of the proposed east pit. MW-05-03 was advanced to a total depth of 9.45 m ending in clay overburden. The overburden consisted of approximately 0.1 m of dark brown organics underlain by 3.8 m of sand (some gravel) and 5 m of compact gravel (some silt) followed by 0.45 m of firm varved clay (some silt).

The monitoring well was installed on March 17, 2005. On March 18, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the gravel and silt. The K was estimated at 1.7×10^{-5} cm/s and the groundwater SGL was 2.10 m BGS. On September 20, 2005, after a dry summer, the SGL was 2.63 m BGS.

Drillhole MW-05-04

MW-05-04 (WMS-02) was installed approximately 750 m east of the proposed east pit. MW-05-04 was advanced to a total depth of 10.1 m ending in bedrock. There was approximately 2.1 m of overburden consisting of 1.58 m of dark brown organics underlain by 0.52 m of loose sand (trace silt and clay).

The monitoring well was installed on March 20, 2005. On March 21, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 1.3×10^{-4} cm/s and the SGL was 0.03 m BGS. On September 21, 2005, after a dry summer, the SGL was 0.41 m BGS.

Drillhole MW-05-05

MW-05-05 (WMS-03) was installed southeast of the proposed non-ARD waste dump. MW-05-05 was advanced to a total depth of 10.1 m ending in bedrock. There was approximately 0.3 m of dark brown organics.

The monitoring well was installed on March 23, 2005. On March 23, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at

2.0×10^{-4} cm/s and the SGL was 0.72 m BGS. On September 22, 2005, after a dry summer, the SGL was 2.20 m BGS.

Drillhole MW-05-06

MW-05-06 (WMS-08) was installed 100 m to the north of the proposed east pit. MW-05-06 was advanced to a total depth of 49.5 m ending in bedrock. There were no overburden soils.

The monitoring well was installed on April 1, 2005. On August 4, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 1.3×10^{-5} cm/s and the SGL was 8.93 m BGS. On September 20, 2005, after a dry summer, the SGL was 9.18 m BGS.

Drillhole MW-05-07

MW-05-07 (WMS-05) was installed approximately 200 m south of the proposed west pit. MW-05-07 was advanced to a total depth of 8.8 m ending in cobbles. The overburden consisted of approximately 0.15 m of very loose, dark brown to black organics underlain by 7.23 m of firm, grey silt (trace fine sand) and 1.42 m of cobbles.

The monitoring well was installed on June 28, 2005. On June 28, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the silt and cobbles. The K was estimated at 3.1×10^{-4} cm/s and the SGL was 1.88 m BGS. On September 20, 2005, after a dry summer, the SGL was 3.12 m BGS.

Drillhole MW-05-08

MW-05-08 (WMS-01) was installed approximately 950 m east of the proposed east pit (200 m east of MW-05-04). MW-05-08 was advanced to a total depth of 9.76 m ending in bedrock. There was approximately 0.92 m of overburden consisting of 0.15 m of very loose, black organics underlain by 0.31 m of compact sand (trace silt and gravel) and 0.46 m of cobbles.

The monitoring well was installed on July 7, 2005. On July 7, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 5.0×10^{-6} cm/s and the SGL was 2.8 m BGS. On September 21, 2005, the SGL was 0.75 m above ground surface (artesian).

Drillhole MW-05-09

MW-05-09 (WMS-07) was installed approximately 300 m north of the proposed non-ARD waste dump. MW-05-09 was advanced to a total depth of 9.76 m ending in bedrock. There was approximately 1.37 m of overburden consisting of 0.46 m of loose to dense, brown organics underlain by 0.91 m of gravel and cobbles.

The monitoring well was installed on July 12, 2005. On July 12, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 8.3×10^{-5} cm/s and the SGL was at ground surface. On September 21, 2005, the SGL was 1.70 m BGS.

Drillholes MW-05-10 and MW-05-15

MW-05-10 and MW-05-15 (WMS-04) were installed near the northeast edge of the proposed non-ARD waste dump. MW-05-10 was advanced to a total depth of 9.76 m ending in bedrock. There were no overburden soils. The monitoring well was installed on August 15, 2005, and was found to be dry the day following the well installation.

Therefore, a second drillhole was advanced and monitoring well MW-05-15 was installed adjacent to MW-05-10 to a depth of 20.73 m on August 31, 2005. Again there were no overburden soils. The SGL in MW-05-15 on September 7, 2005, was 12.87 m BGS. On September 21, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 4.7×10^{-6} cm/s and the SGL was 13.79 m BGS.

Drillhole MW-05-11

MW-05-11 (WMS-10) was installed approximately 200 m west of the northwest edge of the proposed non-ARD waste dump. MW-05-11 was advanced to a total depth of 9.76 m ending in bedrock. There was approximately 2.44 m of overburden consisting of 0.3 m of very loose, dark brown to black organics, underlain by 2.14 m of firm to hard, silt, trace clay.

The monitoring well was installed on August 17, 2005. On September 8, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the silt and bedrock. The K was estimated at 7.7×10^{-5} cm/s and the SGL was 0.81 m BGS. On September 22, 2005, the SGL was 0.59 m BGS.

Drillhole MW-05-12

MW-05-12 (WMS-11) was installed approximately 350 m west of the west edge of the proposed non-ARD waste dump. MW-05-12 was advanced to a total depth of 9.45 m ending in bedrock. There were no overburden soils.

The monitoring well was installed on August 19, 2005. The SGL on September 1, 2005, was 0.87 m BGS. On September 22, 2005, a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 6.2×10^{-5} cm/s and the SGL was 0.96 m BGS.

Drillhole MW-05-13

MW-05-13 (WMS-14) was installed west of the proposed non-ARD waste dump approximately 300 m east of MW-05-12. MW-05-13 was advanced to a total depth of 9.76 m ending in bedrock. There was approximately 0.6 m of very soft, organics and clay overburden.

The monitoring well was installed on August 20, 2005. The SGL on September 1, 2005, was 0.19 m BGS. On September 22, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 2.7×10^{-5} cm/s and the SGL was 0.22 m BGS.

Drillhole MW-05-14

MW-05-14 (WMS-15) was installed near the north edge of the proposed non-ARD waste dump. MW-05-14 was advanced to a total depth of 9.76 m ending in bedrock. There was approximately 0.15 m of loose, brown sand and silt topsoil.

The monitoring well was installed on August 27, 2005. The SGL on September 1, 2005, was 2.27 m BGS. On September 21, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 9.9×10^{-5} cm/s and the SGL was 3.00 m BGS.

Drillhole MW-05-16

MW-05-16 (WMS-17) was installed near the east edge of the proposed non-ARD waste dump. MW-05-16 was advanced to a total depth of 9.30 m ending in bedrock. There were no overburden soils.

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The monitoring well was installed on September 2, 2005. The SGL on September 9, 2005, was 3.26 m BGS. On September 21, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 6.5×10^{-6} cm/s and the SGL was 3.44 m BGS.

Drillhole MW-05-17

MW-05-17 (WMS-13) was installed near the southeast edge of the proposed non-ARD waste dump. MW-05-17 was advanced to a total depth of 8.84 m ending in bedrock. There were no overburden soils.

The monitoring well was installed on September 7. The SGL on September 9, 2005, was 4.42 m BGS. On September 21, 2005 a rising head hydraulic conductivity (K) test was carried out to measure the permeability of the bedrock. The K was estimated at 1.5×10^{-5} cm/s and the SGL was 4.70 m BGS.

Summary
Please do not hesitate to contact the undersigned if you have any questions or if you require any further information.

Yours very truly,
KNIGHT PIÉSOLD LTD.

Joseph Duggan, P.Eng.
Project Engineer

Steven Aiken, P.Eng.
Manager Environmental Services

Attachments:

- Table 1 - Exploratory and Geotechnical Drillhole Summary (1 page)
- Table 2 - Well Summary (1 page)
- Figure 1 - Drillhole and Monitoring Well Locations (1 page)
- Figure 2 - Drillhole and Installation Log - U-03-66 (3 pages)
- Figure 3 - Drillhole and Installation Log - GT-1A (1 page)
- Figure 4 - Drillhole and Installation Log - GT-2A (1 page)
- Figure 5 - Drillhole and Installation Log - GT-3 (1 page)
- Figure 6 - Drillhole and Installation Log - GT-4 (1 page)
- Figure 7 - Drillhole and Installation Log - MW-05-01 (2 pages)
- Figure 8 - Drillhole and Installation Log - MW-05-02 (2 pages)
- Figure 9 - Drillhole and Installation Log - MW-05-03 (1 page)
- Figure 10 - Drillhole and Installation Log - MW-05-04 (1 page)
- Figure 11 - Drillhole and Installation Log - MW-05-05 (1 page)
- Figure 12 - Drillhole and Installation Log - MW-05-06 (2 pages)
- Figure 13 - Drillhole and Installation Log - MW-05-07 (1 page)
- Figure 14 - Drillhole and Installation Log - MW-05-08 (1 page)
- Figure 15 - Drillhole and Installation Log - MW-05-09 (1 page)
- Figure 16 - Drillhole and Installation Log - MW-05-10 (1 page)
- Figure 17 - Drillhole and Installation Log - MW-05-11 (1 page)
- Figure 18 - Drillhole and Installation Log - MW-05-12 (1 page)
- Figure 19 - Drillhole and Installation Log - MW-05-13 (1 page)
- Figure 20 - Drillhole and Installation Log - MW-05-14 (1 page)
- Figure 21 - Drillhole and Installation Log - MW-05-15 (3 pages)
- Figure 22 - Drillhole and Installation Log - MW-05-16 (1 page)
- Figure 23 - Drillhole and Installation Log - MW-05-17 (1 page)

cc: Mr. J. P. Chauvin, Project Manager, URSA Major Minerals Incorporated (by e-mail)
Mr. Vern Coffin, Assistant Project Manager, URSA Major Minerals Incorporated (by e-mail)

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B-17

TABLE 1

URSA MAJOR MINERALS INCORPORATED
SHAKESPEARE PROJECT

GEOTECHNICAL DRILLING AND MONITORING WELL INSTALLATION SUMMARY

EXPLORATORY AND GEOTECHNICAL DRILLHOLE SUMMARY

Drillhole Name	URSA Name	Proposed Site Name	Northing (m)	Easting (m)	Elevation (topo) (m)	Completion Date	Overburden Depth (m)	Drillhole Depth (m)
U-03-66	U-03-66	WMS-12	5,133,433	436,225	319.50	12-Mar-05	1.20	21.00
GT-1A	-	GT-1A	5,133,233	436,112	279.00	29-Jun-05	1.09	4.10
GT-2A	-	GT-2A	5,133,369	436,684	315.00	30-Jun-05	6.10	11.50
GT-3	-	GT-3	5,135,018	437,301	312.50	28-Aug-05	4.27	7.32
GT-4	-	GT-4	5,134,741	437,045	312.00	24-Aug-05	4.11	7.32

I:\101-00222-1\Assignment\Correspondence\N5-0906\[WELL SUMMARY TO MW-05-17 (Oct 21, 2005).xls]Table 1-Golder DH Summary
27-Oct-05

Note:
1. Northing and Easting coordinates are in NAD83 datum, zone 17T.

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TABLE 2

URSA MAJOR MINERALS INCORPORATED
SHAKESPEARE PROJECT

GEOTECHNICAL DRILLING AND MONITORING WELL INSTALLATION SUMMARY

WELL SUMMARY

Well Name	URSA Name	Proposed Site Name	Northing (m)	Easting (m)	Elevation (topo) (m)	Well Completion Date	Overburden Depth (m)	Drillhole Depth (m)	Well Tip Depth (m)	Well Stickup (m)	Groundwater Depth and Elevation			Permeability	
											Date	Depth BGS (m)	Elevation (m)	Date	K (cm/s)
MW-05-01	SWMW-U-03-01	WMS-13	5,132,944	435,545	267	15-Mar-05	14.63	14.63	7.84	1.03	20-Sep-05	1.07	266.46	18-Mar-05	3.4E-06
MW-05-02	SWMW-U-03-02	WMS-09	5,133,372	436,376	290	16-Mar-05	1.50	31.10	29.81	1.07	20-Sep-05	3.76	287.31	23-Mar-05	3.0E-05
MW-05-03	SWMW-U-03-03	WMS-06	5,132,989	437,027	266	17-Mar-05	9.45	9.45	7.63	1.03	20-Sep-05	2.63	264.15	18-Mar-05	1.7E-05
MW-05-04	SWMW-U-03-04	WMS-02	5,133,775	437,582	328	20-Mar-05	2.10	10.10	8.77	1.14	21-Sep-05	0.41	328.73	21-Mar-05	1.3E-04
MW-05-05	SWMW-U-03-05	WMS-03	5,134,348	437,633	339	21-Mar-05	0.30	10.10	8.85	1.16	20-Sep-05	2.20	338.26	23-Mar-05	2.0E-04
MW-05-06	SWMW-U-03-06	WMS-08	5,133,929	436,583	366	1-Apr-05	0.00	49.50	48.77	1.32	20-Sep-05	9.18	357.84	4-Aug-05	1.3E-05
MW-05-07	SWMW-U-03-07	WMS-05	5,132,993	435,960	272	28-Jun-05	8.80	8.80	7.90	0.80	20-Sep-05	3.12	269.18	28-Jun-05	3.1E-04
MW-05-08	SWMW-U-03-08	WMS-01	5,133,782	437,802	306	7-Jul-05	0.92	9.76	8.53	0.75	21-Sep-05	-0.75	307.75	7-Jul-05	5.0E-06
MW-05-09	SWMW-U-03-09	WMS-07	5,135,377	437,149	284	12-Jul-05	1.37	9.76	7.93	0.91	21-Sep-05	1.70	283.01	12-Jul-05	8.3E-05
MW-05-10	SWMW-U-03-10	WMS-04	5,135,256	437,987	334	15-Aug-05	0.00	9.76	7.93	1.00	21-Sep-05	dry	-	-	-
MW-05-11	SWMW-U-03-11	WMS-10	5,134,697	436,377	293	17-Aug-05	2.44	9.76	7.62	1.03	22-Sep-05	0.59	293.44	8-Sep-05	7.7E-05
MW-05-12	SWMW-U-03-12	WMS-11	5,134,465	436,166	303	19-Aug-05	0.00	9.45	8.23	0.82	22-Sep-05	0.98	302.86	22-Sep-05	6.2E-05
MW-05-13	SWMW-U-03-13	WMS-14	5,134,432	436,554	307	20-Aug-05	0.60	9.76	8.53	1.04	22-Sep-05	0.22	307.82	22-Sep-05	2.7E-05
MW-05-14	SWMW-U-03-14	WMS-15	5,135,120	437,100	325	27-Aug-05	0.15	9.76	8.84	1.13	21-Sep-05	3.00	322.63	21-Sep-05	9.9E-05
MW-05-15	SWMW-U-03-15	WMS-04B	5,135,256	437,987	334	31-Aug-05	0.00	20.73	19.66	1.06	21-Sep-05	13.79	321.27	21-Sep-05	4.7E-06
MW-05-16	SWMW-U-03-16	WMS-17	5,134,893	437,891	334	2-Sep-05	0.00	9.30	8.69	0.87	21-Sep-05	3.44	331.43	21-Sep-05	6.5E-06
MW-05-17	SWMW-U-03-17	WMS-13	5,134,642	437,906	350	7-Sep-05	0.00	8.84	8.23	1.20	21-Sep-05	4.70	346.50	21-Sep-05	1.5E-05

I:\101-00222-1\Assignment\Correspondence\NS-0905 - Drilling Summary Letter\[WELL SUMMARY TO MW-05-17 (Oct 21, 2005).xls]Table 2-Well Summary
27-Oct-05

Notes:
1. Northing and Easting coordinates are in NAD83 datum, zone 17T.
2. Depth BGS means Below Ground Surface. A negative depth indicates artesian condition.
3. K refers to coefficient of permeability (hydraulic conductivity). K data measured using a rising head test and K calculated by the Hvorslev method.

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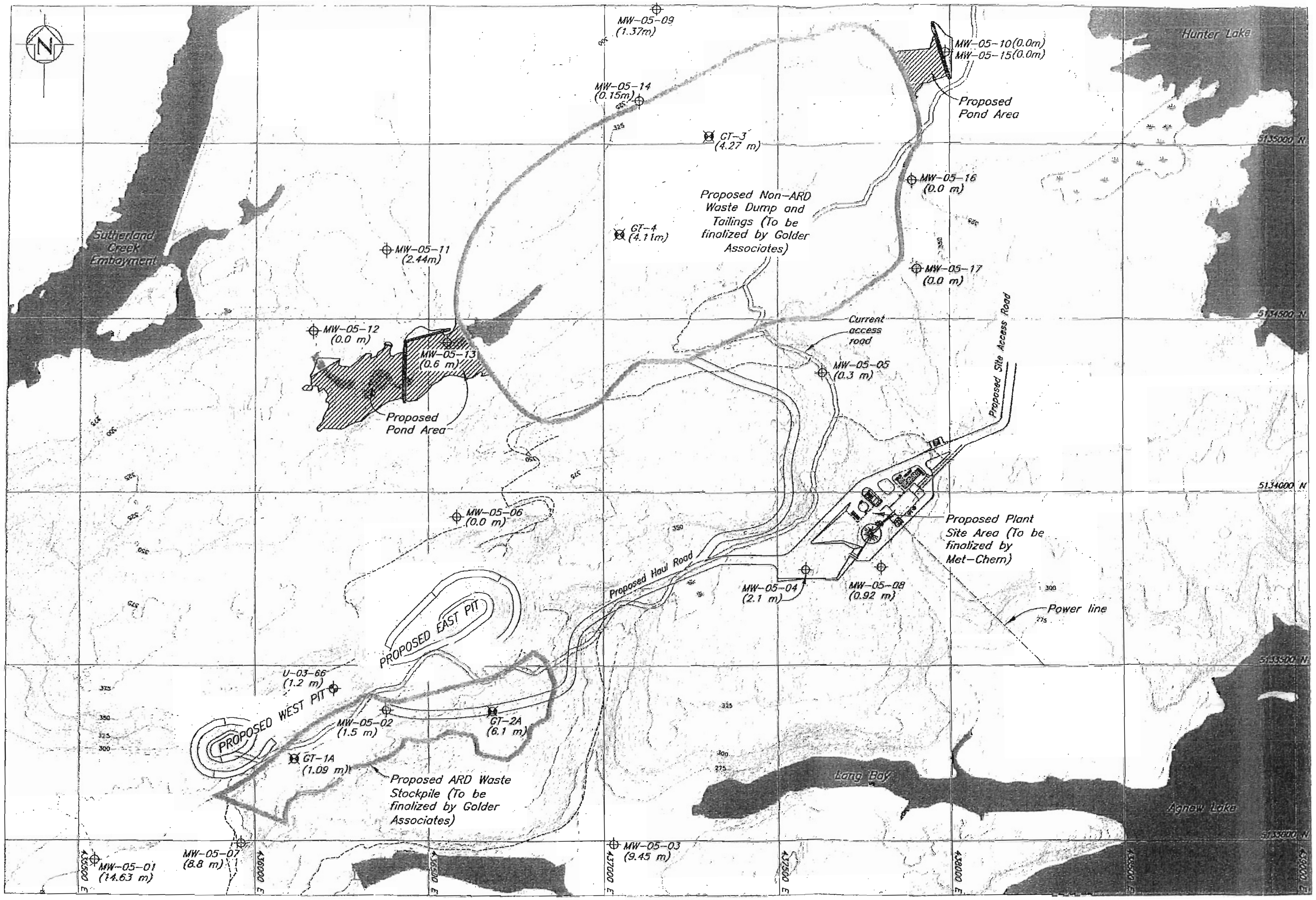

LEGEND:

- Water
- Proposed Ponds (To be finalized by Golder Associates)
- Streams
- Intermittent creeks/streams
- Completed groundwater monitoring well (Depth of overburden)
- Completed geotechnical investigation drillhole (Depth of overburden)
- Completed exploratory drillhole (Depth of overburden)
- Approximate outline of waste rock and tailings dumps, as of August 2005 (To be finalized by Golder Associates)
- Proposed access and haul roads (To be finalized by Met-Chem).
- Current access road
- ATV/Skidder/Snowmobile Trail
- Power line (To be finalized by Met-Chem)

NOTES:

1. Detailed mapping provided by URSA Major Minerals Inc., Golder Associates and Met Chem(August and September, 2005).
2. Coordinate grid shown is UTM (NAD 83).
3. Contours are in metres. Contour interval is 2.5 metres.

Scale 120 60 0 120 240 360 480 600 Metres

URSA MAJOR MINERALS INC.

SHAKESPEARE PROJECT

DRILLHOLE AND MONITORING WELL LOCATIONS

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P/A NO.	REF.	REV.
NB101-00222/1	N5-0906	0

FIGURE 1

Project:	Shakespeare Project	Drill Hole No.	**U-03-66**	PAGE	1 of 3
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	12 Mar 05
Drilling Method:	LF 70	Elevation:	319.5 m	Date Completed:	12 Mar 05
Location:		Total Depth:	21 m	Logged by:	CNH
Coordinates:	5,133,433 N , 436,225 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	319.0		**COBBLES** (0 to 1.2) Cobbles, some gravel, trace coarse sand, compact, grey to brown, wet.	33		1					
1	318.0		**BEDROCK** (1.2 to 21) Shakespeare Gabbro - medium to dark grey, medium grained, disseminated sulphides, highly oxidized joint surfaces with hematite.								
2				84		2	*21*	*46*			
3	317.0 / 316.0			100		3	*93*	*68*			
4	315.0										
5	314.0			100		4	*95*	*69*			
6	313.0			100		5	*90*	*68*			
7	312.0										
8	311.0			73		6	*73*	*65*			
9	310.0			100		7	*89*	*68*			

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	NS-0906	0

Figure 2

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**U-03-66**	PAGE	2 of 3
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	12 Mar 05
Drilling Method:	LF 70	Elevation:	319.5 m	Date Completed:	12 Mar 05
Location:		Total Depth:	21 m	Logged by:	CNH
Coordinates:	5,133,433 N , 436,225 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✕) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	309.0										
11				95		8	*88*	*65*			
	308.0										
12											
	307.0			100		9	*89*	*69*			
13											
	306.0										
14				100		10	*101*	*78*			
	305.0										
15											
	304.0			100		11	*105*	*79*			
16											
	303.0										
17				93		12	*86*	*70*			
	302.0										
18											
	301.0			100		13	*98*	*74*			
19											
	300.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 2

DRILLHOLE LOG_METRIC NB101-00222-1_REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project: Shakespeare Project	Drill Hole No. **U-03-66**		PAGE 3 of 3
Drilling Co: Downing Drilling	In Situ Sampler: Core		Date Started: 12 Mar 05
Drilling Method: LF 70	Elevation: 319.5 m		Date Completed: 12 Mar 05
Location:	Total Depth: 21 m		Logged by: CNH
Coordinates: 5,133,433 N , 436,225 E	Inclination: -90		Reviewed by: DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✕) / PL MC LL 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	299.0			97		14	*97*	*79*			
21			End of Drillhole: 21 m								
	298.0										
22											
	297.0										
23											
	296.0										
24											
	295.0										
25											
	294.0										
26											
	293.0										
27											
	292.0										
28											
	291.0										
29											
	290.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 2

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

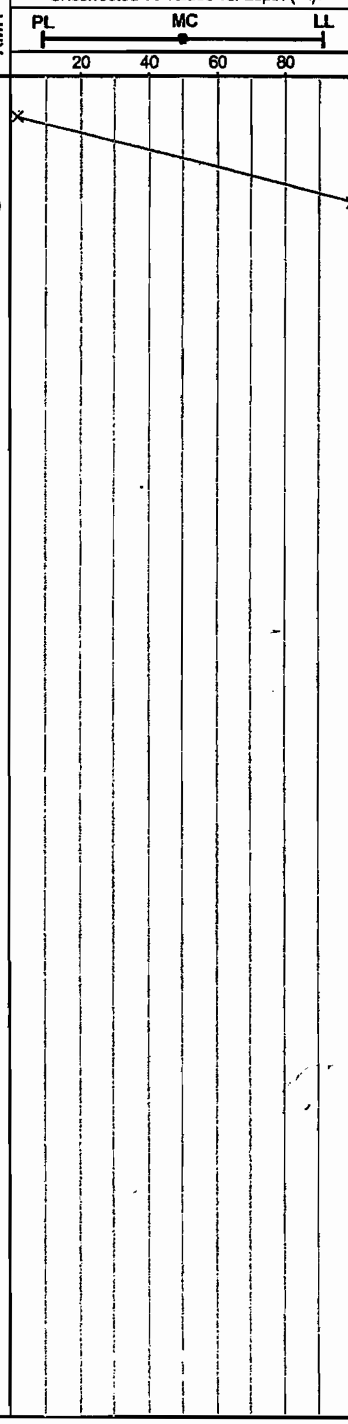
I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project: Shakespeare Project | **Drill Hole No.** GT-1A | **PAGE** 1 of 1

Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	29 Jun 05
Drilling Method:	LF 70	Elevation:	279 m	Date Completed:	29 Jun 05
Location:		Total Depth:	4.1 m	Logged by:	ACK
Coordinates:	5,133,233 N , 436,112 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR
0		**TOPSOIL/ORGANICS** (0 to 0.15) Very loose, damp, black organics	79	Splitspoon	1	0/1/1	2
		SILT (0.15 to 1) Very soft, wet, grey silt, trace clay to clayey, some sand and gravel	72	Splitspoon	2	WH	100
1	278.0	**SAND** (1 to 1.09) Dense, wet, orange and dark grey sand					
		BEDROCK (1.09 to 4.1) Nipissing Gabbro, fine grained, greyish in colour, some quartzite veins	99	Core	3	*85*	*58*
2	277.0						
3	276.0		99	Core	4	*80*	*60*
4	275.0	End of Drillhole: 4.1 m					
5	274.0						
6	273.0						
7	272.0						
8	271.0						
9	270.0						

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (Δ)
SPT TEST DATA Uncorrected 'N' values vs. depth (✕)



WELL DEPTHS (m) | WELL DETAILS

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

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Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 3

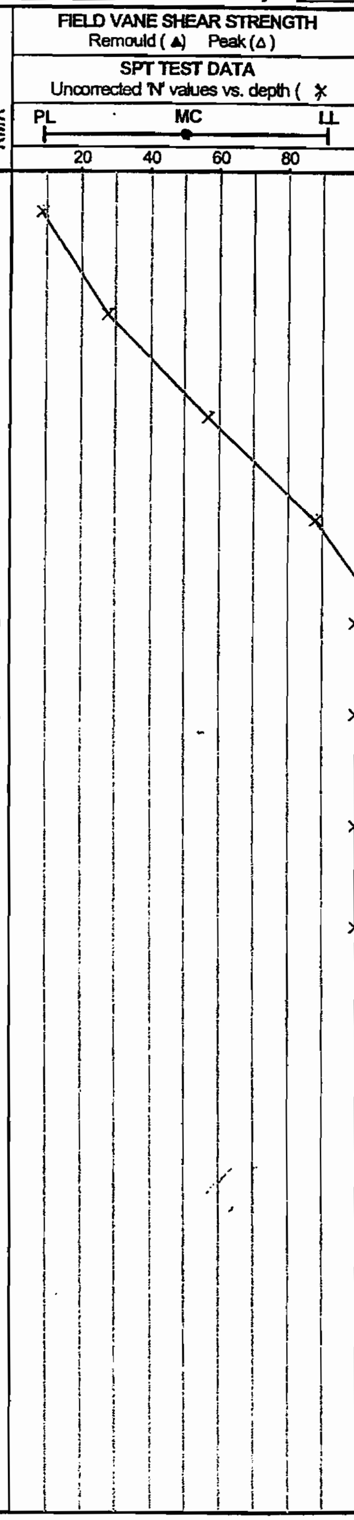
DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

B-13

Project:	Shakespeare Project	Drill Hole No.	**GT-2A**	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	29 Jun 05
Drilling Method:	LF 70	Elevation:	309 m	Date Completed:	30 Jun 05
Location:		Total Depth:	11.5 m	Logged by:	ACK
Coordinates:	5,133,369 N , 436,684 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR
		SILT (0 to 0.3) Stiff, wet, grey, orange and brown mottled silt, trace clay	87	1	4/5/4	9
1	308.0	**SAND** (0.3 to 0.61) Loose, wet, fine and coarse grained sand	100	2	6/14/14	28
		SILT (0.61 to 1.37) Very stiff, wet, grey and orange mottled silt, trace clay				
2	307.0	**SAND** (1.37 to 1.83) Compact, wet, fine and coarse grained sand	92	3	3/24/33	57
		SILT (1.83 to 2.9) Hard, moist, grey to light brown silt, trace clay	97	4	6/30/58	88
3	306.0	**SAND** (2.9 to 3.35) Very dense, wet, fine grained sand, with bluish silt	100	5	16/60/50	110
4	305.0	**SILT** (3.35 to 4.57) Hard, moist, bluish silt, some clay	100	6	28/85/80	165
5	304.0	**SAND** (4.57 to 4.88) Very dense, wet, fine and coarse grained sand	97	7	5/50/50	100
		SILT (4.88 to 5.64) Hard, moist, bluish silt, some clay	25	8	7/50/50	100
6	303.0	**COBBLES** (5.64 to 6.1) Various minerals in gravel sized stones retrieved from core barrel above bedrock				
7	302.0	**BEDROCK** (6.1 to 11.5) Nipissing Gabbro, fine grained, greyish in colour, some quartzite veins				
8	301.0		60	9	*54*	*60*
9	300.0					



WELL DEPTHS (m) | WELL DETAILS

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	NS-0906	0

Figure 4

DRILLHOLE LOG METRIC NB101-00222-1_REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	GT-2A	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	29 Jun 05
Drilling Method:	LF 70	Elevation:	309 m	Date Completed:	30 Jun 05
Location:		Total Depth:	11.5 m	Logged by:	ACK
Coordinates:	5,133,369 N , 436,684 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△); SPT TEST DATA Uncorrected 'N' values vs. depth (✱); PL MC LL; 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
11	298.0										
			End of Drillhole: 11.5 m								
12	297.0										
13	296.0										
14	295.0										
15	294.0										
16	293.0										
17	292.0										
18	291.0										
19	290.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 4

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**GT-3**	PAGE	1 of 1
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	27 Aug 05
Drilling Method:	LF 70	Elevation:	312.5 m	Date Completed:	28 Aug 05
Location:		Total Depth:	7.32 m	Logged by:	JD
Coordinates:	5,135,018 N , 437,301 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△); SPT TEST DATA Uncorrected 'N' values vs. depth (✕); PL MC LL; 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	312.0		**TOPSOIL/ORGANICS** (0 to 0.76) Very loose, wet, dark brown and black organics, with grey silt and fine sand								
1	311.0		**FINE SAND AND SILT** (0.76 to 2.13) Very loose, wet, grey fine sand and silt, trace clay	26		1	WH				
2				59		2	WH				
	310.0		**CLAY AND SILT** (2.13 to 4.27) Very soft, wet, grey clay and silt	0		3	WH				
3	309.0			49		4					
4	308.0		**BEDROCK** (4.27 to 7.32) Heavily fractured quartzite with hematite and markosite infilling								
5	307.0			100		5	*99*	*79*			
6	306.0			100		6	*90*	*77*			
7	305.0		End of Drillhole: 7.32 m								
8	304.0										
9	303.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 5

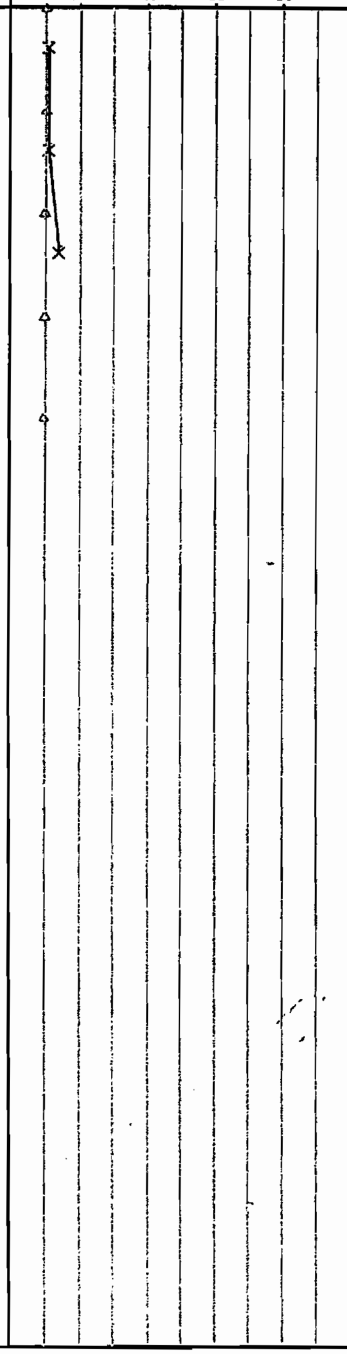
DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project: Shakespeare Project	Drill Hole No. GT-4	PAGE 1 of 1	
Drilling Co: Downing Drilling	In Situ Sampler: SPT and Core	Date Started: 22 Aug 05	
Drilling Method: LF 70	Elevation: 312 m	Date Completed: 24 Aug 05	
Location:	Total Depth: 7.32 m	Logged by: JD	
Coordinates: 5,134,741 N , 437,045 E	Inclination: -90	Reviewed by: DD	

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS
0	312.0	**TOPSOIL/ORGANICS** (0 to 0.08) Very loose, damp, black organics
		SILT (0.08 to 2) Stiff, dry, brown mottled silt, some clay, trace fine sand
1	311.0	
2	310.0	**CLAY** (2 to 4) Soft to firm, wet, brown to grey silty clay
3	309.0	
4	308.0	**SAND** (4 to 4.11) Loose, wet, brown, medium to coarse grained sand seam
		BEDROCK (4.11 to 7.32) Heavily fractured quartzite with hematite and markosite infilling
5	307.0	
6	306.0	
7	305.0	End of Drillhole: 7.32 m
8	304.0	
9	303.0	

SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*
100	Splitspoon	1	1/5/6	11
100	Splitspoon	2	4/5/6	11
100	Splitspoon	3	5/7/7	14
100	Splitspoon	4	WH	
100	Splitspoon	5		
100	Core	6	*79*	*69*
100	Core	7	*78*	*71*



WELL DEPTHS (m) | WELL DETAILS

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 6

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-01**	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT	Date Started:	14 Mar 05
Drilling Method:	LF 70	Elevation:	266.5 m	Date Completed:	15 Mar 05
Location:		Total Depth:	14.63 m	Logged by:	CNH
Coordinates:	5,132,944 N , 435,545 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)
0		**ORGANICS** (0 to 0.05) Top 5cm: Organics/peat, soft, dark brown, wet.	44	1	1/0/1	1	
	266.0	**SILT** (0.05 to 4.2) Silt some clay, soft to firm, medium grey brown, damp to wet, low plasticity.					0.6
1			100	2	6/7/8	15	
	265.0						
2							
	264.0		100	3	2/3/5	8	
3							3
	263.0						
4		**CLAY** (4.2 to 14.6) Clay some silt, trace organics, very soft to firm, grey, medium to high plasticity, varved with lighter and darker layers 0.5-3cm in thickness, saturated.	100	4	2/3/3	6	4.2
	262.0						4.8
5							
	261.0		100	5	1/0/0	0	
6							
	260.0						
7			100	6	1/0/0	0	
	259.0						
8							7.84
	258.0						8.5
9			100	7	WH		
	257.0						9.9

FIELD VANE SHEAR STRENGTH
Remould (▲) Peak (△)

SPT TEST DATA
Uncorrected 'N' values vs. depth (✕)

PL MC LL

20 40 60 80

WELL DETAILS

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

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Project No.	Ref. No.	Rev.
101-00222/1	NS-0906	0

Figure 7

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project: Shakespeare Project | Drill Hole No. **MW-05-01** | PAGE 2 of 2

Drilling Co:	Downing Drilling	In Situ Sampler:	SPT	Date Started:	14 Mar 05
Drilling Method:	LF 70	Elevation:	266.5 m	Date Completed:	15 Mar 05
Location:		Total Depth:	14.63 m	Logged by:	CNH
Coordinates:	5,132,944 N , 435,545 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
				100	Split spoon	8	WH				
				100	Split spoon	9	3/6/6	12			
				100	Split spoon	10	2/6/8	14			

Depth scale: 11, 12, 13, 14, 15, 16, 17, 18, 19. Elevation scale: 256.0, 255.0, 254.0, 253.0, 252.0, 251.0, 250.0, 249.0, 248.0, 247.0.

End of Drillhole: 14.63 m

Water level measured at 1.07m below ground surface on September 20, 2005.
Hydraulic Conductivity estimated at 3.4E-6cm/s on March 18, 2005.
Well Stickup was 1.03m.

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

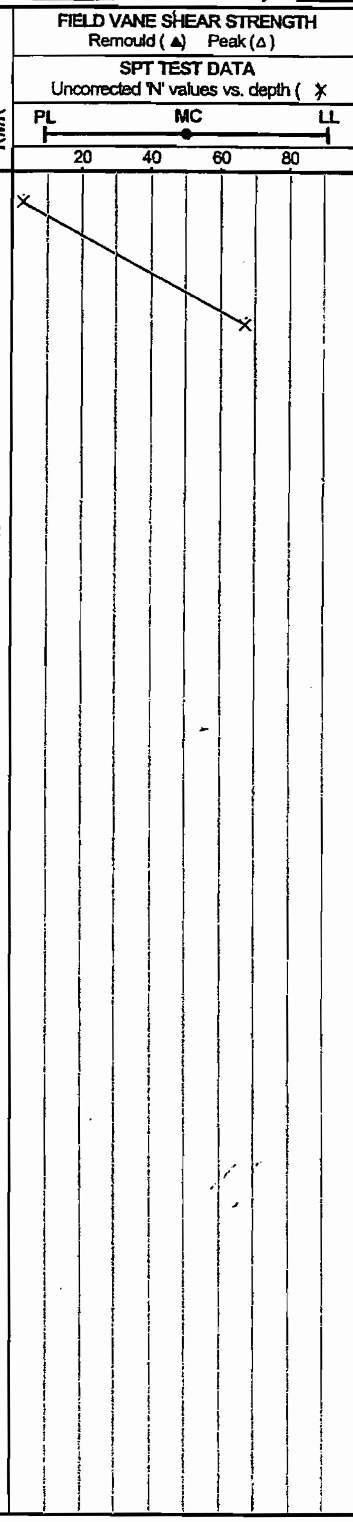
Figure 7

DRILLHOLE LOG METRIC NB101-00222-1_REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-02**	PAGE	1 of 4
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	15 Mar 05
Drilling Method:	LF 70	Elevation:	290 m	Date Completed:	16 Mar 05
Location:		Total Depth:	31.4 m	Logged by:	CNH
Coordinates:	5,133,372 N , 436,378 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)
			ORGANICS (0 to 0.45) Organics/Peat, cobbles some silt, compact, dark brown, wet, refusal of split spoon on cobble.	53		1	0/0/3	3	0.3
1	289.0		**GRAVEL SOME SAND** (0.45 to 1.5) Gravel, some sand, trace silt, subgranular particles, dense, tan brown, wet.	33		2	5/15/52	67	
2	288.0		**BEDROCK** (1.5 to 31.4) Nipissing Gabro - medium to coarse grained, salt and pepper texture, medium to dark grey, oxidized joint surface with some gauge infilling.						
				76		3	*73*	*56*	
3	287.0								
4	286.0								4.3
5	285.0								
				98		4	*85*	*58*	
6	284.0								
7	283.0								
8	282.0								
				97		5	*84*	*57*	
9	281.0								



WELL DETAILS

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 8

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	MW-05-02	PAGE	2 of 4
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	15 Mar 05
Drilling Method:	LF 70	Elevation:	290 m	Date Completed:	16 Mar 05
Location:		Total Depth:	31.4 m	Logged by:	CNH
Coordinates:	5,133,372 N , 436,378 E	Inclination:	-90	Reviewed by:	DD

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (Δ)
SPT TEST DATA Uncorrected 'N' values vs. depth (✱)
PL MC LL
20 40 60 80

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)	WELL DETAILS
11	279.0									
				100		6	95	65		
12	278.0									
									12.8	
13	277.0									
14	276.0									
				100		7	92	67		
15	275.0									
16	274.0									
17	273.0									
				100		8	100	70		
18	272.0									
19	271.0									

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 8

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project: Shakespeare Project	Drill Hole No. **MW-05-02**	PAGE 3 of 4	
Drilling Co: Downing Drilling	In Situ Sampler: SPT and Core	Date Started: 15 Mar 05	
Drilling Method: LF 70	Elevation: 290 m	Date Completed: 16 Mar 05	
Location:	Total Depth: 31.4 m	Logged by: CNH	
Coordinates: 5,133,372 N , 436,378 E	Inclination: -90	Reviewed by: DD	

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)
SPT TEST DATA Uncorrected 'N' values vs. depth (✱)
PL MC LL
20 40 60 80

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)	WELL DETAILS
				99		9	93	66		
21	269.0									
22	268.0									
23	267.0									
				97		10	89	65		
24	266.0									
25	265.0									
26	264.0									
				95		11	75	64	26.8	
27	263.0									
28	262.0									
29	261.0									
				95		12	81	64	29.81	

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev
101-00222/1	N5-0906	0

Figure 8

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	MW-05-02	PAGE	4 of 4
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	15 Mar 05
Drilling Method:	LF 70	Elevation:	290 m	Date Completed:	16 Mar 05
Location:		Total Depth:	31.4 m	Logged by:	CNH
Coordinates:	5,133,372 N , 436,378 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
31	259.0									31.1	
			End of Drillhole: 31.4 m Water level measured at 3.76m below ground surface on September 20, 2005. Hydraulic Conductivity estimated at 3.0E-5cm/s on March 23, 2005. Well Stickup was 1.07m.								
32	258.0										
33	257.0										
34	256.0										
35	255.0										
36	254.0										
37	253.0										
38	252.0										
39	251.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

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Project No.	Ref. No.	Rev.
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Figure 8

DRILLHOLE LOG METRIC NB101-00222-1_REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-03**	PAGE	1 of 1
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT	Date Started:	16 Mar 05
Drilling Method:	LF 70	Elevation:	265.75 m	Date Completed:	17 Mar 05
Location:		Total Depth:	9.45 m	Logged by:	CNH
Coordinates:	5,132,989 N , 437,027 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)
0–0.12		**ICE AND SNOW** (0 to 0.12) Ice and Snow	73	Splitspoon	1	11/11/10	21	0.3
0.12–0.2	265.0	**ORGANICS** (0.12 to 0.2) Organics/Peat, loose but frozen, dark brown, wet.						
0.2–4	264.0, 263.0, 262.0	**SAND SOME GRAVEL** (0.2 to 4) Sand some gravel to gravel trace sand, compact to dense, brown to grey-pink, wet, subangular to subrounded to angular particles.	67	Splitspoon	2	7/16/19	35	1.8
			16	Splitspoon	3	8/9/8	17	3.7
4–9	261.0, 260.0, 259.0, 258.0, 257.0	**GRAVEL SOME SILT** (4 to 9) Gravel some silt, trace clay, compact, grey, wet.	7	Splitspoon	4	2/4/7	11	4.6
			44	Splitspoon	5	4/5/8	13	
			0	Splitspoon	6	3/6/5	11	7.63
		Water level measured at 2.57m below ground surface on August 2, 2005. Hydraulic Conductivity estimated at 1.7E-5cm/s on March 18, 2005. Well stickup was 1.03m.						8.1
9–9.45	256.0	**CLAY SOME SILT** (9 to 9.45) Clay some silt, varved, firm, grey, saturated, medium to high plasticity, darker finer layer 1.5 - 4cm thick, lighter coarser layers 0.3 - 1cm thick.	100	Splitspoon	7	3/2/2	4	9.45
		End of Drillhole: 9.45 m						

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)
SPT TEST DATA Uncorrected 'N' values vs. depth (✕)
PL MC LL
20 40 60 80

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
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Figure 9

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

Project:	Shakespeare Project	Drill Hole No.	MW-05-04	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	19 Mar 05
Drilling Method:	LF 70	Elevation:	328 m	Date Completed:	20 Mar 05
Location:		Total Depth:	10.1 m	Logged by:	CNH
Coordinates:	5,133,775 N , 437,582 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*	WELL DEPTHS (m)
			TOPSOIL/ORGANICS (0 to 1.58) Loose, wet, dark brown to black organics	11		1	1/0/0	0	0.3
1	327.0								
			SAND (1.58 to 2.1) Loose, wet, grey, poorly graded, fine grained sand, trace silt and clay	89		2	2/2/2	4	
2	326.0		**BEDROCK** (2.1 to 10) Heavily fractured quartzite with hematite and markosite infilling						2.4
3	325.0			100		3	*82*	*64*	
4	324.0								4.3
5	323.0			100		4	*92*	*67*	5.72
6	322.0								
7	321.0								
8	320.0			99		5	*72*	*61*	8.77
9	319.0								

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)

SPT TEST DATA Uncorrected 'N' values vs. depth (✕)

PL MC LL

20 40 60 80

WELL DETAILS

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 10

Project:	Shakespeare Project	Drill Hole No.	**MW-05-04**	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	19 Mar 05
Drilling Method:	LF 70	Elevation:	328 m	Date Completed:	20 Mar 05
Location:		Total Depth:	10.1 m	Logged by:	CNH
Coordinates:	5,133,775 N , 437,582 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			End of Drillhole: 10.1 m Water level measured at 0.41m below ground surface on September 21, 2005. Hydraulic Conductivity estimated at 1.3E-4cm/s on March 21, 2005. Well Stickup was 1.14m.							10.1	
11	317.0										
12	316.0										
13	315.0										
14	314.0										
15	313.0										
16	312.0										
17	311.0										
18	310.0										
19	309.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

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Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 10

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-05**	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	20 Mar 05
Drilling Method:	LF 70	Elevation:	339.3 m	Date Completed:	23 Mar 05
Location:		Total Depth:	10.1 m	Logged by:	CNH
Coordinates:	5,134,346 N , 437,633 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)
0	339.3	**ORGANICS** (0 to 0.3) Organics/Topsoil, roots, loose, dark brown, frozen/wet.	27	1	1/0/0	0	0.3
0.3	339.0	**BEDROCK** (0.3 to 10.1) Quartzite - grey and red, very hard, fine grained, oxidation and hematite on joint surfaces.					
1			97	2	*56*	*55*	
3			98	3	*76*	*61*	
							4.3
5.5			100	4	*69*	*51*	5.8
8.5			99	5	*48*	*47*	8.85

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)

SPT TEST DATA Uncorrected 'N' values vs. depth (✱)

PL MC LL

20 40 60 80

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

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Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 11

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-05**	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	20 Mar 05
Drilling Method:	LF 70	Elevation:	339.3 m	Date Completed:	23 Mar 05
Location:		Total Depth:	10.1 m	Logged by:	CNH
Coordinates:	5,134,346 N , 437,633 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△); SPT TEST DATA Uncorrected 'N' values vs. depth (✱); PL MC LL; 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	329.0		End of Drillhole: 10.1 m Water level measured at 2.20m below ground surface on September 20, 2005. Hydraulic Conductivity estimated at 2.0E-4cm/s on March 23, 2005. Well stickup was 1.16m							10.1	
11	328.0										
12	327.0										
13	326.0										
14	325.0										
15	324.0										
16	323.0										
17	322.0										
18	321.0										
19	320.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
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Figure 11

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	MW-05-06	PAGE	1 of 6
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	29 Mar 05
Drilling Method:	LF 70	Elevation:	365.5 m	Date Completed:	1 Apr 05
Location:		Total Depth:	49.5 m	Logged by:	CNH
Coordinates:	5,133,929 N , 436,583 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) SPT TEST DATA Uncorrected 'N' values vs. depth (✱) PL MC LL 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			BEDROCK (0 to 49.5) Quartzite - grey, fine to medium grained, very hard, oxidized joints surfaces, highly weathered.	100		1	*0*	*56*		0.2	
	365.0										
1				100		2	*84*	*64*			
	364.0										
2											
	363.0										
3				100		3	*72*	*55*			
	362.0										
4											
	361.0			98		4	*41*	*46*			
5											
	360.0										
6				100		5	*70*	*63*			
	359.0										
7											
	358.0										
8											
	357.0			100		6	*78*	*59*			
9											
	356.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	NS-0906	0

Figure 12

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-06**		
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	29 Mar 05
Drilling Method:	LF 70	Elevation:	365.5 m	Date Completed:	1 Apr 05
Location:		Total Depth:	49.5 m	Logged by:	CNH
Coordinates:	5,133,929 N , 436,583 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	355.0										
11											
	354.0			98		7	*50*	*50*			
12											
	353.0										
13											
	352.0										
14											
	351.0			100		8	*76*	*57*			
15											
	350.0										
16											
	349.0										
17											
	348.0			97		9	*59*	*53*			
18											
	347.0										
19											
	346.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 12

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-06**		PAGE		
Drilling Co:	Downing Drilling	In Situ Sampler:	Core		Date Started:	29 Mar 05	
Drilling Method:	LF 70	Elevation:	365.5 m		Date Completed:	1 Apr 05	
Location:		Total Depth:	49.5 m		Logged by:	CNH	
Coordinates:	5,133,929 N , 436,583 E	Inclination:	-90		Reviewed by:	DD	

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	345.0										
				97		10	*38*	*48*			
21											
	344.0										
22											
	343.0										
23											
	342.0										
				98		11	*57*	*55*			
24											
	341.0										
25											
	340.0									25.5	
26											
	339.0										
				93		12	*77*	*60*		26.82	
27											
	338.0										
28											
	337.0										
29											
	336.0										
				98		13	*46*	*53*			

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

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Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 12

Project: Shakespeare Project	Drill Hole No. **MW-05-06**		PAGE 4 of 6
Drilling Co: Downing Drilling	In Situ Sampler: Core		Date Started: 29 Mar 05
Drilling Method: LF 70	Elevation: 365.5 m		Date Completed: 1 Apr 05
Location:	Total Depth: 49.5 m		Logged by: CNH
Coordinates: 5,133,929 N , 436,583 E	Inclination: -90		Reviewed by: DD

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)
SPT TEST DATA Uncorrected 'N' values vs. depth (✱)
PL MC LL
20 40 60 80

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*	WELL DEPTHS (m)	WELL DETAILS
	335.0									
31	334.0									
32	333.0			100		14	*77*	*56*		
33	332.0									
34	331.0									
35	330.0			99		15	*78*	*58*		
36	329.0									
37	328.0									
38	327.0			100		16	*83*	*62*		
39	326.0									

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 12

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-06**	PAGE	5 of 6
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	29 Mar 05
Drilling Method:	LF 70	Elevation:	365.5 m	Date Completed:	1 Apr 05
Location:		Total Depth:	49.5 m	Logged by:	CNH
Coordinates:	5,133,929 N , 436,583 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✕) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	325.0										
41											
	324.0			100		17	*80*	*62*			
42											
	323.0										
43											
	322.0										
44											
	321.0			100		18	*68*	*54*			
45											
	320.0									45.72	
46											
	319.0										
47											
	318.0			98		19	*74*	*56*			
48											
	317.0									48.77	
49											
	316.0		End of Drillhole: 49.5 m							49.5	
			Water level measured at 9.18m below ground								

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 12

Project:	Shakespeare Project	Drill Hole No.	**MW-05-06**	PAGE	6 of 6
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	29 Mar 05
Drilling Method:	LF 70	Elevation:	365.5 m	Date Completed:	1 Apr 05
Location:		Total Depth:	49.5 m	Logged by:	CNH
Coordinates:	5,133,929 N , 436,583 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✗) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			surface on September 20, 2005. Hydraulic Conductivity estimated at 1.3E-5cm/s on August 4, 2005. Well stickup was 1.32m.								
	315.0										
51											
	314.0										
52											
	313.0										
53											
	312.0										
54											
	311.0										
55											
	310.0										
56											
	309.0										
57											
	308.0										
58											
	307.0										
59											
	306.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 12

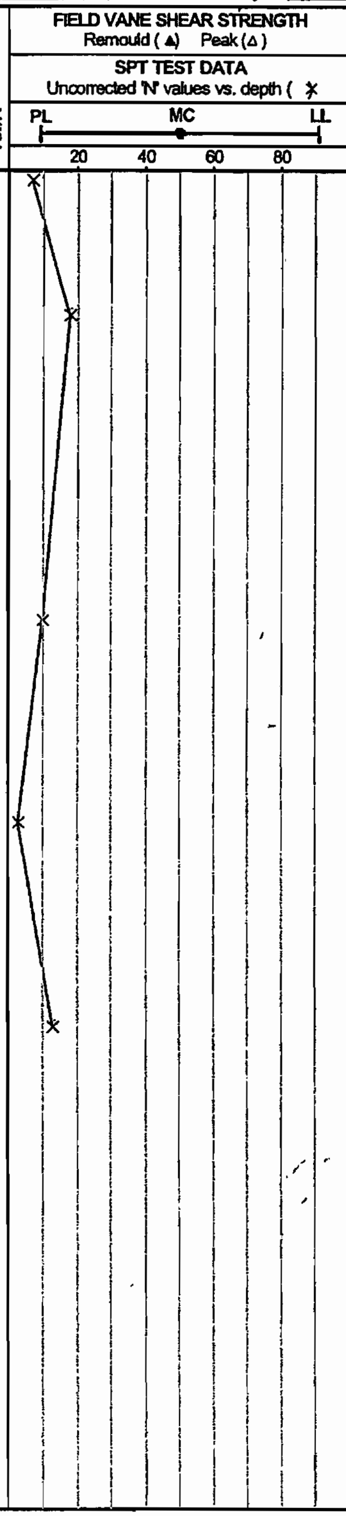
Project:	Shakespeare Project	Drill Hole No.	**MW-05-07**	PAGE	1 of 1
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT	Date Started:	27 Jun 05
Drilling Method:	LF 70	Elevation:	271.5 m	Date Completed:	28 Jun 05
Location:		Total Depth:	8.8 m	Logged by:	ACK
Coordinates:	5,132,993 N , 435,960 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)
0 – 0.15		**TOPSOIL/ORGANICS** (0 to 0.15) Very loose, wet, dark brown to black organics	67	1A / 1B	0/1/6	7	0.3
0.15 – 7.38	271.0 – 264.0	**SILT** (0.15 to 7.38) Firm, dry to moist, grey silt, trace fine sand	84	3	7/9/9	18	
			100	4	4/5/5	10	2.9 / 3.66
			100	5	0/1/2	3	4.6
			100	6	4/8/5	13	
7.38 – 8.8	264.0 – 263.0	**COBBLES** (7.38 to 8.8) Various minerals in gravel sized stones retrieved from core barrel above bedrock		7			7.9 / 8.8

Depth scale (m): 1, 2, 3, 4, 5, 6, 7, 8, 9. Elevation scale (m): 271.0, 270.0, 269.0, 268.0, 267.0, 266.0, 265.0, 264.0, 263.0, 262.0.

End of Drillhole: 8.8 m

Water level measured at 3.12m below ground surface on September 20, 2005.
Hydraulic Conductivity estimated at 3.0E-4cm/s on June 28, 2005.
Well stickup was 0.8m.



WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
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Figure 13

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-08**	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	6 Jul 05
Drilling Method:	LF 70	Elevation:	306.3 m	Date Completed:	7 Jul 05
Location:		Total Depth:	9.75 m	Logged by:	ACK
Coordinates:	5,133,782 N , 437,802 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✕) / PL MC LL (20 40 60 80)	WELL DEPTHS (m)	WELL DETAILS
0	306.0		**TOPSOIL/ORGANICS** (0 to 0.15) Very loose, wet, dark brown to black organics	59	Splitspoon	1A	1/5/21	26	✕	0.15	
						1B				0.3	
			SAND (0.15 to 0.46) Compact, damp, light brown sand, trace silt and gravel		Core	3				0.75	
1	305.0		**COBBLES** (0.46 to 0.92) Various minerals in gravel sized stones retrieved from core barrel above bedrock		Core						
2	304.0		**BEDROCK** (0.92 to 9.75) Heavily fractured quartzite with hematite and markosite infilling		Core	4					
3	303.0				Core	5				3.19	
4	302.0				Core						
5	301.0				Core	6				5.49	
6	300.0				Core	7					
7	299.0				Core						
8	298.0				Core	8				8.53	
9	297.0										
			End of Drillhole: 9.75 m							9.75	

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 14

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-08**	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	6 Jul 05
Drilling Method:	LF 70	Elevation:	306.3 m	Date Completed:	7 Jul 05
Location:		Total Depth:	9.75 m	Logged by:	ACK
Coordinates:	5,133,782 N , 437,802 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✕) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	296.0		Water level measured at 0.75m above ground surface on September 21, 2005. Hydraulic Conductivity estimated at 5.0E-6cm/s on July 7, 2005. Well stickup was 0.75m.								
11	295.0										
12	294.0										
13	293.0										
14	292.0										
15	291.0										
16	290.0										
17	289.0										
18	288.0										
19	287.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 14

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-09**	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	11 Jul 05
Drilling Method:	LF 70	Elevation:	283.8 m	Date Completed:	12 Jul 05
Location:		Total Depth:	9.75 m	Logged by:	ACK
Coordinates:	5,135,377 N , 437,149 E	Inclination:	-90	Reviewed by:	DD

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)
SPT TEST DATA Uncorrected 'N' values vs. depth (✗)
PL MC LL
20 40 60 80

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)	WELL DETAILS
			TOPSOIL/ORGANICS (0 to 0.46) Loose to dense, dry, brown, very fined grained peat and organics	75		1	1/1/10	11	0.4	
1	283.0		**GRAVEL AND COBBLES** (0.46 to 1.37) Small to large gravel and cobbles with many varieties of minerals			2				
2	282.0		**BEDROCK** (1.37 to 9.75) Nipissing Gabbro, fine grained, greyish in colour, some quartzite veins	100		3	75	55		
3	281.0								3.36	
4	280.0			99		4	63	50		
5	279.0			100		5	81	52	4.88	
6	278.0									
7	277.0			99		6	79	54		
8	276.0			99		7	99	66	7.93	
9	275.0			99		8	67	48		
	274.0		End of Drillhole: 9.75 m						9.75	

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	NS-0906	0

Figure 15

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-09**	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	11 Jul 05
Drilling Method:	LF 70	Elevation:	283.8 m	Date Completed:	12 Jul 05
Location:		Total Depth:	9.75 m	Logged by:	ACK
Coordinates:	5,135,377 N , 437,149 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			Water level measured at 1.70m below ground surface on September 21, 2005. Hydraulic Conductivity estimated at 8.3E-5cm/s on July 12, 2005. Well stickup was 0.91m.								
	273.0										
11											
	272.0										
12											
	271.0										
13											
	270.0										
14											
	269.0										
15											
	268.0										
16											
	267.0										
17											
	266.0										
18											
	265.0										
19											
	264.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 15

DRILLHOLE LOG METRIC NB101-00222-1_REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-10**	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	14 Aug 05
Drilling Method:	LF 70	Elevation:	334 m	Date Completed:	15 Aug 05
Location:		Total Depth:	9.75 m	Logged by:	JD
Coordinates:	5,135,256 N , 437,987 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△); SPT TEST DATA Uncorrected 'N' values vs. depth (✕); PL MC LL; 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			BEDROCK (0 to 9.75) Heavily fractured quartzite with hematite and markosite infilling							0.3	
				100		1	*76*	*75*			
1	333.0										
										1.5	
2	332.0										
				99		2	*78*	*74*			
3	331.0										
										3.5	
4	330.0			73		3	*73*	*78*			
										4.88	
5	329.0										
				100		4	*100*	*81*			
6	328.0										
7	327.0										
				100		5	*100*	*84*			
8	326.0									7.92	
9	325.0			100		6	*81*	*75*			
			End of Drillhole: 9.75 m							9.75	

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 16

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	MW-05-10	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	14 Aug 05
Drilling Method:	LF 70	Elevation:	334 m	Date Completed:	15 Aug 05
Location:		Total Depth:	9.75 m	Logged by:	JD
Coordinates:	5,135,256 N , 437,987 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			Well was dry. Well stickup was 1.0m.								
11	323.0										
12	322.0										
13	321.0										
14	320.0										
15	319.0										
16	318.0										
17	317.0										
18	316.0										
19	315.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 16

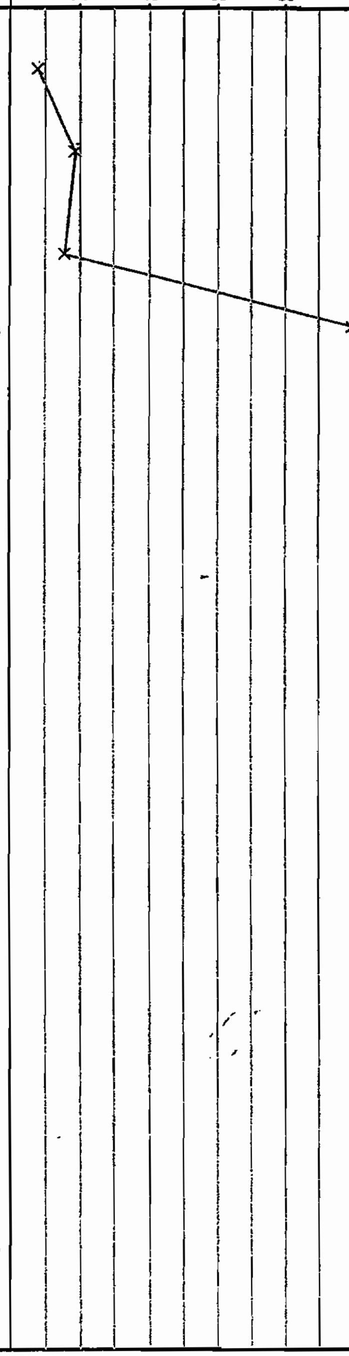
DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-11**	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	16 Aug 05
Drilling Method:	LF 70	Elevation:	293 m	Date Completed:	17 Aug 05
Location:		Total Depth:	9.76 m	Logged by:	JD
Coordinates:	5,134,697 N , 436,377 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*	WELL DEPTHS (m)
		TOPSOIL/ORGANICS (0 to 0.3) Very loose, wet, dark brown to black organics					0.3
		SILT (0.3 to 2.44) Firm to hard, moist, brown and grey mottled (slightly varved) silt, trace clay	75	1	2/2/6	8	
1	292.0		100	2	8/10/9	19	0.91
							1.52
2	291.0		100	3	2/4/12	16	
			0	4		100	
		BEDROCK (2.44 to 9.76) Heavily fractured quartzite with hematite and markosite infilling					
3	290.0		100	5	*76*	*71*	
4	289.0						
5	288.0		100	6	*79*	*72*	
6	287.0		100	7	*73*	*70*	
7	286.0						7.62
8	285.0		100	8	*100*	*72*	
9	284.0		100	9	*100*	*68*	9.75
		End of Drillhole: 9.76 m					

FIELD VANE SHEAR STRENGTH
Remould (▲) Peak (△)
SPT TEST DATA
Uncorrected 'N' values vs. depth (✕)
PL MC LL



WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 17

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	MW-05-11	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	16 Aug 05
Drilling Method:	LF 70	Elevation:	293 m	Date Completed:	17 Aug 05
Location:		Total Depth:	9.76 m	Logged by:	JD
Coordinates:	5,134,697 N , 436,377 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			Water level measured at 0.59m below ground surface on September 22, 2005. Hydraulic Conductivity estimated at 7.7E-5cm/s on September 8, 2005. Well stickup was 1.03m.								
11	282.0										
12	281.0										
13	280.0										
14	279.0										
15	278.0										
16	277.0										
17	276.0										
18	275.0										
19	274.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 17

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	MW-05-12	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	18 Aug 05
Drilling Method:	LF 70	Elevation:	303 m	Date Completed:	19 Aug 05
Location:		Total Depth:	9.45 m	Logged by:	JD
Coordinates:	5,134,465 N , 436,166 E	Inclination:	-90	Reviewed by:	DD

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)
SPT TEST DATA Uncorrected 'N' values vs. depth (✕)
PL — MC — LL; 20 40 60 80

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)
0	303.0	**BEDROCK** (0 to 9.45) Heavily fractured quartzite with hematite and markosite infilling	100	1	93	74	0.3
1	302.0						1.52
2	301.0		81	2	70	67	2.13
3	300.0						
4	299.0		100	3	76	67	
5	298.0						
6	297.0		100	4	96	71	
7	296.0		100	5	98	76	
8	295.0						8.23
9	294.0		100	6	91	69	9.45

End of Drillhole: 9.45 m

Water level measured at 0.96m below ground

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 18

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-12**	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	18 Aug 05
Drilling Method:	LF 70	Elevation:	303 m	Date Completed:	19 Aug 05
Location:		Total Depth:	9.45 m	Logged by:	JD
Coordinates:	5,134,465 N , 436,166 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			surface on September 22, 2005. Hydraulic Conductivity estimated at 6.2E-5cm/s on September 22, 2005. Well stickup was 0.82m.								
11	292.0										
12	291.0										
13	290.0										
14	289.0										
15	288.0										
16	287.0										
17	286.0										
18	285.0										
19	284.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 18

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-13**	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	20 Aug 05
Drilling Method:	LF 70	Elevation:	307 m	Date Completed:	20 Aug 05
Location:		Total Depth:	9.76 m	Logged by:	JD
Coordinates:	5,134,432 N , 436,554 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)
		TOPSOIL/CLAY AND ORGANICS (0 to 0.6) Very soft, wet black organics and grey clay	100	Splitspoon	1	WH		0.3
		BEDROCK (0.6 to 9.76) Heavily fractured quartzite with hematite and markosite infilling						0.76
1	306.0		100	Core	2	*100*	*70*	1.52
2	305.0							2.44
3	304.0		100	Core	3	*100*	*70*	
4	303.0		100	Core	4	*92*	*67*	
5	302.0							
6	301.0		100	Core	5	*100*	*69*	
7	300.0		100	Core	6	*100*	*76*	
8	299.0							8.53
9	298.0		100	Core	7	*100*	*67*	
		End of Drillhole: 9.76 m						9.75

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)
SPT TEST DATA Uncorrected 'N' values vs. depth (✗)
PL MC LL
20 40 60 80

GRAPHIC LOG

WELL DETAILS

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	N5-0906	0

Figure 19

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

I:\101-00222-1\ASSIGNMENT\DATA\GINT\NB101-00222-1_REV 0.GPJ

Project:	Shakespeare Project	Drill Hole No.	**MW-05-13**	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	SPT and Core	Date Started:	20 Aug 05
Drilling Method:	LF 70	Elevation:	307 m	Date Completed:	20 Aug 05
Location:		Total Depth:	9.76 m	Logged by:	JD
Coordinates:	5,134,432 N , 436,554 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△); SPT TEST DATA Uncorrected 'N' values vs. depth (✗); PL — MC — LL; 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			Water level measured at 0.22m below ground surface on September 22, 2005. Hydraulic Conductivity estimated at 2.7E-5cm/s on September 22, 2005. Well stickup was 1.04m.								
11	296.0										
12	295.0										
13	294.0										
14	293.0										
15	292.0										
16	291.0										
17	290.0										
18	289.0										
19	288.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

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Project No.	Ref. No.	Rev.
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Figure 19

Project:	Shakespeare Project	Drill Hole No.	MW-05-14	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	25 Aug 05
Drilling Method:	LF 70	Elevation:	324.5 m	Date Completed:	27 Aug 05
Location:		Total Depth:	9.76 m	Logged by:	JD
Coordinates:	5,135,120 N , 437,100 E	Inclination:	-90	Reviewed by:	DD

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)
SPT TEST DATA Uncorrected 'N' values vs. depth (✱)
PL MC LL
20 40 60 80

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)
0		**TOPSOIL/SAND AND SILT** (0 to 0.15) Loose, dry, brown sand and silt topsoil					0.3
	324.0	**BEDROCK** (0.15 to 9.76) Heavily fractured quartzite with hematite and markosite infilling	100	1	*78*	*74*	
1	323.0						1.52
2	322.0		100	2	*93*	*78*	2.74
3	321.0						
4	320.0		100	3	*88*	*74*	
5	319.0		100	4	*91*	*70*	
6	318.0						
7	317.0		100	5	*90*	*65*	
8	316.0						8.84
9	315.0		100	6	*84*	*66*	9.75
		End of Drillhole: 9.76 m					

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
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Figure 20

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

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Project:	Shakespeare Project	Drill Hole No.	**MW-05-14**	PAGE	2 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	25 Aug 05
Drilling Method:	LF 70	Elevation:	324.5 m	Date Completed:	27 Aug 05
Location:		Total Depth:	9.76 m	Logged by:	JD
Coordinates:	5,135,120 N , 437,100 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) SPT TEST DATA Uncorrected 'N' values vs. depth (✱) PL MC LL 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
	314.0		Water level measured at 3.00m below ground surface on September 21, 2005. Hydraulic Conductivity estimated at 9.9E-5cm/s on September 21, 2005. Well stickup was 1.13m.								
11											
	313.0										
12											
	312.0										
13											
	311.0										
14											
	310.0										
15											
	309.0										
16											
	308.0										
17											
	307.0										
18											
	306.0										
19											
	305.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
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Figure 20

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

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Project:	Shakespeare Project	Drill Hole No.	**MW-05-15**	PAGE	1 of 3
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	29 Aug 05
Drilling Method:	LF 70	Elevation:	334 m	Date Completed:	31 Aug 05
Location:		Total Depth:	20.73 m	Logged by:	JD
Coordinates:	5,135,256 N , 437,987 E	Inclination:	-90	Reviewed by:	DD

FIELD VANE SHEAR STRENGTH: Remould (▲) Peak (△)
SPT TEST DATA: Uncorrected 'N' values vs. depth (✗)
PL — MC — LL; scale 20, 40, 60, 80

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)	WELL DETAILS
			BEDROCK (0 to 20.73) Heavily fractured quartzite with hematite and markosite infilling						0.3	
				100		1	97	84		
1	333.0									
2	332.0			100		2	95	83		
3	331.0									
4	330.0			100		3	96	81		
5	329.0									
				100		4	96	83		
6	328.0									
7	327.0			100		5	100	79		
8	326.0			89		6	100	85		
9	325.0								9.14	
				100		7	100	84		

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
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Figure 21

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

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Project:	Shakespeare Project	Drill Hole No.	**MW-05-15**	PAGE	2 of 3
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	29 Aug 05
Drilling Method:	LF 70	Elevation:	334 m	Date Completed:	31 Aug 05
Location:		Total Depth:	20.73 m	Logged by:	JD
Coordinates:	5,135,256 N , 437,987 E	Inclination:	-90	Reviewed by:	DD

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)
SPT TEST DATA Uncorrected 'N' values vs. depth (X)
PL MC LL
20 40 60 80

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ *RQD (%)*	SPT 'N' VALUE/ *RMR*	WELL DEPTHS (m)	WELL DETAILS
									10.52	
11	323.0									
				100		8	*100*	*76*		
12	322.0									
				98		9	*59*	*44*		
13	321.0			98		10	*49*	*39*		
14	320.0									
				71		11	*52*	*45*		
15	319.0									
				96		12	*99*	*73*		
16	318.0									
17	317.0									
				100		13	*100*	*84*		
18	316.0									
				100		14	*100*	*86*		
19	315.0									
									19.66	
				93		15	*93*	*86*		

WELL INSTALLATION SYMBOLS:
BENTONITE CEMENT GRAVEL GROUT
SAND SLOUGH RISER PIPE SLOTTED PIPE

SAMPLE SYMBOL:
AUGER SPLITSPOON
CORE SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold
CONSULTING

Project No.	Ref. No.	Rev.
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Figure 21

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

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Project:	Shakespeare Project	Drill Hole No.	MW-05-15	PAGE	3 of 3
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	29 Aug 05
Drilling Method:	LF 70	Elevation:	334 m	Date Completed:	31 Aug 05
Location:		Total Depth:	20.73 m	Logged by:	JD
Coordinates:	5,135,256 N , 437,987 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (✱) / PL MC LL 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			End of Drillhole: 20.73 m Water level measured at 13.79m below ground surface on September 21, 2005. Hydraulic Conductivity estimated at 4.7E-6cm/s on September 21, 2005. Well stickup was 1.06m.							20.73	
21	313.0										
22	312.0										
23	311.0										
24	310.0										
25	309.0										
26	308.0										
27	307.0										
28	306.0										
29	305.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

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Figure 21

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

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Project:	Shakespeare Project	Drill Hole No.	MW-05-16	PAGE	1 of 2
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	1 Sep 05
Drilling Method:	LF 70	Elevation:	334 m	Date Completed:	2 Sep 05
Location:		Total Depth:	9.3 m	Logged by:	JD
Coordinates:	5,134,893 N , 437,891 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△); SPT TEST DATA Uncorrected 'N' values vs. depth (✱); PL MC LL; 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
0	334.0		BEDROCK (0 to 9.3) Heavily fractured quartzite with hematite and markosite infilling							0.3	
1	333.0			100		1	95	77		1.37	
2	332.0										
3	331.0			100		2	81	59		2.59	
4	330.0			100		3	100	98			
5	329.0										
6	328.0			100		4	98	80			
7	327.0										
8	326.0			100		5	97	78		8.69	
9	325.0									9.3	
			End of Drillhole: 9.3 m								
			Water level measured at 3.44m below ground surface on September 21, 2005.								

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
101-00222/1	NS-0906	0

Figure 22

Project:	Shakespeare Project	Drill Hole No.	MW-05-16		
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	1 Sep 05
Drilling Method:	LF 70	Elevation:	334 m	Date Completed:	2 Sep 05
Location:		Total Depth:	9.3 m	Logged by:	JD
Coordinates:	5,134,893 N , 437,891 E	Inclination:	-90	Reviewed by:	DD

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLES	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△) / SPT TEST DATA Uncorrected 'N' values vs. depth (x) / PL MC LL / 20 40 60 80	WELL DEPTHS (m)	WELL DETAILS
			Hydraulic Conductivity estimated at 6.5E-6cm/s on September 21, 2005. Well stickup was 0.87m.								
11	323.0										
12	322.0										
13	321.0										
14	320.0										
15	319.0										
16	318.0										
17	317.0										
18	316.0										
19	315.0										

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
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Figure 22

Project:	Shakespeare Project	Drill Hole No.	MW-05-17	PAGE	1 of 1
Drilling Co:	Downing Drilling	In Situ Sampler:	Core	Date Started:	6 Sep 05
Drilling Method:	LF 70	Elevation:	350 m	Date Completed:	7 Sep 05
Location:		Total Depth:	8.84 m	Logged by:	JD
Coordinates:	5,134,642 N , 437,905 E	Inclination:	-90	Reviewed by:	DD

FIELD VANE SHEAR STRENGTH Remould (▲) Peak (△)
SPT TEST DATA Uncorrected 'N' values vs. depth (✗)
PL MC LL
20 40 60 80

DEPTH (m)	ELEVATION (m)	DESCRIPTION OF MATERIALS	SAMPLE RECOVERY (%)	SAMPLE NO.	BLOW COUNT/ RQD (%)	SPT 'N' VALUE/ RMR	WELL DEPTHS (m)
0	350.0	BEDROCK (0 to 8.84) Heavily fractured quartzite with hematite and markosite infilling	100	1	52	56	0.3
1	349.0						1.52
2	348.0		100	2	59	68	2.13
3	347.0						
4	346.0		100	3	87	74	
5	345.0		100	4	83	65	
6	344.0						
7	343.0		100	5	72	62	
8	342.0		100	6	100	71	8.23
9	341.0	End of Drillhole: 8.84 m Water level measured at 4.7m below ground surface on September 21, 2005. Hydraulic Conductivity estimated at 1.5E-5cm/s on September 21, 2005. Well stickup was 1.2m.					8.84

WELL INSTALLATION SYMBOLS: BENTONITE, CEMENT, GRAVEL, GROUT, SAND, SLOUGH, RISER PIPE, SLOTTED PIPE

SAMPLE SYMBOL: AUGER, SPLITSPOON, CORE, SHELBY TUBE

URSA Major Minerals Incorporated
Shakespeare Project

Knight Piésold CONSULTING

Project No.	Ref. No.	Rev.
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Figure 23

DRILLHOLE LOG METRIC NB101-00222-1 REV 0.GPJ DRILL.GDT 3 Nov 05

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APPENDIX C

PRE-OPERATIVE ENVIRONMENTAL BASELINE STUDY - SHAKESPEARE DEPOSIT, ESPANOLA, ONTARIO - URSA MAJOR MINERALS INC. (N.A.R. ENVIRONMENTAL CONSULTANTS INC.)

- Report 45 pages

N.A.R. Environmental Consultants Inc.

1130 Southlane Road
Sudbury, ON P3G 1N6
Phone: (705) 522-5990
Fax: (705) 522-1898
Email: nar@ bellnet.ca

November 14, 2005

Knight Piesold Ltd.
P.O. Box 10, 34 Commerce Crescent
North Bay, ON P1B 8G8

Attention: Ms. Deena Duff, P.Eng., Project Manager

Dear Deena:

Re: Environmental Baseline Assessment – URSA Major Mineral Inc. Shakespeare Township Project

The results of N.A.R. Environmental Consultant Inc.'s (NAR) environmental baseline assessment of Agnew Lake and three embayments adjacent to URSA Major Mineral Inc.'s Shakespeare Project are presented in the appended report (two copies plus one electronic copy).

Summary of Findings

In general, water quality at the stations sampled met the Ministry of the Environment's (MOE) criteria for surface waters, although some depletion of the dissolved oxygen levels was noted in the bottom waters of the deeper basins of Agnew Lake under summer stratification. Exceedances of MOE's sediment quality guidelines under baseline conditions was noted, however, exceedances of organics and metal concentrations in Precambrian Shield lakes is not uncommon. The findings also support the benthic and fisheries communities in Agnew Lake are limited and impacted by the annual draw-down of the lake.

Due to this seasonal dewatering and the limited water movement, most of the longer embayments adjacent to the project site have limited potential as receiving water environments for discharges from a potential mining development.

Receiving Water Recommendations and Considerations

Based on work NAR has completed to date at the project site, the discharge of a combined minewater and stormwater effluent stream directly to Agnew Lake via a diffuser outfall is technically the most practical scenario to optimize waste assimilation and minimize environmental impacts. However, until a conceptual design for the tailings management area is completed, undertaking any more technical studies supporting a receiving water assessment is premature.

The following are some general considerations that apply to either the specific or all options:

1. The more constrictive channels east of Spellman's Cove and Stumpy Bay afford good advective dilution potential, as would an extended submarine outfall laid along the bottom of the Sutherland Creek embayment, and discharging to a multi-port diffuser located in the main historic channel of the Spanish River;

2. For all three options, the recommended extended outfall and multi-port diffuser should likely be installed at a mid-depth, above the seasonal thermocline for the purposes of better mixing and follow-up impact assessment.

3. The submarine outfall associated with the Sutherland Creek embayment option would be approximately 3.2 km in length, starting from monitoring well WMS-11 as a reference point. Considering the topographic relief at this location versus the Spellman's Cove and Stumpy Bay options, this outfall will likely be gravity flow. Potentially the submarine outfall could be rather simply installed in the historic thalweg (flow channel) of Sutherland Creek embayment;

4. The design of any pipeline and diffuser will need to accommodate ice scour and potential seasonal exposure during draw-down in it's design. At the transition to a continuously submerged depth, the pipeline will need to carry the ice mass associated with the seasonal draw-down of the reservoir;

5. Detailed bathometric profiling will need to be completed to facilitate siting of such a pipeline/diffuser, as well as additional environmental baseline and geotechnical studies of the shorelands and bed of the reservoir;

6. On a strict aerial basis, the pipeline would result in a loss of habitat within the creek bed, however, the pipeline and commonly utilized concrete pipe weights afford significant structure for fish habitat. In NAR's professional judgement, this would therefore result in a net gain of habitat and would not be a harmful alteration, distruption or disturbance (HADD);

7. The other potential HADD associated with the pipeline discharge scenario is the disturbance of shorelands and littoral zones during installation construction. In this site-specific case, the littoral zone is *de facto* not fish habitat in that the area is annually exposed during draw-down of the reservoir. One can reasonably expect that both benthic and macrophyte communities in this zone are absent due to annual desiccation and freezing. Some physical disturbance of the littoral bed below the defined regulatory limits of draw-down is likely in order to accommodate placement of the pipe at the shoreline cut. However, a habitat gain can be readily accommodated in this very small area of disturbance by placement of graded armour stone over ideally a granular underlay. This would create a usable bass spawning area in what is likely to be a post-construction area of ground water upwelling associated with the pipeline.;

8. For the shoreland area above the water line that would be disturbed, the use of bio-engineering principals is favoured versus hard armouring in that these tend to be as effective, more environmentally friendly and more cost effective;

9. Once a water balance and general arrangement drawing for the mine development is finalized, a preliminary conceptual design for the outfall and

diffuser should proceed. The US Army Corp of Engineer's model CORMIX is a suitable mixing zone design tool for this application, based on our experience;

10. Once sited, further baseline biological, hydrographic and current data should be collected to facilitate the final design and permitting of this discharge under Section 53 of the Ontario Water Resource Act. This is a relatively complex receiving water assessment, and as such an approvals timeline of 8 – 12 months might be expected;

Closure

We were recently advised that the daily production tonnage for the mine/mill is in the order of 4,500 Tonnes/day. As such, this mining project will trip the general provisions of the Canadian Environmental Assessment Act (CEAA). We would encourage the client to initiate discussions with the CEAA Agency as soon as possible.

The report can be revised to meet the requirements of a pre-submission document to CEAA - Fisheries and Oceans Canada once a finalized conceptual plan for tailings and waste rock management is adopted. This report generally completes our defined Terms of Reference with respect to requirements for Closure Plan reporting under the Mining Act.

If you or URSA Major Mineral Inc. have any questions or comments regarding the report, or wish to discuss the discharge options presented above, do not hesitate to contact either Brad Bowman or myself.

Yours truly

Jan Linquist
Senior Water Resources Scientist/Project Manager

Pre-Operative Environmental Baseline Study
Shakespeare Deposit, Espanola, Ontario
URSA Major Minerals Inc.

Prepared for:

Knight Piesold Consulting Ltd.
P.O. Box 10
34 Commerce Crescent
North Bay, ON P1B 8G8

Prepared by:

N.A.R. Environmental Consultants Inc.
1130 Southlane Road
Sudbury, ON P3G 1N6
(705) 522-5990

November 2005

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URSA Major Minerals Inc.

1.0 Introduction

Ursa Major Minerals Inc. is actively advancing their Shakespeare Project located on the north side of Agnew Lake approximately 75 km southwest of Sudbury, Ontario (see Figure 1).

Exploration work on the property has been conducted intermittently since the 1920's. The mineralization associated with the deposit consists of pyrrhotite and nickel – copper bearing sulphide mineralization within gabbroic rocks near the contact with Mississagi quartzites.

As proposed, the 12 M Tonne resource would be extracted by open pit mining. Both off- and on-site milling are currently being evaluated as part of an economic feasibility study.

2.0 Background

2.1 Terms of Reference

As part of their staged exploration program, Ursa Major Minerals Inc. engaged N.A.R. Environmental Consultants Inc. (NAR) to develop a pre-operative monitoring program for the project in 2004. This included the collection of multi-media data on water and sediment quality, hydrology, benthic communities and fisheries habitat. The majority of this data collection was undertaken by NAR staff, however certain tasks (e.g. baseline stream sampling) were coordinated by NAR, with the sampling completed by the client under Standard Operating Practices (SOP).

As the project advanced, Knight-Piesold Consulting assumed the lead consultant role, but engaged NAR as a specialty sub-consultant to continue the delivery of the environmental baseline study components of the project.

Under the Terms of Reference, NAR's Scope of Services included:

- the collection and interpretation of water, sediment and benthic data for Agnew Lake; and
- a general assessment of fish habitat and wetlands within the project area.

The technical studies completed should be regarded as preliminary in the absence of final siting of the infrastructure associated with the mine. At the time of the baseline studies, only the location of the open pit was confirmed. However, the data collected meets the more generalized requirements of the Mining Act, and also serves for purposes of experimental design.

2.2 Site-Setting, Habitat and Station Location Constraints

Agnew Lake is a man-made reservoir, constructed in the early 1900's for purposes of power production. The Spanish River is the primary inflow to the reservoir. Johns Creek, entering from the north and located approximately two thirds along the reservoir, is the major sub-watershed in the project area. There are several other minor streams that discharge to Agnew Lake.

Water levels in the lake are managed by INCO Limited under the terms of a waterpower lease. Water levels in the lake are generally lowered over the winter months, but maintained on a more constant basis (inflow equals outflow) during periods of peak recreational use, and periods of fish spawning activity (i.e. Spring through Fall).

The seasonal draw-down of the reservoir is approximately 3 - 6 m. As such, the littoral zone of the lake has been impacted, and there is an annual loss fish habitat associated with the winter draw-down. As the lands adjoining the reservoir are prone to erosional processes, failing slopes and massive land slippage are common.

The local soils immediate to and forming the lake bed are predominantly sands, with varying amounts of gravels or cohesive silts and clays. The amount of sub-ordinate materials present are influenced by geomorphologic processes associated with the river, and form a gradient along it's length. In deeper, depositional basins, organics transported from the upstream and surrounding catchments overlay the parent soils. From a habitat perspective, this is a dynamic environment and therefore only limited benthic communities would be expected.

3.0 Methodology

A total of six aquatic monitoring stations were established in the receiving waters for the predicted mine activities (Figure 2). Three of these stations were established in Agnew Lake to establish baseline conditions in relation to a potential extended outfall discharge option. These included a reference (REF), a near-field (NF), and a far-field (FF) station.

Three additional stations, the emb
ayment stations, were established in the nearshore waters of Spellman's Cove (SP), Stumpy Bay (ST), and Long Bay (LB). Spellman's Cove is immediately downstream of the catchment in which the ore resource is located, and thus potentially might be influenced by on-going exploration activities, including the proposed clearing and stripping and 10,000 Tonne bulk sampling program.

3.1 Sediment and Benthic Sampling

Benthic samples were collected from the three profundal stations in Agnew Lake in the Fall of 2004. Unfortunately, the samples collected were composited across stations by a sub-contractor engaged to process the samples. The resultant taxa list thus serves no purpose in terms of post-operative impact assessment, and only provides for a general overview of the benthic communities present (see Appendix A).

These stations were re-sampled in May, 2005, and the nearshore stations sampled concurrently. Triplicate benthic and sediment samples were collected at each station using a 15 x 15 cm petite Ponar dredge.

The benthic samples were screened in the field through a 60 µm wash pail, the fraction retained on the screen transferred to 1.5 L plastic jars and preserved with 10% formalin. The samples were then shipped to Zaranko Environmental Assessment Services for processing and taxonomic identification.

Only the upper 2.5 cm of the samples collected was utilized for sediment chemistry analysis. This sub-sample was removed using a stainless steel spoon, and placed in clean 250 ml glass jars provided by the contract laboratory. The samples were delivered under Chain of Custody to Testmark Laboratories Ltd. and analyzed for total organic carbon (TOC), total Kjeldahl nitrogen (TKN), total phosphorus (TP), and trace metals by ICP/MS. Testmark is accredited by the Standards Council of Canada.

At the time the samples were collected qualitative sediment descriptions were recorded, and physical habitat descriptions and photos collected at the embayment stations.

3.2 Water Quality

The Agnew Lake stations were sampled in August and October, 2004, and May, 2005 to assess seasonal changes in water quality.

The samples were collected as photic zone composites (2 x Secchi disc visibility) using a composite bottle and metered line. Under later summer thermal stratification (August 2004), discrete samples were collected 1 m above bottom using a Kemmerer sampler. The samples were transferred to plastic and glass jars provided by the contract laboratory, preserved, and placed on ice. The samples were hand delivered to Testmark Laboratories Ltd. under Chain of Custody, and analyzed for nutrients and general characterization parameters.

Dissolved oxygen/temperature profiles were measured concurrently at each station using a YSI Model 85 DO/conductivity meter or a YSI Model 55 DO meter.

Profiles were also recorded at the embayment stations in May, 2005, and sub-surface water quality grab samples collected concurrently.

4.0 Results and Discussion

4.1.1 Sediment Quality

The sediment chemistry results for Agnew Lake proper and the embayment stations are presented in Tables 1 and 2, respectively.

<u>Agnew Lake Stations</u>

In Agnew Lake, all three stations are located in depositional site-settings, and established along an upstream to downstream gradient. There are no active or historic point sources discharging to the study area, and thus the concentrations found should be representative of background conditions.

The results for the triplicate samples collected from each station are presented, as well as the mean, standard deviation (SD), and coefficient of variation (CV). Typically, for purposes of station-to-station comparison, the CV should be less than 35%. At values greater than 35%, additional sampling effort is normally warranted to facilitate valid station-to-station and temporal comparisons.

Given the preliminary nature of the study, no statistical assessment of station-to-station differences was undertaken. Qualitatively there would appear to be no order of magnitude differences between stations for any parameter.

As might be expected in these depositional site-settings, TOC and TP levels are elevated, exceeding the Ministry of Environment's (MOE) LEL Guideline for Sediment Quality (MOE 1992), while TKN levels exceed the SEL. The catchment has a long history of logging activities and, until the mid-1960's, the river was used to transport logs to the mill annually. The historic as well as on-going logging activities will have both contributed and elevated these nutrient levels.

Both iron (2.3 – 3.3 %) and manganese (0.05 – 0.15 %) levels are also elevated, suggesting summer anoxia occurs at these stations. Under anoxic conditions, TP would be released into the water column from the sediments.

The majority of the trace metals analyzed also exceed MOE's Lowest Effect Level (LEL) established to protect benthic macroinvertebrate communities. These effect levels were developed using data from the Great Lakes, and have been shown to not be indicative of actual impacts in Pre-Cambrian shield waters where background levels of metals routinely exceed Provincial Sediment and Water Quality Objectives (MOE 1994) due to natural mineralization.

Embayment Stations

Concentrations of both nutrients and metals at the three embayment stations were generally within the same range of concentrations observed at the depositional stations in Agnew Lake. These background concentrations routinely exceeded MOE's LEL or SEL for the protection of benthic macroinverebrate communities for all stations.

The highest levels of nutrients and metals were found at the Stumpy Bay station. These marginally higher levels could be reflective of higher organic content of the sediments, or exposed mineralization within the catchment, or both.

4.1.2 QA/QC, Sample Replication and Post-operative Statistical Methods

No duplicate, blind or spike samples were submitted for purposes of Quality Control – Quality Assurance (QA/QC), so only general comments on QA/QC can be offered.

Testmark Laboratories Ltd. is Standard Council of Canada accredited. Having used this laboratory for 5+ years, NAR has found their analytical services to be comparable to other labs in other project assignments. Based on our review of their internal QA/QC provided for the analytical run, there are no readily apparent analytical or laboratory errors.

The minor exception to this is the analysis of P (by ICP/MS) versus Total Phosphorus (by Scalar methods). These two different analytical methods were used at the embayment and lake stations, respectively. Although the concentrations reported in this study would appear to be comparable in terms of concentration, ideally the same analytical methodology should have been used to allow for direct comparisons.

During any follow-up sampling, submitting the samples for replicate analysis of "P" and "TP" could facilitate a review of correlation between analytical methods. The samples selected should cover a range of expected concentrations (800 – 1,400 µg/g), with n equal to 5 – 8 samples. A graphical plot of the two methods should be linear, and correlated at $p<0.05$.

For all nutrients and most base metals (Ni, Cu, Pb and Zn), the CV achieved within individual stations was less 35%, however for other trace metals the CV was higher, notably at the embayment stations. To facilitate an optimal post-operative sediment quality assessment, replication per station should ideally be increased to 5 samples, and repeated measures Analysis of Variance (ANOVA) adopted as an objective assessment of station-to-station and temporal changes in sediment quality.

4.2 Benthic Communities

The benthic macroinvertebrate taxa lists for the Agnew Lake and embayment stations are presented in Tables 3 and 4, respectively. For the triplicate samples collected from each station, the mean number of organisms and taxa is presented, as well as the coefficient of variance (CV). Percentage composition has also been derived as a summary of the dominant taxa in the individual samples.

Agnew Lake Stations

The dominant taxa at all three stations are worms (Oligochaeta), midge (Chironomids), and clams. In general, community composition at these three profundal stations is typical for unimpacted Precambrian shield lakes, low numbers of organisms and taxa diversity.

At the reference station, low numbers of more tolerant stoneflies and caddisflies were found. On average, these EPT taxa represented about 4% of the organisms found in any individual sample. The presence of these taxa suggests that water quality conditions at this station are somewhat better than those found at the near-field and far-field stations. However, the latter stations are deeper and summer anoxia conditions would strongly influence the organisms that can survive low dissolved oxygen conditions.

Embayment Stations

Benthic communities at the embayment (Table 4) are very similar to those found at the profundal lake stations, although midge were somewhat more dominant as a percentage of the overall population. Both the total number of organisms and taxa diversity per sample were low, but not atypical.

In general, within station variance based on number of organisms ranged from 21 to 135%, exceeding 35% at 4 of the 6 stations sampled. Based on numbers of taxa, only one station (the near field lake station) exceeded the 35% CV.

Sample heterogeneity is common when sampling benthic communities. In any future pre- and post-operative studies, increased sample replication will be required. The variance estimates from these samples can be used to estimate required numbers of samples for specified levels of accuracy, or a sequential experimental design adopted.

Given the simplicity of the benthic macroinvertebrate communities found at these stations, these organisms may not be idealized indicators of environmental change in this site-setting, recognizing that littoral benthic communities will be equally depauperate due to seasonal draw-down effects associated with the reservoirs operation.

4.3 Water Quality

The water quality monitoring data collected from Agnew Lake in 2004/2005 is summarized and presented in Table 5, along with the embayment data collected in May 2005. The dissolved oxygen/temperature profiles collected at the time of sampling are presented in Appendix B.

In general, the water quality of Agnew Lake is good to excellent, meeting Provincial Water Quality Objectives (PWQO) (MOE 1994) for all parameters measured. The exception is an exceedance of Cd in the bottom waters at the reference station during the August sampling. Lake Agnew would be characterized as a Policy 1 site-setting and suitable as a potential receiver for a discharge.

These waters are dilute, circum-neutral, and poorly buffered, with low concentrations of chloride and sulfate.

Agnew Lake is nutrient poor, based on overall TKN and TP levels as measured during one hydrologic year.

The D.O./temperature profiles collected reflect a normal seasonal dimictic pattern, and are weakly stratified and weakly clinograde during the period of summer stratification. Dissolved oxygen levels in the bottom waters at the reference station exceeded MOE's PWQO of 5 mg/L for the protection of warm water biota, while DO levels in the deeper basins at the near field and reference stations was lower.

Water quality results for Spellman's Cove, Stumpy Bay and Long Bay were similar to Lake Agnew, with no exceedances of PWQOs for those parameters measured.

4.4 Fish Communities and Habitat

The generalized habitat descriptions and photos of the three embayment areas, completed during the Spring of 2005, are presented in Appendix C.

Also included in Appendix C are results of a Fall Walleye Index Netting (FWIN) study complete for the Ministry of Natural Resources (MNR) by Laurentian University's Co-operative Freshwater Ecology Unit in 1998 and 1999.

The following fish species (listed by abundance) occur in Agnew Lake:

Common Name	Scientific Name
Rock Bass	*Amblophites rupestris*
Lake Whitefish	*Coregonus clupeformis*
White Sucker	*Catostomus commersonii*
Walleye	*Sanders vitreus*
Yellow Perch	*Perca flavescens*
Northern Pike	*Esox lucius*
Smallmouth Bass	*Micropterus dolomieu*
Burbot	*Lota lota*

Pike (*Esox lucius*) and walleye (*Sanders vitreus*) are the major sport fishery. The *Guide to Eating Ontario Sport Fish* (MOE 2005) lists both these species as containing elevated levels of background mercury, with consumption advisors in-place for both species over 30-35 cm in length.

Both of these species are known to spawn at the mouth of Sutherland Creek. There is also a known walleye spawning area approximately 3 km east of Long Bay on the north shore of Agnew Lake (See Figure 2). The majority of the walleye spawning activity in Agnew Lake occurs further east at the mouth of Johns Creek. Johns Creek, in it's mid and upper reaches, supports a coldwater brook trout (*Salvelinus fontinalis*) fishery.

The loss of littoral habitat, and associated benthic productivity, generally limit the fishery resources present in Agnew Lake. Based on our discussions with Co-operative Freshwater Ecology Unit, (Morgan – Linquist, personnel communication), this hypothesis is consistent with the limited warmwater fishery present in Agnew Lake.

4.5 Project Site Ponds

A field inspection was carried out on August 17th, 2005 by A.B. Bowman, P. Geo., Senior Environmental Scientist with NAR, and Maureen Kershaw, R.P.F, a Senior Ecologist. The purpose of the inspection was to assess a series of ponds that are located north of the proposed open pit and discharge to the south shore of the Sutherland Creek embayment at an existing stream monitoring station. Under one of the site development options, a proposed waste rock dump would be established upstream of the ponds.

The area was accessed by boat from Agnew Lake and the Sutherland Creek embayment, then by walking a series of exploration trails established for the purposes of Knight-Piesold's on-going geotechnical/geo-environmental investigative of the area.

4.5.1 Drainage Characteristics and Fisheries Resources

Available mapping indicates three small ponds in series, with drainage flowing in a westerly direction. The outlet stream from the catchment was crossed several times during the field visit, and observed to be either intermittent or hyporhyric (subsurface). The channel downstream of the ponds is poorly defined, and only readily differentiated by the pre-dominance of mosses and ferns. This would be characterized as an Order 1 catchment.

Two of the three ponds did not exist at the time of the inspection, while the middle pond, Pond #2 located at 436624E/5134546N, covered an area of <1,000 m^2. Historically, either bedrock topographic control and/or historic beaver activity were responsible for the existence of Ponds #1 and #3 (see Plates 1 to 4, Appendix D).

Precipitation during June, 2005 was reported to be 15% of average normal, which defines this year to be abnormally dry. However, there was some observed flow over the bedrock control pond for the middle pond, Pond #2. The volume of flow was visually estimated at < 0.0001 m^3/s.

The field pH of the stream was measured to be 6 using Litmus paper, and temperature near ambient (21^{O}C). The standing water in the pond was dark-tea coloured (i.e. humic). No Cyprinids were observed in the pond, which had an estimated mean depth of < 1 m.

4.5.2 Plant Communities

The wetland complex within the project area has developed on silt loam soils over bedrock terrain. A series of sedge meadows (former beaver ponds) occur downstream of a small, shallow pond. A narrow (<1m), very shallow stream meanders through the Canada Blue-joint Grass/Wool Rush (*Calamagrostis canadensis* (Michx) P. Beauv./*Scirpus cyperinus* (L.) Kunth) meadow marsh west of the open pond. Decaying beaver dams separate a series of graminoids meadows. Snags of varying degrees of decomposition were common in the wetland at both the drill site and meadows downstream of the pond. No active nesting sites were observed.

Scattered pockets of common meadow plants were observed on the site including Broad-leaved Meadowsweet (*Spirea latifolia), Alnus incana* (River Alder), *Osmunda sensibilis* (Sensitive Fern), and *Chamaedaphne calyculata* (Leatherleaf). At the time of the inspection, the stream course was reduced to a moist, vegetated channel below the second meadow with no evidence of surface water.

Sphagnum (*Sphagnum cuspidatum* Hoffm. and to a small degree, *Drepanocladus* sp.) were observed growing submerged in the open water pond. In general, aquatic vegetation was not well represented, perhaps reflecting the shallow, acidic water conditions. The shoreline consisted of smooth planar bedrock with pockets of vegetated gently sloping silt loam soils. A few scattered Water Arum (*Sagittaria latifolia*), Small-fruited Bulrush (*Scirpus microcarpus*), Canada rush (*Juncus brevicaudatus*), and clumps of quillwort (*Isoetes* sp.) grew along the shoreline. Blue iris (*Iris versicolor*) grew in the area but was not abundant.

Eastern white cedar (*Thuja occidentalis*), River alder (*Alnus incana*), Sensitive fern (*Osmunda sensibilis*), Canada blue-joint grass (*Calamagrostis canadensis*), sedges and goldthread (*Coptis groenlandicum*) grew in the stream channel where no surface water was observed.

The adjacent forests were primarily mixed forest with poorly drained sites supporting communities dominated by Eastern white cedar (*Thuja occidentalis*) with scattered Yellow birch (*Betula allegheniensis*). Better drained sites supported Eastern White Pine (*Pinus strobus*), Balsam fir (*Abies balsamea*), White Spruce (*Picea alba*) and less commonly Black Spruce (*Picea mariana*), Red Maple (Acer rubrum), Large-tooth aspen (Populus grandidentata), and White Birch (Betula papyrifera). The understory was representative of mixed forests of this Eco-District with good representation of *Vaccinium angustifolium* (low sweet blueberry), *Diervilla lonicera* (Bush honeysuckle), Wild lily of the valley (*Maianthemum canadense*), Bracken Fern (*Pteridium aquilinum*) and bunchberry (*Cornus canadensis*).

4.5.3 Evaluation of Ecological Significance

The observational data collected during the site inspection support that ponds downstream of the proposed water rock repository are transitory, and do not support a fishery. As such, these ponds are not fish habitat as defined by the *Fisheries Act*.

The upland forest communities in the project area are typical of the mixed forests of Ecodistrict (5E4). The wetland communities observed within the project area included: Open Water Aquatics, Grass-Sedge Meadows, and Shrub Thickets. These wetland communities are representative of communities within this Ecodistrict, although species diversity was relatively low. The wetlands are strongly influenced by the bedrock-controlled topography and past beaver activity. There was no evidence of undisturbed wetlands which supported unique plant assemblages or rare, threatened or endangered wildlife habitat.

The only plant species of provincial significance (S3) that was observed was Marsh St. John's-wort (*Triadenum virginicum* (L.) Raf.). It was abundant along the shore of the shallow, open pond (436660 E/5134548 N) and at scattered locations in the graminoids (*Calamagrostis canadensis* (Michx) P. Beauv./*Scirpus cyperinus* (L.) Kunth) meadow. Although provincially significant, this species has been frequently observed on decaying beaver dams and sedge/grass meadows that establish in drained beaver ponds throughout Ecodistrict 5E4.

5.0 Summary and General Recommendations

Water quality and biological communities in Agnew Lake are generally reflective of it's man-made nature and usage as a reservoir subject to winter drawdown. Agnew Lake is a river-run reservoir, receiving the seasonally variable flow of the Spanish River. Water levels in the reservoir vary as much as 3 - 6 m annually, and this drawdown results in significant loss of habitat, and greatly influences erosional processes along the adjoining shoreland. Slumpage and slope failure are common in these site-settings.

Water quality results for the three Agnew Lake stations and the Spellman's Cove, Stumpy Bay and Long Bay stations were below their applicable PWQOs for surface waters. Dissolved oxygen levels in the bottom waters at the near and far field stations were low under thermal stratification.

Results of the sediment quality monitoring showed exceedances of MOE's LEL guidelines for nutrients (TOC and TP) and most metal levels, and of the SEL guidelines for TKN, however, Canadian Shield background sediment levels routinely exceed the LELs. Similar sediment chemistry results were seen in the embayments, where nutrient andmetal levels exceeded the sediment quality guidelines. Due to the variability in results, increased sample size is recommended for additional sediment monitoring programs.

In general, benthic macroinvertebrate communities at both the lake and embayment stations were dominated by worms, midge and clams. Results were typical of unimpacted shield lakes where numbers of organisms and taxa diversity are typically low. Communities in the embayments are also subject to stress through the annual seasonal draw-down.

Fisheries resources in Agnew Lake are generally limited by the loss of littoral habitat and the associated benthic productivity.

Most of the extended embayments (e.g. Long Bay and Sutherland Creek) immediate to the proposed Shakespeare mining development afford little potential as receiving water environments due to their limited dilution potential and water movement. Under an assumed continuous discharge scenario, water quality in these site-settings would, under steady-state conditions, approach MISA effluent standards. This would result in an unacceptably large mixing zone and a build-up of potentially toxic metals in the near-field sediments over time.

As such, while the general arrangement for the mine is currently under development, the discharge of a combined minewater and stormwater effluent stream to Agnew Lake via a diffuser outfall is seen to be the most practical discharge scenario for optimal waste assimilation and minimized environmental impacts.

6.0 Closure

We trust this draft report addresses the requirements of the environmental baseline assessment for the project area. Certificates for the authors for Closure Plan reporting will be provided with the Final Report.

Respectively submitted:

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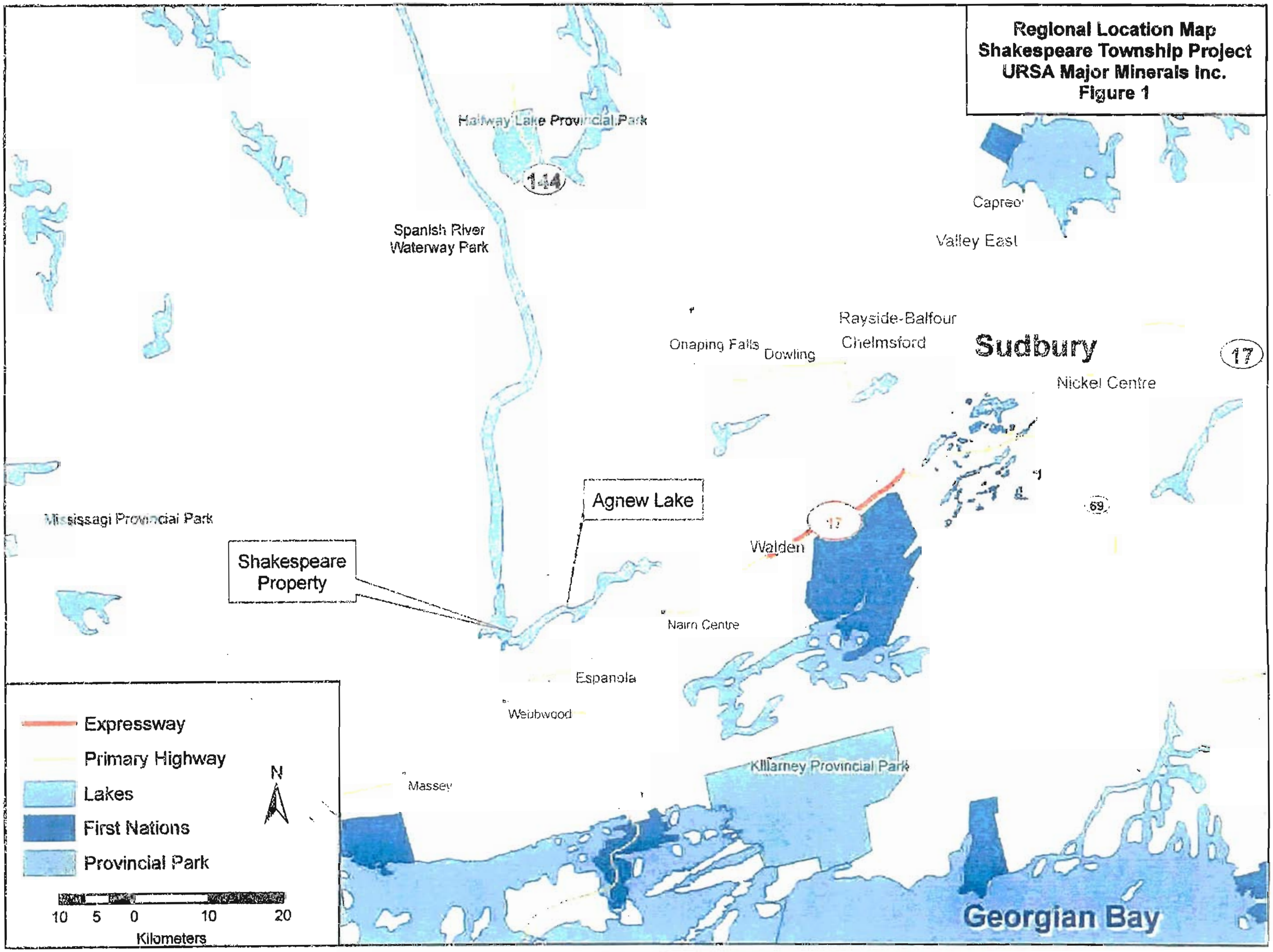

Regional Location Map
Shakespeare Township Project
URSA Major Minerals Inc.
Figure 1
Halfway Lake Provincial Park
144
Spanish River
Waterway Park
Capreol
Valley East
Rayside-Balfour
Chelmsford
Onaping Falls
Dowling
Sudbury
17
Nickel Centre
69
Mississagi Provincial Park
Agnew Lake
Shakespeare
Property
Walden
17
Nairn Centre
Espanola
Webbwood
Massey
Killarney Provincial Park
Georgian Bay
Expressway
Primary Highway
Lakes
First Nations
Provincial Park
N
10 5 0 10 20
Kilometers

Figure 2
Pre-Operative Monitoring Station Locations,
Shakespeare Township Project,
Ursa Major Minerals Inc.

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August 2005

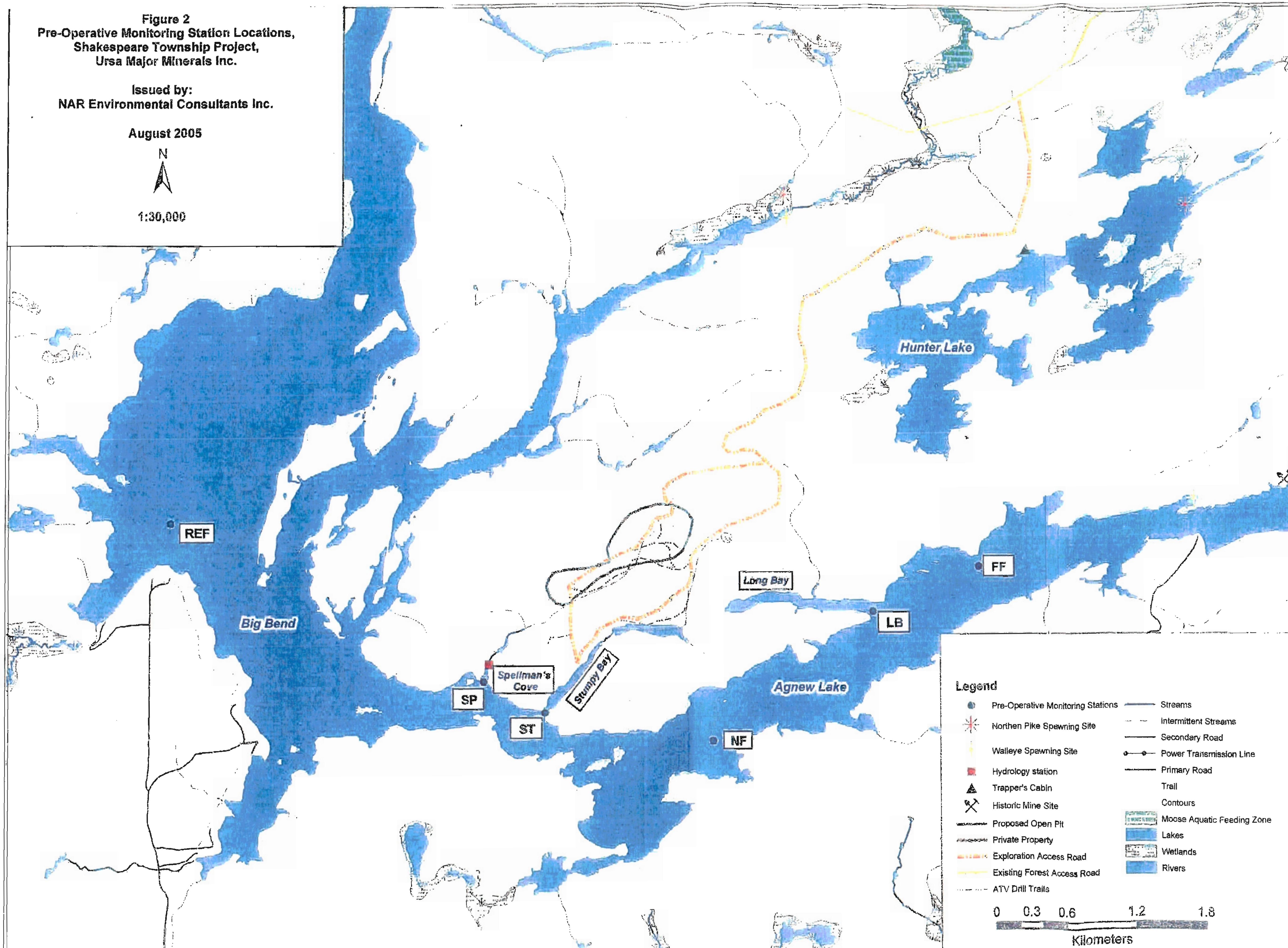


TABLE 1: Sediment Chemistry Results - Agnew Lake

Sample Location	Date (D/M/Y)	% Moisture %	TOC %	Al µg/g	As µg/g	Cd µg/g	Ca µg/g	Cr µg/g	Co µg/g	Cu µg/g	Fe µg/g	Pb µg/g
LEL			1		6	0.6		26		16	20000	31
SEL			10		33	10		110		110	40000	250
REF-1	07/10/2004	77.4	9.47	13300	3.6	1	3280	40	18.6	31	36000	38
REF-2	07/10/2004	76.1	9.35	12200	0.99	0.9	3100	36	16.8	29	30000	36
REF-3	07/10/2004	75.2	9.16	12500	2.2	1.1	3270	40	19.7	35	33000	42
Mean		76.2	9.33	12667	2.26	1	3217	39	18.4	32	33000	39
SD		1.1	0.16	569	1.31	0.1	101	2	1.5	3	3000	3
CV		1.5	1.68	4	57.71	10	3	6	8.0	10	9	8
NF-1	06/10/2004	70.8	8.87	14400	1.1	0.57	2850	33	11.7	24	24000	27
NF-2	06/10/2004	70.5	8.49	13400	1.8	0.64	2960	34	11.8	29	22000	35
NF-3	06/10/2004	79.6	11.8	16500	2.1	0.89	3070	37	12.6	33	40000	46
Mean		73.6	9.72	14767	1.7	0.70	2960	35	12.0	29	28667	36
SD		5.2	1.81	1582	0.5	0.17	110	2	0.5	5	9866	10
CV		7.0	18.64	11	30.8	24.03	4	6	4.1	16	34	26
FF-1	06/10/2004	73.9	20.7	10000	11	0.97	3220	23	10.9	25	18800	31
FF-2	06/10/2004	77.9	12.9	17800	9.4	1.2	2920	35	18.6	36	29000	46
FF-3	06/10/2004	66.7	10.8	15900	5.4	0.49	2300	27	9.97	19	22000	25
Mean		72.8	14.8	14567	8.6	0.89	2813	28	13.16	27	23267	34
SD		5.7	5.2	4067	2.9	0.36	469	6	4.74	9	5217	11
CV		7.8	35.2	28	33.5	40.86	17	22	36.00	32	22	32

Sample Location	Date (D/M/Y)	Mg µg/g	Mn µg/g	Hg µg/g	Mo µg/g	Ni µg/g	P µg/g	Sr µg/g	Sn µg/g	TKN µg/g	U µg/g	Zn µg/g
LEL			460	0.2		16				550		120
SEL			1100	2		75				4800		820
REF-1	07/10/2004	5860	1020	0.14	1.4	40	1000	16	1.3	6980	8	140
REF-2	07/10/2004	5660	1280	<0.5	1.1	37	770	15	1.1	5720	6.9	130
REF-3	07/10/2004	5720	2130	0.079	1.4	41	900	16	1.4	7000	7	140
Mean		5747	1477	N/A	1.3	39	890	16	1.3	6567	7.3	137
SD		103	581	N/A	0.2	2	115	1	0.2	733	0.6	6
CV		2	39	N/A	13.3	5	13	4	12.1	11	8.3	4
NF-1	06/10/2004	5790	420	<0.05	0.89	28	680	14	1.2	6320	4.5	110
NF-2	06/10/2004	6090	478	<0.5	0.94	35	720	14	1.4	5970	5	120
NF-3	06/10/2004	5850	543	<0.5	1.1	40	870	14	1.6	7030	5.4	160
Mean		5910	480	N/A	0.98	34	757	14	1.4	6440	5.0	130
SD		159	62	N/A	0.11	6	100	0	0.2	540	0.5	26
CV		3	13	N/A	11.23	18	13	0	14.3	8	9.1	20
FF-1	06/10/2004	2680	1170	0.076	1.4	28	590	18	1	7080	4	100
FF-2	06/10/2004	4460	1110	0.17	1.9	46	1000	19	1.6	7550	5.9	140
FF-3	06/10/2004	3120	666	0.14	1.7	21	800	16	1.2	7490	4.8	74
Mean		3420	982	0.13	1.7	32	797	18	1.3	7373	4.9	105
SD		927	275	0.05	0.3	13	205	2	0.3	256	1.0	33
CV		27	28	37.32	15.1	41	26	9	24.1	3	19.5	32

LEL - Lowest Effect Level

SEL - Severe Effect Level

- Exceeds LEL

- Exceeds SEL

TABLE 2: Sediment Chemistry Results - Stumpy Bay, Spellman's Cove and Long Bay

Sample Location	Date (D/M/Y)	% Moisture %	TOC %	Al µg/g	As µg/g	Cd µg/g	Ca µg/g	Cr µg/g	Co µg/g	Cu µg/g	Fe µg/g	Pb µg/g	Mg µg/g
LEL			1		6	0.6		26		16	20000	31	
SEL			10		33	10		110		110	40000	250	
SP-1	04/05/2005	82.4	4.4	12600	13	1.4	3070	36	28.2	34	65000	45	5030
SP-2	04/05/2005	66.9	3	7430	2.4	0.51	2200	22	9.96	19	17000	21	3180
SP-3	04/05/2005	72.7	3.3	9830	1.9	0.68	2540	25	11.1	22	21000	32	3910
Mean		74.0	3.6	9953	5.8	0.86	2603	28	16.42	25	34333	33	4040
SD		7.8	0.7	2587	6.3	0.47	438	7	10.22	8	26633	12	932
CV (%)		10.6	20.7	26	108.7	54.73	17	27	62.23	32	78	37	23
ST-1	04/05/2005	82.2	9.17	12700	6.3	1.4	3120	37	19.3	39	36000	56.7	4900
ST-2	04/05/2005	78.8	5.88	11500	5.2	1.4	3270	38	20	41	28000	60	4970
ST-3	04/05/2005	85.9	7.98	10300	6.6	1.2	3130	31	18.8	29	32000	40	4310
Mean		82.3	7.68	11500	6.0	1.3	3173	35	19.4	36	32000	52.2	4727
SD		3.6	1.67	1200	0.7	0.1	84	4	0.6	6	4000	10.7	363
CV		4.3	21.70	10	12.2	8.7	3	11	3.1	18	13	20.5	8
LB-1	05/05/2005	71.7	4.3	9760	4.4	0.43	2570	23	8.76	18	18000	22	3200
LB-2	05/05/2005	76.5	3.8	11700	6.2	0.9	2960	34	18.3	35	36000	49.9	4760
LB-3	05/05/2005	68.1	3	9760	3.5	0.51	2870	27	12.6	24	17000	29	3940
Mean		72.1	3.7	10407	4.7	0.61	2800	28	13.22	26	23667	33.6	3967
SD		4.2	0.7	1120	1.4	0.25	204	6	4.80	9	10693	14.5	780
CV		5.8	17.7	11	29.3	41.00	7	20	36.31	34	45	43.2	20

Sample Location	Date (D/M/Y)	Mg µg/g	Mn µg/g	Hg µg/g	Mo µg/g	Ni µg/g	Sr µg/g	Sn µg/g	TKN µg/g	TP µg/g	U µg/g	Zn µg/g
LEL			460	0.2		16			550	600		120
SEL			1100	2		75			4800	2000		820
SP-1	04/05/2005	5030	2500	0.11	1.5	58.4	18	1.7	4900	1300	8.1	190
SP-2	04/05/2005	3180	945	<0.05	0.75	24	12	0.95	2400	480	3.2	65.2
SP-3	04/05/2005	3910	1400	<0.05	0.87	36	14	0.99	2300	1100	3.7	87.7
Mean		4040	1615	N/A	1.04	39.5	15	1.21	3200	960	5.0	114.3
SD		932	799	N/A	0.40	17.5	3	0.42	1473	428	2.7	66.5
CV		23	50	N/A	38.74	44.2	21	34.78	46	45	53.9	58.2
ST-1	04/05/2005	4900	726	0.12	1.4	48	18	1.8	6000	1300	8.2	150
ST-2	04/05/2005	4970	1530	0.096	1.8	52.6	19	2.1	4300	850	7.5	160
ST-3	04/05/2005	4310	2000	0.1	1.3	41	18	1.3	5500	1900	7.4	110
Mean		4727	1419	0.11	1.5	47.2	18	1.7	5267	1350	7.7	140
SD		363	644	0.01	0.3	5.8	1	0.4	874	527	0.4	26
CV		8	45	12.21	17.6	12.4	3	23.3	17	39	5.7	19
LB-1	05/05/2005	3200	617	<0.05	0.88	21	16	0.89	2600	800	3.1	53.6
LB-2	05/05/2005	4760	1780	0.089	1.5	48	17	1.6	3000	1000	5.8	130
LB-3	05/05/2005	3940	621	<0.05	0.82	32	17	1.1	2000	860	3.6	73.3
Mean		3967	1006	N/A	1.07	34	17	1.20	2533	887	4.2	85.6
SD		780	670	N/A	0.38	14	1	0.36	503	103	1.4	39.7
CV		20	67	N/A	35.29	40	3	30.48	20	12	34.5	46.3

LEL - Lowest Effect Level
SEL - Severe Effect Level
- Exceeds LEL
- Exceeds SEL

TABLE 3: BENTHIC MACROINVERTEBRATES COLLECTED FROM AGNEW LAKE, 2005.

Station	REF			NF			FF		
Replicate	1	2	3	1	2	3	1	2	3
ROUNDWORMS									
P. Nemata	-	1	2	-	3	-	1	1	-
ANNELIDS									
P. Annelida									
WORMS									
Cl. Oligochaeta									
F. Naididae									
Dero digitata	-	-	-	-	-	-	-	1	4
F. Tubificidae									
Aulodrilus limnobius	3	1	5	2	-	-	4	6	4
Aulodrilus pigueti	1	-	1	-	1	-	3	3	4
Ilyodrilus templetoni	-	-	-	-	-	-	1	-	-
Limnodrilus hoffmeisteri	-	-	1	-	-	-	-	-	-
immatures with hair chaetae	-	1	-	-	2	-	2	3	-
immatures without hair chaetae	6	8	6	-	2	1	2	5	2
ARTHROPODS									
P. Arthropoda									
WATER SCUDS									
O. Amphipoda									
F. Hyalellidae									
Hyalella	1	-	-	-	-	-	-	-	-
INSECTS									
Cl. Insecta									
MAYFLIES									
O. Ephemeroptera									
F. Heptageniidae									
Stenonema	-	-	-	-	-	-	-	1	-
STONEFLIES									
O. Plecoptera									
F. Taeniopterygidae									
Taeniopteryx	1	-	1	-	-	-	-	-	-
CADDISFLIES									
O. Trichoptera									
F. Lepidostomatidae									
Lepidostoma	1	-	-	-	-	-	-	-	-
F. Leptoceridae									
Oecetis	-	1	-	-	-	-	-	1	-
F. Polycentropodidae									
Polycentropus	-	1	-	-	-	-	-	-	2
O. Megaloptera									
ALDERFLIES									
F. Sialidae									
Sialis	-	-	-	-	1	-	-	-	-
TRUE FLIES									
O. Diptera									
BITING-MIDGE									
F. Ceratopogonidae									
Probezzia	-	-	-	-	1	-	-	-	-
MIDGES									
F. Chironomidae									
chironomid pupae	-	-	-	-	2	-	1	1	-
S.F. Chironominae									
Chironomus	-	-	1	-	-	-	-	1	1
Pagastiella	-	-	-	-	1	-	-	-	-
Polypedilum scalaenum	-	1	-	-	-	2	-	4	2

TABLE 4: BENTHIC MACROINVERTEBRATES COLLECTED FROM LONG BAY, SPELLMANS COVE, AND STUMPY BAY, 2005.

Station	Long Bay			Spellmans Cove			Stumpy Bay		
Replicate	1	2	3	1	2	3	1	2	3
ROUNDWORMS									
P. Nemata	-	-	1	-	-	1	-	-	-
ANNELIDS									
P. Annelida									
WORMS									
Cl. Oligochaeta									
F. Tubificidae									
Aulodrilus limnobius	4	4	1	3	14	4	4	2	5
Aulodrilus pigueti	2	-	2	-	6	-	-	-	1
immatures with hair chaetae	-	-	-	1	-	-	1	-	-
immatures without hair chaetae	1	-	-	-	-	-	-	-	-
Cl. Polychaeta									
Manayunkia speciosa	-	-	-	-	-	-	1	-	-
ARTHROPODS									
P. Arthropoda									
MITES									
Cl. Arachnida									
O. Acarina	-	-	-	-	1	-	-	-	-
INSECTS									
Cl. Insecta									
O. Megaloptera									
ALDERFLIES									
F. Sialidae									
Sialis	1	-	-	-	2	1	-	-	-
CADDISFLIES									
O. Trichoptera									
F. Dipseudopsidae									
Phylocentropus	-	-	-	-	1	-	1	-	-
F. Leptoceridae									
Oecetis	-	-	-	-	1	-	-	-	-
TRUE FLIES									
O. Diptera									
BITING-MIDGE									
F. Ceratopogonidae									
Bezzia	-	-	-	-	-	-	1	-	-
Mallochohelea	-	-	3	-	-	-	-	-	-
MIDGES									
F. Chironomidae									
chironomid pupae	-	-	-	-	-	1	-	-	-
S.F. Chironominae									
Nilothauma	-	-	1	-	-	-	-	-	1
Pagastiella	2	1	-	1	2	1	1	1	1
Parachironomus	-	-	-	-	1	-	-	-	-
Polypedilum scalaenum	1	1	3	1	1	-	-	-	1
Stempellinella	-	-	-	-	-	1	-	-	-
Tanytarsus	14	15	27	7	15	8	9	2	5
Xenochironomus	1	-	-	-	-	-	-	-	-
S.F. Orthocladiinae									
S.F. Tanypodinae									

TABLE 5: Water Chemistry Results, Agnew Lake 2004-2005

Station Location		AL mg/L	NH3 mg/L	As mg/L	Cd mg/L	Ca mg/L	Chloride mg/L	Co mg/L	Cond µS/cm	Cu mg/L	Fe mg/L	Pb mg/L	Mg mg/L	Alkal. mg/L	Mn mg/L
	PWQO	0.075	a	0.1 (0.005)	0.0002 (0.0001)			0.0009		0.005 (0.001)	0.3	0.005 (0.001)			
REF-S	08/19/04	0.029	0.034	<0.001	<0.0001	3.9	2.3	<0.0001	40	<0.001	0.073	<0.001	1.18	<10	0.018
REF-B	08/19/04	0.031	0.025	<0.001	**0.00035**	4.1	1.5	0.0002	41	0.0023	0.087	<0.001	1.15	<10	0.03
REF	10/7/04	0.024	0.022	<0.001	<0.0001	4.7	1.1	<0.0001	42.5	<0.001	0.076	<0.001	1.30	13	0.016
REF	05/4/05		0.055			3.2	1		34.3					<10	
NF-S	08/19/04	0.028	0.06	<0.001	<0.0001	4	1.2	<0.0001	40	<0.001	0.068	<0.001	1.13	<10	0.034
NF-B	08/19/04	0.035	0.023	<0.001	<0.0001	4.2	1.1	<0.0001	41	0.0012	0.14	<0.001	1.16	10	0.098
NF	10/6/04	0.023	0.049	<0.001	<0.0001	4.7	1	<0.0001	42.4	<0.001	0.055	<0.001	1.29	12	0.021
NF	05/5/05		0.058			3.2	0.93		35.07					<10	
FF-S	08/19/04	0.034	0.052	<0.001	<0.0001	4.3	1.1	<0.0001	41	<0.001	0.076	<0.001	1.20	<10	0.035
FF-B	08/19/04	0.032	0.045	<0.001	0.00013	3.8	1.3	<0.0001	41	0.0019	0.11	<0.001	1.08	10	0.093
FF	10/6/04	0.023	0.043	<0.001	<0.0001	4.5	1	<0.0001	42.4	0.0017	0.057	<0.001	1.27	10	0.017
FF	05/5/05		0.054			2.8	0.86		33.97					<10	
SP	05/04/2005		0.05			3.2	0.94		33.93					<10	
ST	05/04/2005		0.12			3	0.91		33.99					<10	
LB	05/05/2005		0.054			3	0.86		33.58					<10	

Station Location	Date	Hg mg/L	Mo mg/L	Ni mg/L	NO3 mg/L	NO2 mg/L	pH pH	Sulfate mg/L	TDS mg/L	TH mg/L	TKN mg/L	TP mg/L	TSS mg/L	Zn mg/L
PWQO		0.0002	(0.01)	0.025								b		0.03 (0.02)
REF-S	08/19/04	<0.0001	<0.001	<0.001	<0.1	<0.05	7.4	6.2	43	14.7	0.33	0.016	<3	0.002
REF-B	08/19/04	<0.0001	<0.001	0.0027	<0.1	<0.05	6.99	5.2	40	15	0.33	0.016	<3	0.020
REF	10/7/04	<0.0001	<0.001	<0.001	<0.1	<0.05	7.23	4.9	41	17.1	0.31	0.0073	<3	<0.001
REF	05/4/05				<0.1	<0.05	6.93	4.8	44	11.7	0.22		<6	
NF-S	08/19/04	<0.0001	<0.001	<0.001	<0.1	<0.05	7.05	5.3	37	14.7	0.31	0.016	<3	0.001
NF-B	08/19/04	<0.0001	<0.001	0.0011	<0.1	<0.05	6.9	5.6	35	15.2	0.36	0.016	<3	0.004
NF	10/6/04	<0.0001	<0.001	<0.001	<0.1	<0.05	7.16	4.8	41	16.9	0.3	0.0083	<3	<0.001
NF	05/5/05				<0.1	<0.05	6.94	4.7	56	11.8	0.41		<6	
FF-S	08/19/04	<0.0001	<0.001	0.0011	<0.1	<0.05	6.97	5.4	48	15.6	0.38	0.017	<3	0.001
FF-B	08/19/04	<0.0001	<0.001	0.002	<0.1	<0.05	6.75	5.5	52	13.9	0.28	0.018	<3	0.009
FF	10/6/04	<0.0001	<0.001	<0.001	<0.1	<0.05	7.14	4.9	32	16.4	0.29	0.0091	<3	<0.001
FF	05/5/05				<0.1	<0.05	6.89	4.8	38	10.3	0.41		<6	
SP	05/04/2005				<0.1	<0.05	6.87	4.7	56	11.6	0.25		<6	
ST	05/04/2005				<0.1	<0.05	6.91	4.8	44	11.1	0.32		<6	
LB	05/05/2005				<0.1	<0.05	6.89	4.7	53	11.1	0.24		<6	

PWQO - Provincial Water Quality Objectives, Exceedences are in bold. Interim Objectives are in brackets

a - dependant on temperature and pH

b - To avoid nuisance concentrations of algae in lakes, average total phosphorus concentrations for the ice free period should not exceed 0.02 mg/L. A high level of protection against aesthetic deterioration will be provided by a total phosphorus concentration for the ice free period of 10 mg/L or less. This should apply to all lakes naturally below this value.

-S - surface sample.

-B - sampled 1m above bottom.

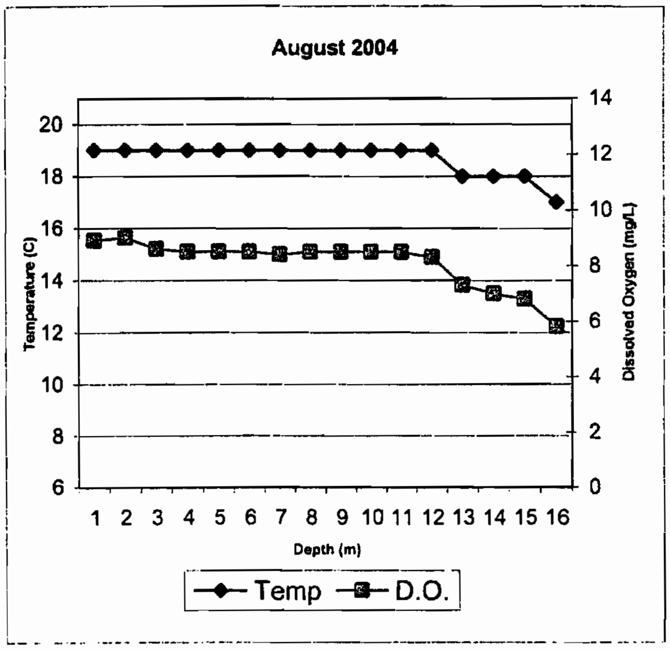
APPENDIX A: BENTHIC MACROINVERTEBRATES COLLECTED FROM AGNEW LAKE, 2004.

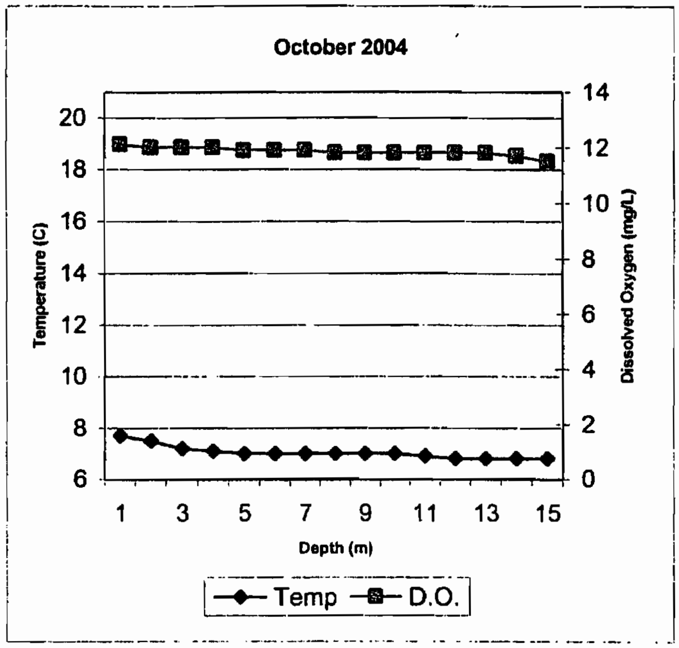
Station	Sensitivity	Agnew Lake											
Replicate	Value	1	2	3	4	5	6	7	8	9	10	11	12
ROUNDWORMS													
P. Nemata	*	-	-	-	1	-	-	1	-	-	1	1	-
FLATWORMS													
P. Platyhelminthes													
Cl. Turbellaria													
O. Tricladida	3	-	-	-	-	-	1	-	-	1	1	-	-
ANNELIDS													
P. Annelida													
WORMS													
Cl. Oligochaeta													
F. Naididae													
Dero digitata	*	-	-	-	1	-	1	1	-	1	-	-	-
Uncinais uncinata	*	-	-	-	-	-	1	-	-	-	-	-	1
F. Tubificidae													
Aulodrilus limnobius	2	2	-	1	2	1	4	3	2	8	2	1	1
Aulodrilus pigueti	2	3	-	7	2	3	2	6	3	6	4	1	1
Ilyodrilus templetoni	0	-	1	-	1	-	-	-	-	-	-	1	-
Limnodrilus hoffmeisteri	0	2	1	1	2	2	2	2	2	1	8	2	1
immatures with hair chaeta	0	-	2	4	4	1	4	4	10	2	-	2	3
immatures without hair cha	0	2	5	17	13	15	12	14	14	4	19	7	8
ARTHROPODS													
P. Arthropoda													
WATER SCUDS													
O. Amphipoda													
F. Hyalellidae													
Hyalella	2	-	-	-	-	-	-	-	1	-	-	-	-
INSECTS													
Cl. Insecta													
MAYFLIES													
O. Ephemeroptera													
F. Ephemeridae													
Hexagenia	1	1	-	-	1	-	-	-	-	-	-	-	-
O. Megaloptera													
ALDERFLIES													
F. Sialidae													
Sialis	2	-	-	1	-	-	-	-	-	-	-	-	-
CADDISFLIES													
O. Trichoptera													
F. Dipseudopsidae													
Phylocentropus	2	-	-	-	-	-	-	-	-	-	-	-	1
F. Leptoceridae													
Oecetis	2	-	-	-	-	-	-	1	-	-	-	-	-
TRUE FLIES													
O. Diptera													
PHANTOM MIDGE													
F. Chaoboridae													
Chaoborus punctipennis	0	2	-	-	-	-	-	1	2	2	2	-	-
MIDGES													
F. Chironomidae													
S.F. Chironominae													
Chironomus	0	1	1	6	2	2	4	6	6	4	8	-	5
Dicrotendipes	0	-	-	-	-	-	-	-	-	-	1	-	-
Microtendipes	2	1	1	1	-	-	-	-	-	-	-	-	-
Polypedilum scalaenum	1	-	-	1	-	-	2	1	-	-	3	1	-
Polypedilum ?tritum	0	-	-	-	1	-	-	-	-	-	-	-	-
Tanytarsus	2	12	2	14	16	6	33	31	18	45	61	-	7
S.F. Orthocladiinae													
Mesocricotopus	*	-	-	1	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae													
Clinotanypus	1	-	-	-	-	-	-	-	-	1	-	-	-

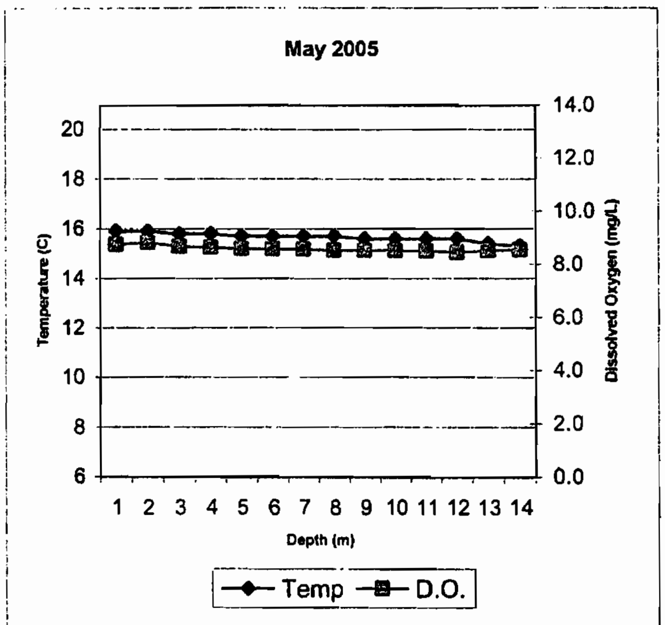
APPENDIX B

Dissolved Oxygen and Temperature Measurements,
Agnew Lake

Appendix B: Dissolved Oxygen and Temperature Measurements, Agnew Lake Near Field







APPENDIX C

Habitat Descriptions and Photographs for Embayments
Historic Fisheries Assessment Record

The forest community on the east side of the bay consists largely of white birch, while the west side is predominantly white birch with some pine and spruce.

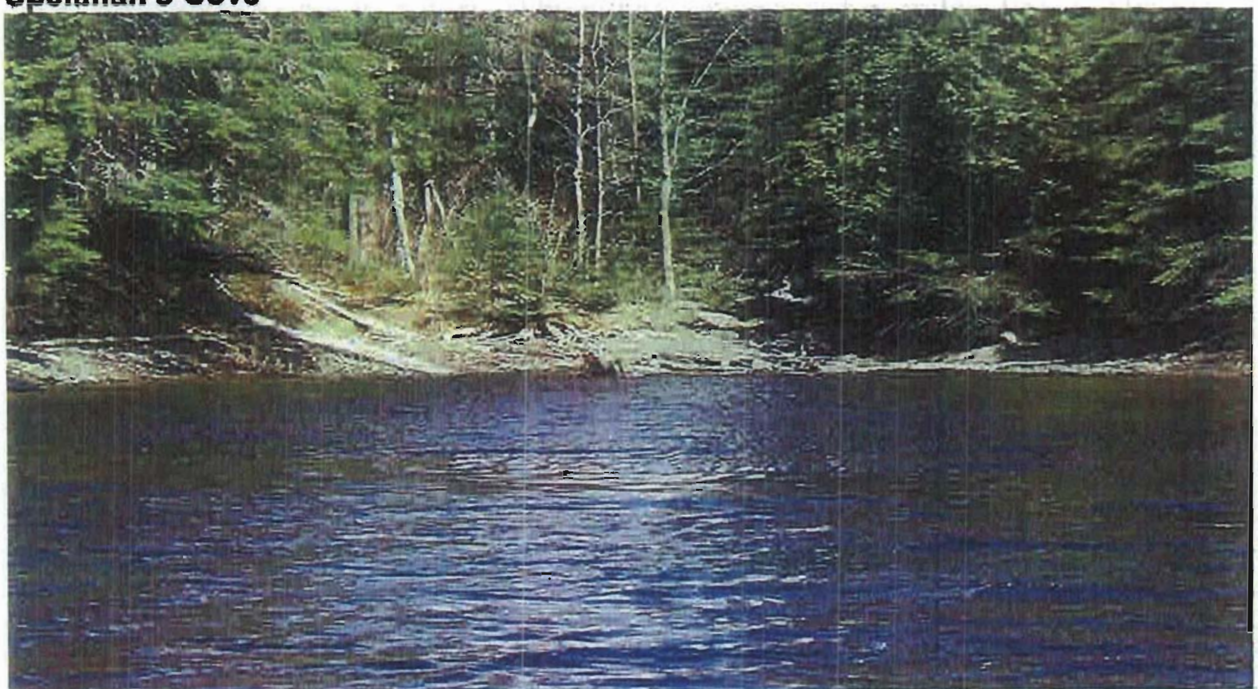
Long Bay

Long Bay runs in an east west direction. Total length of the bay is approximately 1.2 km, while the average width is approximately 100m. Water depth averages 6m through the center portion of the bay.

The north side of the bay has an exposed sandy shoreline that slopes quite steeply into the water. Midway through the length of the bay, the north shoreline changes from sand to boulder and bedrock and the adjacent terrain becomes increasingly steep. Very little woody debris is present on the north shore. The forest community on the north side of the bay is predominately pine with some spruce. There was no evidence of aquatic macrophyte growth along the north shore.

The southern shore is well shaded and was still harboring significant ice slabs in early May. Much of the south shore consists of boulder and bedrock substrate with a significant amount of woody debris. A steep hill runs the length of the south side of the bay. Forest community along the south shore is mixed conifers including balsam fir, spruce, hemlock and some eastern white cedar. There was no evidence to suggest that any significant aquatic macrophyte growth occurs along the south shore.

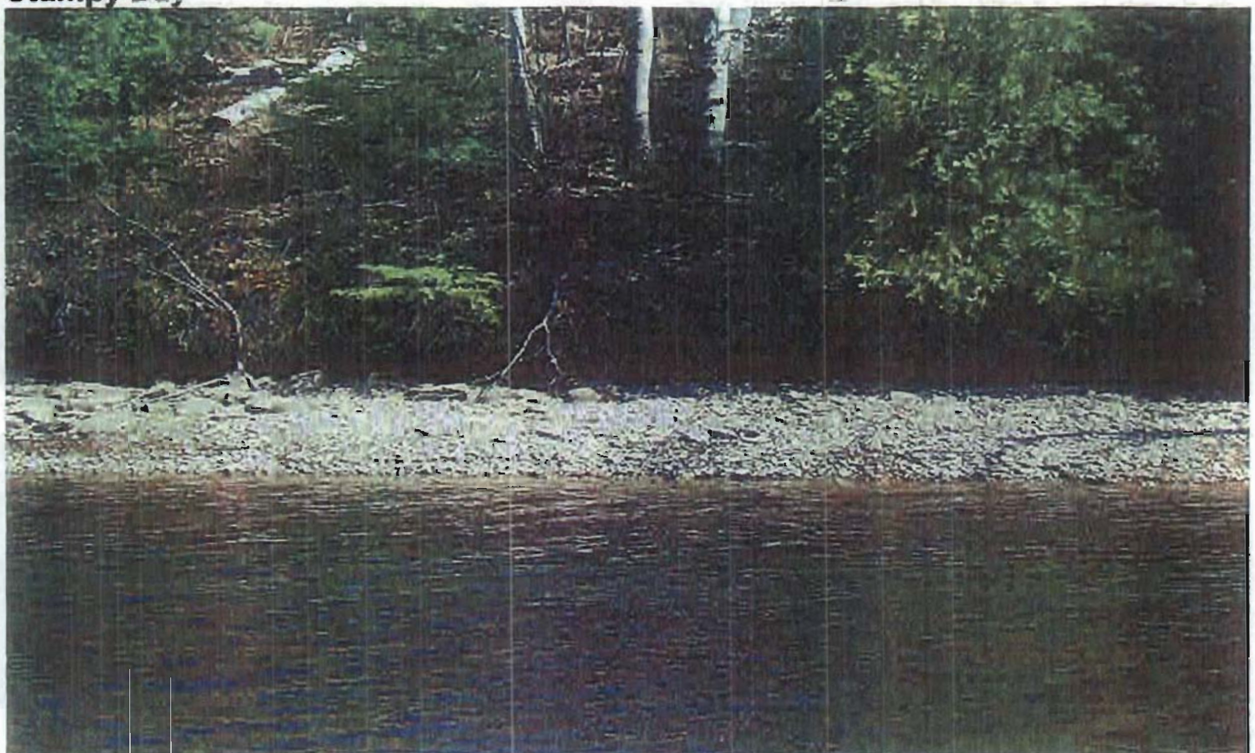
Spellman's Cove



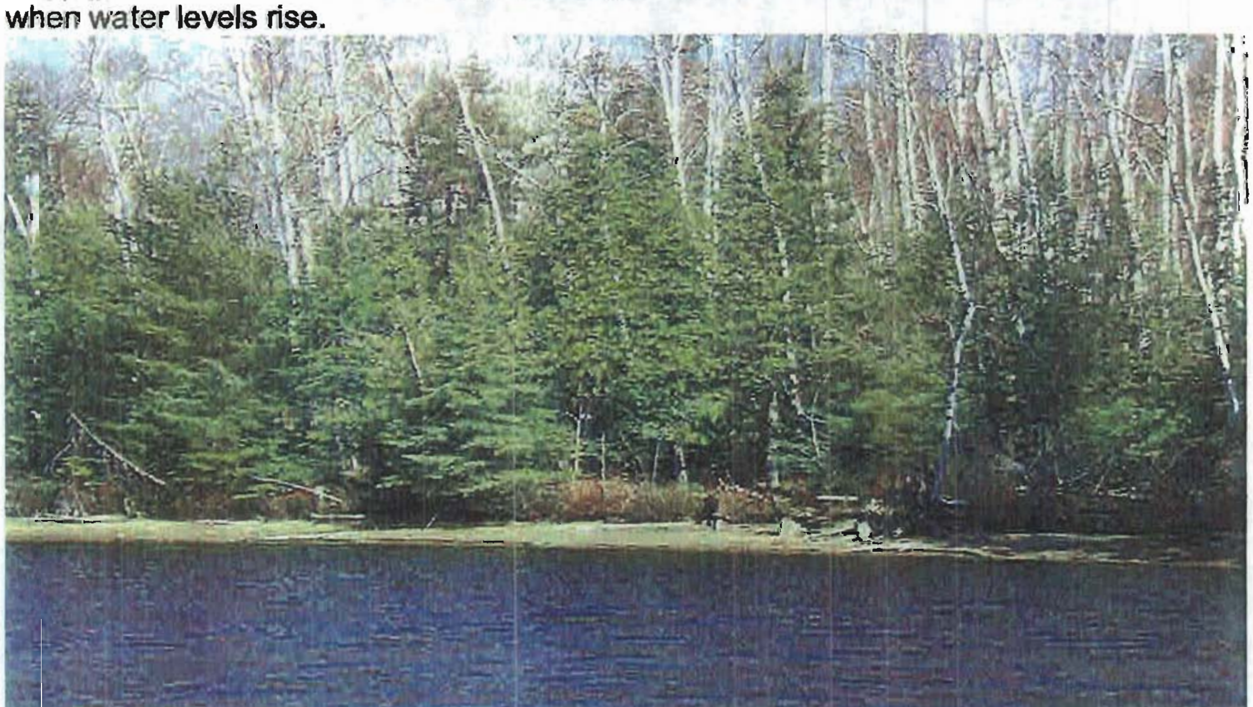
North end of Spellman's Cove, May 5, 2005. A small intermittent stream enters the bay at this location. Flow logging equipment has been installed at this site since August 2004.

East shoreline of Spellman's Cove in early May of 2005. Low water levels provide a good view of near shore substrate characteristics. Sand is common along much of the shore with the exception of the north end of the bay.

Stumpy Bay



Gravel and cobble substrate on east shoreline of Stumpy Bay. Although much of the near shore substrate in Stumpy Bay consists of sand, there are sections of clean gravel and cobble that may provide spawning areas for smallmouth bass when water levels rise.



Typical shoreline features on the west side of Stumpy Bay in early May 2005. Normal summer water levels would be to the edge of the vegetation.

Long Bay

Near shore substrate in Long Bay is varied. Boulders and large cobbles are present along the extreme left of the photo grading to sand in the extreme right of the photo.

The well shaded south shoreline of Long Bay in early May. This view is typical of the south shoreline.

Run: 01 Effort field: EFFDUR Effort range:
Catch field: CATCNT Effort status: 1, ,
Stratum: .._.._.._.. Transform: 0

# Samples	Sum	Mean	SD	%CV	Min	Max	Median
12	255.58	21.30	1.83	8.6	19.42	24.33	20.96

Species-Group		Eff	# Catches	Sum	Mean	SE	%RSE	Min	Max	Median	Probability Value	SE	%RSE	% of Total
091-00	LaWhi	999	9	25	2.08	0.58	28.0	0	6	1.50	0.750	0.131	17.4	18.0
131-00	NoPik	999	9	14	1.17	0.27	23.2	0	3	1.00	0.750	0.131	17.4	10.1
163-00	WhSuc	999	8	22	1.83	0.66	36.1	0	8	1.50	0.667	0.142	21.3	15.8
271-00	Burbo	999	1	1	0.08	0.08	100.0	0	1	0.00	0.083	0.083	100.0	0.7
311-00	RoBas	999	9	33	2.75	0.85	31.1	0	10	2.00	0.750	0.131	17.4	23.7
316-00	SmBas	999	3	3	0.25	0.13	52.2	0	1	0.00	0.250	0.131	52.2	2.2
331-00	YePer	999	6	18	1.50	0.63	42.2	0	7	0.50	0.500	0.151	30.2	13.0
334-00	Walle	999	10	23	1.92	0.51	26.8	0	6	1.00	0.833	0.112	13.5	16.6

Run: 01 Effort field: EFFDUR Effort range:
Catch field: CATCNT Effort status: 1, ,
Stratum: .._.._.._.. Transform: 1 LOG10(X+1)

# Samples	Sum	Mean	SD	%CV	Min	Max	Median
12	255.58	21.30	1.83	8.6	19.42	24.33	20.96

Species-Group		Eff	# Catches	Sum	Mean	SE	%RSE	Min	Max	Median	Probability Value	SE	%RSE	% of Total
091-00	LaWhi	999	9	4.782	0.398	0.087	21.8	0.000	0.845	0.389	0.750	0.131	17.4	17.6
131-00	NoPik	999	9	3.538	0.295	0.059	19.9	0.000	0.602	0.301	0.750	0.131	17.4	13.0
163-00	WhSuc	999	8	4.164	0.347	0.089	25.7	0.000	0.954	0.389	0.667	0.142	21.3	15.3
271-00	Burbo	999	1	0.301	0.025	0.025	100.0	0.000	0.301	0.000	0.083	0.083	100.0	1.1
311-00	RoBas	999	9	5.443	0.454	0.099	21.9	0.000	1.041	0.477	0.750	0.131	17.4	20.1
316-00	SmBas	999	3	0.903	0.075	0.039	52.2	0.000	0.301	0.000	0.250	0.131	52.2	3.3
331-00	YePer	999	6	3.283	0.274	0.094	34.5	0.000	0.903	0.151	0.500	0.151	30.2	12.1
334-00	Walle	999	10	4.730	0.394	0.075	19.0	0.000	0.845	0.301	0.833	0.112	13.5	17.4

C-41

```
============================================= FISHNET 2.0L =============================================
Project..... AGNEW LAKE FWIN 1999                                                            35D_IA99_AGN
Report...... Species Abundance (R511)                                                            04.03.25
Topic....... Effort-Catch Summary (Stratum)                                                      Page   1
Filter...... Run Number (RUN):             01
=========================================================================================================
```

Run: 01 | Effort field: EFFDUR | Effort range:
Catch field: CATCNT | Effort status: 1, ,
Stratum: .._.._.._.. | Transform: 0

# Samples	Sum	Mean	SD	%CV	Min	Max	Median
12	270.50	22.54	1.17	5.2	20.77	24.05	22.71

Species-Group		Eff	# Catches	Sum	Mean	SE	%RSE	Min	Max	Median	Probability Value	Probability SE	Probability %RSE	% of Total
091-00	LaWhi	999	12	44	3.67	0.77	21.1	1	10	2.50	1.000	0.000	0.0	25.7
131-00	NoPik	999	9	17	1.42	0.40	28.1	0	5	1.00	0.750	0.131	17.4	9.9
163-00	WhSuc	999	4	7	0.58	0.29	49.3	0	3	0.00	0.333	0.142	42.6	4.1
271-00	Burbo	999	2	2	0.17	0.11	67.4	0	1	0.00	0.167	0.112	67.4	1.2
311-00	RoBas	999	9	28	2.33	0.57	24.4	0	6	2.00	0.750	0.131	17.4	16.4
316-00	SmBas	999	3	3	0.25	0.13	52.2	0	1	0.00	0.250	0.131	52.2	1.8
331-00	YePer	999	8	46	3.83	1.96	51.1	0	24	1.50	0.667	0.142	21.3	26.9
334-00	Walle	999	8	24	2.00	0.74	36.9	0	9	1.00	0.667	0.142	21.3	14.0

Run: 01 | Effort field: EFFDUR | Effort range:
Catch field: CATCNT | Effort status: 1, ,
Stratum: .._.._.._.. | Transform: 1 LOG10(X+1)

# Samples	Sum	Mean	SD	%CV	Min	Max	Median
12	270.50	22.54	1.17	5.2	20.77	24.05	22.71

Species-Group		Eff	# Catches	Sum	Mean	SE	%RSE	Min	Max	Median	Probability Value	Probability SE	Probability %RSE	% of Total
091-00	LaWhi	999	12	7.321	0.610	0.067	11.0	0.301	1.041	0.540	1.000	0.000	0.0	25.0
131-00	NoPik	999	9	3.891	0.324	0.068	21.1	0.000	0.778	0.301	0.750	0.131	17.4	13.3
163-00	WhSuc	999	4	1.681	0.140	0.064	45.5	0.000	0.602	0.000	0.333	0.142	42.6	5.7
271-00	Burbo	999	2	0.602	0.050	0.034	67.4	0.000	0.301	0.000	0.167	0.112	67.4	2.1
311-00	RoBas	999	9	5.259	0.438	0.087	19.9	0.000	0.845	0.477	0.750	0.131	17.4	18.0
316-00	SmBas	999	3	0.903	0.075	0.039	52.2	0.000	0.301	0.000	0.250	0.131	52.2	3.1
331-00	YePer	999	8	5.306	0.442	0.127	28.7	0.000	1.398	0.389	0.667	0.142	21.3	18.1
334-00	Walle	999	8	4.311	0.359	0.094	26.2	0.000	1.000	0.301	0.667	0.142	21.3	14.7

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APPENDIX D

Pond Investigation Photographs

Plate 1: Bedrock Control Point – old Beaver Dam, outlet Pond No. 2

Plate 2: Residual Pond Upstream of Control Point

Plate 3: Valley Land Site-Setting u/s Pond No. 2

Plate 4: Grass Meadow and Wildlife Snags u/s Pond No. 1 looking downstream

Knight Piésold
CONSULTING

APPENDIX D

TERRESTRIAL ASSESSMENT - URSA MAJOR ACCESS CORRIDOR
(MAUREEN KERSHAW, N.A.R. ENVIRONMENTAL CONSULTANTS INC.)

- Report 3 pages

August 22, 2004

Ursa Major Access Corridor

Prepared By: Maureen Kershaw, NAR Environmental Consultants Inc.

Alternative road corridors are presented on the accompanying map, which set out routes to link the open pit mine with the existing all-season access road north of Beaver Lake. The objective in selecting alternative corridors was to minimize expensive water crossings, avoid wherever possible, steep slopes, and to avoid known major environmental values. The area has an ongoing history of logging and the associated road network used for harvesting and renewal activities were examined on the current forest inventory maps in the Espanola District of the Ontario Ministry of Natural Resources on August 20, 2004. Where practical, the proposed corridor overlapped with any existing (or recently abandoned) access.

Forest cover and land use maps, aerial photographs, and 1:50,000 topographic maps were examined in the Ontario Ministry of Natural Resources Espanola District office (Appendix 1) and on digital aerial photo coverage provided by the mining company.

Brief descriptions of sections of the proposed access corridor are provided below. The majority of the route traverses through shallow till over bedrock terrain.

Section 1 (0 – 2 km)

Two alternative routes are presented. The northern route avoids the skyline reserved along Agnew Lake, established to minimize disturbances to the cottage activity along the lake. The northern route is longer and traverses through mature white pine mixedwood forests (white and yellow birch, soft maple, eastern hemlock, and spruce).

The southern route accesses the south-eastern section of the mining property. This route crosses through mature red oak-white pine and mixed hardwood forests, come of which form part of the skyline reserved along Agnew Lake. Approximately 1 km of this section overlaps with the proposed "drill road".

Section 2 (2 – 3.9 km)

This section overlaps with the proposed mining exploration "drill road" south of Hunter Lake. The route lies along the north edge of the Skyline Reserve established along the north shore of Agnew Lake. The road traverses through upland hemlock- white birch and white pine forests.

Section 3A Southern Route (3.9 – 4.2 km): this route descends relatively steep terrain for 0.3 km, then levels out to parallel the north shore of Agnew Lake, crossing into the Skyline Reserve. Fill would be required to moderate the slope of the descent.

Section 3B: Northern Route (3.9 – 5.4 km)
This route is longer but avoids the steep slope of the southern route. The route overlaps with the "drill road" for 1 km then traverses through white pine/hardwood mixed forest. At Junction III the route traverses south on level to undulating terrain to link up with the proposed southern route for Section 3. The corridor should be placed to avoid the poorly drained marshland to the east and steep slopes to the west. The route traverses through a spruce stand and mixed hardwood forest.

Note: At Junction III, there is the option to link up with the existing forestry trails and the power line to the north (Alternate Route). This route requires the construction of major river crossing of Hunter Creek and John Creek, and would add considerable distance to the road. Should forestry operations resume in the area, it would also require coordination with logging traffic. It is not presented at this time as a preferred option due to both the multiple water crossings and the extra distance.

Section 4 (4.2 – 11.2 km)
This section traverses undulating terrain through mixed poplar-white birch-soft maple-spruce forests. One block of private land occurs south of the route at 9.2 km, and north of the proposed route at kilometer 10.2. The route follows undulating terrain running parallel to Agnew Lake.

Water Crossing at 11.2 km
The route crosses John Creek west of John Creek Bay in Agnew Lake. An on-site inspection is required at this site as the area consists of a matrix of poorly drained sandy outwash and organic deposits.

Section 11.2 to 13.5 km
This section crosses undulating terrain, running in a north-easterly direction south of John Creek. The proposed route, for most of its distance, follows the alignment of an existing forest access road used for renewal activities. This section of the road traverses sandy outwash deposits

Section 13.5 to 16.5 km
This section links with an existing access trail that links with the existing all-season access road. This route crosses the poorly drained headwaters of John Creek.

Section 13.5 to 16.5 km Alternative
An alternative route runs north east following a mapped trail. This route crosses a small tributary of Ministic Creek and links with the Hydro Corridor south of the main road.

Appendix 1. Maps and Air Photos of the Project Area

Air Photographs

90/1-4613 21-72,73, 74, 75

90/1-46 21 115, 116, 117, 118, 119, 120, 121, 122

90/1-4615 27-55, 56, 57, 58

Maps

Gartner, J.F. 1978. NOEGTS Data Base map (Surficial Geology) Espanola. Ontario Geological Survey. Map 5002 (NTS 41 I/SW) Scale: 1:100,000

Forest Management Planning Map 8: Sheet 74313 and 74413
(for forest cover and road access)

NTS Map 41 I/5. Espanola Ontario Scale: 1:50,000 (1975)

APPENDIX E

TERRESTRIAL HABITAT ASSESSMENT OF SHAKESPEARE PROJECT SITE - URSA MAJOR MINERALS INCORPORATED (MARET TAE)

- Report 39 pages

TERRESTRIAL HABITAT ASSESSMENT
OF
SHAKESPEARE PROJECT SITE
URSA MAJOR MINERALS INCORPORATED

For:

KNIGHT PIESOLD CONSULTING

Prepared By:

MARET TAE, B.Sc., B.Ed.

October 2005

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TERRESTRIAL HABITAT ASSESSMENT OF SHAKESPEARE PROJECT SITE

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Appendix A – Terrestrial Habitat Assessment Photos

Appendix B – Forest Management Planning Map

Appendix C – Breeding Bird Atlas Data

1. INTRODUCTION

URSA Major Minerals Incorporated (URSA) made a significant near-surface nickel, copper and platinum group metal discovery on the Shakespeare Project site, 70 km west of Sudbury, Ontario, in 2002. In 2004, URSA completed a positive pre-feasibility study on a 2,900 tonne/day open pit mining operation at the Shakespeare Project site. A base case scenario involving truck haulage for milling in Sudbury and an alternative case of constructing a processing plant on the Shakespeare Project site are being evaluated.

In January 2005, URSA engaged Knight Piésold Ltd. to carry out a program of environmental studies and permitting for the Shakespeare Project, including an advanced exploration closure plan; environmental baseline work for a full feasibility study and public and First Nations consultations.

As a component of the environment baseline work, this terrestrial habitat assessment has been commissioned by Knight Piésold to provide an overview of the terrestrial habitat on the potential Shakespeare Project mine site. An ecosystem approach has been taken in this assessment, with the general vegetation communities on the Project site described, and the presence of native wildlife discussed.

2. FIELD WORK

A terrestrial habitat assessment was conducted on the potential Shakespeare Project mine site. The area bounded by Sutherland Creek to the northwest, Hunter Lake to the east, Stumpy Bay, Long Bay and the intervening unnamed pond to the south and Agnew Lake to the southwest is shown on Figure 1 and will be referred to as the assessment area. The habitat assessment included upland and isolated (non contiguous with water bodies) wetland areas.

The Espanola office of the Ontario Ministry of Natural Resources (MNR) was visited on September 12, 2005 to review wildlife and vegetation information on file regarding the assessment area and to conduct aerial photo interpretation. Forest Management Planning and Values mapping was requested, as well as site specific trapping and hunting information and significant wildlife issues.

The most recent Ministry of Natural Resources aerial photos of the assessment area were taken in 1990, at a scale of 1:20,000. Photos from 1977 and 1973 were also obtained and examined. Aerial photos of the assessment area are listed below

Date	Roll #	Flight line	Frame #'s
1990	R21	4612	32-35
1990	R21	4613	73-74
1977	R95	4615	169-171
1973	R11	4615	124-127
1973	R12	4616	111-114

All of the photos, with the exception of the 1990 flight line 4612 (which were not available), were examined with a stereoscopic viewer. Interpretation included delineating vegetation community boundaries, identifying points of interest, preliminary selection of vegetation sampling sites and gaining familiarity with the area prior to the field visit.

A field visit to map vegetation species and communities, observe habitat values and record any wildlife observations, was conducted on September 13, 14 and 15, 2005. The assessment area was traversed primarily using the access road and skidder trails constructed for the Shakespeare Project, as well as boat access to the shoreline of Agnew Lake, Sutherland Creek and Stumpy Bay. Vegetation sampling locations are shown on Figure 1.

For each vegetation sampling location, all observed vegetation species and general soil type was recorded. Wetland type was determined for wetland communities and Forest Ecosystem Classification (FEC) site type and vegetation type was determined for upland locations. A field guide to Forest Ecosystems of Northeastern Ontario (McCarthy et al., 1994) was used to identify site types and vegetation types. General vegetation communities and tree species were recorded during a shoreline cruise from Stumpy Bay to the upstream end of the navigable portion of Sutherland Creek. Photos were taken at most sampling locations, unless lighting and/or inclement weather constraints persisted. These photos are included in Appendix A. Wildlife observations were recorded as observed.

The FEC is part of Canada's Ecological Land Classification program. Forest ecosystems are complex interactions among species and environmental conditions. This complexity has to be simplified so that patterns can be recognized and applied at a practical management level. The FEC system allows a mature forest ecosystem to be allocated to one of 22 site types and 26 vegetation types. Site specific modifications to the FEC system were implemented since the Shakespeare Project occurs at the southern edge of the area of application for the field guide, in a transition zone between two major forest types. The system is intended for use within relatively small, 10 to 100 ha, mature undisturbed forested areas. Vegetation communities were mapped at 1:20,000 scale, since the FEC site type classification is associated with mapping scales of 1:50,000 to 1:10,000.

The following field guides were used in the identification of plants and animals during the field visit:

- Forest Plants of Northeastern Ontario, (Legacy et. al., 1995),
- Forest Plants of Central Ontario (Chambers et. al., 1996),
- Wetlands Plants of Ontario (Newmaster et. al., 1997),
- Introduction to Canadian Amphibians and Reptiles (Cook, 1984),
- A Field Guide to the Birds of Eastern and Central North America (Peterson, 1980), and
- A Field Guide to the Mammals of America North of Mexico (Burt and Grossenheider, 1976)..

3. PHYSICAL FEATURES

Topography

The Shakespeare Project site exhibits steep topography with several ridges trending approximately northeast to southwest. The assessment area has several southeast facing cliffs and steep northwest facing slopes. Vegetation community distribution was strongly influenced by topography.

Climate

The assessment area is near the north shore of Lake Huron, which has a moderating effect on climate. Plants that typically occur farther south extend their ranges into this area where more growing degree days are available for plant growth. Climate in the region is generally described as continental, with a growing season from 140 to 169 days long, and annual growing degree days of 1600 to 1800 °C days

Soil

Soils of the assessment area are primarily classified as Rockland, meaning there is less than 10 cm of soil material overlying bedrock and exposed bedrock. The remainder of the assessment area is covered in an Orthic Humo-Ferric Podsol, mainly a noncalcareous coarse sand and gravelly sand outwash mixed with till (Ontario Institute of Pedology, 1982).

Soils found on the assessment area included either very shallow soil with bedrock outcrops, or sandy to coarse loamy soil. The vegetation communities correspond to soil cover and therefore the map of vegetation communities (Figure 2) illustrates the distribution of soils on the assessment area. Vegetation communities designated site type 1 (ST 1) are underlain by very shallow soil with bedrock outcrops, while site types 15 and 16 (ST 15 and ST 16) grow on a sandy to coarse loamy soil of varying depth. Organic soil underlies the wetland areas, with underlying clay soil in the wetland contiguous with vegetation sampling location F (Figure 2).

Significant Natural Features

No significant natural features, such as sensitive plant or animal species or ecosystems, were identified on the Shakespeare Project site, however several naturally significant ecosystems were identified within 10 km (Natural Heritage Information Centre (NHIC), 2005). The NHIC compiles, maintains and provides information on rare, threatened and endangered species and spaces in Ontario. The natural heritage sites within 10 km of the Shakespeare Project site are listed below, with the direction from the Project site indicated:

Name	**Ontario Living Legacy Category**	**Direction**
Gough Outwash Forest	Conservation Reserve	W
Shakespeare Forest	Forest Reserve	W
Savage Lake Area	Enhanced Management Area	NW
Swann Lake	Enhanced Management Area	N
Acheson Lake	Enhanced Management Area	N
Spanish River	Provincial Park	N

The Spanish River Valley Signature Site, identified by Ontario's Living Legacy Land Use Strategy as an area exhibiting exceptional natural and cultural features deserving special protection and promotion, is approximately 5 km upriver of the Shakespeare Project site. It is comprised of several Enhanced Management Areas (EMA's) and Provincial Parks along the Spanish River, including Swann Lake EMA, Acheson Lake EMA and the Spanish River Provincial Park. The Spanish River Valley is important as a recreational waterway, significant old growth pine forests and wetlands, and hunting and fishing. Mineral exploration and development may take place within certain areas of the Signature Site, taking into consideration the backcountry recreation and eco-tourism potential of the area. Mine development planning will need to recognize the proximity of this significant land use area.

Preliminary discussions with the MNR area biologist, Christine Selinger, indicated that access may be an issue in the development of the Shakespeare Project mine due to the proximity of the Natural Heritage sites listed above, however this is currently uncertain since no development or access plan has been reviewed by the biologist to date. Further information regarding wildlife sensitive issues on the assessment area may be forthcoming, however it is unlikely that critical issues would arise since values mapping and natural heritage information has been reviewed during the course of this assessment.

4. VEGETATION

Vegetation Communities

The assessment area is in the transition zone between the southern Great Lakes-St. Lawrence Forest and the northern Boreal Forest, with tree species characteristic of both forest types growing in close proximity. White birch, trembling aspen, balsam fir, jack pine, white spruce and black spruce are characteristic of the Boreal Forest, while red maple, sugar maple, yellow birch, eastern hemlock, white and red pine, white cedar and red oak are characteristic of the Great Lakes-St. Lawrence Forest. Eastern hemlock, red maple, sugar maple, yellow birch and red oak are all approaching the northern limits of their distribution (Farrar, 1995).

The primary vegetation community types found on the assessed area included the upland Transitional (Boreal / Great Lakes-St. Lawrence) Forest and Shallow Soil based plant communities, as well as wetland Marsh or Swamp communities. Vegetation communities on the assessment area were found to be strongly influenced by topography. The vegetation communities delineated at 1:20,000 scale on the assessment area are presented on Figure 2. The plant species composition of the upland communities are presented on Table 1, while the wetland community compositions are presented on Table 2.

The Transitional Forest exhibited a wide variety of species, including red maple, sugar maple, yellow birch, white pine, hemlock, white birch, trembling aspen, white spruce and the ubiquitous balsam fir. This forest type was further subdivided into three communities; Tolerant hardwood mixedwood (V2, ST-15), Red maple mixedwood (V3, ST-15) and Yellow birch mixedwood (V2, ST-16). The vegetation type (V) and site type (ST) from the Forest Ecosystem Classification is shown in parentheses for each vegetation community. The Tolerant hardwood mixedwood has a red maple and either yellow birch or sugar maple component, and grows in slightly warmer microclimates than the red maple mixedwood, primarily on south facing or gentle slopes, at slightly lower elevations. The Yellow birch mixedwood community has a similar composition, with yellow birch and sugar maple dominant. The Red maple mixedwood was lacking a significant sugar maple or yellow birch component, but exhibited a variety of species, with white birch or trembling aspen dominant in localized stands and with occasional hemlock dominant stands. The community was found in sheltered areas of the more exposed ridge tops within larger pockets of soil and north facing slopes.

Much of the assessment area was covered in very shallow soil, a sandy loam, with many bare bedrock outcrops. The vegetation communities in these Shallow Soil areas were divided into two types, the Jack pine mixedwood (V15/16, ST-1) and the White pine mixedwood (V4, ST-1). (The FEC vegetation type (V) and site type (ST) is shown in parentheses). The ridge tops and very steep slopes where rock outcrops were common, hosted the Jack pine mixedwood community, a conifer mixedwood with large jack pine, red oak, blueberry and lichen components. On the ridges, scattered within the thin soil, were pockets of boggy swamp. The red oak on the survey assessed area occurred either in shrubby form on the bare rock ridge tops, or as large trees in the deeper soil of the ridge top gullies.

Wetland communities, on sites covered or saturated by water for at least part of the year, comprise less than 10% of the assessment area, and most exhibit some degree of beaver activity.

Marshes are wet areas permanently or periodically inundated with water and characterized by robust emergent aquatic plants, as well as water submerged plants. Assessment area marshes are either Open water marshes or beaver ponds which have reached the Meadow marsh successional stage to become seasonally almost dry.

Two types of swamp, defined as wooded wetland dominated by trees or tall shrubs, are found on the assessment area. The Conifer swamps are dominated by black spruce or cedar with a tamarack component and ericaceous shrubs such as leatherleaf. The organic soil is covered in a thick layer of living sphagnum. Deciduous trees are more dominant in the Tall shrub/treed swamp community, although conifers are still present.

Forestry

The Shakespeare Project site is within the Northshore Forest Management Unit (FMU). The section of the Northshore FMU Forest Management Planning Map 8, sheet 74413, covering the assessment area is included in Appendix B and can be viewed at the Espanola MNR office.

A timber cruise of the proposed mine site was conducted to determine the harvestable timber value for payment of crown dues on timber removed for mine development. The central area of the Shakespeare Project site has been cleared of all vegetation for exploration purposes. This is the area at the terminus of the access road and at the base of the large central cliff.

Rare Plants

Two plant species classified as rare by the MNR have been recorded within 20 km of the Shakespeare Project site (NHIC, 2005). Neither species, Coast Jointweed (*Polygonella articulata*) and Nuttall Alkali Grass (*Puccinellia nuttalliana*), are globally rare, threatened or endangered. Coast Jointweed grows on sandy banks, plains and dunes, and often colonizes disturbed places and jack pine plains (Voss, 1985). Nuttall alkali grass usually occurs in wetlands, growing in moist, usually saline or alkaline soil.

In order to document the presence or absence of significant plant species on the Shakespeare Project site, additional effort would be required. Surveys could be conducted throughout the growing season in order to document ephemeral species in the spring, as well as flowering grasses which may be difficult to identify in their vegetative state.

5. WILDLIFE

Mammals

Common native mammals were very evident on the site, particularly the large mammals such as bear, moose and whitetail deer as well as the smaller coyote, raccoon, beaver and red squirrel. The mammals observed on the assessment area during this survey are listed below. Several of these have also been observed by reliable site personnel in the course of their on-site work.

Common name	Latin name	Evidence
Shorttail shrew	*Blarina brevicauda*	observed dead
Black bear	*Ursus americanus*	tracks, scat
Raccoon	*Procyon lotor*	tracks
Striped skunk	*Mephitis mephitis*	tracks, smell
Coyote	*Canis latrans*	tracks
Fox	*Vulpes fulva*	tracks
Red squirrel	*Tamiasciurus hudsonicus*	observed
Beaver	*Castor candensis*	tracks, sign
Moose	*Alces alces*	tracks
Whitetail deer	*Odocoileus virginianus*	tracks

This list was compiled after a three day site visit, and should not be considered exhaustive. An on-site wildlife sightings report form would help provide a complete list of species using the Shakespeare Project site. This should be kept at the core shack and all on site personnel should be made aware of it and shown the proper way to complete records. All mammals, birds, reptiles, amphibians and fish should be recorded on this form.

Three species of bat, which are considered rare, have been observed within 20 km of the assessment area (Natural Heritage Information Centre, 2005). These are Small-footed bat (*Myotis leibii*), Eastern Pipitrelle (*Pipistrellus subflavus*), and Northern Long-eared Bat (*Myotis septentrionalis*). The presence of these species, or any bat species, on the assessment area is unknown. A program of mist netting bats mid summer months would help determine which of bat species are resident on the Shakespeare project site.

The wetland area between Stumpy Bay and Long Bay exhibits the characteristics of a Moose Aquatic Feeding Area (MAFA) and has been identified as such by the MNR, with a moderate rating. Field observations in September confirm that this wetland would still provide good moose aquatic feed.

There are several active and abandoned beaver dams on the assessment area. The pond just upstream of Spellman's Bay shows beaver activity, with a beaver dam between this pond and Spellman's Bay. The series of ponds to the north of the mine deposit are beaver controlled. The beavers are constructing new dams at the downstream end of this pond series to create new impoundments, while the upstream dams in this series currently appear to be abandoned. The status of beaver dams can change from year to year. Beaver dam locations are shown on Figure 2.

A bear dening site located to the east of the Shakespeare Project site was discovered by exploration personnel in 2004, however no dens were found on the assessment area during this three day field survey.

The Transitional Forest on the assessment area has the capability of providing good black bear habitat in the spring/summer, while the shallow soiled ridge top communities (ST-1) provide good fall habitat, with blueberry crops for autumn feeding (McCarthy et. al., 1994). The open water wetlands to the south of the Shakespeare project site have the capability to provide aquatic feed for moose in the spring and summer, as well as adjacent forest cover. The roads and trails constructed in the site provide access and travel corridors for moose, as well as whitetail deer, bears, coyotes and fox.

The Shakespeare Project site is within Wildlife Management Area 39, with hunting seasons for bear, moose, whitetail deer and small game.

Birds

Breeding Bird Atlas data for the 10 km survey square encompassing the Shakespeare Project site were examined and are included in Appendix C. Several species have been recorded as possibly, probably or confirmed breeding within the 10 km survey square which encompasses the Shakespeare project site (Birds Ontario, 2005). Of these, the bald eagle is considered provincially rare, and the clay coloured sparrow is considered regionally rare. Several Breeding Bird Atlas Roadside point count locations are located on the south side of Agnew Lake and slightly west of the projects site, on the road leading to and beyond Agnew Lake Lodge, indicating that the majority of records in the atlas would be observations from these survey locations.

Incidental bird observations on the assessment area during the mid September three day field visit are listed below.

Common mergansers	Mergus merganser
Ruffed grouse	*Bonasa umbellus*
Broad-winged hawk	*Buteo platypterus*
Turkey vultures	*Cathartes aura*
Common flicker	*Colaptes auratus*
Hairy woodpecker	*Picoides villosus*
Northern raven	*Corvus corax*
Black-capped chickadee	*Parus atricapillus*
White throated sparrow	*Zonotrichia albicollis*

In order to better document the avian species nesting on the Shakespeare project site, additional surveys, such as waterfowl, raptor or spring songbird surveys could be conducted. Bird sightings by site personnel could be recorded in the wildlife log mentioned earlier, to improve knowledge of the avian fauna inhabiting the assessment area.

MNR records show a Cooper's hawk nest just to the north of Sutherland Creek, immediately northwest of the Shakespeare Project site. Although no bald eagles were observed during the field visit, they are known to frequent the Spanish River, and the habitat in the vicinity of the project would be suitable, with cliffs, isolated potential nesting sites and fish in Agnew Lake. Bald Eagles are an endangered species, with legislated protection of their critical habitat.

The north end of Sutherland Creek, at the upstream end of the navigable portion, is a large reed marsh, ideal for waterfowl breeding feeding and staging. Local information indicates that it is a popular waterfowl hunting site. The Shakespeare Project site is within the Northern District for waterfowl, and has hunting seasons for migratory and game birds.

The assessment area provides woodland habitat for forest nesting songbirds, and numerous songbirds were observed during the field visit. The assessment area habitat capability for ruffed grouse can be estimated as fair, with the best conditions being in the localized trembling aspen dominated stands (McCarthy et. al., 1994).

Herpetiles

Amphibians and reptiles were not incidentally observed in abundance during the fall field visit. Mink frogs (*Rana septentrionalis*) were seen in many of the wetlands and puddles on the assessment area. Site personnel report having seen garter snakes and water snakes.

The Open water marsh and Meadow marsh communities on site provide excellent habitat for native frogs. The moist woods of the Transitional Forest could provide good habitat for salamanders, such as the red backed and blue lined, however the Shallow Soil/open bedrock areas are likely too dry for salamanders. The entire assessment area appeared to be suitable habitat for garter snakes, with good cover and prey abundance. Amphibian and reptile surveys, such as a spring frog call survey, would provide a better understanding of the species inhabiting the Shakespeare Project site.

CONCLUSIONS

The Shakespeare Project site exhibits a variety of wildlife habitat, both upland and wetland, and vegetation typical of the landscape of the north shore of Lake Huron. Forest habitat is primarily Transitional Boreal / Great Lakes-St. Lawrence Forest. Close to half the site is covered in very shallow soil with bedrock outcrops with a Shallow Soil vegetation community dominated by sometimes stunted jack pine and red oak. The site also has a small amount of swamp and marsh habitat, and is adjacent to a large open water marsh to the northwest on Sutherland Creek. The presence of the cliffs and the adjacent Agnew Lake are valuable features for wildlife such as raptors.

This terrestrial habitat assessment should be considered an overview of the natural environment of the Shakespeare Project site. As mine planning progresses, additional geographical areas may need to be studied, or additional ecological concerns may arise. The vegetation community descriptions provided in this report should prove useful in designing any future studies, if required. Any additional time spent on site surveying the ecosystem of the Shakespeare Project site would add to the Environmental Baseline data being collecting in support of permitting the proposed mine site.

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TABLES

Table 1

Species Composition of Upland Vegetation Communities

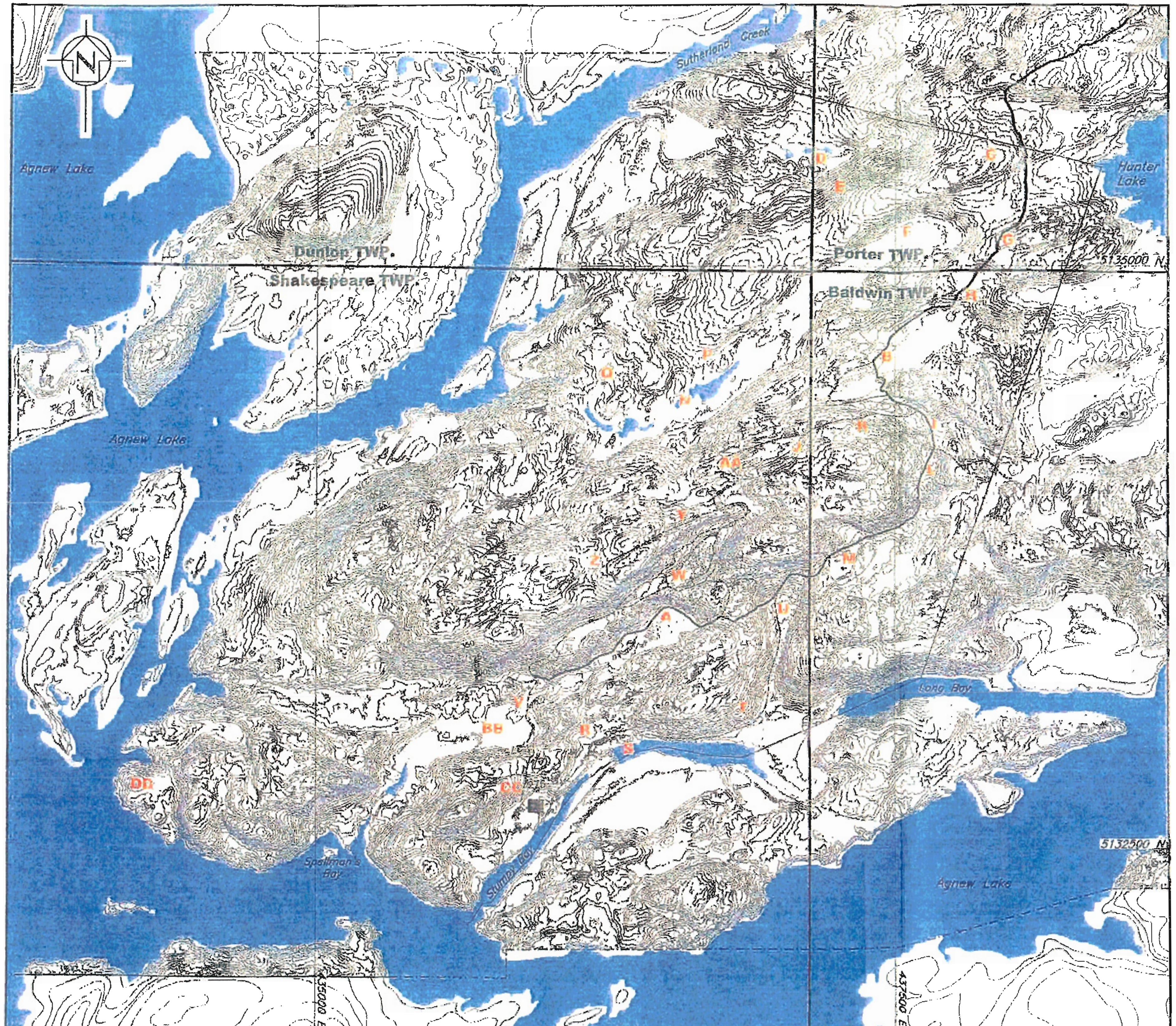
Community	Shallow Soil				Transitional (Boreal / Great Lakes-St. Lawrence) Forest					
	Jack pine mixedwood		White pine mixedwood		Tolerant hardwood mixedwood		Red maple mixedwood		Yellow birch mixedwood	
Site type	ST1-V15/V16		ST1 - V4		ST15-V2		ST15-V3		ST16-V2	
Vegetation type										
trees	jack pine	*Pinus banksiana*	red pine	*Pinus resinosa*	red maple	*Acer rubrum*	red maple	*Acer rubrum*	sugar maple	*Acer saccharum*
	red oak	*Quercus rubra*	white pine	*Pinus strobus*	sugar maple	*Acer saccharum*	trembling aspen	*Populus tremuloides*	yellow birch	*B. alleghaniensis*
	red maple	*Acer rubrum*	jack pine	*P. banksiana*	yellow birch	*B. alleghaniensis*	white birch	*Betula papyrifera*	cedar	*Thuja occidentalis*
	white birch	*Betula papyrifera*			trembling aspen	*Populus tremuloides*	white spruce	*Picea glauca*	balsam fir	*Abies balsamea*
	white pine	*Pinus strobus*			white birch	*Betula papyrifera*	balsam fir	*Abies balsamea*	eastern hemlock	*Tsuga canadensis*
	trembling aspen	*Populus tremuloides*			eastern hemlock	*Tsuga canadensis*	eastern hemlock	*Tsuga canadensis*		
	yellow birch	*Betula alleghaniensis*			white pine	*Pinus strobus*	black spruce	*Picea mariana*		
	balsam fir	*Abies balsamea*			red oak	*Quercus rubra*	white pine	*Pinus strobus*		
	black spruce	*Picea mariana*			cedar	*Thuja occidentalis*	red oak	*Quercus rubra*		
	eastern hemlock	*Tsuga canadensis*			white spruce	*Picea glauca*				
	red pine	*Pinus resinosa*			balsam fir	*Abies balsamea*				
					black spruce	*Picea mariana*				
shrubs	blueberry	*Vaccinium angustifolium*	alder	*Alnus viridis*	mountain maple	*Acer spicatum*	mountain maple	*Acer spicatum*	mountain maple	*Acer spicatum*
	juniper	*Juniperus communis*	balsam fir	*Abies balsamea*	striped maple	*Acer pensylvanicum*	striped maple	*A. pensylvanicum*	striped maple	*A. pensylvanicum*
	pin cherry	*Prunus pensylvanica*	blueberry	*V. angustifolium*	spruce	*Picea sp.*	mountain ash	*Sorbus americana*	beaked hazel	*Corylus cornuta*
	alder	*Alnus viridis*	red maple	*Acer rubrum*	raspberry	*Rubus idaeus*	balsam fir	*Abies balsamea*	red baneberry	*Actaea rubra*
	sweet fern	*Comptonia peregrina*	white birch	*B. papyrifera*	red maple	*Acer rubrum*	hemlock	*Tsuga canadensis*		
	red maple	*Acer rubrum*			blueberry	*V. angustifolium*	raspberry	*Rubus idaeus*		
	trailing arbutus	*Epigaea repens*			twinflower	*Linnaea borealis*	princes pine	*Chimaphola umbellata*		
	wintergreen	*Gaultheria procumbens*			white birch	*Betula papyrifera*	wintergreen	*Gaultheria procumbens*		
					beaked hazel	*Corylus cornuta*	red maple	*Acer rubrum*		
					bush honeysuckle	*Diervilla lonicera*	bush honeysuckle	*Diervilla lonicera*		
					dogwood	*Cornus sp.*	beaked hazel	*Corylus cornuta*		
					yellow birch	*B. alleghaniensis*	white birch	*Betula papyrifera*		
							trailing arbutus	*Epigaea repens*		
herbs	bunchberry	*Cornus canadensis*			bunchberry	*Cornus canadensis*	bunchberry	*Cornus canadensis*	wood fern	*D. carthusiana*
	canada mayflower	*Maianthemum canadense*			goldthread	*Coptis trifolia*	goldthread	*Coptis trifolia*	ground pine	*L. dendroideum*
	pale corydalis	*Corydalis sempervirens*			sarsaparilla	*Aralia nudicaulis*	clintonia	*Clintonia borealis*		
	bracken fern	*Pteridium aquilinum*			wood fern	*Dryopteris carthusiana*	starflower	*Trientalis borealis*		
	jack in the pulpit	*Arisaema triphyllum*			starflower	*Trientalis borealis*	interrupted clubmoss	*Lycopodium annotinum*		
	clintonia	*Clintonia borealis*			canada mayflower	*M. canadense*	ground pine	*L. dendroideum*		
	interrupted clubmoss	*Lycopodium annotinum*			clintonia	*Clintonia borealis*	sarsapparilla	*Aralia nudicaulis*		
					ground pine	*Lycopodium dendroideum*	bracken fern	*Pteridium aquilinum*		
					bracken fern	*Pteridium aquilinum*	canada mayflower	*M. canadense*		
					large leaf aster	*Aster macrophyllus*	large leaf aster	*Aster macrophyllus*		
					rose twisted stalk	*Streptopus roseus*	interrupted fern	*Osmunda claytoniana*		
							pale corydalis	*Corydalis sempervirens*		
							bindweed	*Polygonum sp.*		
ground cover	reindeer lichen	*Cladina rangiferina*	needle litter		leaf litter		feathermoss		leaf litter	
	coral lichen	*Cladina stellaris*			moss	*Dicranium sp.*	leaf litter			
	false pixiecup	*Cladonia chlorophaea*								
	moss	*Dicranium sp.*								
	lichen	*Cladonia sp.*								
Sampling sites	C,G,L,Y,AA		DD		E,H,P,R,T, CC		I,J,K,Q		U	

Table 2

Species Composition of Wetland Vegetation Communities

Community	Marsh				Swamp			
	Open water marsh		Meadow marsh		Tall shrub/treed swamp		Conifer swamp	
Vegetation type								
trees			eastern white cedar	*Thuja occidentalis*	eastern white cedar	*Thuja occidentalis*	black spruce	*Picea mariana*
			black spruce	*Picea mariana*	black spruce	*Picea mariana*	tamarack	*Larix laricina*
					black ash	*Fraxinus nigra*	white pine	*Pinus strobus*
					red maple	*Acer rubrum*	eastern white cedar	*Thuja occidentalis*
					yellow birch	*Betula alleghaniensis*		
					white birch	*Betula papyrifera*		
					trembling aspen	*Populus tremuloides*		
					balsam fir	*Abies balsamea*		
dead trees			cedar	*Thuja occidentalis*				
			white birch	*Betula papyrifera*				
			black spruce	*Picea mariana*				
shrubs	sweet gale	*Myrica gale*	speckled alder	*Alnus rugosa*	raspberry	*Rubus sp.*	white pine	*Pinus strobus*
	spirea	*Spiraea alba*	nanaberry	*Viburnum lentago*	willow	*Salix sp.*	black spruce	*Picea mariana*
	leatherleaf	*Chamaedaphne calyculata*	red maple	*Acer rubrum*	alder	*Alnus rugosa*	leatherleaf	*Chamaedaphne calyculata*
	speckled alder	*Alnus rugosa*	mountain holly	*Nemopanthus mucronatus*	balsam fir	*Abies balsamea*	labrador tea	*Ledum groenlandicum*
			winterberry	*Ilex verticillata*	dogwood	*Cornus rugosa*	white birch	*Betula papyrifera*
					sugar maple	*Acer saccharum*	alder	*Alnus sp.*
					red maple	*Acer rubrum*	red maple	*Acer rubrum*
					mountain maple	*Acer spicatum*	cranberry	*Vaccinium oxycoccos*
floating	water shield							
	water lily							
	pondweed							
herbs	cattail	*Typha latifolia*	cattail	*Typha latifolia*	cattail	*Typha latifolia*	ostrich fern	*Matteuccia struthiopteris*
	sedge	*Carex sp.*	cotton grass	*Eriophorum sp.*	purple stemmed aster	*Aster puniceaeus*	canada mayflower	*Maianthemum canadense*
	3 way sedge	*Dulchium arundinaceum*	juncus	*Juncus sp*	canada goldenrod	*Solidago canadensis*	3 leaved smilacina	*Maianthemum trifolium*
	northern bugleweed	*Lycopus uniflorus*	cut grass	*Carex sp.*	joe pie weed	*Eupatorium maculatum*	godthread	*Coptis trifolia*
	pipewort	*Eriocaulon aquaticum*	nodding sedge	*Carex gynandra*	juncus	*Juncus sp.*	bunchberry	*Cornus canadensis*
	beaked sedge	*Carex utriculata*	wool grass	*Scirpus cyperinus*	violet	*Viola sp.*	starflower	*Trientalis borealis*
			canada bluejoint	*Calamagrostis canadensis*	strawberry	*Fragaria sp.*	sedges	*Carex sp.*
			marsh st Johnswort	*Triadenum fraseri*	bindweed	*Polygonum sp.*		
			pondweed	*Potamogeton sp.*	northern bugleweed	*Lycopus uniflorus*		
			northern bugleweed	*Lycopus uniflorus*	spinulose fern	*Dryopteris carthusiana*		
			canada goldenrod	*Solidago canadensis*	sarsaparilla	*Aralia nudicaulis*		
			arrowhead	*Sagittaria latifolia*	goldthread	*Coptis trifolia*		
			manna grass	*Glyceria canadensis*	ground pine	*Lycopodium dendroideum*		
			violet	*Viola sp.*	clintonia	*Clintonia borealis*		
			ferns		sedges	*Carex sp.*		
			grasses		bunchberry	*Cornus canadensis*		
					sphagnum	*Sphagnum sp.*		
ground cover							peat moss	*sphagnum magellanicum*
							peat moss	*sphagnum girgensohnii*
Sampling sites	S		N,W, BB		A,D,M, V		B,F	

FIGURES



LEGEND:

- Water
- Access road
- ATV/Skidder/Snowmobile Trail
- Streams
- Intermittent creeks
- Extents of detailed mapping
- Terrestrial habitat assessment area boundary
- Wetland
- Core shack
- Terrestrial habitat assessment sampling locations

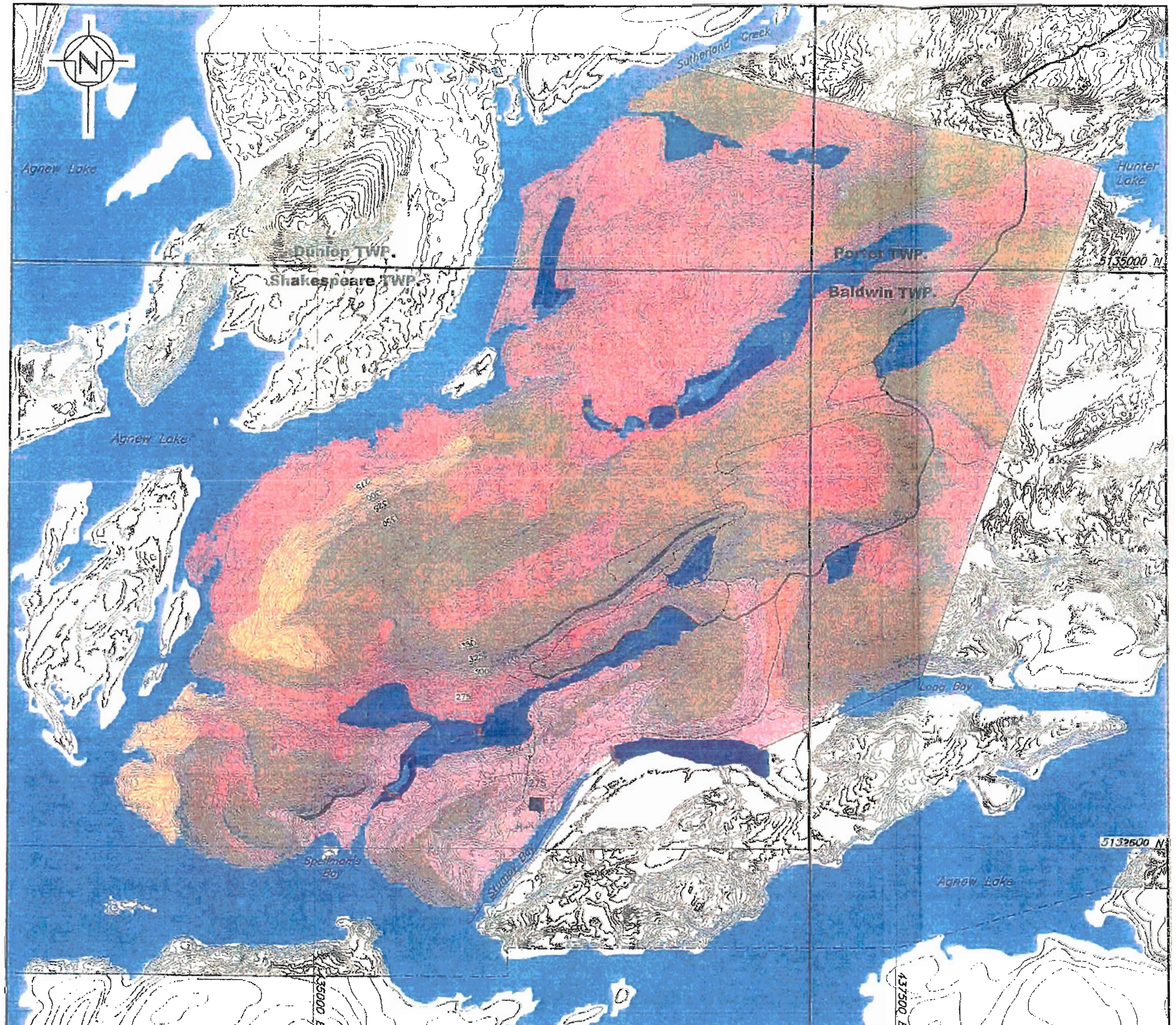
NOTES:

1. Detailed mapping provided by URSA Major Minerals Inc. The remaining mapping was taken from electronic OBM mapping.
2. Access roads, trails, and staked claims boundary illustrated on this figure were provided by Burt Consulting Service.
3. Coordinate grid is shown in UTM (NAD 83) and is in metres.
4. Detailed contour interval is 2.5 metres.
5. 1:20,000 scale

Scale 200 100 0 200 400 600 800 1000 Metres

URSA MAJOR MINERALS INC.			
SHAKESPEARE PROJECT			
TERRESTRIAL HABITAT ASSESSMENT SAMPLING LOCATIONS			
Knight Piésold CONSULTING	P/A NO. NB101-00222/1	REF. -	REV. -
	FIGURE 1		

E-27



LEGEND:

Water
Access road
ATV/Skidder/Snowmobile Trail
Streams
Intermittent creeks
Extents of detailed mapping
Terrestrial habitat assessment area boundary
Wetland
Core shack

VEGETATION COMMUNITY TYPES:

UPLAND:

Jack pine mixedwood (V15/16, ST 1)
White pine mixedwood (V4, ST 1)
Tolerant hardwood mixedwood (V2, ST 15)
Red maple mixedwood (V3, ST 15)
Yellow birch mixedwood (V2, ST 16)

WETLAND:

Conifer swamp
Tall shrub/treed swamp
Open water marsh
Meadow marsh

Cliff
Beaver dam

NOTES:

1. Detailed mapping provided by URSA Major Minerals Inc. The remaining mapping was taken from electronic OBM mapping.
2. Access roads, trails, and staked claims boundary illustrated on this figure were provided by Burt Consulting Service.
3. Coordinate grid is shown in UTM (NAD 83) and is in metres.
4. Detailed contour interval is 2.5 metres.
5. 1:20,000 scale

Scale 200 100 0 200 400 600 800 1000 Metres

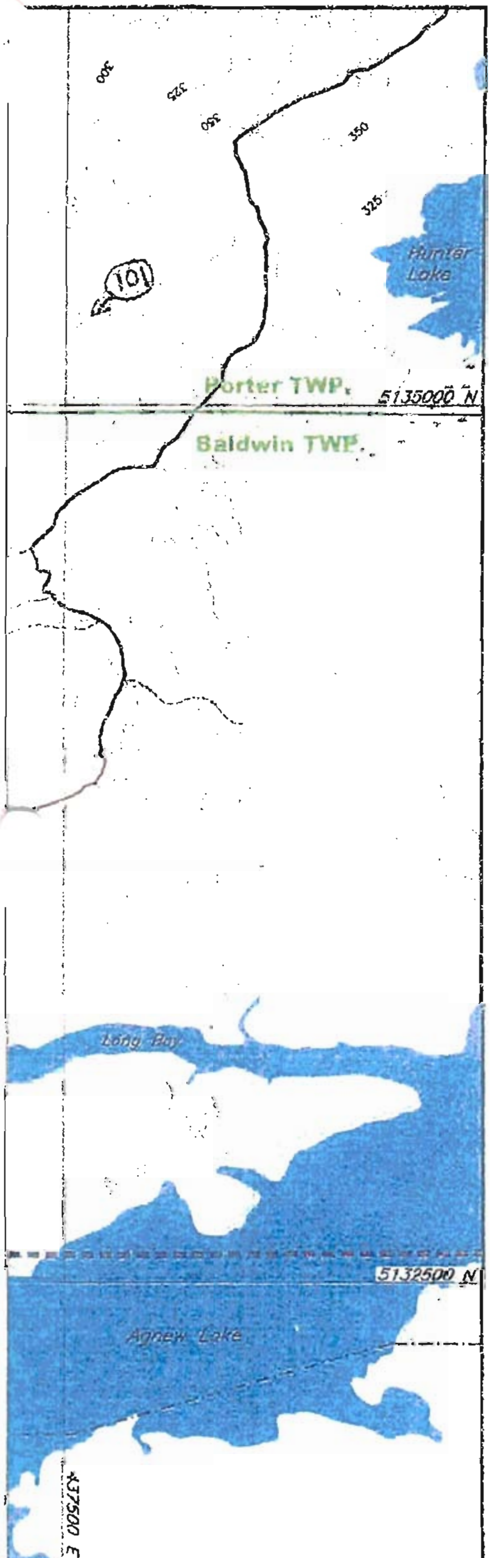
URSA MAJOR MINERALS INC.			
SHAKESPEARE PROJECT			
TERRESTRIAL HABITAT ASSESSMENT VEGETATION COMMUNITIES			
Knight Piésold CONSULTING	P/A NO. NB101-00222/1	REF. -	REV -
	FIGURE 2		

APPENDICES

Appendix A
Terrestrial Habitat Assessment Photos

Terrestrial Habitat Assessment Photos

Photos are named to indicate location. The alphabetical names of the photos correspond to the terrestrial habitat assessment vegetation sampling locations, shown on Figure 1. The primary photo for each sampling location is designated with a letter (x), while additional photos, such as individual plants at each location, are designated with an alphanumeric name (x1). Additional views of the area are identified with a number, starting at 101, with the locations shown on the map included in this Appendix.



LEGEND:

- Water
- Public access road
- Trail/old logging road
- Streams
- Intermittent Streams
- Extents of detailed mapping
- Staked Claims Boundary
- Wetland

NOTES:

1. Detailed mapping provided by URSA Major Minerals Inc. The remaining mapping was taken from electronic OBM mapping.
2. Access roads, trails, and staked claims boundary illustrated on this figure were provided by Burt Consulting Service.
3. Coordinate grid is shown in UTM (NAD 83) and is in metres.
4. Detailed contour interval is 2.5 metres.

Scale 200 0 200 400 600 800 1000 Metres

URSA MAJOR MINERALS INC.

SHAKESPEARE PROJECT

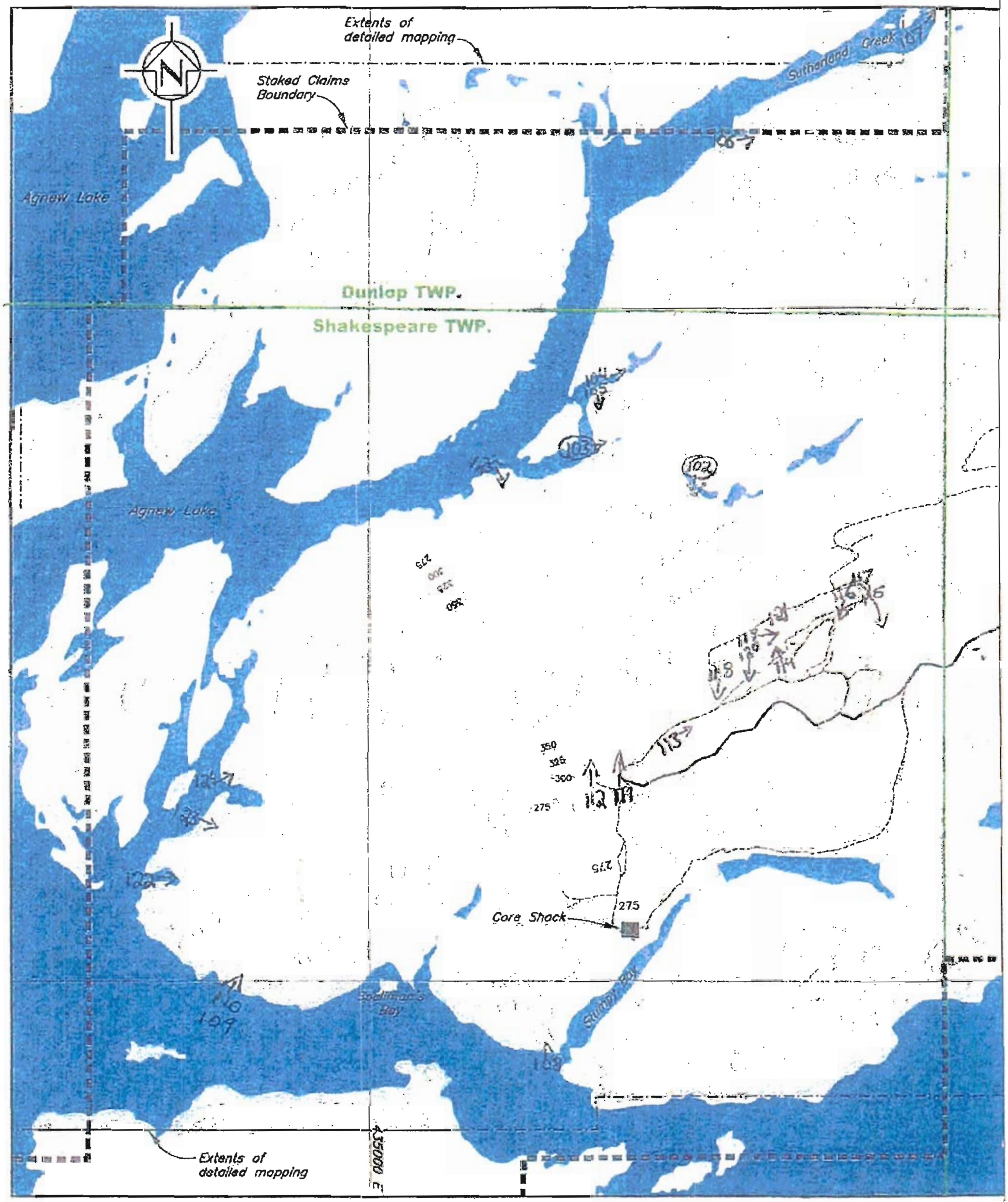
Terrestrial Habitat Assessment

Photo Location Key

Knight Piésold CONSULTING

October 2005

Appendix A



XREF FILE : Detailed Mapping 0.5m_REV8

Appendix B

Forest Management Planning Map

Terrestrial Habitat Assessment

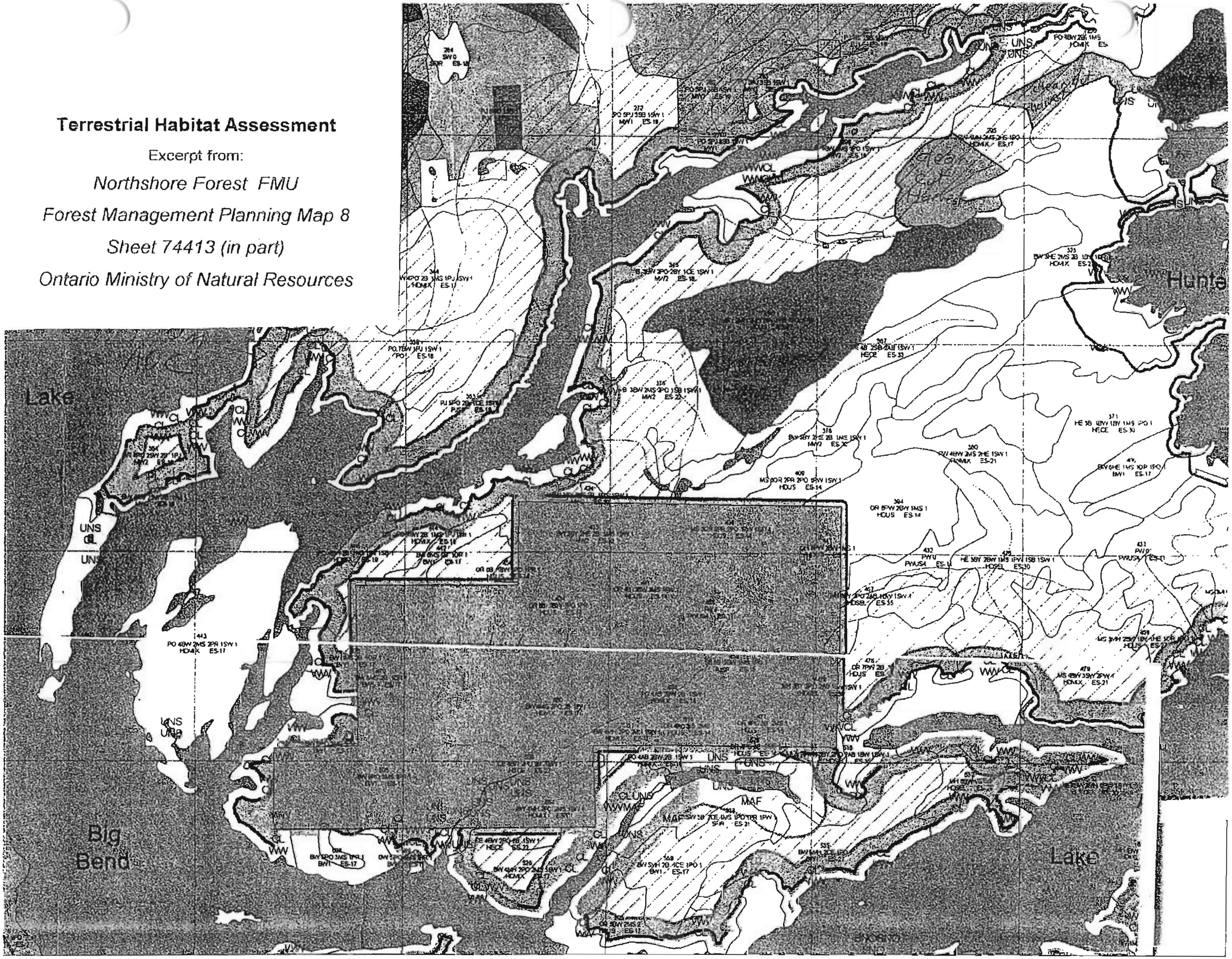
Excerpt from:

Northshore Forest FMU

Forest Management Planning Map 8

Sheet 74413 (in part)

Ontario Ministry of Natural Resources



E-25

Appendix C

Breeding Bird Atlas Data

Square Summary (17MM33)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
17	12	1	30	52	21	16	89	4	22	8	0

Region summa

#squares	#sq with data		#ı
	1st	2nd	1
345	220	224	1'

Target number of point counts in this square: 9 road side, 16 off road (6 in deciduous forest, 6 in coniferous forest, 2 in mixed forest, 2
Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	BE 2nd	BE 1st	% 2nd	% 1st
Common Loon	P		61	65
Pied-billed Grebe	H		8	4
Double-crest Cormorant §			16	6
American Bittern	H		20	13
Great Blue Heron §	AE		27	35
Green Heron ‡§			<1	<1
Turkey Vulture	X		32	16
Canada Goose	P		29	1
Wood Duck	H		24	15
American Black Duck			26	39
Mallard	NY	P	31	26
Blue-winged Teal			4	9
Northern Pintail ‡			<1	<1
Green-winged Teal			4	0
Ring-necked Duck			23	22
Lesser Scaup			6	2
Common Goldeneye	H		32	27
Hooded Merganser	H		33	27
Common Merganser	FY		48	49
Red-breast Merganser			6	5
Osprey	H		20	16
Bald Eagle †	AE		15	<1
Northern Harrier	H		19	15
Sharp-shinned Hawk			8	12
Cooper's Hawk			3	3
Northern Goshawk			2	3
Red-should Hawk †			4	<1
Broad-winged Hawk	H	H	59	39
Red-tailed Hawk			28	15

SPECIES	BE 2nd	BE 1st	% 2nd	% 1st
Golden Eagle †			0	<1
American Kestrel			23	25
Merlin	H		24	4
Ruffed Grouse	S		59	33
Spruce Grouse			9	5
Sharp-tailed Grouse †			4	<1
Virginia Rail			4	1
Sora			2	1
Sandhill Crane	S		35	3
Killdeer	P		20	24
Solitary Sandpiper			4	6
Spotted Sandpiper	H		40	31
Upland Sandpiper ‡			<1	<1
Common Snipe	H		15	11
American Woodcock	S	P	38	15
Ring-billed Gull §	H		15	5
Herring Gull §	H		34	32
Caspian Tern †			5	5
Common Tern §			8	8
Black Tern † §			0	1
Rock Dove			9	7
Mourning Dove	T		14	7
Black-billed Cuckoo	S		15	10
Yellow-billed Cuckoo ‡			0	<1
Black/Yell-billed Cuckoo			7	0
Great Horned Owl	H		9	4
Barred Owl			28	10
Great Gray Owl †			1	1
Boreal Owl ‡			3	<1

SPECIES		
North Saw-whet Owl	S	
Common Nighthawk		
Whip-poor-will	S	
Chimney Swift		
Ruby-thr Hummingbi	T	H
Belted Kingfisher	V	
Red-head Woodpeck		
Yellow-bellied Sapsu	CF	S
Downy Woodpecker	H	
Hairy Woodpecker	H	
Am. Three-toed Woo		
Black-back Woodpec		
Northern Flicker	S	AE
Pileated Woodpecke	S	
Olive-sided Flycatche	S	
Eastern Wood-Pewe	S	S
Yellow-bellied Flycat		
Alder Flycatcher	S	
Willow Flycatcher ‡		
Least Flycatcher	S	S
Eastern Phoebe	H	
Gr Crested Flycatche	S	P
Eastern Kingbird	S	D
Loggerhead Shrike †		
Blue-headed Vireo	A	
Warbling Vireo		
Philadelphia Vireo	S	
Red-eyed Vireo	D	D
Gray Jay		

Ontario Breeding Bird Atlas - Summary Sheet for Square 17MM33 (page 2 of 2)

SPECIES	BE 2nd	BE 1st	% 2nd	% 1st
Blue Jay	FY	P	61	40
American Crow	FY		54	36
Common Raven	FY	P	69	49
Purple Martin			<1	4
Tree Swallow		H	33	40
North Rgh-wing Swallow			3	8
Bank Swallow §			5	16
Cliff Swallow §			6	13
Barn Swallow	V		21	30
Black-capp Chickadee	FY	H	68	41
Boreal Chickadee			10	6
Red-breast Nuthatch	H	P	56	34
White-breast Nuthatch	H		18	6
Brown Creeper			24	6
House Wren			8	2
Winter Wren	S		65	23
Sedge Wren			6	1
Marsh Wren		S	3	1
Golden-crown Kinglet			40	22
Ruby-crown Kinglet			37	18
Eastern Bluebird			12	4
Veery	D	S	56	34
Swainson's Thrush	S		63	28
Hermit Thrush	CF		67	35
Wood Thrush	S		11	4
American Robin	CF	S	70	53
Gray Catbird	S		20	15
Northern Mockingbird ‡			<1	<1
Brown Thrasher	H		11	13

SPECIES	BE 2nd	BE 1st	% 2nd	% 1st
European Starling	FY		19	21
Cedar Waxwing	H	P	63	47
Golden-winged Warbler			4	1
Blue/Gold-wing Warbler			0	0
Tennessee Warbler			17	11
Nashville Warbler	S	S	67	35
Northern Parula			30	2
Yellow Warbler	S		32	23
Chestn-sided Warbler	CF	D	69	46
Magnolia Warbler	A		67	27
Cape May Warbler			16	12
Black-thr Blue Warbler	A		50	15
Yellow-rumped Warbler	T		67	34
Black-thr Green Warbler	A	A	58	35
Blackburnian Warbler	S		52	26
Pine Warbler			25	6
Bay-breasted Warbler			17	10
Black-white Warbler	S		58	32
American Redstart	A	D	61	33
Ovenbird	D	S	64	48
North Waterthrush			31	15
Connecticut Warbler			0	1
Mourning Warbler	A		51	20
Common Yellowthroat	V	S	59	40
Wilson's Warbler			6	2
Canada Warbler	A	H	37	19
Scarlet Tanager	S		25	6
Eastern Towhee ‡			1	<1
Chipping Sparrow	A		55	37

SPECIES		
Clay-colored Sparrov	S	
Vesper Sparrow		
Savannah Sparrow		
Song Sparrow	CF	H
Lincoln's Sparrow	S	
Swamp Sparrow	FY	
White-throat Sparrow	CF	S
Dark-eyed Junco		
Northern Cardinal ‡		
Rose-breast Grosbea	S	
Indigo Bunting	S	H
Bobolink		
Red-wing Blackbird		
Eastern Meadowlark		
Rusty Blackbird		
Brewer's Blackbird		
Common Grackle		
Brown-head Cowbird	H	
Baltimore Oriole	S	
Pine Grosbeak ‡		
Purple Finch		
House Finch		
Red Crossbill ‡		
White-winged Crossb		
Pine Siskin		
American Goldfinch	D	
Evening Grosbeak		
House Sparrow		

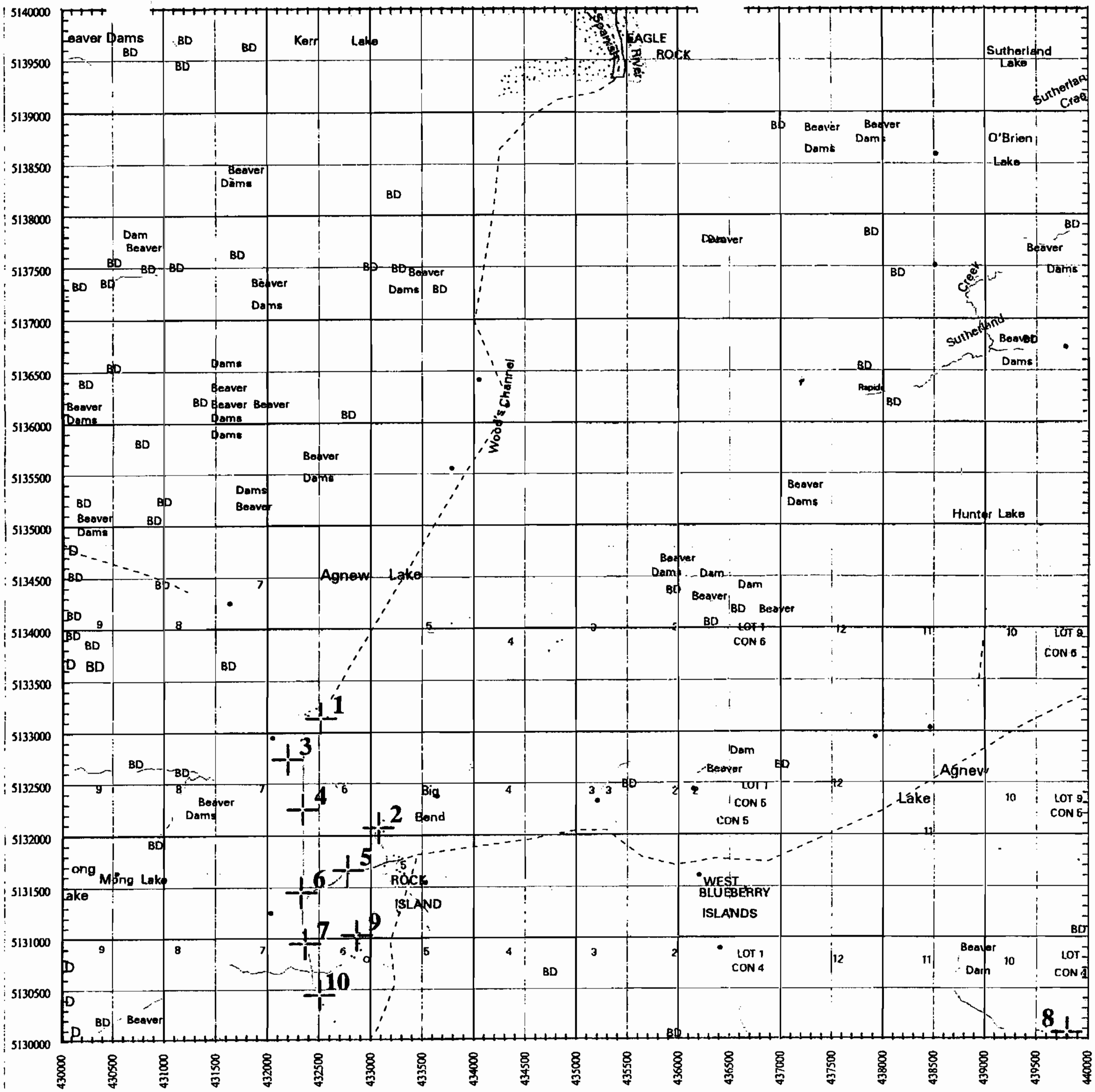
This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #34 (Span that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this squa than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest bre square 17MM33 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species wa atlas (this gives an idea of the expected chance of finding that species in region #34). Rare/Colonial Species Report Forms should be complet § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 29/09/2005. An up-to-date version of this sheet is available from http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17MM33

see previous page

Ontario Breedi_ _ Bird Atlas

Roadside Point Count Coordinates

No.	Easting	Northing
01	432519	5133356
02	433078	5132291
03	432201	5132956
04	432345	5132473
05	432782	5131880
06	432328	5131669
07	432367	5131165
08	439800	5130286
09	432867	5131246
10	432508	5130665
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	0	0
38	0	0
39	0	0
40	0	0
41	0	0
42	0	0
43	0	0
44	0	0
45	0	0
46	0	0
47	0	0
48	0	0
49	0	0
50	0	0



Wooded Areas

Water Bodies Water Area

Water Bodies Wetland Area

Wetlands

ANSI

Pits and Quarries

Parks and Reserves

Public Road

Private Road

Track

Trail

Railway

Contour Lines

Lots

Roadside Point Count Locations

North American Datum 198
Universal Transverse Merca
Zone 17, Central Meridian 8
Grid Interval 1000 meters
Contour Interval 10 meters
Some features on the Breedi
have been updated since the

Atlas Square: 17MM33
Region: 34

(NAD27 - 17MB33)

0km 1km 2km

0mi 1mi

Onta
Bree
Bird

APPENDIX F

ACID ROCK DRAINAGE AND METAL LEACHING CHARACTERIZATION INTERIM REPORTS
(SGS LAKEFIELD RESEARCH LIMITED)

F1 WASTE ROCK INTERIM REPORT 5
F2 TAILINGS INTERIM REPORT 3

APPENDIX F1

WASTE ROCK INTERIM REPORT 5

- Report 149 pages

SGS

November 14, 2005

URSA Major Minerals Incorporated
8 King Street East, Suite #1300
Toronto, Ontario
M5C 1B5

Attn: Richard Sutcliffe, PhD., P.Geo.

Re: Acid Rock Drainage and Metal Leaching Characterization of Waste Rock, Interim Report 5
Shakespeare Property
SGS Reference No. 11016-001

Dear Richard:

Please find enclosed a copy of the SGS Environmental Services (SGS) report entitled, "Acid Rock Drainage and Metal Leaching Characterization of Waste Rock, Interim Report 5" prepared for URSA Major Minerals Incorporated.

If you have any questions or comments concerning the aforementioned report, or if we can be of further assistance, please do not hesitate to contact the undersigned at (705) 652-2148.

Best regards,

SGS LAKEFIELD RESEARCH LIMITED
Environmental Services

Jennifer LaBelle

Jennifer LaBelle
Environmental Testing Services

BB/jl
Attachment
c.c. S. Aiken, Knight Piesold Ltd.
J.P. Chauvin, Patricia Mining Corp.
Richard Gowans, Micon International
Che McRae, Golder Ass.
R. Caldwell, SGS Lakefield

EXECUTIVE SUMMARY

SGS Environmental Services (SGS) was contracted by URSA Major Minerals Incorporated to complete environmental characterization of waste rock from the Shakespeare property located near Sudbury, Ontario. The purpose of the environmental test program was to identify the acid rock drainage (ARD) potential and the metal leaching characteristics of waste rock from the Shakespeare project.

This report provides a summary of the environmental test work completed to November 4, 2005 and the results thereof. The following test work was complete at the time of report preparation: modified acid base accounting (modified ABA), net acid generation (NAG) testing, toxicity characteristic leach procedure (TCLP) US EPA Method 1311 and synthetic precipitation leach procedure (SPLP) US EPA Method 1312. Humidity cell testing was initiated on four individual and three composite waste rock samples on June 7, 2005 and is currently in the twenty second week of leaching. Analytical results of the humidity cell leachate analyses to the end of Week 20 are provided herein. A summary report is scheduled to be provided upon completion of the test program.

The two samples from the Quartz Gabbro deposit (SEQG-1K and SWQG-1K) subjected to static tests exhibited similar carbonate mineralization of 0.32% and 0.34%, respectively. However, different ABA neutralization potentials (NP) were determined (10.6 and 17.5 t $CaCO_3$/1000 t). Both values are higher than the theoretical NP available from carbonate mineralization alone. The sulphide concentrations (0.18% and 0.60%, respectively) were also notably different resulting in different NP/AP ratios of 1.9 and 0.93. NAG tests showed a potential for acid generation largely related to metal acidities.

Over the initial twenty weeks of the humidity cell test, the pH of the SEQG-1K leachate has shown a general decrease from 7.87 (Week 0) to 6.23 (Week 20). Sulphate concentrations have shown an increasing trend over the twenty week test period. Free acidity has reported at concentrations below the analytical detection limit throughout the twenty week test period, although alkalinity concentrations have shown a decreasing trend to date. Analysis of the SEQG-1K leachate for dissolved metals revealed that all controlled parameters tested reported at concentrations below the Canadian Metal Mining Effluent Regulations (MMER) limits.

The SWQG-1K leachate has reported a decreasing pH over the twenty week initial humidity cell test period. Although sulphate concentrations have fluctuated over the initial test period, concentrations have not varied greatly from the average weekly value of 12 mg/L. Acidity has not been released into the weekly leachates, even though alkalinity concentrations have shown a decreasing trend to date. Analysis of the SWQG-1K leachate revealed that all controlled parameters have reported at concentrations within the MMER limits.

The SEOZD-1K (Disseminated Sulphide Mineralization) and SEFG-1K (Footwall Gabbro) samples show similar carbonate contents of 0.08% and 0.10% and similar NP values of 7.9 and 8.2 t $CaCO_3$/1000 t, but had very different

F1-3

Samples HWQ-1Ke and HWQ-1Kf also exhibited generally similar ABA and NAG results with no carbonate mineralization detected and low NP values (2.8 and 2.9 t $CaCO_3$/1000 t respectively), but higher sulphide contents (0.12% and 0.11%) than the other Hanging Wall Quartzites and similar total sulphur content at 0.18% and 0.19%. The NP/AP ratios were within the range typically considered indicative of an acid generating potential at 0.74 and 0.85. The NAG results indicated similar net acid generation potential with a final pH for these samples at 3.40 and 3.61. The $NAG_{4.5}$ values were 1.4 and 2.9 kg H_2SO_4/t while the $NAG_{7.0}$ values were 3.2 and 4.6 kg H_2SO_4/t. Humidity cell testing has also been initiated on a composite of these two samples.

Based on similarities in the ABA and NAG characteristics noted above for the Hanging Wall Quartzites, samples were combined for subsequent kinetic testing. Kinetic testing on the three composite samples tested (HWQ-1Kab, HWQ-1Kcd, and HWQ-1Kef) show similar leachate qualities after twenty weeks of testing. Leachate analyses generally show no free alkalinity, increasing free acidity, and decreasing pH. After twenty weeks of leaching, the HWQ samples are reporting acidic pH values that clearly show the lack of neutralization capability in these samples. In all three composite HWQ humidity cell tests, the pH of the leachate has reported below the MMER lower limit. Increasing concentrations of Cu, Fe, U and Zn have been observed in the HWQ-1Kab leachates. Increasing Cu, Ni and Zn concentrations have been reported in both the HWQ-1Kcd and the HWQ-1Kef leachates. While concentrations of those parameters mentioned above that are regulated under the MMER have reported within the regulated limits to date, continued monitoring will show whether the minor sulphides present or other metal acidities will result in a more acidic or otherwise environmentally significant leachate quality.

Analysis of the TCLP leachates from the sixteen samples submitted for leachate testing revealed that all parameters, with the exception of pH, reported at concentrations within the MMER limits. Results of the analyses on the SPLP leachates determined that all parameters reported at values within the MMER limits for all sixteen samples tested.

SGS LAKEFIELD RESEARCH LIMITED
Environmental Services

Barbara Bowman

Barbara Bowman
Environmental Testing and Research

Jennifer LaBelle

Jennifer LaBelle
Environmental Testing and Research

LIST OF TABLES

LIST OF ABBREVIATIONS & TERMS

Modified ABA	Modified Acid Base Accounting
NAG	Net Acid Generation
TCLP 1311	Toxicity Characteristic Leach Procedure US EPA 1311
SPLP 1312	Synthetic Precipitation Leach Procedure US EPA 1312
BH	Borehole

LIST OF REFERENCES

Department of Justice Canada. 2004. *Metal mining effluent regulations (SOR/2002-222). Fisheries Act, Aug 31, 2004.*

Table 1 Scope of Work

Sample	Mineralogical Examination *(to be determined)*	Mod. ABA	NAG	Humidity Cell	TCLP	SPLP
SEQG-1K (L13+00E 168-173m)		X	X	X		
SEQG-1ML (L5+00E 153-154m)					X	X
SEQG-2ML (L7+00E 98-99m)					X[4]	X[4]
SEQG-3ML (L9+00E 122-123m)					X	X
SEQG-4ML (L11+00E 189-190m)					X	X
SWQG-1K (L10+00W 121.9-128)		X	X	X		
SWQG-1ML (L14+00W 68-69)					X	X
HWQ-1Ka (L1+00E 30-35m)		X	X	X[1]		
HWQ-1Kb (L1+00E 35-40m)		X	X	X[1]		
HWQ-1Kc (L1+00E 40-45m)		X	X	X[2]		
HWQ-1Kd (L1+00E 45-50m)		X	X	X[2]		
HWQ-1Ke (L1+00E 50-55m)		X	X	X[3]		
HWQ-1Kf (L1+00E 55-60m)		X	X	X[3]		
HWQ-1ML (L14+00W 15-16m)					X	X
HWQ-2ML (L1+00W 70-71m)					X	X
HWQ-3ML (L1+00E 29-30m)					X[4]	X[4]
SEOZD-1K (L11+00E 193.65-198.65m)		X	X	X		
SWOZD-1ML (L14+00W 50.20-51m)					X	X
SWOZD-2ML (L20+00W 111.52-112.53)					X[4]	X[4]
SEOZD-1ML (L9+00E 150-150.97m)					X	X
SEOZD-2ML (L11+00E 168.75-169.75)					X	X
SEOZB-1ML (L9+00E 126.6-129.94m)					X	X
SEFG-1K (L11+00E 230.2-235.2m)		X	X	X		
SEFG-1ML (L11+00E 250-251m)					X	X
SEFG-2ML (L9+00E 210-211m)					X	X
SWFG-1ML (L17+00W 40-41m)					X	X

[1] *Combined humidity cell (HWQ-1Ka and HWQ-1Kb).*
[2] *Combined humidity cell (HWQ-1Kc and HWQ-1Kd).*
[3] *Combined humidity cell (HWQ-1Ke and HWQ-1Kf).*
[4] *Duplicate leaches were performed on these samples.*

1.2 PROJECT STATUS AS OF NOVEMBER 4, 2005

To date, the modified acid base accounting (ABA), net acid generation (NAG), toxicity characteristic leaching procedure (TCLP) US EPA 1311 and synthetic precipitation leaching procedure (SPLP) US EPA 1312 testing has been completed. The humidity cell tests were initiated on June 7, 2005 and are currently in their twenty second week of testing. This report includes all results available to November 4, 2005. Humidity cell testing is scheduled to proceed for forty weeks as authorized by JP Chauvin on November 9, 2005.

2.1.3 *DISSEMINATED SULPHIDE MINERALIZATION*

- SEOZD-1K (L11+00E 193.65-198.65m) - East Ore Zone – BH U-03-48
- SEOZD-1ML (L9+00E 150-150.97m) - East Ore Zone – BH U-03-26
- SEOZD-2ML (L11+00E 168.75-169.75) - East Ore Zone – BH U-03-48
- SWOZD-1ML (L14+00W 50.20-51m) - West Ore Zone – BH U-03-35
- SWOZD-2ML (L20+00W 111.52-112.53) - West Ore Zone – BH U-03-43

2.1.4 *BLEBBY SULPHIDE MINERALIZATION*

- SEOZB-1ML (L9+00E 126.6-129.94m) - East Ore Zone – BH U-03-26

2.1.5 *FOOTWALL GABBRO*

- SEFG-1K (L11+00E 230.2-235.2m) – East Footwall – BH U-03-50
- SEFG-1ML (L11+00E 250-251m) - East Footwall – BH U-03-50
- SEFG-2ML (L9+00E 210-211m) - East Footwall – BH U-03-26
- SWFG-1ML (L17+00W 40-41m) - West Footwall – BH U-03-41

2.2 SAMPLE PREPARATION AND HANDLING

The following sections provide a brief overview of sample preparation and handling procedures developed for the Shakespeare test program. Representative portions of the samples received were submitted for environmental testing and analyses at SGS Lakefield. Samples were prepared for the proposed test work and analyses according to SGS Lakefield Research Standard Operating Procedures.

2.2.1 *INITIAL SAMPLE PREPARATION*

Initial sample preparation of the Shakespeare waste rock included the crushing of the samples. Sample preparation procedures specific to the analyses performed on the waste rock samples are listed below.

- Crushing of the samples of the kinetic test samples to minus 6.3 mm (-1/4") for humidity cell testing.
- Further crushing and pulverization of the kinetic test samples to 80% passing a 200-mesh (Tyler) screen for modified ABA, NAG testing and mineralogical examination.
- Crushing of the metal leaching test samples to minus 9.5 mm (-3/8") for TCLP US EPA 1311 and SPLP US EPA 1312 testing.

and expressed in units of kg H_2SO_4 equivalent per tonne. Titration to pH 4.5 and to pH 7.0 provided additional information for sample characterization. The $NAG_{4.5}$ value indicated the contribution from free acid, Al and Fe, while the NAG_7 provided information on the additional acidity due to other metals such as Cu and Zn.

2.3.3 HUMIDITY CELL TESTING

The humidity cell test is used to predict the potential for acidic leachate generation and the primary rates of reaction under aerobic weathering conditions. Humidity cell testing was initiated on four individual waste rock samples and three waste rock composites according to the standard ASTM D5744-96 method.

The waste rock samples were crushed to minus 6.3 mm (-1/4") and placed in a cell with dimensions of 101.6 mm (4") inside diameter by 203.2 mm (8") height. A perforated disk was located approximately 12.5 mm (1/2") above the cell bottom to support the solid waste rock samples. A filter media was placed on the perforated disk to transmit air and to allow leachate to drain into a valve at the bottom of the cell, which, when opened, allows leachate to pass into the collection vessel.

A 1000 g dry waste rock 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 waste rock sample with 1000 mL of deionised water for one hour, followed by the collection of leachate for analyses.

Subsequent stages of the humidity cell test involved three stages over a 7-day cycle: (1) dry air (which entered the bottom of the cell and flowed upward through the sample) was passed through the sample 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, deionised 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 tests are submitted for general analyses including: pH, acidity, alkalinity, conductivity and sulphate. Inductively coupled plasma, mass spectroscopy (ICP-MS) trace metal scans will be performed on a weekly basis from Weeks 0 to 5 and every 5 weeks thereafter. The cycle will repeated for a period of 20 weeks.

2.3.4 TOXICITY CHARACTERISTIC LEACH PROCEDURE US EPA METHOD 1311

The objective of the TCLP US EPA 1311 is to determine the mobility of inorganic analytes present in the mine waste rock and if the resultant leachates generated will be considered acceptable to landfill, or whether the waste materials should be listed as registerable wastes. In this case, the leachant was adjusted to pH 4.93 ± 0.05 (extraction fluid #1) through the addition of acetic acid and sodium hydroxide to deionised water. The leachant

3.0 RESULTS

Results of the analytical tests completed are summarized in the following sections. Detailed test results are appended to this report (Appendix A).

3.1 MODIFIED ACID BASE ACCOUNTING

Summary results of the modified ABA tests performed on the Quartz Gabbro, Disseminated Sulphide Mineralization and Footwall Gabbro samples are presented in Table 3 and provided in detail in Appendix A. The two samples from the Quartz Gabbro formations (SEQG-1K and SWQG-1K) exhibited similar carbonate (CO_3) mineralization of 0.32% and 0.34%, respectively, but different ABA NP values of 10.6 and 17.5 t $CaCO_3$/1000 t, both of which are higher than the theoretical NP available from carbonate mineralization alone. Based on the theoretical CO_3 NP values of 5.31 and 5.64 t $CaCO_3$/1000 t and the related CO_3 NP/AP ratios of 0.95 and 0.30 respectively, the potential for acid generation exists in both of these samples.

The Disseminated Sulphide Mineralization (SEOZD-1K) and Footwall Gabbro (SEFG-1K) samples show similar CO_3 contents of 0.08% and 0.10% and similar NP values of 7.9 and 8.2 t $CaCO_3$/1000 t respectively. However, very different sulphide contents, AP values and resultant NP/AP ratios (0.15 and 2.0, respectively) were determined for the two samples. As with the previous Quartz Gabbro samples, the theoretical CO_3 NP available is significantly lower that determined by the modified ABA method, indicating the modified ABA NP may be an overestimate of the NP actually available for practical neutralization of acidity.

Table 3 Modified ABA – Quartz Gabbro, Disseminated Sulphide and Footwall Gabbro Samples

Parameter	Units	SEQG-1K (L13+00E 168-173m)	SWQG-1K (L10+00W 121.9-128)	SEOZD-1K (L11+00E 193.65 198.65m)	SEFG-1K (L11+00E 230.2-235.2m)
Borehole		U-03-30	U-03-39	U-03-48	U-03-50
NP	t $CaCO_3$/1000 t	10.6	17.5	7.9	8.2
AP	t $CaCO_3$/1000 t	5.6	18.8	51.9	4.1
Net NP	t $CaCO_3$/1000 t	5.0	-1.3	-44.0	4.1
NP/AP	ratio	1.9	0.93	0.15	2.0
S	%	0.27	0.79	1.88	0.20
$S^=$	%	0.18	0.60	1.66	0.13
SO_4	%	< 0.4	< 0.4	< 0.4	< 0.4
C(t)	%	0.09	0.10	0.04	0.04
CO_3	%	0.32	0.34	0.08	0.10
CO_3 NP*	t $CaCO_3$/1000 t	5.31	5.64	1.33	1.66
CO_3 NP/AP*	ratio	0.95	0.30	0.03	0.40

** Calculated based on the carbonate (CO_3) content.*

3.2 NET ACID GENERATION TESTING

Summary results of the NAG tests performed on the Quartz Gabbro, Disseminated Sulphide Mineralization and Footwall Gabbro samples are presented in Table 5 and provided in detail in Appendix A. The SEQG-1K (Quartz Gabbro) sample reported a final pH of 4.60 and a $NAG_{4.5}$ of 0. The $NAG_{7.0}$ of 2.3 kg H_2SO_4/t indicates a potential for acid generation related to metal acidity.

Results for the SWQG-1K (Quartz Gabbro) sample reported a net acid generated with a final pH of 3.61. The $NAG_{4.5}$ of 1.9 kg H_2SO_4/t and $NAG_{7.0}$ of 6.2 kg H_2SO_4/t indicate an acid generation potential related more to metal acidity.

The Disseminated Sulphide Mineralization (SEOZD-1K) sample revealed a final pH of 2.68. A strong potential for acid generation is indicated by the $NAG_{4.5}$ of 15 kg H_2SO_4/t and $NAG_{7.0}$ of 29 kg H_2SO_4/t. This sample exhibits a very different chemical composition and behaviour from all of the other samples tested with regards to ARD potential.

NAG test results reported a final pH of 5.33 and no net acid generated for the SEFG-1K (Footwall Gabbro) sample. The chemical composition and behaviour of this sample is also very different from the other samples tested with regards to ARD potential.

Table 5 NAG Test – Quartz Gabbro, Disseminated Sulphide and Footwall Gabbro Samples

Parameter	Units	SEQG-1K (L13+00E 168-173m)	SWQG-1K (L10+00W 121.9-128)	SEOZD-1K (L11+00 193.65-198.65m)	SEFG-1K (L11+00E 230.2-235.2m)
Borehole		U-03-30	U-03-39	U-03-48	U-03-50
Final pH	units	4.60	3.61	2.68	5.33
NaOH	Normality	0.10	0.10	0.10	0.10
Vol NaOH to pH 4.5	mL	0.0	1.0	7.7	0.0
Vol NaOH to pH 7.0	mL	1.2	3.2	15	0.2
$NAG_{4.5}$	kg H_2SO_4/tonne	0	1.9	15	0
$NAG_{7.0}$	kg H_2SO_4/tonne	2.3	6.2	29	0.4

Results of the NAG tests completed on the Hanging Wall Quartzite samples are summarized in Table 6 and presented in detail in Appendix A. Samples HWQ-1Ka and HWQ-1Kb (Hanging Wall Quartzites) exhibited generally similar ABA and NAG results. The NAG results indicated a net acid generated with a final pH for both samples at 3.8, the same $NAG_{4.5}$ value at 0.98 kg H_2SO_4/t and similar $NAG_{7.0}$ values of 2.1 and 2.8 kg H_2SO_4/t respectively. The chemical composition and behaviour of these two samples is very similar with regards to their ARD characteristics. Kinetic humidity cell testing on a blend of these two samples, designated as HWQ-1Kab Composite, is in progress.

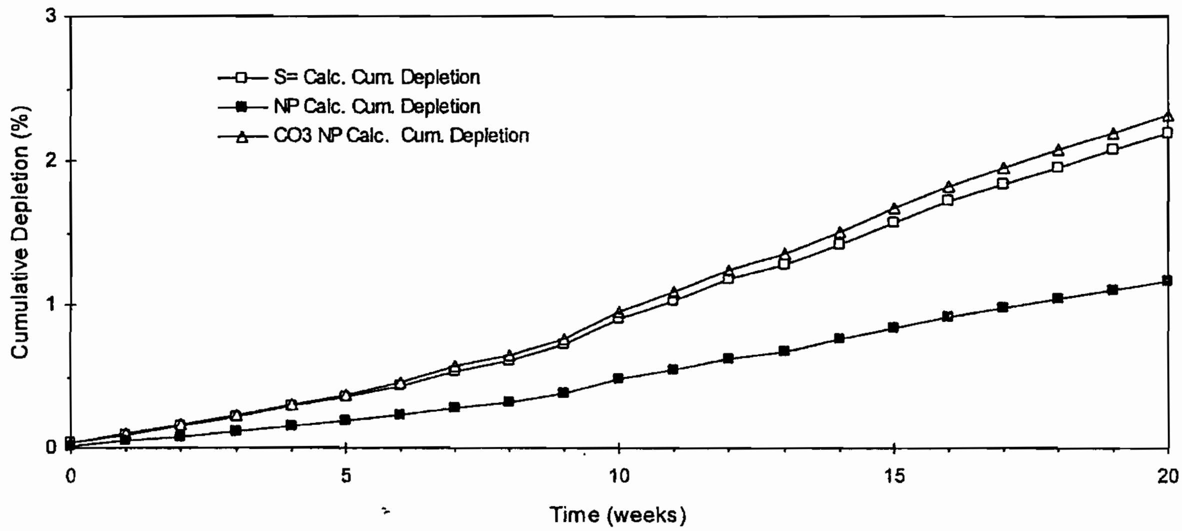
3.3.1 SEQG 1K HUMIDITY CELL (BH U-03-30)

Preliminary results of the pH, conductivity, acidity, alkalinity and sulphate analyses for the SEQG-1K humidity cell test leachate are summarized in Table 7. The pH, conductivity and sulphate concentrations reported in the weekly leachates are presented graphically in Figure 1. Over the initial twenty weeks of the humidity cell test, the pH in the SEQG-1K leachate has decreased from 7.87 (Week 0) to 6.23 (Week 20). Sulphate concentrations have shown an increasing trend over the twenty week test period. Acidity has not been released into the weekly leachates, although alkalinity concentrations have shown a decreasing trend to date.

Table 7 Weekly Leachate Results – SEQG-1K (BH U-03-30)

Week	Leachate Volume mL	pH units	Acidity. $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	SO_4 mg/L
0	798	7.87	< 2	11	41	2.4
1	888	7.77	< 2	8	34	3.5
2	903	7.45	< 2	6	24	3.6
3	888	7.21	< 2	5	24	4.0
4	887	7.28	< 2	5	23	4.4
5	866	7.24	< 2	4	20	3.7
6	894	6.89	< 2	4	21	5.0
7	859	6.88	< 2	4	15	6.4
8	935	6.72	< 2	3	14	4.2
9	907	6.48	< 2	2	22	6.4
10	892	6.68	< 2	2	30	11
11	890	6.68	< 2	2	26	7.6
12	887	6.66	< 2	< 2	27	9.2
13	916	6.77	< 2	< 2	17	6.0
14	888	6.71	< 2	2	32	8.8
15	875	6.63	<2	< 2	33	9.6
16	876	6.64	< 2	< 2	26	9.3
17	915	6.54	< 2	< 2	20	6.6
18	891	7.67	< 2	5	22	7.1
19	874	6.65	< 2	< 2	21	7.2
20	910	6.23	< 2	< 2	21	7.1

Figure 2 Cumulative Depletion Rates – SEQG 1K (BH U-03-30)



Results of dissolved metal concentrations in the SEQG-1K humidity cell leachate are shown in Table 8. Analysis of the SEQG-1K leachate revealed that all controlled parameters tested reported at concentrations below the MMER limits. Detailed analytical tables are included in Appendix C and certificates of analyses are provided in Appendix D.

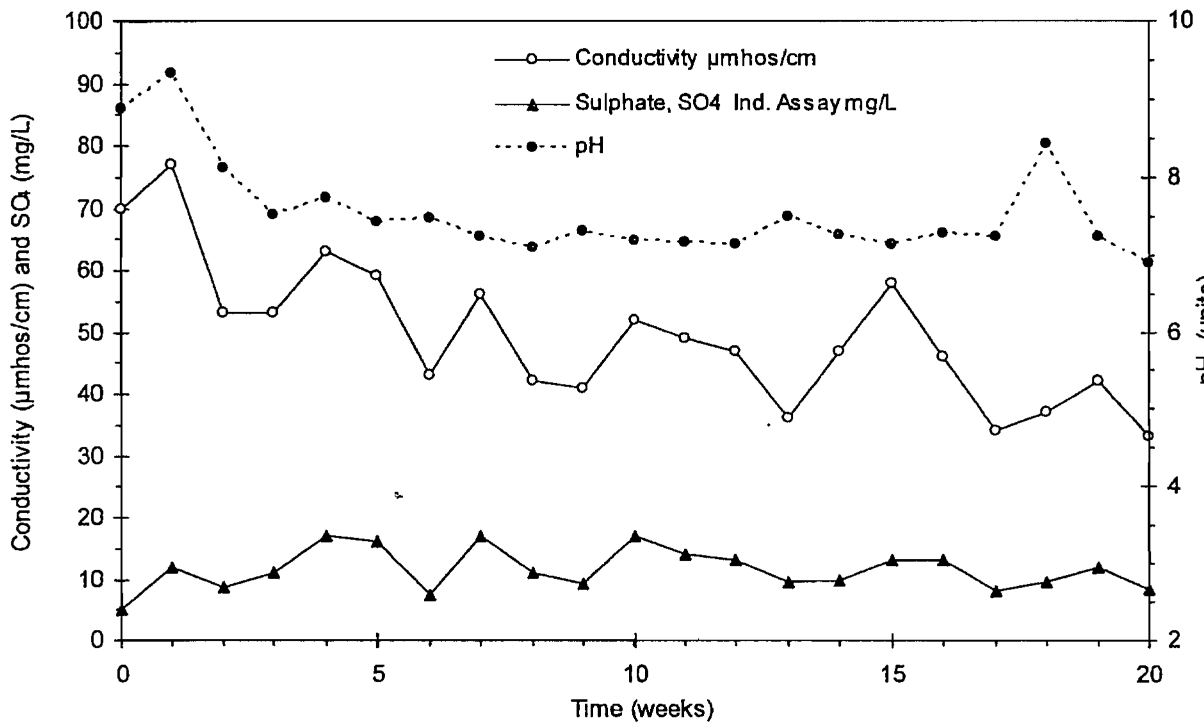
Table 8 Dissolved Metal Concentrations – SEQG-1K (BH U-03-30)

Parameter	Units	MMER*	Week						
			0	1	2	3	4	5	6
pH	units	6.0-9.5	7.87	7.77	7.45	7.21	7.28	7.24	6.89
As	mg/L	0.50	0.009	0.002	0.005	0.005	0.003	0.014	---
Cu	mg/L	0.30	0.0010	< 0.0008	< 0.0008	0.0061	< 0.0008	< 0.0008	---
Ni	mg/L	0.50	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---
Pb	mg/L	0.20	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Zn	mg/L	0.50	0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	---

Parameter	Units	MMER*	Week						
			7	8	9	10	11	12	13
pH	units	6.0-9.5	6.88	6.72	6.48	6.68	6.68	6.66	6.77
As	mg/L	0.50	---	---	---	0.006	---	---	---
Cu	mg/L	0.30	---	---	---	< 0.0008	---	---	---
Ni	mg/L	0.50	---	---	---	< 0.001	---	---	---
Pb	mg/L	0.20	---	---	---	< 0.0002	---	---	---
Zn	mg/L	0.50	---	---	---	< 0.001	---	---	---

**Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.*

Figure 3 Conductivity, pH and Sulphate Concentrations - SWQG 1K (BH U-03-39)



Results from the modified ABA test performed on the SWQG-1K (Quartz Gabbro) humidity cell head sample indicated an NP of 17.5 t $CaCO_3$/1000 t, which is higher than the theoretical NP available from carbonate mineralization alone. This samples potential for acid generation is indicated by the theoretical CO_3 NP 5.64 t $CaCO_3$/1000 t and resultant CO_3 NP/AP ratio of 0.30. Results from the NAG test completed on this sample reported a net acidity generated and an acid generation potential more related to metal acidity than sulphide acidity.

Preliminary cumulative depletion rates for sulphide sulphur, NP and CO_3 NP for the SWQG-1K sample are presented in Figure 4. The cumulative sulphide depletion over the initial twenty week test period was calculated to be 1.19%. With an originally determined sulphide content of 0.60%, these results indicate that almost all of the original sulphide (0.59%) is still present in the SWQG-1K sample after twenty weeks of leaching. A remaining NP of 17.28 t $CaCO_3$/1000 t was determined based on the NP measured in the ABA test performed on the head sample and the calculated cumulative depletion of 1.28%. Results based on the CO_3 NP of 5.64 t $CaCO_3$/1000 t however, indicate a calculated carbonate depletion of 3.96% and suggest a CO_3 NP of 5.42 t $CaCO_3$/1000 t remaining in the SWQG-1K sample. These calculations indicate that the CO_3 NP is being depleted at a rate almost 3.5 times faster than the sulphide.

Table 10 (Continued) Dissolved Metal Concentrations – SWQG-1K (BH U-03-39)

Parameter	Units	MMER*	Week						
			14	15	16	17	18	19	20
pH	units	6.0-9.5	7.25	7.13	7.28	7.23	8.42	7.23	6.89
As	mg/L	0.50	---	0.006	---	---	---	---	0.007
Cu	mg/L	0.30	---	< 0.0008	---	---	---	---	< 0.0008
Ni	mg/L	0.50	---	< 0.001	---	---	---	---	< 0.001
Pb	mg/L	0.20	---	< 0.0002	---	---	---	---	< 0.0002
Zn	mg/L	0.50	---	< 0.001	---	---	---	---	0.001

**Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.*

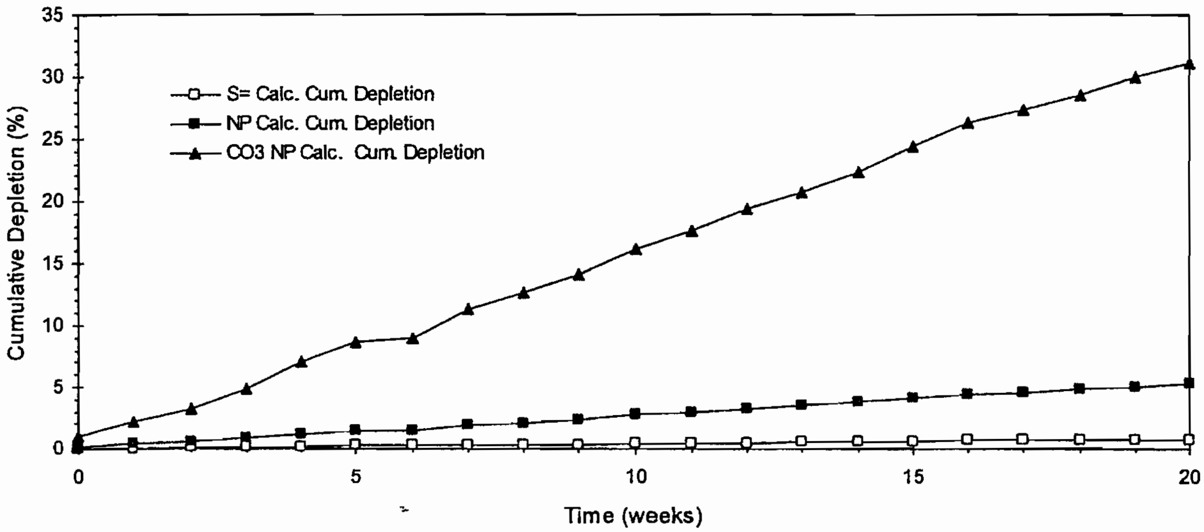
3.3.3 SEOZD-1K HUMIDITY CELL (BH U-03-48)

Preliminary results of the pH, conductivity, acidity, alkalinity and sulphate analyses for the leachates collected from the SEOZD-1K humidity cell are summarized in Table 11. Figure 5 illustrates the pH, conductivity and sulphate concentrations reported in the weekly leachates. Over the initial twenty weeks of the humidity cell test, the pH of the SEOZD-1K leachate has decreased from 7.47 (Week 0) to 6.03 (Week 20). Fluctuating sulphate concentrations have not varied greatly from the calculated average weekly concentration of 21 mg/L. Free acidity has reported in all but the Weeks 0 and 3 leachates. Alkalinity has remained below the analytical detection limit since the Week 11 leach, with the exception of an isolated occurrence of free acidity in the Week 18 leachate.

Table 11 Weekly Leachate Results – SEOZD-1K (BH U-03-48)

Week	Leachate Volume mL	pH units	Acidity $CaCO_3$ eq.mg/L	Alkalinity $CaCO_3$ eq.mg/L	Conductivity µmhos/cm	SO_4 mg/L
0	896	7.47	< 2	10	76	14
1	880	7.28	11	6	85	18
2	911	7.13	9	4	62	15
3	903	6.95	< 2	3	74	22
4	867	6.90	7	2	98	33
5	854	6.90	5	3	71	23
6	653	6.78	2	3	27	7.7
7	874	6.58	6	2	63	33
8	906	6.42	8	2	53	19
9	924	6.44	8	< 2	55	21
10	891	6.44	9	2	71	29
11	884	6.40	6	< 2	64	22
12	874	6.38	6	< 2	68	26
13	930	6.41	4	< 2	42	18
14	888	6.26	5	< 2	63	22
15	905	6.55	4	< 2	80	30
16	882	6.12	5	< 2	64	27
17	921	6.15	4	< 2	39	15
18	891	7.18	4	5	47	17
19	862	6.12	5	< 2	57	21
20	912	6.03	4	< 2	42	16

Figure 6 Cumulative Depletion Rates – SEOZD-1K (BH U-03-48)



Preliminary summary results of dissolved metal concentrations in the SEOZD-1K humidity cell leachate are shown in Table 12. Analysis of the SEOZD-1K leachate revealed that all controlled parameters tested reported at concentrations below the MMER limits. Detailed analytical tables are included in Appendix C and certificates of analyses are provided in Appendix D.

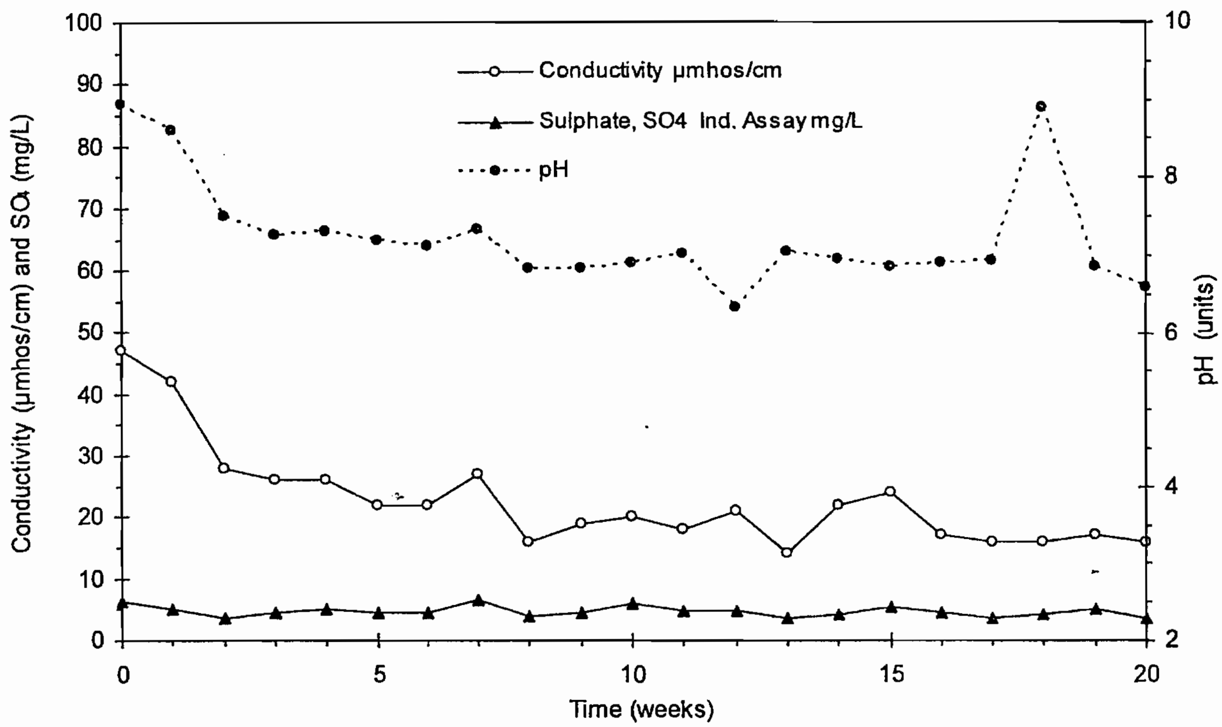
Table 12 Dissolved Metal Concentrations – SEOZD-1K (BH U-03-48)

Parameter	Units	MMER*	Week 0	1	2	3	4	5	6
pH	units	6.0-9.5	7.47	7.28	7.13	6.95	6.90	6.90	6.78
As	mg/L	0.50	0.013	0.004	0.006	0.008	0.007	0.009	---
Cu	mg/L	0.30	0.0014	0.0020	0.0014	< 0.0008	0.0020	0.0008	---
Ni	mg/L	0.50	0.004	0.005	0.004	0.005	0.005	0.005	---
Pb	mg/L	0.20	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---
Zn	mg/L	0.50	0.001	0.004	< 0.001	0.001	0.003	0.002	---

Parameter	Units	MMER*	Week 7	8	9	10	11	12	13
pH	units	6.0-9.5	6.58	6.42	6.44	6.44	6.40	6.38	6.41
As	mg/L	0.50	---	---	---	0.003	---	---	---
Cu	mg/L	0.30	---	---	---	0.0030	---	---	---
Ni	mg/L	0.50	---	---	---	0.014	---	---	---
Pb	mg/L	0.20	---	---	---	< 0.0002	---	---	---
Zn	mg/L	0.50	---	---	---	0.005	---	---	---

**Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.*

Figure 7 Trends in Conductivity, pH and Sulphate Concentrations – SEFG 1K (BH U-03-50)



Modified ABA results for the SEFG-1K (Footwall Gabbro) humidity cell head sample reported an NP of 8.2 t $CaCO_3$/1000 t, sulphide content of 0.13%, AP of 4.1 t $CaCO_3$/1000 t and resultant NP/AP ratio of 2.0. NAG test results for this sample reported a final pH of 5.33 and no net acidity generated.

Preliminary cumulative depletion rates for sulphide sulphur, NP and CO_3 NP for the SEFG-1K sample are presented in Figure 8. With an originally determined sulphide content of 0.13%, the cumulative sulphide depletion after twenty weeks of leaching was calculated to be 2.22%, indicating that very little sulphide depletion has occurred in the SEFG-1K sample. A remaining NP of 8.11 t $CaCO_3$/1000 t was calculated based on the NP of 8.2 t $CaCO_3$/1000 t determined in the ABA test on the head sample and the calculated NP cumulative depletion of 1.10%. However, the NP based on the carbonate content of the SEFG-1K sample was significantly lower than that determined by the ABA test method and results based on the CO_3 NP of 1.66 t $CaCO_3$/1000 t indicate that by Week 20, 5.44% of the CO_3 NP had been depleted. This correlates into a remaining CO_3 NP of 1.57 t $CaCO_3$/1000 t and indicates that the CO_3 NP is being depleted at a rate almost 2.5 times faster than the sulphide. Continued monitoring will show whether trends will result in the generation and release of acidic drainage.

Table 14 (Continued) Dissolved Metal Concentrations – SEFG-1K (BH U-03-50)

Parameter	Units	MMER*	Week						
			14	15	16	17	18	19	20
pH	units	6.0-9.5	6.96	6.85	6.91	6.92	8.89	6.86	6.58
As	mg/L	0.50	---	0.030	---	---	---	---	0.051
Cu	mg/L	0.30	---	< 0.0008	---	---	---	---	< 0.0008
Ni	mg/L	0.50	---	< 0.001	---	---	---	---	< 0.001
Pb	mg/L	0.20	---	< 0.0002	---	---	---	---	< 0.0002
Zn	mg/L	0.50	---	< 0.001	---	---	---	---	0.002

**Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.*

3.3.5 HANGING WALL QUARTZITE AB COMPOSITE HUMIDITY CELL (BH U-03-65)

Results of the modified ABA tests completed on the HWQ-1Kab Composite humidity cell feed sample are summarized in Table 15 and presented in detail in Appendix A. The HWQ-1Kab Composite reported no carbonate mineralization (<0.05%), a low NP (3.7 t $CaCO_3$/1000 t) and a low sulphide content (0.03%) resulting in a low AP (0.94 t $CaCO_3$/1000 t). This samples potential for acid generation upon oxidation is indicated by the theoretical CO_3 NP available and the resultant CO_3 NP/AP ratio of <0.88. Although the low sulphide content indicates a low AP, the NAG test results on the individual samples (HWQ-1Ka and HWQ-1Kb) did show a resultant acidity generated.

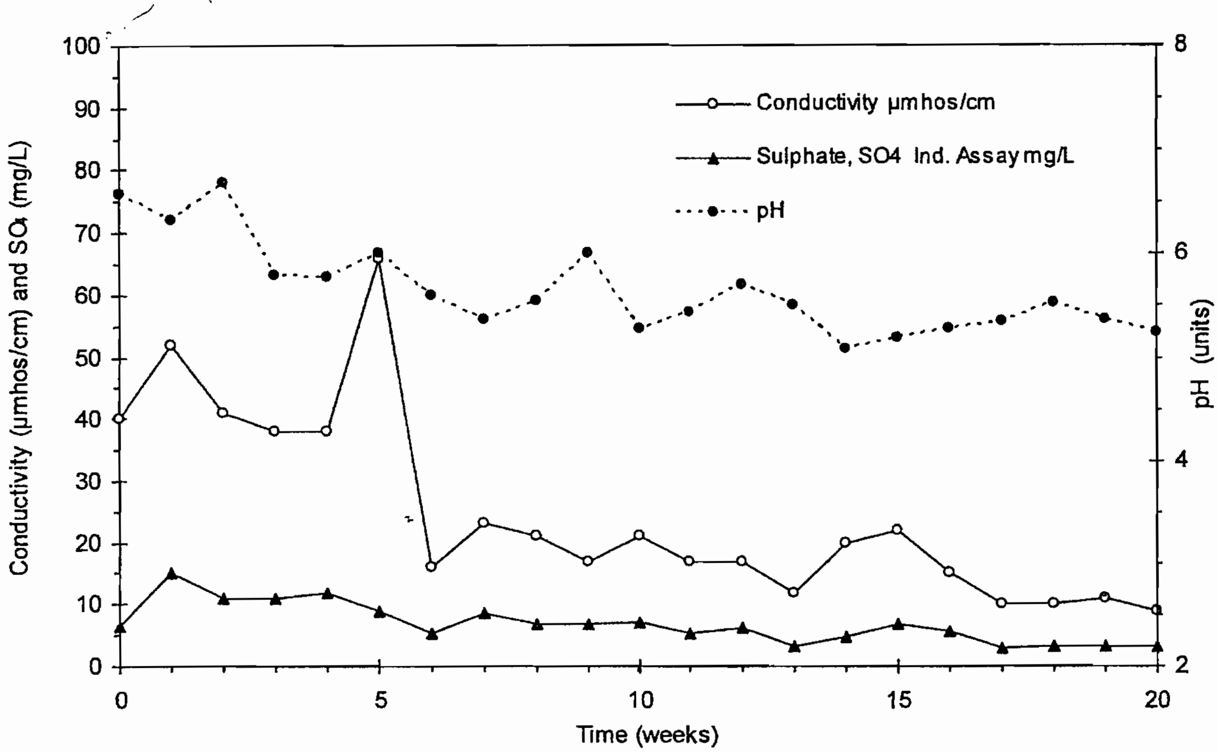
Table 15 Modified ABA – HWQ-1Kab Composite (BH U-03-65)

Parameter	Units	HWQ 1Kab Comp
NP	t $CaCO_3$/1000 t	3.7
AP	t $CaCO_3$/1000 t	0.94
Net NP	t $CaCO_3$/1000 t	2.8
NP/AP	ratio	3.9
S	%	0.13
$S^=$	%	0.03
SO_4	%	< 0.4
C(t)	%	0.02
CO_3	%	<0.05
Calculated CO_3 NP*	t $CaCO_3$/1000 t	<0.83
Calculated CO_3 NP/AP*	ratio	<0.88

** Calculated based on the carbonate (CO_3) content.*

Preliminary results of the pH, conductivity, acidity, alkalinity and sulphate analyses for the humidity cell test on the HWQ-1Kab Composite are summarized in Table 16. Figure 9 illustrates the pH values, conductivity and sulphate concentrations reported in the weekly leachates. Over the initial twenty weeks of the humidity cell test period the pH of the HWQ-1Kab Composite leachate shown a decreasing trend resulting in an average pH of 5.49. Although sulphate concentrations released into the weekly leachates initially increased, a clearly decreasing trend has been maintained since the Week 5 leach. With the exception of the Weeks 1 and 8 leachates, alkalinity has

Figure 9 Conductivity, pH and Sulphate Concentrations – HWQ-1Kab Composite (BH U-03-65)



Preliminary cumulative depletion rates for sulphide sulphur, NP and CO_3 NP for the HWQ-1Kab Composite are presented in Figure 10. The cumulative sulphide depletion over the initial twenty week test period was calculated to be 13.86%. With an originally determined sulphide content of 0.03%, these results indicate that 0.026% sulphide is still present in the HWQ-1Kab sample after twenty weeks of leaching. Based on the measured NP of 3.7 t $CaCO_3$/1000 t determined in the ABA test performed on the head sample and the calculated cumulative depletion of 3.51%, it was calculated that an NP of 3.57 t $CaCO_3$/1000 t remains. Results based on the available CO_3 NP of <0.83 t $CaCO_3$/1000 t however, indicate a calculated CO_3 depletion of 15.65% and suggest a CO_3 NP of <0.70 t $CaCO_3$/1000 t remaining in the HWQ-1Kab sample. These calculations indicate that the CO_3 NP is being depleted at a slightly faster rate than the sulphide.

Table 17 (Continued) Dissolved Metal Concentrations – HWQ-1Kab Composite (BH U-03-65)

Parameter	Units	MMER*	Week 7	8	9	10	11	12	13
pH	units	6.0-9.5	**5.37**	**5.54**	**6.00**	**5.27**	**5.43**	**5.70**	**5.50**
As	mg/L	0.50	---	---	---	0.007	---	---	---
Cu	Mg/L	0.30	---	---	---	0.0023	---	---	---
Fe	mg/L		---	---	---	0.12	---	---	---
Ni	mg/L	0.50	---	---	---	0.048	---	---	---
Pb	mg/L	0.20	---	---	---	0.0033	---	---	---
U	mg/L		---	---	---	0.0022	---	---	---
Zn	mg/L	0.50	---	---	---	0.027	---	---	---

Parameter	Units	MMER*	Week 14	15	16	17	18	19	20
pH	units	6.0-9.5	**5.08**	**5.19**	**5.28**	**5.35**	**5.53**	**5.37**	**5.24**
As	mg/L	0.50	---	0.001	---	---	---	---	0.005
Cu	mg/L	0.30	---	0.0009	---	---	---	---	0.0016
Fe	mg/L		---	0.23	---	---	---	---	0.25
Ni	mg/L	0.50	---	0.046	---	---	---	---	0.034
Pb	mg/L	0.20	---	0.0004	---	---	---	---	0.0004
U	mg/L		---	0.0021	---	---	---	---	0.0020
Zn	mg/L	0.50	---	0.023	---	---	---	---	0.025

**Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.*

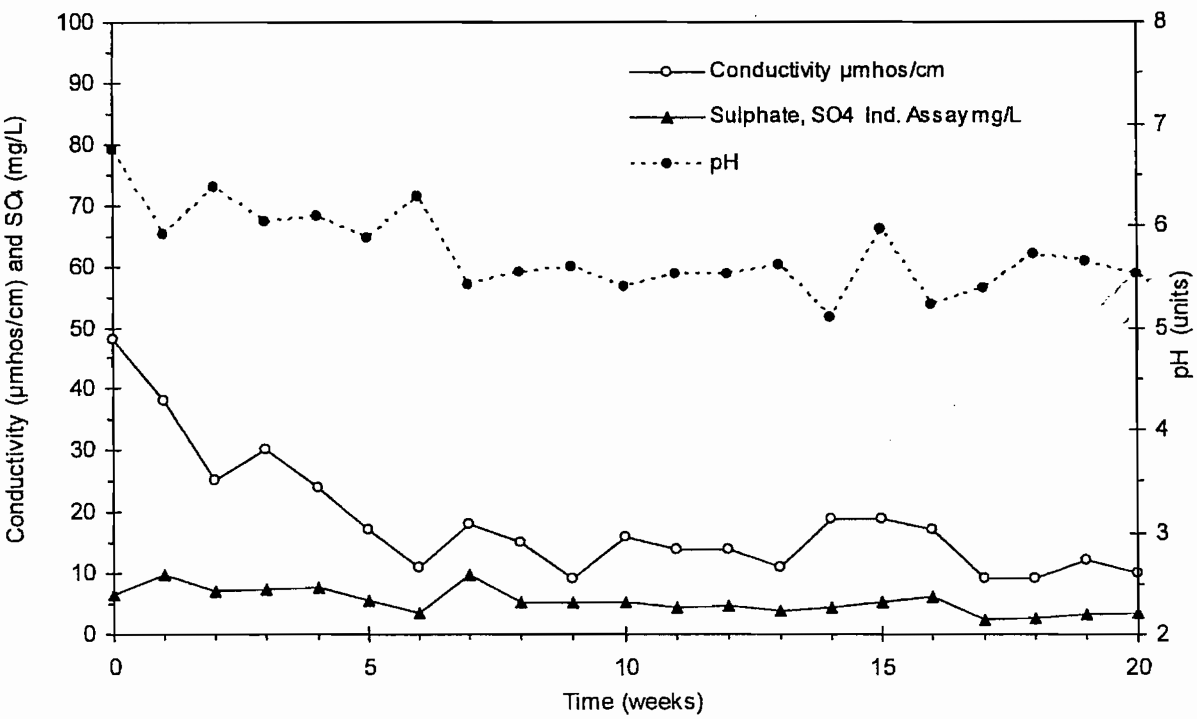
3.3.5.1 HANGING WALL QUARTZITE CD COMPOSITE HUMIDITY CELL (BH U-03-65)

Summary results of the modified ABA tests completed on the HWQ-1Kcd Composite humidity cell head sample are reported in Table 18 and presented in detail in Appendix A. Modified ABA results for the HWQ-1Kcd Composite a low NP (3.1 t $CaCO_3$/1000 t) and a low sulphide content (0.03%) resulting in an NP/AP ratio of 3.3. No carbonate mineralization was detected (<0.05%), resulting in a theoretical carbonate NP of <0.83 t $CaCO_3$/1000 t, which is significantly lower than the NP reported by the modified ABA test results. The potential for acid generation is indicated by the calculated CO_3 NP/AP ratio of <0.88. NAG test results for the individual samples (HWQ-1Kc and HWQ-1Kd) used to create this composite reported a net acidity generated and suggested that the acidity is a consequence of metal acidity rather than sulphide acidity.

Table 19 Weekly Leachate Results – HWQ-1Kcd Composite (BH U-03-65)

Week	Leachate Volume mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	SO_4 mg/L
0	811	6.75	<2	3	48	6.5
1	858	5.91	2	<2	38	9.7
2	922	6.37	2	<2	25	7.2
3	912	6.03	<2	<2	30	7.5
4	869	6.09	2	<2	24	7.8
5	867	5.87	3	<2	17	5.7
6	473	6.28	< 2	< 2	11	3.4
7	850	5.42	3	< 2	18	9.8
8	910	5.54	< 2	1	15	5.4
9	912	5.60	5	< 2	9	5.2
10	882	5.39	4	< 2	16	5.4
11	900	5.53	5	< 2	14	4.3
12	886	5.53	5	< 2	14	4.8
13	920	5.61	5	< 2	11	3.9
14	883	5.10	5	< 2	19	4.4
15	889	5.97	4	< 2	19	5.2
16	898	5.23	6	< 2	17	6.1
17	924	5.38	4	< 2	9	2.4
18	909	5.72	5	< 2	9	2.6
19	869	5.65	5	< 2	12	3.2
20	920	5.53	4	< 2	10	3.4

Figure 11 Conductivity, pH and Sulphate Concentrations – HWQ-1Kcd Composite (BH U-03-65)



F1-39

Table 20 Dissolved Metal Concentrations – HWQ-1Kcd Composite (BH U-03-65)

Parameter	Units	MMER*	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
pH	units	6.0-9.5	6.75	**5.91**	6.37	6.03	6.09	**5.87**	6.28
As	mg/L	0.50	0.009	0.002	0.004	0.006	0.002	0.007	---
Cu	mg/L	0.30	0.0011	< 0.0008	< 0.0008	< 0.0008	0.0014	< 0.0008	---
Ni	mg/L	0.50	0.002	0.002	0.002	0.004	0.006	0.006	---
Pb	mg/L	0.20	0.0002	< 0.0002	< 0.0002	< 0.0002	0.0003	< 0.0002	---
Zn	mg/L	0.50	0.001	0.001	0.005	0.005	0.006	0.004	---

Parameter	Units	MMER*	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
pH	units	6.0-9.5	**5.42**	**5.54**	**5.60**	**5.39**	**5.53**	**5.53**	**5.61**
As	mg/L	0.50	---	---	---	0.002	---	---	---
Cu	mg/L	0.30	---	---	---	< 0.0008	---	---	---
Ni	mg/L	0.50	---	---	---	0.023	---	---	---
Pb	mg/L	0.20	---	---	---	< 0.0002	---	---	---
Zn	mg/L	0.50	---	---	---	0.009	---	---	---

Parameter	Units	MMER*	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20
pH	units	6.0-9.5	**5.10**	5.97	**5.23**	**5.38**	**5.72**	**5.65**	**5.53**
As	mg/L	0.50	---	< 0.001	---	---	---	---	< 0.001
Cu	mg/L	0.30	---	0.0008	---	---	---	---	0.0014
Ni	mg/L	0.50	---	0.032	---	---	---	---	0.042
Pb	mg/L	0.20	---	< 0.0002	---	---	---	---	< 0.0002
Zn	mg/L	0.50	---	0.010	---	---	---	---	0.015

**Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.*

3.3.6 HANGING WALL QUARTZITE EF COMPOSITE HUMIDITY CELL (BH U-03-65)

Results of the modified ABA tests completed on the HWQ-1Kef Composite are summarized in Table 21 and presented in detail in Appendix A. Modified ABA test results for the HWQ-1Kef Composite also reported no carbonate mineralization detected (<0.05%) and a low NP (2.8 t $CaCO_3$/1000 t), but a higher sulphide content (0.07%) than the other Hanging Wall Quartzite samples. The NP/AP ratio for this composite sample was within the uncertain range (1.3); however, as with other hanging wall quartzite samples, the NP based on the carbonate content and the resultant calculated CO_3 NP/AP ratio of <0.38 are considered indicative of an acid generating potential. NAG test results for the individual sample components (HWQ-1Ke and HWQ-1Kf) indicated a net acidity generated.

Table 22 Weekly Leachate Results – HWQ-1Kef Composite (BH U-03-65)

Week	Volume mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	SO_4 mg/L
0	808	6.73	<2	3	44	10
1	928	6.26	<2	<2	44	14
2	920	5.95	<2	<2	49	16
3	902	5.95	<2	<2	53	18
4	866	5.59	4	<2	68	24
5	862	5.52	5	<2	47	16
6	912	5.43	5	< 2	47	17
7	874	4.99	4	< 2	41	31
8	899	4.98	4	3	37	13
9	921	5.00	4	< 2	26	11
10	899	4.77	7	< 2	43	17
11	884	4.67	8	< 2	37	14
12	896	4.78	8	< 2	30	14
13	918	4.85	7	< 2	21	8.4
14	886	4.53	11	< 2	43	16
15	889	4.46	9	< 2	45	19
16	888	4.65	9	< 2	26	12
17	927	4.66	7	< 2	22	8.9
18	899	4.70	9	< 2	27	9.5
19	872	4.57	12	< 2	38	15
20	927	4.93	9	< 2	32	12

Figure 13 Conductivity, pH and Sulphate Concentrations – HWQ-1Kef Composite (BH U-03-65)

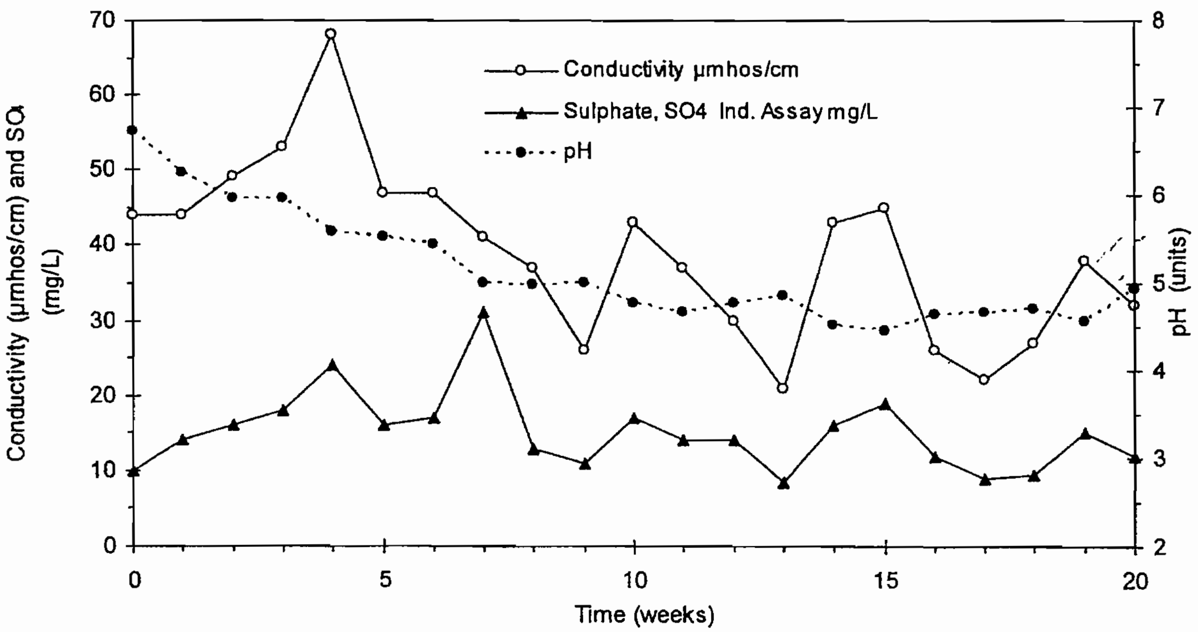


Table 23 Dissolved Metal Concentrations – HWQ-1Kef Composite (BH U-03-65)

Parameter	Units	MMER*	Week 0	1	2	3	4	5	6
pH	units	6.0-9.5	6.73	6.26	**5.95**	**5.95**	**5.59**	**5.52**	**5.43**
As	mg/L	0.50	0.008	0.001	0.004	0.005	0.001	0.008	---
Cu	mg/L	0.30	< 0.0008	< 0.0008	< 0.0008	< 0.0008	0.0010	0.0020	---
Ni	mg/L	0.50	0.002	0.003	0.008	0.019	0.043	0.039	---
Pb	mg/L	0.20	< 0.0002	< 0.0002	0.0002	< 0.0002	< 0.0002	< 0.0002	---
Zn	mg/L	0.50	< 0.001	< 0.001	0.008	0.008	0.011	0.012	---

Parameter	Units	MMER*	Week 7	8	9	10	11	12	13
pH	units	6.0-9.5	**4.99**	**4.98**	**5.00**	**4.77**	**4.67**	**4.78**	**4.85**
As	mg/L	0.50	---	---	---	0.001	---	---	---
Cu	mg/L	0.30	---	---	---	0.0162	---	---	---
Ni	mg/L	0.50	---	---	---	0.105	---	---	---
Pb	mg/L	0.20	---	---	---	0.0007	---	---	---
Zn	mg/L	0.50	---	---	---	0.033	---	---	---

Parameter	Units	MMER*	14	15	16	17	18	19	20
pH	units	6.0-9.5	**4.53**	**4.46**	**4.65**	**4.66**	**4.70**	**4.57**	**4.93**
As	mg/L	0.50	---	< 0.001	---	---	---	---	< 0.001
Cu	mg/L	0.30	---	0.0349	---	---	---	---	0.0500
Ni	mg/L	0.50	---	0.045	---	---	---	---	0.042
Pb	mg/L	0.20	---	0.0007	---	---	---	---	0.0007
Zn	mg/L	0.50	---	0.022	---	---	---	---	0.017

**Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.*

3.4 TOXICITY CHARACTERISTIC LEACH PROCEDURE US EPA METHOD 1311

Summary results from the analyses performed on the Shakespeare TCLP leachates are presented in Table 24 and provided in detail in Appendix A. Analysis of the TCLP leachates revealed that all parameters, with the exception of pH, reported at concentrations within the MMER limits. The pH of the leachant used in the leach test was 4.93 ± 0.05. Parameters reporting at concentrations below the lower limit designated by the MMER are indicated in bold.

3.5 SYNTHETIC PRECIPITATION LEACH PROCEDURE US EPA METHOD 1312

Table 25 provides summary results of the analyses performed on the SPLP 1312 leachates. Detailed analytical tables are provided in Appendix A. Analysis of the Shakespeare SPLP 1312 leachates determined that all parameters reported at concentrations within the MMER limits. The pH of the acid used in the SPLP was 5 ± 0.05.

Table 25 Synthetic Precipitate Leach Procedure US EPA Method 1312

Parameter	Units	MMER*	SEQG-1ML (L5+00E 153-154m)	SEQG-2ML (L7+00E 98-99m)	SEQG-2ML (L7+00E 98-99m) Dup.	SEQG-3ML (L9+00E 122-123m)	SEQG-4ML (L11+00E 189-190m)	SWQG-1ML (L14+00W 68-69)
Borehole			U-03-24	U-03-09	U-03-09	U-03-26	U-03-50	U-03-36
As	mg/L	0.50	0.008	0.005	0.005	0.005	0.004	0.003
Cu	mg/L	0.30	0.0179	0.0078	0.0071	0.0094	0.0126	0.0068
Ni	mg/L	0.50	0.023	0.018	0.015	0.008	0.010	0.005
Pb	mg/L	0.20	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Zn	mg/L	0.50	0.039	0.048	0.055	0.034	0.070	0.073
Hg	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
pH	units	6.0-9.5	7.67	8.00	7.87	8.78	8.00	7.85
Alkalinity	mg/L as $CaCO_3$		16	15	16	21	13	10
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2	< 2
SO_4	mg/L		5.4	5.9	6.3	5.5	5.2	5.8

Parameter	Units	MMER*	HWQ-1ML (L14+00W 15-16m)	HWQ-2ML (L1+00W 70-71m)	HWQ-3ML (L1+00E 29-30m)	HWQ-3ML (L1+00E 29-30m) Dup.	SWOZD-1ML (L14+00W 50.20-51m)	SEOZD-2ML (L11+00E 168.75-169.75)	SEOZD-1ML (L9+00E 150-150.97m)
Borehole			U-03-37	U-03-65	U-03-65	U-03-65	U-03-35	U-03-48	U-03-26
As	mg/L	0.50	0.003	0.003	0.002	0.002	0.010	0.019	0.007
Cu	mg/L	0.30	0.0026	0.0020	0.0018	0.0015	0.0145	0.146	0.0355
Ni	mg/L	0.50	0.004	0.003	0.003	0.003	0.005	0.093	0.008
Pb	mg/L	0.20	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Zn	mg/L	0.50	0.056	0.076	0.067	0.064	0.032	0.062	0.041
Hg	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
pH	units	6.0-9.5	7.47	6.74	6.91	6.91	8.00	7.41	7.87
Alkalinity	mg/L as $CaCO_3$		10	2	4	4	21	10	21
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2	< 2	< 2
SO_4	mg/L		6.3	5.1	5.6	5.1	6.2	6.3	6.6

**Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.*

4.0 CLOSING

This report has been provided as an interim report summarising the environmental test work completed to November 4, 2005 and results thereof. Updated humidity cell interim data reports consisting of data tables and graphs are scheduled to be provided after 25, 30, 35 and 40 weeks of leaching. A summary report is scheduled to be provided upon completion of the test program.

Modified ABA

Parameter	Units	SEQG-1K (L13+00E 168-173m)	SWQG-1K (L10+00W 121.9-128)	HWQ-1Ka (LI1+00E 30-35m)	HWQ-1Kb (LI1+00E 35-40m)	HWQ-1Kc (LI1+00E 40-45m)	HWQ-1Kd (LI1+00E 45-50m)	HWQ-1Ke (LI1+00E 50-55m)	HWQ-1Kf (LI1+00E 55-60m)	SEOZD-1K (L11+00E 193.65-198.65m)	SEFG-1K (L11+00E 230.2-235.2m)
Paste pH	units	9.73	9.84	9.80	9.39	9.66	9.72	9.32	9.47	9.40	9.92
Fizz Rate	---	1	2	1	1	1	1	1	1	1	1
Sample	weight(g)	2.03	2.00	2.05	2.00	2.04	2.00	2.00	2.05	1.99	1.98
HCl added	mL	20.00	25.60	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
HCl	Normality	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH	Normality	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH	to pH=8.3 mL	15.70	18.60	18.40	18.65	18.70	18.80	18.90	18.80	16.85	16.75
Final	units	1.70	1.73	1.04	1.04	1.04	1.03	0.97	1.10	1.34	1.31
NP	t $CaCO_3$/1000 t	10.6	17.5	3.9	3.4	3.2	3.0	2.8	2.9	7.9	8.2
AP	t $CaCO_3$/1000 t	5.6	18.8	1.6	1.2	1.9	2.2	3.8	3.4	51.9	4.1
Net NP	t $CaCO_3$/1000 t	5.0	-1.3	2.3	2.2	1.3	0.8	-1.0	-0.5	-44.0	4.1
NP/AP	ratio	1.9	0.93	2.4	2.8	1.7	1.4	0.74	0.85	0.15	2.0
S	%	0.27	0.79	0.12	0.10	0.14	0.14	0.18	0.19	1.88	0.20
$S^{=}$	%	0.18	0.60	0.05	0.04	0.06	0.07	0.12	0.11	1.66	0.13
SO_4	%	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
C(t)	%	0.09	0.10	0.02	0.02	0.02	0.02	0.02	0.01	0.04	0.04
CO_3	%	0.32	0.34	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	0.10
Calculated CO_3 NP	t $CaCO_3$/1000 t	5.31	5.64	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	1.33	1.66
Calculated CO_3 NP/AP	ratio	0.95	0.30	<0.52	<0.69	<0.44	<0.38	<0.22	<0.24	0.03	0.40

Lims # CA10388-APR05

NAG Test

Parameter	Units	SEQG-1K (L13+00E 168-173m)	SWQG-1K (L10+00W 121.9-128)	HWQ-1Ka (LI1+00E 30-35m)	HWQ-1Kb (LI1+00E 35-40m)	HWQ-1Kc (LI1+00E 40-45m)	HWQ-1Kd (LI1+00E 45-50m)	HWQ-1Ke (LI1+00E 50-55m)	HWQ-1Kf (LI1+00E 55-60m)	SEOZD-1K (L11+00E 193.65-198.65m)	SEFG-1K (L11+00E 230.2-235.2m)
Sample	weight(g)	2.54	2.52	2.49	2.51	2.51	2.53	2.52	2.48	2.51	2.47
vol H_2O_2	mL	250	250	250	250	250	250	250	250	250	250
Final pH	units	4.60	3.61	3.80	3.84	3.70	3.61	3.40	3.61	2.68	5.33
NaOH	Normality	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Vol NaOH to pH 4.5	mL	0.0	1.0	0.5	0.5	0.9	0.9	1.5	0.7	7.7	0.0
Vol NaOH to pH 7.0	mL	1.2	3.2	1.0	1.4	9.6	9.5	2.4	1.6	15	0.2
NAG	@pH4.5	0	1.9	0.98	0.98	1.8	1.7	2.9	1.4	15	0
NAG	@pH7.0	2.3	6.2	2.1	2.8	19	18	4.6	3.2	29	0.4

Lims #10387APR05

E1-53

Shakespeare Property
Ursa Major Minerals Corporation
SGS Lakefield Reference No.: 11016-001

TCLP 1311 Extraction Fluid #1

Parameter	Units	HWQ-2ML (L1+00W 70-71m)	HWQ-3ML (L1+00E 29-30m)	HWQ-3ML (L1+00E 29-30m) Dup.	SWOZD-1ML (L14+00W 50.20-51m)	SEOZD-2ML (L11+00E 168.78-169.75m)	SEOZD-1ML (L9+00E 150-150.97m)	SWOZD-2ML (L20+00W 111.52-112.53m)
Moisture	%	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
% solids	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample	weight(g)	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ext. Fluid	#1 or #2	1	1	1	1	1	1	1
Ext Volume	mL	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0
Initial pH	units	4.92	4.92	4.92	4.98	4.92	4.98	4.92
Final pH	units	4.96	4.97	4.96	5.15	4.97	5.09	4.97
As	mg/L	0.004	0.004	0.004	0.002	0.003	0.002	0.003
Ag	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Al	mg/L	0.34	0.33	0.35	0.82	1.15	1.07	0.96
Ba	mg/L	1.77	1.54	1.77	1.92	1.72	1.69	1.64
B	mg/L	0.51	0.45	0.43	0.38	0.43	0.38	0.40
Be	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Bi	mg/L	< 0.0003	< 0.0003	< 0.0003	0.0005	0.0015	0.0014	0.0010
Ca	mg/L	0.87	4.19	1.49	152	6.11	98.4	4.62
Cd	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0006	< 0.0005
Co	mg/L	0.0130	0.0140	0.0144	0.0267	0.0202	0.0627	0.0260
Cr	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Cu	mg/L	0.0009	< 0.0008	< 0.0008	0.0306	0.0309	0.0241	0.0720
Fe	mg/L	2.42	2.71	2.96	4.18	5.65	7.99	4.95
K	mg/L	16.2	10.0	10.8	17.7	10.5	22.1	15.7
Li	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Mg	mg/L	0.270	0.204	0.208	2.86	2.78	3.05	2.08
Mn	mg/L	0.0275	0.0871	0.0558	---	0.163	0.672	0.178
Mn	mg/L	---	---	---	0.895	---	---	---
Mo	mg/L	0.0010	0.0009	0.0011	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Ni	mg/L	0.011	0.014	0.015	0.536	0.394	0.936	0.585
Pb	mg/L	0.02	0.05	0.05	< 0.02	< 0.02	< 0.02	< 0.02
Sb	mg/L	0.0007	0.0004	0.0004	< 0.0004	< 0.0004	< 0.0004	0.0004
Se	mg/L	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sn	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Sr	mg/L	0.0141	0.0127	0.0128	0.127	0.0419	0.0715	0.0323
Ti	mg/L	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Tl	mg/L	< 0.0002	< 0.0002	< 0.0002	0.0009	0.0002	0.0005	0.0003
U	mg/L	0.0098	0.0021	0.0024	0.0007	0.0011	0.0016	0.0007
V	mg/L	0.0016	0.0017	0.0020	0.0018	0.0022	0.0019	0.0023
W	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Y	mg/L	0.0023	0.0027	0.0022	0.0040	0.0024	0.0045	0.0021
Zn	mg/L	0.742	0.668	0.662	0.598	0.630	0.604	0.637
Hg	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
pH	units	**5.00**	**4.99**	**5.03**	**5.22**	**5.02**	**5.13**	**4.99**
Conductivity	uS/cm	4770	4810	4810	5360	4820	5190	4830
Alkalinity	mg/L as $CaCO_3$	1350	1370	1360	1840	1380	1690	1390
Acidity	mg/L as $CaCO_3$	1610	1620	1620	1160	1570	1240	1520
SO_4	mg/L	3.4	3.0	3.0	4.1	3.7	5.1	3.6

Lims # CA10382-APR05

**Metal Mining Effluent Regulations* *Bolded concentrations reported at levels outside of the MMER*

SPLP 1312

Parameter	Units	MMER*	SEQG-1ML (L5+00E 153-154m)	SEQG-2ML (L7+00E 98-99m)	SEQG-2ML (L7+00E 98-99m) Dup.	SEQG-3ML (L9+00E 122-123m)	SEQG-4ML (L11+00E 189-190m)	SWQG-1ML (L14+00W 68-69)	HWQ-1ML (L14+00W 15-16m)
Moisture	%		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
% solids	%		100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample	weight(g)		100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ext.Fluid	#1 or #2		1	1	1	1	1	1	1
Ext Volume	mL		2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0
Initial pH	units		7.54	7.74	7.84	9.67	7.71	6.50	6.56
Final pH	units		9.46	9.60	9.61	9.65	9.56	9.43	9.13
As	mg/L	0.50	0.008	0.005	0.005	0.005	0.004	0.003	0.003
Ag	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Al	mg/L		2.53	4.59	4.00	1.17	8.49	8.57	5.50
Ba	mg/L		0.630	0.692	0.715	0.609	0.758	0.837	1.05
B	mg/L		0.16	0.17	0.18	0.13	0.16	0.16	0.17
Be	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Bi	mg/L		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Ca	mg/L		6.05	5.43	5.70	6.37	4.59	3.92	1.60
Cd	mg/L		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Co	mg/L		0.0032	0.0037	0.0028	0.0011	0.0071	0.0054	0.0020
Cr	mg/L		< 0.02	0.03	0.02	< 0.02	< 0.02	< 0.02	< 0.02
Cu	mg/L	0.30	0.0179	0.0078	0.0071	0.0094	0.0126	0.0068	0.0026
Fe	mg/L		3.09	4.18	3.41	0.88	10.5	10.9	4.10
K	mg/L		2.56	1.13	1.25	3.46	3.12	4.27	4.57
Li	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Mg	mg/L		1.96	3.65	3.04	0.846	4.93	3.45	1.56
Mn	mg/L		0.0314	0.0486	0.0402	0.0109	0.122	0.108	0.0195
Mo	mg/L		0.0004	0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Ni	mg/L	0.50	0.023	0.018	0.015	0.008	0.010	0.005	0.004
Pb	mg/L	0.20	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Sb	mg/L		0.0005	< 0.0004	< 0.0004	0.0004	< 0.0004	< 0.0004	< 0.0004
Se	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sn	mg/L		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Sr	mg/L		0.0194	0.0242	0.0243	0.0194	0.0203	0.0200	0.0115
Ti	mg/L		0.106	0.153	0.139	0.026	0.340	0.542	0.193
Tl	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
U	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0003	0.0010
V	mg/L		0.0130	0.0297	0.0271	0.0098	0.0204	0.0241	0.0046
W	mg/L		0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Y	mg/L		0.0005	0.0009	0.0008	0.0002	0.0010	0.0020	0.0017
Zn	mg/L	0.50	0.039	0.048	0.055	0.034	0.070	0.073	0.056
Hg	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
pH	units	6.0-9.5	7.67	8.00	7.87	8.78	8.00	7.85	7.47
Conductivity	uS/cm		63	54	58	70	44	40	44
Alkalinity	mg/L as $CaCO_3$		16	15	16	21	13	10	10
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2	< 2	< 2
SO_4	mg/L		5.4	5.9	6.3	5.5	5.2	5.8	6.3

Lims # CA10383-APR05

**Metal Mining Effluent Regulations*

SPLP 1312

Parameter	Units	MMER*	SWOZD-2ML (L20+00W 111.52-112.53)	SWOZD-2ML (L20+00W 111.52-112.53) Dup.	SEOZB-1ML (L9+00E 126.6-129.94m)	SEFG-1ML (L11+00E 250-251m)	SEFG-2ML (L9+00E 210-211m)	SWFG-1ML (L17+00W 40-41m)
Moisture	%		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
% solids	%		100.0	100.0	100.0	100.0	100.0	100.0
Sample	weight(g)		100.0	100.0	100.0	100.0	100.0	100.0
Ext.Fluid	#1 or #2		1	1	1	1	1	1
Ext Volume	mL		2000.0	2000.0	2000.0	2000.0	2000.0	2000.0
Initial pH	units		6.72	6.48	8.00	9.66	8.78	9.46
Final pH	units		8.40	8.39	9.49	9.84	9.85	9.87
As	mg/L	0.50	0.009	0.008	0.024	0.003	0.005	0.004
Ag	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Al	mg/L		0.86	0.85	0.98	0.79	5.65	2.49
Ba	mg/L		0.539	0.537	0.731	0.595	0.733	0.653
B	mg/L		0.17	0.22	0.21	0.17	0.18	0.15
Be	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Bi	mg/L		0.0008	0.0008	0.0009	< 0.0003	< 0.0003	< 0.0003
Ca	mg/L		2.35	2.12	6.56	5.87	6.30	6.91
Cd	mg/L		< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Co	mg/L		0.0038	0.0036	0.0021	< 0.0003	0.0037	0.0016
Cr	mg/L		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Cu	mg/L	0.30	0.0608	0.0599	0.0871	0.0019	0.0060	0.0052
Fe	mg/L		1.33	1.29	1.13	0.37	6.46	2.77
K	mg/L		1.61	1.38	3.44	0.85	1.10	2.92
Li	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Mg	mg/L		1.48	1.38	0.917	0.615	5.32	1.51
Mn	mg/L		0.0163	0.0135	0.0199	0.0054	0.0833	0.0406
Mo	mg/L		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Ni	mg/L	0.50	0.057	0.057	0.033	0.001	0.011	0.004
Pb	mg/L	0.20	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Sb	mg/L		< 0.0004	< 0.0004	< 0.0004	< 0.0004	0.0009	< 0.0004
Se	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sn	mg/L		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Sr	mg/L		0.0136	0.0126	0.0166	0.0160	0.0299	0.0199
Ti	mg/L		0.037	0.035	0.032	0.013	0.191	0.116
Tl	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
U	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
V	mg/L		< 0.0009	0.0032	0.0020	0.0029	0.0208	0.0080
W	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Y	mg/L		0.0002	0.0002	0.0002	< 0.0001	0.0010	0.0004
Zn	mg/L	0.50	0.048	0.064	0.076	0.059	0.081	0.052
Hg	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
pH	units	6.0-9.5	7.08	7.08	7.80	8.02	8.07	7.67
Conductivity	uS/cm		52	50	83	60	58	66
Alkalinity	mg/L as $CaCO_3$		5	5	16	22	21	22
Acidity	mg/L as $CaCO_3$		3	2	< 2	< 2	< 2	< 2
SO_4	mg/L		6.2	6.8	7.3	< 5	5.0	< 5

Lims # CA10383-APR05

**Metal Mining Effluent Regulations*

SGS

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Modified ABA

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Wednesday, May 18, 2005

Date Rec. : 27 April 2005
LR Report: **CA10388-APR05**
Reference: CofC:11016-001-3

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: SEQG-1K (L13+00E 168-173m)	6: SWQG-1K (L10+00W 121.9-128)	7: HWQ-1Ka (L1+00E 30-35m)	8: HWQ-1Kb (L1+00E 35-40m)
Sample Date & Time				26-Apr-05 10:00	26-Apr-05 10:00	26-Apr-05 10:00
Paste pH [units]	18-May-05	08:10	9.73	9.84	9.80	9.39
Fizz Rate [--]	18-May-05	08:10	1	2	1	1
Sample [weight(g)]	18-May-05	08:10	2.03	2.00	2.05	2.00
HCl added [mL]	18-May-05	08:10	20.00	25.60	20.00	20.00
HCl [Normality]	18-May-05	08:10	0.10	0.10	0.10	0.10
NaOH [Normality]	18-May-05	08:10	0.10	0.10	0.10	0.10
NaOH to [pH=8.3 mL]	18-May-05	08:10	15.70	18.60	18.40	18.65
Final pH [units]	18-May-05	08:10	1.70	1.73	1.04	1.04
NP [t CaCO3/1000t]	18-May-05	08:10	10.6	17.5	3.9	3.4
AP [t CaCO3/1000 t]	10-May-05	12:57	5.6	18.8	1.6	1.2
Net NP [t CaCO3/1000 t]	18-May-05	08:10	5.0	-1.3	2.3	2.2
NP/AP [ratio]	18-May-05	08:10	1.9	0.93	2.4	2.8
S [%]	10-May-05	12:25	0.27	0.79	0.12	0.10
S= [%]	10-May-05	12:25	0.18	0.60	0.05	0.04
SO4 [%]	17-May-05	08:04	< 0.4	< 0.4	< 0.4	< 0.4
C(t) [%]	10-May-05	12:25	0.09	0.10	0.02	0.02
CO3 [%]	11-May-05	10:03	0.32	0.34	< 0.05	< 0.05

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

OnLine LIMS

E1-101

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Modified ABA

Project : CALR-11016-001
LR Report : CA10388-APR05

```
*NP (Neutralization Potential)
 = 50 x (N of HCL x Total HCL added - N NaOH x NaOH added)
   -----------------------------------------------------
                    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.
```

Brian Graham B.Sc.
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F1-103

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TCLP1311

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Friday, May 27, 2005

Date Rec. : 25 April 2005
LR Report: **CA10382-APR05**
Reference: 1016-001-1

Copy: #1

E1-L7

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	6: SEQG-1ML (L5+00E 153-154m)	7: SEQG-2ML (L7+00E 98-99m)	8: SEQG-2ML (L7+00E 98-99m) Dup.	9: SEQG-3ML (L9+00E 122-123m)	10: SEQG-4ML (L11+00E 189-190m)	11: SWQG-1ML (L14+00W 68-69)	12: HWQ-1ML (L14+00W 15-16m)	13: HWQ-2ML (L1+00W 70-71m)
Sample Date & Time			25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05
Moisture [%]	20-May-05	12:37	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
% solids [%]		12:37	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample [weight(g)]	20-May-05	12:37	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ext.Fluid [#1 or #2]	20-May-05	12:37	1	1	1	1	1	1	1	1
ExtVolume [mL]	20-May-05	12:37	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0
InitialpH [units]	20-May-05	12:37	4.94	4.94	4.94	4.96	4.93	4.92	4.92	4.92
Final pH [units]	20-May-05	12:37	4.99	4.97	4.97	5.11	4.97	4.97	4.96	4.96
Arsenic [mg/L]	26-May-05	08:43	0.003	0.002	0.002	0.003	0.003	0.002	0.003	0.004
Silver [mg/L]	27-May-05	11:38	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aluminum [mg/L]	25-May-05	13:00	1.38	1.19	1.14	0.88	1.17	0.95	0.60	0.34
Barium [mg/L]	27-May-05	11:39	1.62	1.53	1.53	1.75	1.81	2.08	1.79	1.77
Boron [mg/L]	25-May-05	13:00	0.38	0.37	0.38	0.41	0.44	0.43	0.47	0.51
Beryllium [mg/L]	27-May-05	11:39	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Bismuth [mg/L]	27-May-05	11:39	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Calcium [mg/L]	25-May-05	13:00	18.6	19.1	17.5	132	7.57	5.78	4.33	0.87
Cadmium [mg/L]	27-May-05	11:39	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cobalt [mg/L]	27-May-05	11:39	0.0264	0.0413	0.0430	0.0242	0.0140	0.0082	0.0105	0.0130
Chromium [mg/L]	25-May-05	13:00	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper [mg/L]	27-May-05	11:39	0.0012	0.0094	0.0033	0.0020	0.0013	0.0008	0.0009	0.0009
Iron [mg/L]	25-May-05	13:00	7.18	4.07	4.43	9.06	7.55	6.07	2.56	2.42
Potassium [mg/L]	25-May-05	13:00	21.1	7.53	8.15	25.5	26.0	38.5	27.7	16.2
Lithium [mg/L]	25-May-05	13:00	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005

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F1-69

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TCLP1311

Project : CALR-11016-001

LR Report : CA10382-APR05

Analysis	14: HWQ-3ML (L1+00E 29-30m)	15: HWQ-3ML (L1+00E 29-30m) Dup.	16: SWOZD-1ML (L14+00W 50.20-51m)	17: SEOZD-2ML (L11+00E 168.78-169.75m)	18: SEOZD-1ML (L9+00E 150-150.97m)	19: SWOZD-2ML (L20+00W 111.52-112.53m)	20: SWOZD-2ML (L20+00W 111.52-112.53m) Dup.	21: SEOZB-1ML (L9+00E 126.6-129.94m)	22: SEFG-1ML (L11+00E 250-251m)	23: SEFG-2ML (L9+00E 210-211m)	24: SWFG-1ML (L17+00W 40-41m)
Magnesium [mg/L]	0.204	0.208	2.86	2.78	3.05	2.08	2.57	2.25	2.50	2.81	1.89
Manganese [mg/L]	0.0871	0.0558	—	0.163	0.672	0.178	0.200	0.338	—	0.432	—
Manganese [mg/L]	—	—	0.895	—	—	—	—	—	1.56	—	1.21
Molybdenum [mg/L]	0.0009	0.0011	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.0005	0.0006	0.0007
Nickel [mg/L]	0.014	0.015	0.536	0.394	0.936	0.585	0.686	0.909	0.028	0.025	0.017
Lead [mg/L]	0.05	0.05	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Antimony [mg/L]	0.0004	0.0004	< 0.0004	< 0.0004	< 0.0004	0.0004	< 0.0004	0.0005	< 0.0004	0.0006	< 0.0004
Selenium [mg/L]	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Tin [mg/L]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Strontium [mg/L]	0.0127	0.0128	0.127	0.0419	0.0715	0.0323	0.0348	0.0430	0.177	0.0988	0.0997
Titanium [mg/L]	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Thallium [mg/L]	< 0.0002	< 0.0002	0.0009	0.0002	0.0005	0.0003	0.0004	0.0006	< 0.0002	< 0.0002	0.0003
Uranium [mg/L]	0.0021	0.0024	0.0007	0.0011	0.0016	0.0007	0.0007	0.0010	0.0005	0.0014	0.0010
Vanadium [mg/L]	0.0017	0.0020	0.0018	0.0022	0.0019	0.0023	0.0023	0.0024	0.0025	0.0037	0.0041
Tungsten [mg/L]	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Yttrium [mg/L]	0.0027	0.0022	0.0040	0.0024	0.0045	0.0021	0.0024	0.0015	0.0035	0.0042	0.0019
Zinc [mg/L]	0.668	0.662	0.598	0.630	0.604	0.637	0.623	0.678	0.545	0.667	0.658
Mercury [mg/L]	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
pH [no unit]	4.99	5.03	5.22	5.02	5.13	4.99	5.03	5.01	5.45	5.04	5.18
Conductivity [uS/cm]	4810	4810	5360	4820	5190	4830	4840	4950	5880	4920	5300
Alkalinity [mg/L as CaCO3]	1370	1360	1840	1380	1690	1390	1400	1450	2250	1470	1750
Acidity [mg/L as CaCO3]	1620	1620	1160	1570	1240	1520	1390	1490	740	1450	1200
Sulphate [mg/L]	3.0	3.0	4.1	3.7	5.1	3.6	3.9	4.0	2.6	2.8	3.1

Extraction Fluid #1 - pH 4.93 ± 0.05
= 5.7mLs of acetic acid plus 64.3 mLs of 1.0N NaOH bulked to 1L with deionized water.

Extraction Fluid #2 - pH 2.88 ± 0.05
=5.7 mLs of acetic acid bulked to 1L with deionized water.

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

SGS

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Environmental Services
Attn : Barb Bowman

Wednesday, June 15, 2005

Date Rec. : 25 April 2005
LR. Ref. : **CA10383-APR05**
Project : CALR-11016-001

Copy to : #2

F1-73

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	6: SEQG-1ML (L5+00E 153-154m)	7: SEQG-2ML (L7+00E 98-99m)	8: SEQG-2ML (L7+00E 98-99m) Dup.	9: SEQG-3ML (L9+00E 122-123m)	10: SEQG-4ML (L11+00E 189-190m)	11: SWQG-1ML (L14+00W 68-69)	12: HWQ-1ML (L14+00W 15-16m)	13: HWQ-2ML (L1+00W 70-71m)
Sample Date & Time			25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05
Moisture [%]	20-May-05	12:34	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
% solids [%]	20-May-05	12:34	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample [weight(g)]	20-May-05	12:34	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ext.Fluid [#1 or #2]	20-May-05	12:34	1	1	1	1	1	1	1	1
ExtVolume [mL]	20-May-05	12:34	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0
InitialpH [units]	20-May-05	12:34	7.54	7.74	7.84	9.67	7.71	6.50	6.56	5.00
Final pH [units]	20-May-05	12:34	9.46	9.60	9.61	9.65	9.56	9.43	9.13	6.63
Arsenic [mg/L]	25-May-05	08:33	0.008	0.005	0.005	0.005	0.004	0.003	0.003	0.003
Silver [mg/L]	24-May-05	15:26	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aluminum [mg/L]	25-May-05	09:16	2.53	4.59	4.00	1.17	8.49	8.57	5.50	2.13
Barium [mg/L]	24-May-05	15:26	0.630	0.692	0.715	0.609	0.758	0.837	1.05	0.680
Boron [mg/L]	25-May-05	09:16	0.16	0.17	0.18	0.13	0.16	0.16	0.17	0.19
Beryllium [mg/L]	24-May-05	15:26	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Bismuth [mg/L]	24-May-05	15:26	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Calcium [mg/L]	25-May-05	09:16	6.05	5.43	5.70	6.37	4.59	3.92	1.60	0.45
Cadmium [mg/L]	24-May-05	15:26	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cobalt [mg/L]	24-May-05	15:26	0.0032	0.0037	0.0028	0.0011	0.0071	0.0054	0.0020	0.0030
Chromium [mg/L]	25-May-05	09:16	< 0.02	0.03	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper [mg/L]	24-May-05	15:26	0.0179	0.0078	0.0071	0.0094	0.0126	0.0068	0.0026	0.0020
Iron [mg/L]	25-May-05	09:16	3.09	4.18	3.41	0.88	10.5	10.9	4.10	1.33

SGS

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Environmental Services
Attn : Barb Bowman

Wednesday, June 15, 2005

Date Rec. : 25 April 2005
LR. Ref. : **CA10383-APR05**
Project : CALR-11016-001

Copy to : #2

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	14: HWQ-3ML (L1+00E 29-30m)	15: HWQ-3ML (L1+00E 29-30m) Dup.	16: SWOZD-1ML (L14+00W 50.20-51m)	17: SEOZD-2ML (L11+00E 168.75-169.76 m)	18: SEOZD-1ML (L9+00E 150-150.97m)	19: SWOZD-2ML (L20+00W 111.52-112.53 m)	20: SWOZD-2ML (L20+00W 111.52-112.53 m) Dup.	21: SEOZB-1ML (L9+00E 126.6-129.94m)	22: SEFG-1ML (L11+00E 250-251m)	23: SEFG-2ML (L9+00E 210-211m)	24: SWFG-1ML (L17+00W 40-41m)
Sample Date & Time	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05	25-Apr-05
Moisture [%]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
% solids [%]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample [weight(g)]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ext.Fluid [#1 or #2]	1	1	1	1	1	1	1	1	1	1	1
ExtVolume [mL]	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0	2000.0
InitialpH [units]	5.18	5.27	9.44	7.08	9.53	6.72	6.48	8.00	9.66	8.78	9.46
Final pH [units]	7.34	7.32	9.41	9.36	9.26	8.40	8.39	9.49	9.84	9.85	9.87
Arsenic [mg/L]	0.002	0.002	0.010	0.019	0.007	0.009	0.008	0.024	0.003	0.005	0.004
Silver [mg/L]	< 0.0001	< 0.0001	< 0.0001	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aluminum [mg/L]	2.05	2.19	0.42	3.20	0.40	0.86	0.85	0.98	0.79	5.65	2.49
Barium [mg/L]	0.695	0.641	0.534	0.654	0.564	0.539	0.537	0.731	0.595	0.733	0.653
Boron [mg/L]	0.19	0.16	0.12	0.17	0.14	0.17	0.22	0.21	0.17	0.18	0.15
Beryllium [mg/L]	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Bismuth [mg/L]	< 0.0003	< 0.0003	< 0.0003	0.0027	< 0.0003	0.0008	0.0008	0.0009	< 0.0003	< 0.0003	< 0.0003
Calcium [mg/L]	0.85	0.79	7.92	4.04	8.49	2.35	2.12	6.56	5.87	6.30	6.91
Cadmium [mg/L]	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cobalt [mg/L]	0.0022	0.0021	0.0004	0.0067	0.0004	0.0038	0.0036	0.0021	< 0.0003	0.0037	0.0016
Chromium [mg/L]	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper [mg/L]	0.0018	0.0015	0.0145	0.146	0.0355	0.0608	0.0599	0.0871	0.0019	0.0060	0.0052
Iron [mg/L]	0.92	0.93	0.25	4.58	0.22	1.33	1.29	1.13	0.37	6.46	2.77

OnLine LIMS

APPENDIX C

Humidity Cell Analytical Summary Tables

November 2005

SGS

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

F1-79

SEQG-1K (BH No. U-03-30)
Dissolved Metal Concentrations

Parameter	Units	MMER*	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Date			June 8/05	June 17/05	June 24/04	July 1/05	July 8/05	July 15/05	July 22/05	July 29/05	Aug 5/05	Aug 12/05	Aug 17/05
LIMS #			JUN10145	JUN10203	10328JUN05	10461JUN05	10004JUL05	10126JUL05	10257JUL05	10348JUL05	10014AUG05	10116AUG05	10254AUG05
HumCell Leachate Vol	mLs		798	888	903	888	887	866	894	859	935	907	892
pH	units	6.0-9.5	7.87	7.77	7.45	7.21	7.28	7.24	6.89	6.88	6.72	6.48	6.68
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Alkalinity	mg/L as $CaCO_3$		11	8	6	5	5	4	4	4	3	2	2
Conductivity	uS/cm		41	34	24	24	23	20	21	15	14	22	30
SO_4	mg/L		2.4	3.5	3.6	4.0	4.4	3.7	5.0	8.4	4.2	6.4	11
Hg	µg/L		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—	—	—	< 0.1
Ag	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	—	—	—	—	< 0.0001
Al	mg/L		0.26	0.17	0.08	0.07	0.05	0.06	—	—	—	—	0.03
As	mg/L	0.50	0.009	0.002	0.005	0.005	0.003	0.014	—	—	—	—	0.006
Ba	mg/L		0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	—	—	—	—	0.004
Be	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	—	—	—	< 0.005
B	mg/L		0.04	0.01	0.01	< 0.01	< 0.01	0.01	—	—	—	—	< 0.01
Bi	mg/L		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	—	—	—	—	< 0.0003
Ca	mg/L		1.29	0.82	0.59	0.57	0.64	0.67	—	—	—	—	2.23
Cd	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	—	—	—	—	< 0.0001
Co	mg/L		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	—	—	—	—	< 0.0003
Cr	mg/L		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	—	—	—	—	< 0.001
Cu	mg/L	0.30	0.0010	< 0.0008	< 0.0008	0.0061	< 0.0008	< 0.0008	—	—	—	—	< 0.0008
Fe	mg/L		0.03	0.02	< 0.02	< 0.02	< 0.02	< 0.02	—	—	—	—	< 0.02
K	mg/L		6.06	4.29	2.95	2.69	2.75	2.36	—	—	—	—	2.21
Li	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	—	—	—	< 0.005
Mg	mg/L		0.299	0.312	0.312	0.371	0.422	0.500	—	—	—	—	0.945
Mn	mg/L		< 0.0007	< 0.0007	< 0.0007	< 0.0007	< 0.0007	< 0.0007	—	—	—	—	< 0.0007
Mo	mg/L		0.0011	0.0014	0.0009	0.0007	0.0005	0.0004	—	—	—	—	< 0.0003
Ni	mg/L	0.50	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	—	—	—	—	< 0.001
Pb	mg/L	0.20	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	—	—	—	—	< 0.0002
Sb	mg/L		0.0013	0.0010	0.0005	0.0008	0.0008	0.0009	—	—	—	—	< 0.0004
Se	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	—	—	—	< 0.005
Sn	mg/L		0.010	0.004	0.003	0.002	0.001	< 0.001	—	—	—	—	< 0.001
Sr	mg/L		0.0058	0.0047	0.0037	0.0035	0.0041	0.0040	—	—	—	—	0.0103
Ti	mg/L		< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	—	—	—	—	< 0.003
Tl	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	—	—	—	—	< 0.0002
U	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	—	—	—	—	0.0003
V	mg/L		0.0041	0.0021	0.0010	0.0011	0.0013	< 0.0009	—	—	—	—	< 0.0009
W	mg/L		0.0012	0.0004	< 0.0002	0.0002	0.0002	< 0.0002	—	—	—	—	< 0.0002
Y	mg/L		< 0.001	< 0.003	< 0.001	< 0.001	< 0.001	< 0.001	—	—	—	—	< 0.001
Zn	mg/L	0.50	0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	—	—	—	—	< 0.001

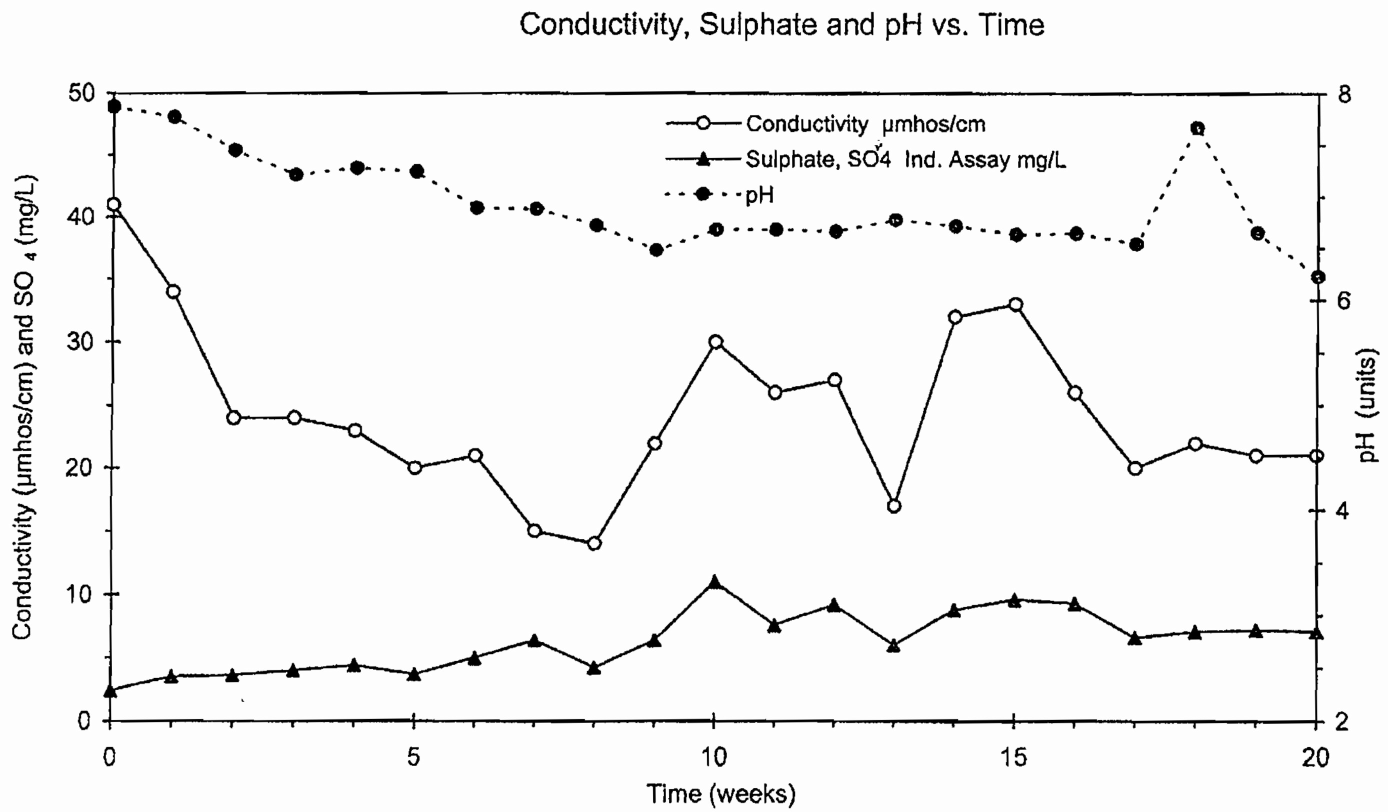
Week #0 signifies the initial flooding of the humidity cell initiating the 20 week test period.
**Metal Mining Effluent Regulations*
---Analysis not requested

SGS

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

181

Humidity Cell Test Report (ASTM D 5744-96)
Sample I.D.: SEQG-1K (BH No. U-03-30)



This report refers to the samples as-received. SGS Lakefield Research is not responsible for any use of this data beyond the result of this test method.

F1-83

SGS

Humidity Cell Test Report (ASTM D 5744-96)

Head Assay

Parameter	Units	Value
S%:	%	0.79
$S^{=}$%:	%	0.60
NP:	t $CaCO_3$/1000 tonne of material	17.5
CO_3 NP:	t $CaCO_3$/1000 tonne of material	5.64

Sample I.D.: **SWQG-1K (BH No. U-03-39)**
Sample Weight: 1000 grams
NP results from Modified ABA Testing
LIMS Ref. #: CA10388-APR05

			Leachate Analyses			Sulphate (SO_4)			Sulphide Depletion		NP Depletion		
Week	Leachate Volume mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	Ind. Assay mg/L	Production Rate g/t/wk	Cum. Production g/t	Ind Depletion %	$S^{=}$ Calc. Cum. Depletion %	Calculated Consumption $CaCO_3$, g/t/wk	NP Calc. Cum. Depletion %	CO_3 NP Calc. Cum. Depletion
0	806	8.87	< 2	28	70	5.1	4.1	4.1	0.02	0.02	4.28	0.02	0.08
1	870	9.32	< 2	17	77	12	10.4	14.6	0.06	0.08	10.88	0.09	0.27
2	923	8.11	< 2	13	53	8.6	7.9	22.5	0.04	0.12	8.27	0.13	0.42
3	899	7.52	< 2	10	53	11	9.9	32.4	0.05	0.18	10.30	0.19	0.60
4	890	7.73	< 2	8	63	17	15.1	47.5	0.08	0.26	15.76	0.28	0.88
5	876	7.42	< 2	8	59	16	14.0	61.5	0.08	0.34	14.60	0.37	1.14
6	473	7.46	< 2	12	43	7.4	3.5	65.0	0.02	0.36	3.65	0.39	1.20
7	886	7.24	< 2	8	56	17	15.1	80.1	0.08	0.44	15.69	0.48	1.48
8	917	7.08	< 2	8	42	11	10.1	90.2	0.06	0.50	10.51	0.54	1.67
9	935	7.29	<2	6	41	9.2	8.6	98.8	0.05	0.55	8.96	0.59	1.82
10	900	7.18	< 2	6	52	17	15.3	114.1	0.09	0.63	15.94	0.68	2.11
11	905	7.17	< 2	5	49	14	12.7	126.7	0.07	0.70	13.20	0.75	2.34
12	900	7.14	< 2	5	47	13	11.7	138.4	0.07	0.77	12.19	0.82	2.56
13	938	7.49	< 2	5	36	9.7	9.1	147.5	0.05	0.82	9.48	0.88	2.73
14	905	7.25	< 2	6	47	10	9.1	156.6	0.05	0.87	9.43	0.93	2.89
15	894	7.13	< 2	6	58	13	11.6	168.2	0.06	0.93	12.11	1.00	3.11
16	885	7.28	< 2	6	46	13	11.5	179.7	0.06	1.00	11.98	1.07	3.32
17	931	7.23	< 2	5	34	8.0	7.4	187.2	0.04	1.04	7.76	1.11	3.46
18	899	8.42	< 2	8	37	9.5	8.5	195.7	0.05	1.09	8.90	1.16	3.61
19	886	7.23	< 2	4	42	12	10.6	206.3	0.06	1.15	11.08	1.23	3.81
20	926	6.89	< 2	5	33	8.5	7.9	214.2	0.04	1.19	8.20	1.28	3.96
Maximum Value		9.32	-	28	77	17	15.3	-	0.09	-	15.94	-	-
Minimum Value		6.89	-	4	33	5	3.5	-	0.02	-	3.65	-	-
Average Value		7.32	-	9	49	12	10.2	-	0.06	-	10.63	-	-

SGS

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

E1-85

SWQG-1K (BH No. U-03-39)
Dissolved Metal Concentrations

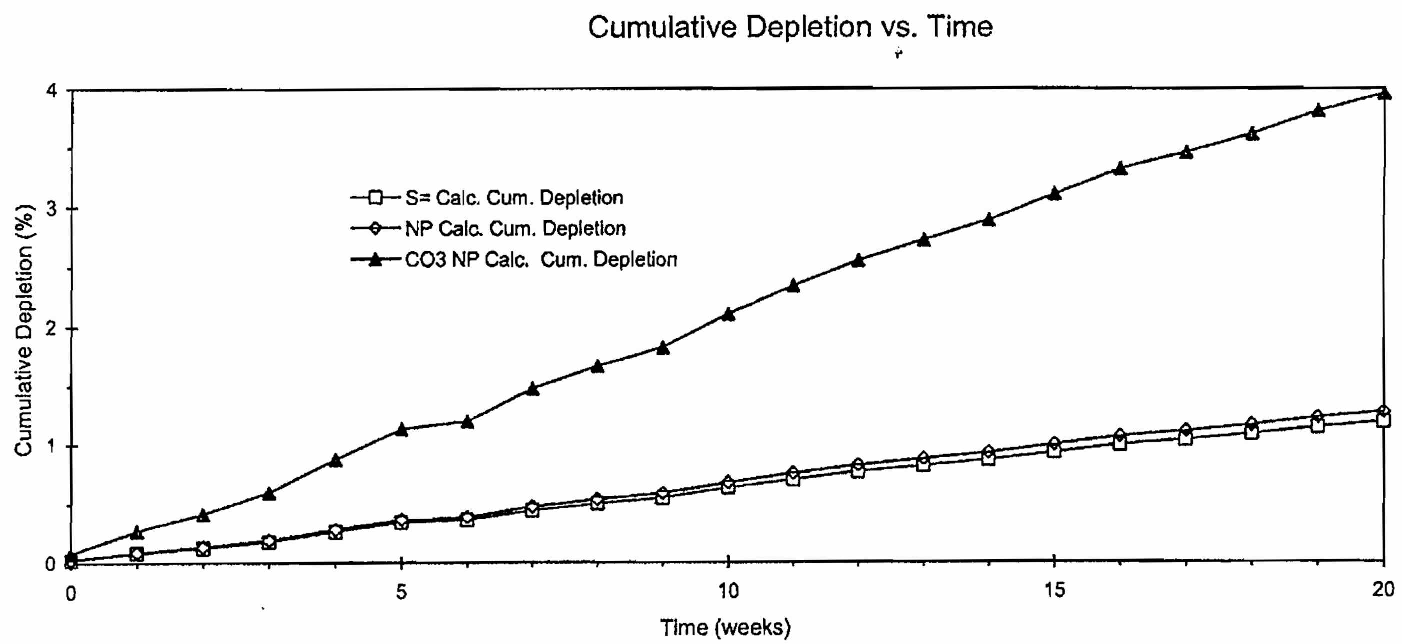
Parameter	Units	MMER*	Week 11	12	13	14	15	16	17	18	19	20
Date			Aug 26/05	Sept 2/05	Sept 9/05	Sept 16/05	Sept 23/05	Sept 30/05	Oct 7/05	Oct 14/05	Oct 21/05	Oct 28/05
LIMS #			10376AUG05	10006SEP05	12083SEP05	10158SEP05	10276SEP05	10490SEP05	10033OCT05	10187OCT05	10289OCT05	10453OCT05
Hum Cell Leachate Vol	mLs		905	900	938	905	894	885	931	899	886	926
pH	units	6.0-9.5	7.17	7.14	7.49	7.25	7.13	7.28	7.23	8.42	7.23	6.89
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Alkalinity	mg/L as $CaCO_3$		5	5	5	6	6	6	5	8	4	5
Conductivity	uS/cm		49	47	36	47	58	46	34	37	42	33
SO_4	mg/L		14	13	9.7	10	13	13	8.0	9.5	12	8.5
Hg	µg/L		---	---	---	---	< 0.1	---	---	---	---	< 0.1
Ag	mg/L		---	---	---	---	< 0.0001	---	---	---	---	< 0.0001
Al	mg/L		---	---	---	---	0.05	---	---	---	---	0.03
As	mg/L	0.50	---	---	---	---	0.006	---	---	---	---	0.007
Ba	mg/L		---	---	---	---	0.005	---	---	---	---	0.002
Be	mg/L		---	---	---	---	< 0.005	---	---	---	---	< 0.005
B	mg/L		---	---	---	---	< 0.01	---	---	---	---	< 0.01
Bi	mg/L		---	---	---	---	< 0.0003	---	---	---	---	< 0.0003
Ca	mg/L		---	---	---	---	6.05	---	---	---	---	4.03
Cd	mg/L		---	---	---	---	< 0.0001	---	---	---	---	< 0.0001
Co	mg/L		---	---	---	---	< 0.0003	---	---	---	---	< 0.0003
Cr	mg/L		---	---	---	---	< 0.001	---	---	---	---	< 0.001
Cu	mg/L	0.30	---	---	---	---	< 0.0008	---	---	---	---	< 0.0008
Fe	mg/L		---	---	---	---	< 0.02	---	---	---	---	< 0.02
K	mg/L		---	---	---	---	2.26	---	---	---	---	1.87
Li	mg/L		---	---	---	---	< 0.005	---	---	---	---	< 0.005
Mg	mg/L		---	---	---	---	0.468	---	---	---	---	0.336
Mn	mg/L		---	---	---	---	0.0035	---	---	---	---	0.0030
Mo	mg/L		---	---	---	---	< 0.0003	---	---	---	---	< 0.0003
Ni	mg/L	0.50	---	---	---	---	< 0.001	---	---	---	---	< 0.001
Pb	mg/L	0.20	---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
Sb	mg/L		---	---	---	---	< 0.0004	---	---	---	---	< 0.0004
Se	mg/L		---	---	---	---	< 0.005	---	---	---	---	< 0.005
Sn	mg/L		---	---	---	---	< 0.001	---	---	---	---	0.001
Sr	mg/L		---	---	---	---	0.0159	---	---	---	---	0.0085
Ti	mg/L		---	---	---	---	< 0.003	---	---	---	---	< 0.003
Tl	mg/L		---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
U	mg/L		---	---	---	---	0.0004	---	---	---	---	0.0003
V	mg/L		---	---	---	---	< 0.0009	---	---	---	---	< 0.0009
W	mg/L		---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
Y	mg/L		---	---	---	---	< 0.001	---	---	---	---	< 0.001
Zn	mg/L	0.50	---	---	---	---	< 0.001	---	---	---	---	0.001

**Metal Mining Effluent Regulations*
***Reassay LIMS #10065OCT*
---Analysis not requested

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

E1-87

Humidity Cell Test Report (ASTM D 5744-96)
Sample I.D.: SWQG-1K (BH No. U-03-39)



This report refers to the samples as-received. SGS Lakefield Research is not responsible for any use of this data beyond the result of this test method.

F1-89

SGS

SEOZD-1K (BH No. U-03-48)
Dissolved Metal Concentrations

Parameter	Units	MMER*	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Date			June 8/05	June 17/05	June 24/04	July 1/05	July 8/05	July 15/05	July 22/05	July 29/05	Aug 5/05	Aug 12/05	Aug 17/05
LIMS #			JUN10145	JUN10203	10328JUN05	10461JUN05	10004JUL05	10126JUL05	10257JUL05	10348JUL05	10014AUG05	10116AUG05	10254AUG05
Hum Cell Leachate Vol	mLs		896	880	911	903	867	854	653	874	906	924	891
pH	units	6.0-9.5	7.47	7.28	7.13	6.95	6.90	6.90	6.78	6.58	6.42	6.44	6.44
Acidity	mg/L as $CaCO_3$		< 2	11	9	< 2	7	5	2	6	8	8	9
Alkalinity	mg/L as $CaCO_3$		10	6	4	3	2	3	3	2	2	< 2	2
Conductivity	uS/cm		76	85	62	74	98	71	27	63	53	55	71
SO_4	mg/L		14	18	15	22	33	23	7.7	33	19	21	29
Hg	µg/L		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	---	---	---	---	< 0.1
Ag	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	---	---	---	---	< 0.0001
Al	mg/L		0.10	0.08	0.03	0.02	0.03	0.03	---	---	---	---	< 0.01
As	mg/L	0.50	0.013	0.004	0.006	0.008	0.007	0.009	---	---	---	---	0.003
Ba	mg/L		0.001	0.002	0.002	0.004	0.004	0.005	---	---	---	---	0.006
Be	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	---	---	---	---	< 0.005
B	mg/L		0.03	0.01	0.01	< 0.01	< 0.01	0.02	---	---	---	---	< 0.01
Bi	mg/L		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	---	---	---	---	< 0.0003
Ca	mg/L		4.00	5.10	4.57	6.05	9.05	7.33	---	---	---	---	8.86
Cd	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	---	---	---	---	< 0.0001
Co	mg/L		< 0.0003	0.0004	0.0004	< 0.0003	0.0003	0.0003	---	---	---	---	0.0014
Cr	mg/L		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---	---	---	---	< 0.001
Cu	mg/L	0.30	0.0014	0.0020	0.0014	< 0.0008	0.0020	0.0006	---	---	---	---	0.0030
Fe	mg/L		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	---	---	---	---	< 0.02
K	mg/L		4.31	3.68	2.38	2.43	2.76	2.40	---	---	---	---	1.97
Li	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	---	---	---	---	< 0.005
Mg	mg/L		0.854	1.52	1.27	1.73	2.30	1.71	---	---	---	---	1.49
Mn	mg/L		0.0013	0.0027	0.0024	0.0030	0.0038	0.0030	---	---	---	---	0.0098
Mo	mg/L		0.0010	0.0012	0.0006	0.0004	< 0.0003	< 0.0003	---	---	---	---	< 0.0003
Ni	mg/L	0.50	0.004	0.005	0.004	0.005	0.005	0.005	---	---	---	---	0.014
Pb	mg/L	0.20	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	< 0.0002
Sb	mg/L		0.0007	0.0004	< 0.0004	0.0005	0.0006	0.0008	---	---	---	---	< 0.0004
Se	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	0.006	0.006	---	---	---	---	< 0.005
Sn	mg/L		0.008	0.006	0.003	0.001	0.001	< 0.001	---	---	---	---	< 0.001
Sr	mg/L		0.0189	0.0278	0.0224	0.0282	0.0458	0.0301	---	---	---	---	0.0283
Ti	mg/L		< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	---	---	---	---	< 0.003
Tl	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	< 0.0002
U	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	< 0.0002
V	mg/L		< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	---	---	---	---	< 0.0009
W	mg/L		0.0004	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	< 0.0002
Y	mg/L		< 0.001	< 0.003	< 0.001	< 0.001	< 0.001	< 0.001	---	---	---	---	< 0.001
Zn	mg/L	0.50	0.001	0.004	< 0.001	0.001	0.003	0.002	---	---	---	---	0.005

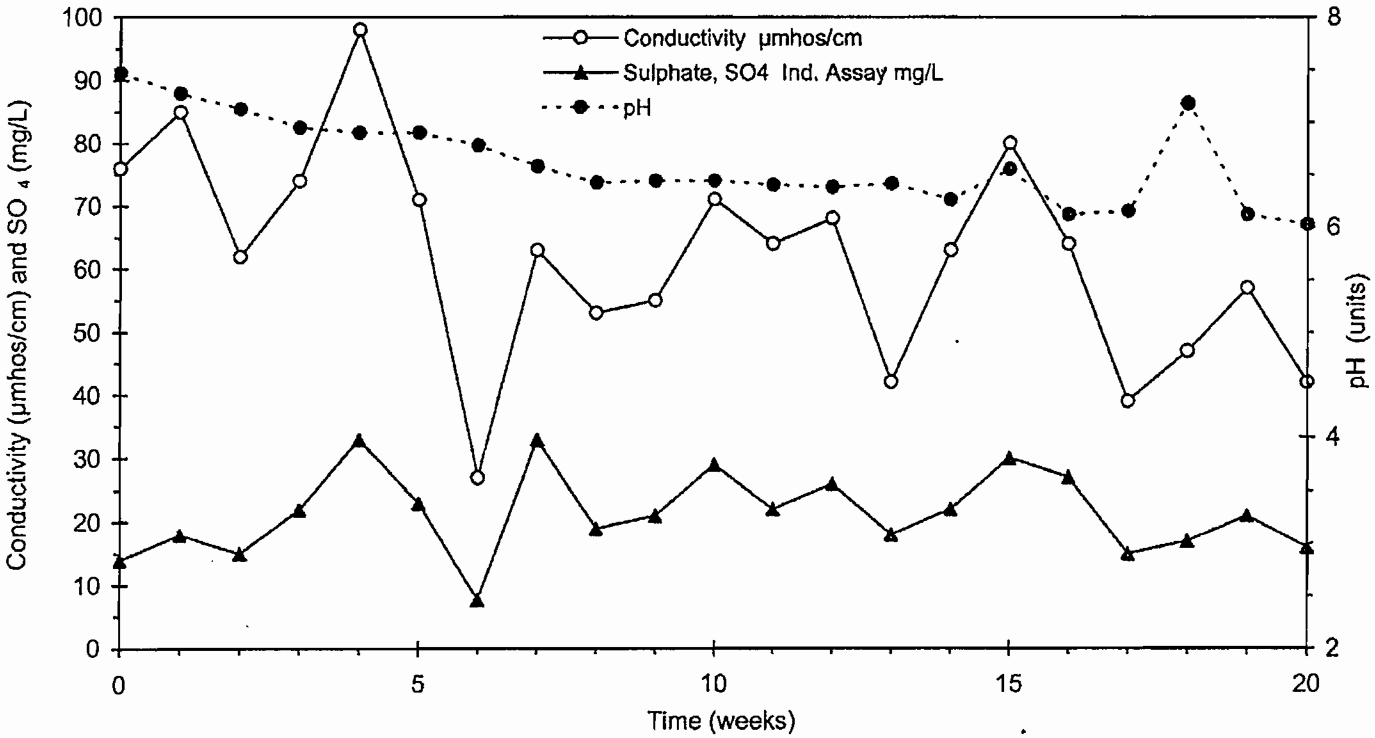
Week #0 signifies the initial flooding of the humidity cell initiating the 20 week test period.
**Metal Mining Effluent Regulations*
---Analysis not requested

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

E1-91

Humidity Cell Test Report (ASTM D 5744-96)
Sample I.D.: SEOZD-1K (BH No. U-03-48)

Conductivity, Sulphate and pH vs. Time



F1-93

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

SGS

Humidity Cell Test Report (ASTM D 5744-96)

Head Assay

Parameter	Units	Value
S%:	%	0.20
$S^{=}$%:	%	0.13
NP:	t $CaCO_3$/1000 tonne of material	8.2
CO_3 NP:	t $CaCO_3$/1000 tonne of material	1.66

Sample I.D.: SEFG-1K (BH No. U-03-50)
Sample Weight: 1000 grams
NP results from Modified ABA Testing
LIMS Ref. #: CA10174-JUN05

	Leachate Analyses					Sulphate (SO_4)			Sulphide Depletion		NP Depletion		
Week	Leachate Volume mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	Ind. Assay mg/L	Production Rate g/t/wk	Cum. Production g/t	Ind Depletion %	$S^{=}$ Calc. Cum. Depletion %	Calculated Consumption $CaCO_3$, g/t/wk	NP Calc. Cum. Depletion %	CO_3 NP Calc. Cum. Depletion %
0	807	8.94	< 2	15	47	6.2	5.0	5.0	0.13	0.13	5.21	0.06	0.31
1	876	8.61	< 2	12	42	5.1	4.5	9.5	0.11	0.24	4.65	0.12	0.59
2	903	7.50	< 2	8	28	3.6	3.3	12.7	0.08	0.33	3.39	0.16	0.80
3	897	7.26	< 2	7	26	4.4	3.9	16.7	0.10	0.43	4.11	0.21	1.05
4	868	7.31	< 2	5	26	5.2	4.5	21.2	0.12	0.54	4.70	0.27	1.33
5	869	7.18	< 2	5	22	4.5	3.9	25.1	0.10	0.64	4.07	0.32	1.57
6	922	7.12	< 2	5	22	4.6	4.2	29.3	0.11	0.75	4.42	0.37	1.84
7	876	7.34	< 2	7	27	6.7	5.9	35.2	0.15	0.90	6.11	0.45	2.21
8	905	6.83	< 2	5	16	3.9	3.5	38.7	0.09	0.99	3.68	0.49	2.43
9	916	6.82	< 2	4	19	4.4	4.0	42.8	0.10	1.10	4.20	0.54	2.68
10	886	6.90	< 2	3	20	5.9	5.2	48.0	0.13	1.23	5.45	0.61	3.01
11	894	7.01	< 2	3	18	4.7	4.2	52.2	0.11	1.34	4.38	0.66	3.28
12	884	6.33	< 2	2	21	4.9	4.3	56.5	0.11	1.45	4.51	0.72	3.55
13	915	7.05	< 2	3	14	3.6	3.3	59.8	0.08	1.53	3.43	0.76	3.75
14	885	6.96	< 2	3	22	4.1	3.6	63.4	0.09	1.63	3.78	0.81	3.98
15	883	6.85	< 2	3	24	5.3	4.7	68.1	0.12	1.75	4.87	0.87	4.27
16	882	6.91	< 2	3	17	4.5	4.0	72.1	0.10	1.85	4.13	0.92	4.52
17	925	6.92	< 2	3	16	3.5	3.2	75.3	0.08	1.93	3.37	0.96	4.73
18	894	8.89	< 2	8	16	4.1	3.7	79.0	0.09	2.03	3.82	1.00	4.96
19	868	6.86	< 2	2	17	5.0	4.3	83.3	0.11	2.14	4.52	1.06	5.23
20	918	6.58	< 2	3	16	3.6	3.3	86.6	0.08	2.22	3.44	1.10	5.44
Maximum Value		8.94	-	15	47	6.7	5.9	-	0.15	-	6.11	-	-
Minimum Value		6.33	-	2	14	3.5	3.2	-	0.08	-	3.37	-	-
Average Value		6.96	-	5	23	4.7	4.1	-	0.11	-	4.30	-	-

SGS

F1-95

SEFG-1K (BH No. U-03-50)
Dissolved Metal Concentrations

Parameter	Units	MMER*	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20
Date			Aug 26/05	Sept 2/05	Sept 9/05	Sept 16/05	Sept 23/05	Sept 30/05	Oct 7/05	Oct 14/05	Oct 21/05	Oct 28/05
LIMS #			10376AUG05	10006SEP05	12083SEP05	10158SEP05	10276SEP05	10490SEP05	10033OCT05	10187OCT05	10289OCT05	10453OCT05
Hum Cell Leachate Vol	mLs		894	884	915	885	883	882	925	894	868	918
pH	units	6.0-9.5	7.01	6.33	7.05	6.96	6.85	6.91	6.92	8.89	6.86	6.58
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Alkalinity	mg/L as $CaCO_3$		3	2	3	3	3	3	3	8	2	3
Conductivity	uS/cm		18	21	14	22	24	17	16	16	17	16
SO_4	mg/L		4.7	4.9	3.6	4.1	5.3	4.5	3.5	4.1	5.0	3.6
Hg	µg/L		---	---	---	---	< 0.1	---	---	---	---	< 0.1
Ag	mg/L		---	---	---	---	< 0.0001	---	---	---	---	< 0.0001
Al	mg/L		---	---	---	---	0.03	---	---	---	---	0.02
As	mg/L	0.50	---	---	---	---	0.030	---	---	---	---	0.051
Ba	mg/L		---	---	---	---	0.002	---	---	---	---	< 0.001
Be	mg/L		---	---	---	---	< 0.005	---	---	---	---	< 0.005
B	mg/L		---	---	---	---	< 0.01	---	---	---	---	< 0.01
Bi	mg/L		---	---	---	---	< 0.0003	---	---	---	---	< 0.0003
Ca	mg/L		---	---	---	---	1.88	---	---	---	---	1.63
Cd	mg/L		---	---	---	---	< 0.0001	---	---	---	---	< 0.0001
Co	mg/L		---	---	---	---	< 0.0003	---	---	---	---	< 0.0003
Cr	mg/L		---	---	---	---	< 0.001	---	---	---	---	< 0.001
Cu	mg/L	0.30	---	---	---	---	< 0.0008	---	---	---	---	< 0.0008
Fe	mg/L		---	---	---	---	< 0.02	---	---	---	---	< 0.02
K	mg/L		---	---	---	---	0.99	---	---	---	---	0.82
Li	mg/L		---	---	---	---	< 0.005	---	---	---	---	< 0.005
Mg	mg/L		---	---	---	---	0.336	---	---	---	---	0.265
Mn	mg/L		---	---	---	---	0.0009	---	---	---	---	0.0009
Mo	mg/L		---	---	---	---	< 0.0003	---	---	---	---	< 0.0003
Ni	mg/L	0.50	---	---	---	---	< 0.001	---	---	---	---	< 0.001
Pb	mg/L	0.20	---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
Sb	mg/L		---	---	---	---	0.0005	---	---	---	---	< 0.0004
Se	mg/L		---	---	---	---	< 0.005	---	---	---	---	< 0.005
Sn	mg/L		---	---	---	---	< 0.001	---	---	---	---	< 0.001
Sr	mg/L		---	---	---	---	0.0080	---	---	---	---	0.0054
Ti	mg/L		---	---	---	---	< 0.003	---	---	---	---	< 0.003
Tl	mg/L		---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
U	mg/L		---	---	---	---	0.0002	---	---	---	---	0.0002
V	mg/L		---	---	---	---	< 0.0009	---	---	---	---	< 0.0009
W	mg/L		---	---	---	---	< 0.0002	---	---	---	---	< 0.0002
Y	mg/L		---	---	---	---	< 0.001	---	---	---	---	< 0.001
Zn	mg/L	0.50	---	---	---	---	< 0.001	---	---	---	---	0.002

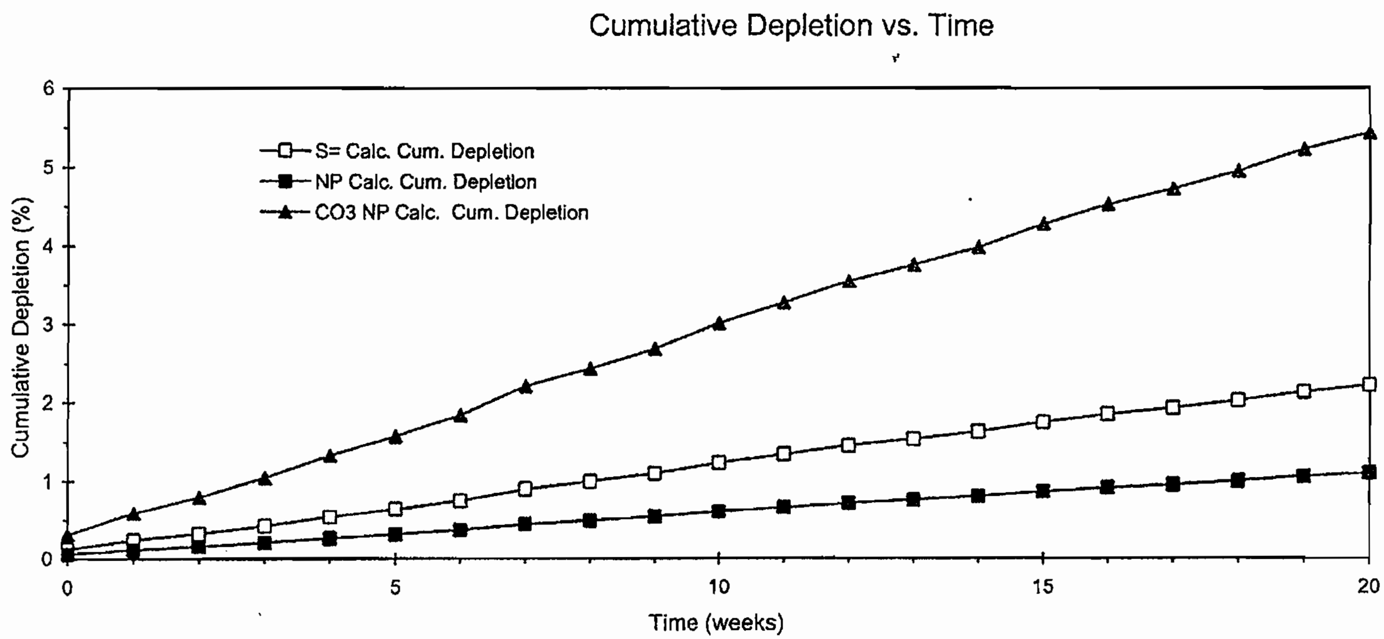
**Metal Mining Effluent Regulations*
---Analysis not requested

SGS

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

F1-97

Humidity Cell Test Report (ASTM D 5744-96)
Sample I.D.: SEFG-1K (BH No. U-03-50)



This report refers to the samples as-received. SGS Lakefield Research is not responsible for any use of this data beyond the result of this test method.

SGS

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

HWQ-1Kab Composite (BH No. U-03-65)
Dissolved Metal Concentrations

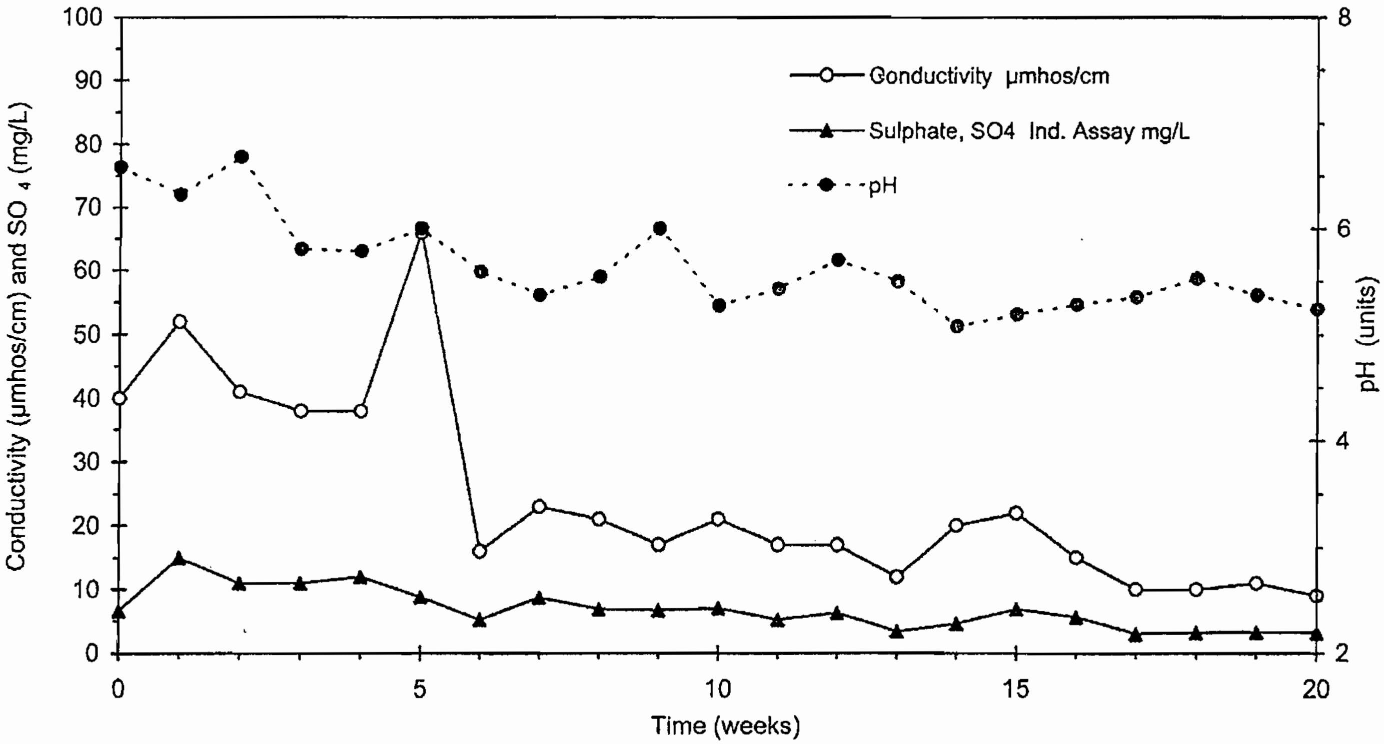
Parameter	Units	MMER*	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Date			June 8/05	June 17/05	June 24/04	July 1/05	July 8/05	July 15/05	July 22/05	July 29/05	Aug 5/05	Aug 12/05	Aug 17/05
LIMS #			JUN10145	JUN10203	10328JUN05	10461JUN05	10004JUL05	10126JUL05	10257JUL05	10348JUL05	10014AUG05	10116AUG05	10254AUG05
Hum Cell Leachate Vol	mLs		783	886	916	897	877	873	412	874	894	922	888
pH	units	6.0-9.5	6.58	6.32	6.68	5.80	5.78	6.00	5.59	5.37	5.54	6.00	5.27
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	3	4	3	4	7	7	5
Alkalinity	mg/L as $CaCO_3$		3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	1	< 2	< 2
Conductivity	uS/cm		40	52	41	38	38	66	16	23	21	17	21
SO_4	mg/L		6.6	15	11	11	12	8.8	5.2	8.7	6.9	6.7	7.0
Hg	µg/L		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	---	---	---	---	< 0.1
Ag	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	---	---	---	---	0.0002
Al	mg/L		0.04	0.02	< 0.01	< 0.01	< 0.01	< 0.01	---	---	---	---	< 0.01
As	mg/L	0.50	0.009	0.003	0.003	0.006	< 0.001	0.018	---	---	---	---	0.007
Ba	mg/L		0.002	0.002	0.003	0.003	0.004	0.004	---	---	---	---	0.010
Be	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	---	---	---	---	< 0.005
B	mg/L		0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	---	---	---	---	< 0.01
Bi	mg/L		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	---	---	---	---	0.0005
Ca	mg/L		0.49	1.40	1.22	1.17	1.49	1.40	---	---	---	---	0.96
Cd	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	---	---	---	---	0.0009
Co	mg/L		0.0017	0.0029	0.0036	0.0054	0.0103	0.0085	---	---	---	---	0.0240
Cr	mg/L		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	---	---	---	---	0.001
Cu	mg/L	0.30	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008	---	---	---	---	0.0023
Fe	mg/L		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	---	---	---	---	0.12
K	mg/L		9.17	9.23	5.52	4.72	4.53	3.16	---	---	---	---	1.73
Li	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	---	---	---	---	< 0.005
Mg	mg/L		0.243	0.583	0.558	0.618	0.729	0.602	---	---	---	---	0.524
Mn	mg/L		0.0056	0.0156	0.0197	0.0324	0.0607	0.0437	---	---	---	---	0.0610
Mo	mg/L		0.0010	0.0010	< 0.0003	< 0.0003	< 0.0003	< 0.0003	---	---	---	---	0.0077
Ni	mg/L	0.50	0.004	0.006	0.007	0.012	0.020	0.019	---	---	---	---	0.048
Pb	mg/L	0.20	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0003	---	---	---	---	0.0033
Sb	mg/L		0.0012	0.0005	< 0.0004	< 0.0004	< 0.0004	0.0005	---	---	---	---	0.0010
Se	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	---	---	---	---	< 0.005
Sn	mg/L		0.005	0.002	0.002	< 0.001	< 0.001	< 0.001	---	---	---	---	< 0.001
Sr	mg/L		0.0032	0.0073	0.0069	0.0073	0.0097	0.0070	---	---	---	---	0.0264
Ti	mg/L		< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	---	---	---	---	< 0.003
Tl	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	0.0007
U	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0003	0.0002	---	---	---	---	0.0022
V	mg/L		< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	---	---	---	---	0.0024
W	mg/L		0.0003	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	< 0.0002
Y	mg/L		< 0.001	< 0.003	< 0.001	< 0.001	< 0.001	< 0.001	---	---	---	---	< 0.001
Zn	mg/L	0.50	0.001	0.003	0.004	0.005	0.008	0.007	---	---	---	---	0.027

Week #0 signifies the initial flooding of the humidity cell initiating the 20 week test period.
**Metal Mining Effluent Regulations*
---Analysis not requested

F1-191

Humidity Cell Test Report (ASTM D 5744-96)
Sample I.D.: HWQ-1Kab Composite (BH No. U-03-65)

Conductivity, Sulphate and pH vs. Time



F1-103

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

SGS

Humidity Cell Test Report (ASTM D 5744-96)

Head Assay

Parameter	Units	Value
S%:	%	0.16
$S^=$%:	%	0.03
NP:	t $CaCO_3$/1000 tonne of material	3.1
CO_3 NP:	t $CaCO_3$/1000 tonne of material	<0.83

Sample I.D.: HWQ-1Kcd Composite (BH No. U-03-65)
Sample Weight: 1000 grams
NP results from Modified ABA Testing
LIMS Ref. #: CA10174-JUN05

	Leachate Analyses					Sulphate (SO_4)			Sulphide Depletion		NP Depletion		
Week	Leachate Volume mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	Ind. Assay mg/L	Production Rate g/t/wk	Cum. Production g/t	Ind Depletion %	$S^=$ Calc. Cum. Depletion %	Calculated Consumption $CaCO_3$, g/t/wk	NP Calc. Cum. Depletion %	CO_3 NP Calc. Cum. Depletion %
0	811	6.75	<2	3	48	6.5	5.3	5.3	0.59	0.59	5.49	0.18	0.66
1	858	5.91	2	<2	38	9.7	8.3	13.6	0.92	1.51	8.67	0.46	1.71
2	922	6.37	2	<2	25	7.2	6.6	20.2	0.74	2.25	6.92	0.68	2.54
3	912	6.03	<2	<2	30	7.5	6.8	27.1	0.76	3.01	7.13	0.91	3.40
4	869	6.09	2	<2	24	7.8	6.8	33.9	0.75	3.76	7.06	1.14	4.25
5	867	5.87	3	<2	17	5.7	4.9	38.8	0.56	4.31	5.15	1.30	4.87
6	473	6.28	< 2	< 2	11	3.4	1.6	40.4	0.18	4.49	1.68	1.36	5.07
7	850	5.42	3	< 2	18	9.8	8.3	48.7	0.93	5.41	8.68	1.64	6.12
8	910	5.54	< 2	1	15	5.4	4.9	53.6	0.55	5.96	5.12	1.80	6.73
9	912	5.60	5	< 2	9	5.2	4.7	58.4	0.53	6.49	4.94	1.96	7.33
10	882	5.39	4	< 2	16	5.4	4.8	63.2	0.53	7.02	4.96	2.12	7.93
11	900	5.53	5	< 2	14	4.3	3.9	67.0	0.43	7.45	4.03	2.25	8.41
12	886	5.53	5	< 2	14	4.8	4.3	71.3	0.47	7.92	4.43	2.39	8.94
13	920	5.61	5	< 2	11	3.9	3.6	74.9	0.40	8.32	3.74	2.52	9.40
14	883	5.10	5	< 2	19	4.4	3.9	78.7	0.43	8.75	4.05	2.65	9.88
15	889	5.97	4	< 2	19	5.2	4.6	83.4	0.51	9.26	4.82	2.80	10.46
16	898	5.23	6	< 2	17	6.1	5.5	88.8	0.61	9.87	5.71	2.99	11.15
17	924	5.38	4	< 2	9	2.4	2.2	91.1	0.25	10.12	2.31	3.06	11.43
18	909	5.72	5	< 2	9	2.6	2.4	93.4	0.26	10.38	2.46	3.14	11.73
19	869	5.65	5	< 2	12	3.2	2.8	96.2	0.31	10.69	2.90	3.23	12.07
20	920	5.53	4	< 2	10	3.4	3.1	99.3	0.35	11.04	3.26	3.34	12.47
Maximum Value		6.75	-	3	48	9.8	8.3	-	0.93	-	8.68	-	-
Minimum Value		5.10	-	<1	9	2.4	1.6	-	0.18	-	1.68	-	-
Average Value		5.60	-	2	18	5.4	4.7	-	0.53	-	4.93	-	-

F1-105

SGS

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

HWQ-1Kcd Composite (BH No. U-03-65)
Dissolved Metal Concentrations

Parameter	Units	MMER*	Week									
			11	12	13	14	15	16	17	18	19	20
Date			Aug 26/05	Sept 2/05	Sept 9/05	Sept 16/05	Sept 23/05	Sept 30/05	Oct 7/05	Oct 14/05	Oct 21/05	Oct 28/05
LIMS #			10376AUG05	10006SEP05	12083SEP05	10158SEP05	10276SEP05	10490SEP05	10033OCT05	10187OCT05	10289OCT05	10453OCT05
Hum Cell Leachate Vol	mLs		900	886	920	883	889	898	924	909	869	920
pH	units	6.0-9.5	5.53	5.53	5.61	5.10	5.97	5.23	5.38	5.72	5.65	5.53
Acidity	mg/L as $CaCO_3$		5	5	5	5	4	6	4	5	5	4
Alkalinity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Conductivity	uS/cm		14	14	11	19	19	17	9	9	12	10
SO_4	mg/L		4.3	4.8	3.9	4.4	5.2	6.1	2.4	2.6	3.2	3.4
Hg	µg/L		—	—	—	—	< 0.1	—	—	—	—	< 0.1
Ag	mg/L		—	—	—	—	< 0.0001	—	—	—	—	< 0.0001
Al	mg/L		—	—	—	—	< 0.01	—	—	—	—	< 0.01
As	mg/L	0.50	—	—	—	—	< 0.001	—	—	—	—	< 0.001
Ba	mg/L		—	—	—	—	0.002	—	—	—	—	0.003
Be	mg/L		—	—	—	—	< 0.005	—	—	—	—	< 0.005
B	mg/L		—	—	—	—	< 0.01	—	—	—	—	< 0.01
Bi	mg/L		—	—	—	—	< 0.0003	—	—	—	—	< 0.0003
Ca	mg/L		—	—	—	—	0.51	—	—	—	—	0.35
Cd	mg/L		—	—	—	—	< 0.0001	—	—	—	—	< 0.0001
Co	mg/L		—	—	—	—	0.0143	—	—	—	—	0.0208
Cr	mg/L		—	—	—	—	< 0.001	—	—	—	—	< 0.001
Cu	mg/L	0.30	—	—	—	—	0.0008	—	—	—	—	0.0014
Fe	mg/L		—	—	—	—	0.18	—	—	—	—	0.26
K	mg/L		—	—	—	—	0.72	—	—	—	—	0.64
Li	mg/L		—	—	—	—	< 0.005	—	—	—	—	< 0.005
Mg	mg/L		—	—	—	—	0.286	—	—	—	—	0.236
Mn	mg/L		—	—	—	—	0.0248	—	—	—	—	0.0219
Mo	mg/L		—	—	—	—	< 0.0003	—	—	—	—	< 0.0003
Ni	mg/L	0.50	—	—	—	—	0.032	—	—	—	—	0.042
Pb	mg/L	0.20	—	—	—	—	< 0.0002	—	—	—	—	< 0.0002
Sb	mg/L		—	—	—	—	< 0.0004	—	—	—	—	< 0.0004
Se	mg/L		—	—	—	—	< 0.005	—	—	—	—	< 0.005
Sn	mg/L		—	—	—	—	< 0.001	—	—	—	—	< 0.001
Sr	mg/L		—	—	—	—	0.0061	—	—	—	—	0.0040
Ti	mg/L		—	—	—	—	< 0.003	—	—	—	—	< 0.003
Tl	mg/L		—	—	—	—	< 0.0002	—	—	—	—	< 0.0002
U	mg/L		—	—	—	—	0.0016	—	—	—	—	0.0018
V	mg/L		—	—	—	—	< 0.0009	—	—	—	—	< 0.0009
W	mg/L		—	—	—	—	< 0.0002	—	—	—	—	< 0.0002
Y	mg/L		—	—	—	—	< 0.001	—	—	—	—	< 0.001
Zn	mg/L	0.50	—	—	—	—	0.010	—	—	—	—	0.015

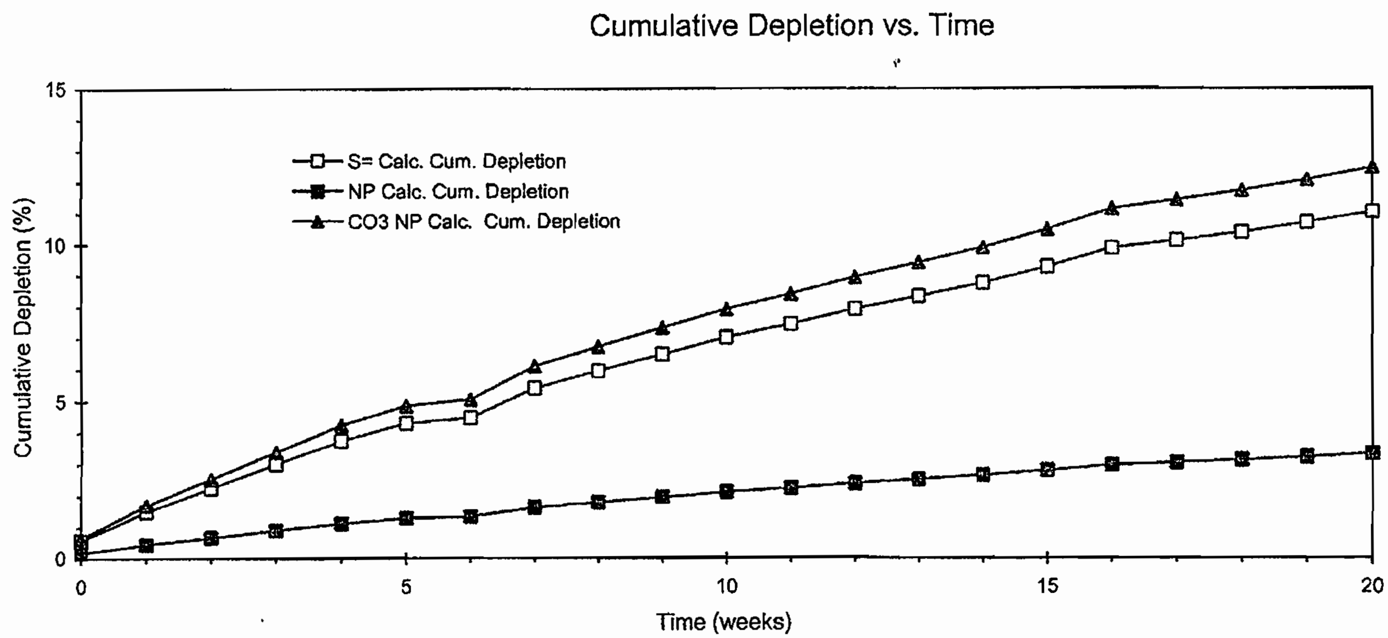
**Metal Mining Effluent Regulations*
—Analysis not requested

SGS

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

F1-107

Humidity Cell Test Report (ASTM D 5744-96)
Sample I.D.: HWQ-1Kcd Composite (BH No. U-03-65)



F1-109

SGS

HWQ-1Kef Composite (BH No. U-03-65)
Dissolved Metals Concentrations

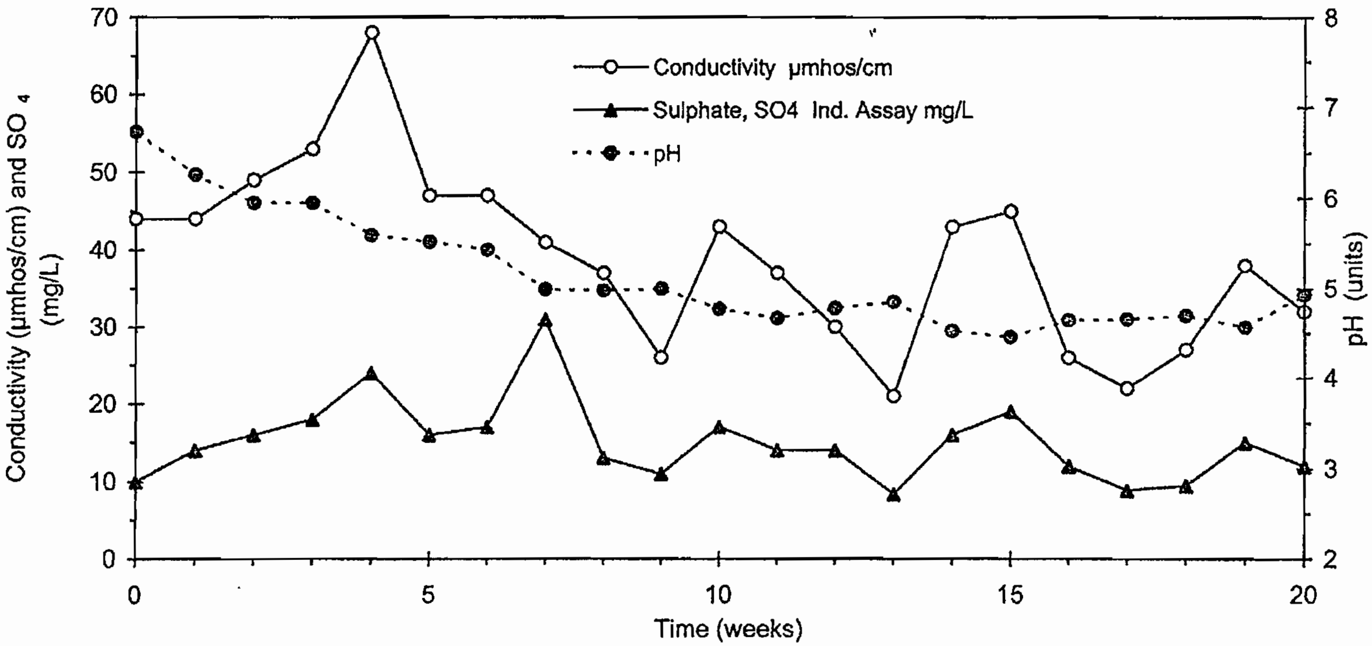
Parameter	Units	MMER*	Week 0	1	2	3	4	5	6	7	8	9	10
Date			June 8/05	June 17/05	June 24/04	July 1/05	July 8/05	July 15/05	July 22/05	July 29/05	Aug 5/05	Aug 12/05	Aug 17/05
LIMS #			JUN10145	JUN10203	10328JUN05	10461JUN05	10004JUL05	10126JUL05	10257JUL05	10348JUL05	10014AUG05	10116AUG05	10254AUG05
Hum Cell Leachate Vol	mLs		808	928	920	902	866	862	912	874	899	921	899
pH	units	6.0-9.5	6.73	6.26	5.95	5.95	5.59	5.52	5.43	4.99	4.98	5.00	4.77
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	4	5	5	4	4	4	7
Alkalinity	mg/L as $CaCO_3$		3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	3	< 2	< 2
Conductivity	uS/cm		44	44	49	53	68	47	47	41	37	26	43
SO_4	mg/L		10	14	16	18	24	16	17	31	13	11	17
Hg	µg/L		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	—	—	—	—	< 0.1
Ag	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	—	—	—	—	< 0.0001
Al	mg/L		0.04	0.02	< 0.01	< 0.01	< 0.01	< 0.01	—	—	—	—	0.48
As	mg/L	0.50	0.008	0.001	0.004	0.005	0.001	0.008	—	—	—	—	0.001
Ba	mg/L		0.001	< 0.001	0.002	0.003	0.007	0.005	—	—	—	—	0.010
Be	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	—	—	—	< 0.005
B	mg/L		0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	—	—	—	—	< 0.01
Bi	mg/L		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	—	—	—	—	< 0.0003
Ca	mg/L		1.06	1.68	2.40	2.56	3.68	2.69	—	—	—	—	1.66
Cd	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	—	—	—	—	< 0.0001
Co	mg/L		0.0015	0.0018	0.0048	0.0117	0.0353	0.0300	—	—	—	—	0.0902
Cr	mg/L		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	—	—	—	—	< 0.001
Cu	mg/L	0.30	< 0.0008	< 0.0008	< 0.0008	< 0.0008	0.0010	0.0020	—	—	—	—	0.0162
Fe	mg/L		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04	—	—	—	—	0.55
K	mg/L		9.07	6.68	6.09	6.02	7.37	4.74	—	—	—	—	2.79
Li	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	—	—	—	< 0.005
Mg	mg/L		0.388	0.578	0.839	1.04	1.55	1.10	—	—	—	—	0.737
Mn	mg/L		0.0059	0.0157	0.0321	0.0613	0.142	0.0961	—	—	—	—	0.0892
Mo	mg/L		0.0015	0.0005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	—	—	—	—	< 0.0003
Ni	mg/L	0.50	0.002	0.003	0.008	0.019	0.043	0.039	—	—	—	—	0.105
Pb	mg/L	0.20	< 0.0002	< 0.0002	0.0002	< 0.0002	< 0.0002	< 0.0002	—	—	—	—	0.0007
Sb	mg/L		0.0012	0.0006	< 0.0004	< 0.0004	< 0.0004	0.0005	—	—	—	—	< 0.0004
Se	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.007	—	—	—	—	< 0.005
Sn	mg/L		0.007	0.003	0.001	0.001	0.001	< 0.001	—	—	—	—	< 0.001
Sr	mg/L		0.0044	0.0056	0.0093	0.0104	0.0174	0.0124	—	—	—	—	0.0103
Ti	mg/L		< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	—	—	—	—	< 0.003
Tl	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	—	—	—	—	< 0.0002
U	mg/L		0.0002	< 0.0002	< 0.0002	0.0003	0.0012	0.0016	—	—	—	—	0.0253
V	mg/L		< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	—	—	—	—	< 0.0009
W	mg/L		0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	—	—	—	—	< 0.0002
Y	mg/L		< 0.001	< 0.003	< 0.001	< 0.001	< 0.001	< 0.001	—	—	—	—	0.004
Zn	mg/L	0.50	< 0.001	< 0.001	0.008	0.008	0.011	0.012	—	—	—	—	0.033

Week #0 signifies the initial flooding of the humidity cell initiating the 20 week test period.
**Metal Mining Effluent Regulations*
—Analysis not requested

This report refers to the samples as-received. SGS Lakefield Research is not responsible for any use of this data beyond the result of this test method.

Humidity Cell Test Report (ASTM D 5744-96)
Sample I.D.: HWQ-1Kef Composite (BH No. U-03-65)

Conductivity, Sulphate and pH vs. Time



This report refers to the samples as-received. SGS Lakefield Research is not responsible for any use of this data beyond the result of this test method.

III-1 F

APPENDIX D

Humidity Cell Certificates of Analysis

SGS

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Project : CALR-11016-001

LR Report : CA10145-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp Wk#0	6: HWQ-1Kcd Comp Wk#0	7: HWQ-1Kef Comp Wk#0	8: SEOZD-1K Comp Wk#0	9: SEFG-1K Wk#0	10: SWQG-1K Wk#0	11: SEQG-1K Wk#0
Thallium [mg/L]	16-Jun-05	14:31	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Uranium [mg/L]	16-Jun-05	14:31	< 0.0002	0.0003	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Vanadium [mg/L]	16-Jun-05	14:31	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.0074	0.0038	0.0041
Tungsten [mg/L]	16-Jun-05	14:31	0.0003	0.0006	0.0003	0.0004	0.0005	0.0007	0.0012
Yttrium [mg/L]	14-Jun-05	15:03	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Zinc [mg/L]	16-Jun-05	14:31	0.001	0.001	< 0.001	0.001	< 0.001	0.002	0.001

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Project : CALR-11016-001
LR Report : CA10203-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK #1	6: HWQ-1Kcd Comp WK #1	7: HWQ-1Kef Comp WK #1	8: SEOZD-1K WK #1	9: SEFG-1K WK #1	10: SWQG-1K WK #1	11: SEQG-1K WK #1
Iron [mg/L]	17-Jun-05	14:28	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Potassium [mg/L]	17-Jun-05	14:28	9.23	7.54	6.68	3.68	2.17	7.89	4.29
Lithium [mg/L]	17-Jun-05	14:28	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Magnesium [mg/L]	17-Jun-05	14:28	0.583	0.231	0.578	1.52	0.266	0.446	0.312
Manganese [mg/L]	22-Jun-05	11:53	0.0156	0.0031	0.0157	0.0027	0.0008	0.0017	< 0.0007
Molydenum [mg/L]	22-Jun-05	11:53	0.0010	0.0015	0.0005	0.0012	0.0010	0.0016	0.0014
Nickel [mg/L]	22-Jun-05	11:53	0.006	0.002	0.003	0.005	< 0.001	< 0.001	< 0.001
Lead [mg/L]	22-Jun-05	11:53	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Antimony [mg/L]	22-Jun-05	11:53	0.0005	0.0008	0.0006	0.0004	0.0011	0.0009	0.0010
Selenium [mg/L]	17-Jun-05	14:57	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Tin [mg/L]	22-Jun-05	11:53	0.002	0.003	0.003	0.006	0.005	0.005	0.004
Strontium [mg/L]	22-Jun-05	11:53	0.0073	0.0022	0.0056	0.0278	0.0078	0.0137	0.0047
Titanium [mg/L]	22-Jun-05	11:53	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Thallium [mg/L]	22-Jun-05	11:53	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Uranium [mg/L]	22-Jun-05	11:53	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0002	< 0.0002	< 0.0002
Vanadium [mg/L]	22-Jun-05	11:53	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.0029	0.0023	0.0021
Tungsten [mg/L]	22-Jun-05	11:53	0.0003	0.0002	< 0.0002	< 0.0002	0.0002	0.0003	0.0004
Yttrium [mg/L]	17-Jun-05	14:28	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Zinc [mg/L]	22-Jun-05	11:53	0.003	0.001	< 0.001	0.004	< 0.001	< 0.001	< 0.001

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Project : CALR-11016-001
LR Report : CA10328-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp Wk # 2	6: HWQ-1Kcd Comp Wk #2	7: HWQ-1Kef Comp WK #2	8: SEOZD-1K WK # 2	9: SEFG-1K WK # 2	10: SWQG-1 K Wk # 2	11: SEQG-1K WK # 2
Iron [mg/L]	24-Jun-05	10:29	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Potassium [mg/L]	24-Jun-05	10:29	5.52	4.55	6.09	2.38	1.62	5.01	2.95
Lithium [mg/L]	24-Jun-05	10:29	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Magnesium [mg/L]	24-Jun-05	10:29	0.558	0.276	0.839	1.27	0.273	0.461	0.312
Manganese [mg/L]	27-Jun-05	10:18	0.0197	0.0037	0.0321	0.0024	0.0007	0.0026	< 0.0007
Molydenum [mg/L]	27-Jun-05	10:18	< 0.0003	0.0007	< 0.0003	0.0006	0.0006	0.0008	0.0009
Nickel [mg/L]	27-Jun-05	10:18	0.007	0.002	0.008	0.004	< 0.001	< 0.001	< 0.001
Lead [mg/L]	27-Jun-05	10:18	< 0.0002	< 0.0002	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Antimony [mg/L]	27-Jun-05	10:18	< 0.0004	0.0004	< 0.0004	< 0.0004	0.0008	0.0004	0.0005
Selenium [mg/L]	27-Jun-05	09:27	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Tin [mg/L]	27-Jun-05	10:18	0.002	0.002	0.001	0.003	0.003	0.003	0.003
Strontium [mg/L]	27-Jun-05	10:18	0.0069	0.0030	0.0093	0.0224	0.0068	0.0120	0.0037
Titanium [mg/L]	27-Jun-05	10:18	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Thallium [mg/L]	27-Jun-05	10:18	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Uranium [mg/L]	27-Jun-05	10:18	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0004	< 0.0002	< 0.0002
Vanadium [mg/L]	27-Jun-05	10:18	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.0017	0.0012	0.0010
Tungsten [mg/L]	27-Jun-05	10:18	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Yttrium [mg/L]	24-Jun-05	10:29	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Zinc [mg/L]	27-Jun-05	10:18	0.004	0.005	0.008	< 0.001	< 0.001	< 0.001	< 0.001

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Project : CALR-11016-001
LR Report : CA10461-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK #3	6: HWQ-1Kcd Comp Wk # 3	7: HWQ-1Kef Comp WK # 3	8: SEOZD-1K WK # 3	9: SEFG-1K WK # 3	10: SWQG-1K WK # 3	11: SEQG-1K WK # 3
Iron [mg/L]	05-Jul-05	15:33	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.11	< 0.02
Potassium [mg/L]	05-Jul-05	15:33	4.72	3.62	6.02	2.43	1.52	4.53	2.69
Lithium [mg/L]	05-Jul-05	15:33	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Magnesium [mg/L]	05-Jul-05	15:33	0.618	0.328	1.04	1.73	0.334	0.595	0.371
Manganese [mg/L]	11-Jul-05	11:24	0.0324	0.0057	0.0613	0.0030	0.0008	0.0040	< 0.0007
Molydenum [mg/L]	11-Jul-05	11:24	< 0.0003	0.0004	< 0.0003	0.0004	0.0005	0.0007	0.0007
Nickel [mg/L]	11-Jul-05	11:24	0.012	0.004	0.019	0.005	< 0.001	< 0.001	< 0.001
Lead [mg/L]	11-Jul-05	11:24	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0002	< 0.0002
Antimony [mg/L]	11-Jul-05	11:24	< 0.0004	0.0005	< 0.0004	0.0005	0.0009	0.0006	0.0008
Selenium [mg/L]	04-Jul-05	09:38	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Tin [mg/L]	11-Jul-05	11:25	< 0.001	0.001	0.001	0.001	0.001	0.002	0.002
Strontium [mg/L]	11-Jul-05	11:25	0.0073	0.0034	0.0104	0.0282	0.0072	0.0143	0.0035
Titanium [mg/L]	11-Jul-05	11:25	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Thallium [mg/L]	11-Jul-05	11:25	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Uranium [mg/L]	11-Jul-05	11:25	< 0.0002	< 0.0002	0.0003	< 0.0002	0.0005	0.0004	< 0.0002
Vanadium [mg/L]	11-Jul-05	11:25	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.0015	0.0010	0.0011
Tungsten [mg/L]	11-Jul-05	11:25	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0002
Yttrium [mg/L]	05-Jul-05	15:33	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Zinc [mg/L]	11-Jul-05	11:25	0.005	0.005	0.008	0.001	< 0.001	0.002	< 0.001

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Project : CALR-11016-001
LR Report : CA10004-JUL05

E1-173

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK # 4	6: HWQ-1Kcd Comp Wk # 4	7: HWQ-1Kef Comp WK # 4	8: SEOZD-1K Wk # 4	9: SEFG-1K WK # 4	10: SWQG-1K WK # 4	11: SEQG-1K WK # 4
Iron [mg/L]	14-Jul-05	12:27	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Potassium [mg/L]	14-Jul-05	12:27	4.53	3.35	7.37	2.76	1.63	5.34	2.75
Lithium [mg/L]	14-Jul-05	12:27	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Magnesium [mg/L]	14-Jul-05	12:27	0.729	0.398	1.55	2.30	0.411	0.956	0.422
Manganese [mg/L]	13-Jul-05	19:16	0.0607	0.0115	0.142	0.0038	0.0009	0.0033	< 0.0007
Molydenum [mg/L]	13-Jul-05	19:16	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.0004	0.0005
Nickel [mg/L]	13-Jul-05	19:16	0.020	0.006	0.043	0.005	< 0.001	< 0.001	< 0.001
Lead [mg/L]	13-Jul-05	19:16	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Antimony [mg/L]	13-Jul-05	19:16	< 0.0004	0.0005	< 0.0004	0.0006	0.0012	0.0007	0.0008
Selenium [mg/L]	13-Jul-05	03:25	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005
Tin [mg/L]	13-Jul-05	19:16	< 0.001	0.001	0.001	0.001	0.001	0.002	0.001
Strontium [mg/L]	13-Jul-05	19:16	0.0097	0.0045	0.0174	0.0458	0.0092	0.0223	0.0041
Titanium [mg/L]	13-Jul-05	19:16	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Thallium [mg/L]	13-Jul-05	19:16	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Uranium [mg/L]	13-Jul-05	19:16	0.0003	< 0.0002	0.0012	< 0.0002	0.0006	0.0007	< 0.0002
Vanadium [mg/L]	13-Jul-05	19:16	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.0017	0.0009	0.0013
Tungsten [mg/L]	13-Jul-05	19:16	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0002
Yttrium [mg/L]	14-Jul-05	12:27	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Zinc [mg/L]	13-Jul-05	19:16	0.008	0.006	0.011	0.003	0.002	0.004	0.002

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Project : CALR-11016-001
LR Report : CA10126-JUL05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp Wk # 5	6: HWQ-1Kcd Comp WK # 5	7: HWQ-1kef COmp Wk# 5	8: SEOZD-1K WK # 5	9: SEFG-1K WK # 5	10: SWQG-1K WK # 5	11: SEQG-1K WK # 5
Iron [mg/L]	19-Jul-05	11:28	< 0.02	< 0.02	0.04	< 0.02	< 0.02	< 0.02	< 0.02
Potassium [mg/L]	19-Jul-05	11:28	3.16	2.24	4.74	2.40	1.56	4.81	2.36
Lithium [mg/L]	19-Jul-05	11:28	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Magnesium [mg/L]	19-Jul-05	11:28	0.602	0.310	1.10	1.71	0.450	0.988	0.500
Manganese [mg/L]	22-Jul-05	09:17	0.0437	0.0088	0.0961	0.0030	0.0007	0.0033	< 0.0007
Molydenum [mg/L]	22-Jul-05	09:18	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	0.0004
Nickel [mg/L]	22-Jul-05	09:18	0.019	0.006	0.039	0.005	< 0.001	< 0.001	< 0.001
Lead [mg/L]	22-Jul-05	09:18	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Antimony [mg/L]	22-Jul-05	09:18	0.0005	0.0005	0.0005	0.0008	0.0011	0.0007	0.0009
Selenium [mg/L]	18-Jul-05	08:59	< 0.005	< 0.005	0.007	0.006	< 0.005	< 0.005	< 0.005
Tin [mg/L]	22-Jul-05	09:18	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Strontium [mg/L]	22-Jul-05	09:18	0.0070	0.0031	0.0124	0.0301	0.0081	0.0223	0.0040
Titanium [mg/L]	22-Jul-05	09:18	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Thallium [mg/L]	22-Jul-05	09:18	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Uranium [mg/L]	22-Jul-05	09:18	0.0002	< 0.0002	0.0016	< 0.0002	0.0005	0.0006	< 0.0002
Vanadium [mg/L]	22-Jul-05	09:18	< 0.0009	< 0.0009	< 0.0009	< 0.0009	0.0010	< 0.0009	< 0.0009
Tungsten [mg/L]	22-Jul-05	09:18	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Yttrium [mg/L]	19-Jul-05	11:28	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Zinc [mg/L]	22-Jul-05	09:18	0.007	0.004	0.012	0.002	0.001	< 0.001	< 0.001

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Project : CALR-11016-001

Environmental Services
Attn : Linda Elliott marilyn.kelly@sgs.com

Friday, August 05, 2005

Date Rec. : 29 July 2005
LR Report: CA10348-JUL05
Reference: Shakespeare wk#7

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp Wk # 7	6: HWQ-1Kcd Comp WK # 7
Sample Date & Time			26-Jul-05	26-Jul-05
Hum Cell Leachate Volume [mLs]	03-Aug-05	09:00	874	850
pH [no unit]	05-Aug-05	13:54	5.37	5.42
Acidity [mg/L as CaCO3]	05-Aug-05	13:54	4	3
Alkalinity [mg/L as CaCO3]	05-Aug-05	13:54	< 2	< 2
Conductivity [uS/cm]	05-Aug-05	13:54	23	18
Sulphate [mg/L]	04-Aug-05	15:32	8.7	9.8

Analysis	7: HWQ-1Kef Comp Wk # 7	8: SEOZD-1K Wk# 7	9: SEFG-1K WK # 7	10: SWQG-1K WK # 7	11: SEQG-1K Wk # 7
Sample Date & Time	26-Jul-05	26-Jul-05	26-Jul-05	26-Jul-05	26-Jul-05
Hum Cell Leachate Volume [mLs]	874	874	876	886	859
pH [no unit]	4.99	6.58	7.34	7.24	6.88
Acidity [mg/L as CaCO3]	4	6	< 2	< 2	< 2
Alkalinity [mg/L as CaCO3]	< 2	2	7	8	4
Conductivity [uS/cm]	41	63	27	56	15
Sulphate [mg/L]	31	33	6.7	17	6.4

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Tuesday, August 16, 2005

Date Rec. : 12 August 2005
LR Report: CA10116-AUG05
Reference: Shakespeare wk#9

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp Wk# 9	6: HWQ-1Kcd Comp Wk# 9
Sample Date & Time			09-Aug-05	09-Aug-05
Hum Cell Leachate Volume [mLs]	15-Aug-05	10:19	922	912
pH [no unit]	16-Aug-05	08:41	6.00	5.60
Acidity [mg/L as CaCO3]	16-Aug-05	08:41	7	5
Alkalinity [mg/L as CaCO3]	16-Aug-05	08:41	< 2	< 2
Conductivity [uS/cm]	16-Aug-05	08:41	17	9
Sulphate [mg/L]	12-Aug-05	15:14	6.7	5.2

Analysis	7: HWQ-1Kef Comp Wk# 9	8: SEOZD-1K Wk# 9	9: SEFG-1K Wk# 9	10: SWQG-1K Wk#9	11: SEQG-1K Wk#9
Sample Date & Time	09-Aug-05	09-Aug-05	09-Aug-05	09-Aug-05	09-Aug-05
Hum Cell Leachate Volume [mLs]	921	924	916	935	907
pH [no unit]	5.00	6.44	6.82	5.85	6.48
Acidity [mg/L as CaCO3]	4	8	< 2	28	< 2
Alkalinity [mg/L as CaCO3]	< 2	< 2	4	6	2
Conductivity [uS/cm]	26	55	19	55	22
Sulphate [mg/L]	11	21	4.4	9.2	6.4

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Wednesday, August 24, 2005

Date Rec. : 17 August 2005
LR Report: **CA10254-AUG05**
Reference: Shakespeare wk#10

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK # 10	6: HWQ-1Kcd Comp WK #10	7: HWQ-1EKef Comp WK# 10	8: SEOZD-1K WK # 10	9: SEFG-1K WK # 10	10: SWQG-1K WK # 10	11: SEQG-1K WK # 10
Sample Date & Time			16-Aug-05	16-Aug-05	16-Aug-05	16-Aug-05	16-Aug-05	16-Aug-05	16-Aug-05
Hum Cell Leachate Volume [mLs]	19-Aug-05	08:53	888	882	899	891	886	900	892
pH [no unit]	19-Aug-05	08:59	5.27	5.39	4.77	6.44	6.90	7.18	6.68
Acidity [mg/L as CaCO3]	22-Aug-05	08:18	5	4	7	9	< 2	< 2	< 2
Alkalinity [mg/L as CaCO3]	22-Aug-05	08:18	< 2	< 2	< 2	2	3	6	2
Conductivity [uS/cm]	19-Aug-05	08:59	21	16	43	71	20	52	30
Sulphate [mg/L]	22-Aug-05	08:09	7.0	5.4	17	29	5.9	17	11
Mercury [ug/L]	22-Aug-05	14:07	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Silver [mg/L]	19-Aug-05	13:31	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aluminum [mg/L]	19-Aug-05	13:20	< 0.01	< 0.01	0.48	< 0.01	0.03	0.06	0.03
Arsenic [mg/L]	24-Aug-05	09:54	0.007	0.002	0.001	0.003	0.079	0.018	0.006
Barium [mg/L]	19-Aug-05	13:31	0.010	0.002	0.010	0.006	0.002	0.006	0.004
Beryllium [mg/L]	19-Aug-05	13:31	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Boron [mg/L]	19-Aug-05	13:20	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth [mg/L]	19-Aug-05	13:31	0.0005	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Calcium [mg/L]	19-Aug-05	13:20	0.96	0.79	1.66	8.86	2.05	6.98	2.23
Cadmium [mg/L]	19-Aug-05	13:32	0.0009	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cobalt [mg/L]	19-Aug-05	13:32	0.0240	0.0098	0.0902	0.0014	< 0.0003	< 0.0003	< 0.0003
Chromium [mg/L]	19-Aug-05	13:32	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Copper [mg/L]	19-Aug-05	13:32	0.0023	< 0.0008	0.0162	0.0030	< 0.0008	< 0.0008	< 0.0008

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Project : CALR-11016-001

Monday, August 29, 2005

Date Rec. : 26 August 2005
LR Report: CA10376-AUG05
Reference: Shakespeare wk#11

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK #11	6: HWQ-1Kcd Comp WK #11
Sample Date & Time			23-Aug-05	23-Aug-05
Hum Cell Leachate Volume [mLs]	25-Aug-05	09:25	902	900
pH [no unit]	29-Aug-05	12:57	5.43	5.53
Acidity [mg/L as CaCO3]	29-Aug-05	12:57	5	5
Alkalinity [mg/L as CaCO3]	29-Aug-05	12:57	< 2	< 2
Conductivity [uS/cm]	29-Aug-05	12:57	17	14
Sulphate [mg/L]	25-Aug-05	14:15	5.2	4.3

Analysis	7: HWQ-1Kef Comp WK #11	8: SEOZD-1K WK #11	9: SEFG-1K WK #11	10: SWQG-1K WK #11	11: SEQG-1K WK #11
Sample Date & Time	23-Aug-05	23-Aug-05	23-Aug-05	23-Aug-05	23-Aug-05
Hum Cell Leachate Volume [mLs]	884	884	894	905	890
pH [no unit]	4.67	6.40	7.01	7.17	6.68
Acidity [mg/L as CaCO3]	8	6	< 2	< 2	< 2
Alkalinity [mg/L as CaCO3]	< 2	< 2	3	5	2
Conductivity [uS/cm]	37	64	18	49	26
Sulphate [mg/L]	14	22	4.7	14	7.6

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Project : CALR-11016-001

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Thursday, September 15, 2005

Date Rec. : 09 September 2005
LR Report: **CA12083-SEP05**
Reference: Shakespeare wk#13

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK#13	6: HWQ-1Kcd Comp WK#13
Sample Date & Time			06-Sep-05	06-Sep-05
Hum Cell Leachate Volume [mLs]	12-Sep-05	10:48	925	920
pH [no unit]	14-Sep-05	10:48	5.50	5.61
Acidity [mg/L as CaCO3]	14-Sep-05	10:48	4	5
Alkalinity [mg/L as CaCO3]	14-Sep-05	10:48	< 2	< 2
Conductivity [uS/cm]	14-Sep-05	10:48	12	11
Sulphate [mg/L]	13-Sep-05	15:36	3.4	3.9

Analysis	7: HWQ-1Kef Comp WK#13	8: SEOZD-1K WK#13	9: SEFG-1K WK#13	10: SWQG-1K WK#13	11: SEQG-1K WK#13
Sample Date & Time	06-Sep-05	06-Sep-05	06-Sep-05	06-Sep-05	06-Sep-05
Hum Cell Leachate Volume [mLs]	918	930	915	938	916
pH [no unit]	4.85	6.41	7.05	7.49	6.77
Acidity [mg/L as CaCO3]	7	4	< 2	< 2	< 2
Alkalinity [mg/L as CaCO3]	< 2	< 2	3	5	< 2
Conductivity [uS/cm]	21	42	14	36	17
Sulphate [mg/L]	8.4	18	3.6	9.7	6.0

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Project : CALR-11016-001

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Wednesday, September 28, 2005

Date Rec. : 23 September 2005
LR Report: **CA10276-SEP05**
Reference: Shakespeare wk#15

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F1-137

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK # 15	6: HWQ-1Kcd Comp WK # 15	7: HWQ-1Kef Comp WK # 15	8: SEOZD-1K WK # 15	9: SEFG-1K WK # 15	10: SWQG-1K Wk # 15	11: SEQG-1K WK # 15
Sample Date & Time			20-Sep-05	20-Sep-05	20-Sep-05	20-Sep-05	20-Sep-05	20-Sep-05	20-Sep-05
Hum Cell Leachate Volume [mLs]	26-Sep-05	10:50	872	889	889	905	883	894	875
pH [no unit]	26-Sep-05	09:29	5.19	5.97	4.46	6.55	6.85	7.13	6.63
Acidity [mg/L as CaCO3]	28-Sep-05	09:35	7	4	9	4	< 2	< 2	< 2
Alkalinity [mg/L as CaCO3]	26-Sep-05	09:29	< 2	< 2	< 2	< 2	3	6	< 2
Conductivity [uS/cm]	26-Sep-05	09:29	22	19	45	80	24	58	33
Sulphate [mg/L]	26-Sep-05	12:22	6.9	5.2	19	30	5.3	13	9.6
Mercury [ug/L]	27-Sep-05	11:23	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Silver [mg/L]	28-Sep-05	07:31	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aluminum [mg/L]	26-Sep-05	07:27	0.03	< 0.01	0.72	< 0.01	0.03	0.05	< 0.01
Arsenic [mg/L]	26-Sep-05	09:32	0.001	< 0.001	< 0.001	< 0.001	0.030	0.006	0.002
Barium [mg/L]	28-Sep-05	07:31	0.005	0.002	0.011	0.008	0.002	0.005	0.004
Beryllium [mg/L]	28-Sep-05	07:31	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Boron [mg/L]	26-Sep-05	07:27	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth [mg/L]	28-Sep-05	07:31	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Calcium [mg/L]	26-Sep-05	07:27	0.63	0.51	0.31	8.28	1.88	6.05	2.09
Cadmium [mg/L]	28-Sep-05	07:31	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cobalt [mg/L]	28-Sep-05	07:31	0.0265	0.0143	0.0360	0.0043	< 0.0003	< 0.0003	< 0.0003

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Project : CALR-11016-001

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Friday, October 07, 2005

Date Rec. : 30 September 2005
LR Report: **CA10490-SEP05**

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK # 16	6: HWQ-1Kcd Comp WK # 16
Sample Date & Time			27-Sep-05	27-Sep-05
Hum Cell Leachate Volume [mLs]	03-Oct-05	09:06	889	898
pH [no unit]	06-Oct-05	16:28	5.28	5.23
Acidity [mg/L as CaCO3]	06-Oct-05	16:28	11	8
Alkalinity [mg/L as CaCO3]	06-Oct-05	16:28	< 2	< 2
Conductivity [uS/cm]	06-Oct-05	09:08	15	17
Sulphate [mg/L]	05-Oct-05	10:45	5.6	6.1

Analysis	7: HWQ-1Kef Comp WK# 16	8: SEOZD-1K WK # 16	9: SEFG-1K WK # 16	10: SWQG-1K WK # 16	11: SEQG-1K WK # 16
Sample Date & Time	27-Sep-05	27-Sep-05	27-Sep-05	27-Sep-05	27-Sep-05
Hum Cell Leachate Volume [mLs]	888	882	882	885	876
pH [no unit]	4.65	6.12	6.91	7.28	6.64
Acidity [mg/L as CaCO3]	9	5	< 2	< 2	< 2
Alkalinity [mg/L as CaCO3]	< 2	< 2	3	6	< 2
Conductivity [uS/cm]	26	64	17	46	26
Sulphate [mg/L]	12	27	4.5	13	9.3

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Project : CALR-11016-001

Environmental Services
Attn : Jennifer LaBelle marilyn.kelly@sgs.com

Wednesday, October 26, 2005

Date Rec. : 14 October 2005
LR Report: CA10187-OCT05
Reference: Week # 18

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK#18	6: HWQ-1Kcd Comp WK#18
Sample Date & Time			11-Oct-05	11-Oct-05
Hum Cell Leachate Volume [mLs]	---	---	888	909
pH [no unit]	19-Oct-05	09:29	5.53	5.72
Acidity [mg/L as CaCO3]	20-Oct-05	10:37	3	5
Alkalinity [mg/L as CaCO3]	19-Oct-05	09:29	< 2	< 2
Conductivity [uS/cm]	18-Oct-05	15:17	10	9
Sulphate [mg/L]	17-Oct-05	15:24	3.2	2.6

Analysis	7: HWQ-1Kef Comp WK#18	8: SEOZD-1K WK#18	9: SEFG-1K WK#18	10: SWQG-1K WK#18	11: SEQG-1K WK#18
Sample Date & Time	11-Oct-05	11-Oct-05	11-Oct-05	11-Oct-05	11-Oct-05
Hum Cell Leachate Volume [mLs]	899	891	894	899	891
pH [no unit]	4.70	7.18	8.89	8.42	7.67
Acidity [mg/L as CaCO3]	9	4	< 2	< 2	< 2
Alkalinity [mg/L as CaCO3]	< 2	5	8	8	5
Conductivity [uS/cm]	27	47	16	37	22
Sulphate [mg/L]	9.5	17	4.1	9.5	7.1

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

OnLine LIMS

F1-141

F1-143

SGS
SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Friday, November 04, 2005

Date Rec. : 28 October 2005
LR Report: **CA10453-OCT05**
Reference: Week #20

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: HWQ-1Kab Comp WK# 20	6: HWQ-1Kcd Comp WK# 20	7: HWQ-1Kef Comp Wk# 20	8: SEOZD-1K WK # 20	9: SEFG-1K WK # 20	10: SWQG-1K WK #20	11: SEQG-1K WK # 20
Sample Date & Time			25-Oct-05	25-Oct-05	25-Oct-05	25-Oct-05	25-Oct-05	25-Oct-05	25-Oct-05
Hum Cell Leachate Volume [mLs]	---	---	916	920	927	912	918	926	910
pH [no unit]	28-Oct-05	14:19	5.24	5.53	4.93	6.03	6.58	6.89	6.23
Acidity [mg/L as CaCO3]	28-Oct-05	14:19	4	4	9	4	< 2	< 2	< 2
Alkalinity [mg/L as CaCO3]	28-Oct-05	14:19	< 2	< 2	< 2	< 2	3	5	< 2
Conductivity [uS/cm]	27-Oct-05	15:23	9	10	32	42	16	33	21
Sulphate [mg/L]	28-Oct-05	12:02	3.2	3.4	12	16	3.6	8.5	7.1
Mercury [ug/L]	03-Nov-05	15:26	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Silver [mg/L]	02-Nov-05	14:02	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aluminum [mg/L]	01-Nov-05	11:24	0.03	< 0.01	0.74	< 0.01	0.02	0.03	< 0.01
Arsenic [mg/L]	31-Oct-05	10:15	0.005	< 0.001	< 0.001	0.001	0.051	0.007	0.001
Barium [mg/L]	02-Nov-05	14:02	0.005	0.003	0.009	0.004	< 0.001	0.002	0.001
Beryllium [mg/L]	02-Nov-05	14:02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Boron [mg/L]	01-Nov-05	11:24	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth [mg/L]	02-Nov-05	14:02	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Calcium [mg/L]	01-Nov-05	11:24	0.32	0.35	0.24	4.59	1.63	4.03	1.62
Cadmium [mg/L]	02-Nov-05	14:02	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cobalt [mg/L]	02-Nov-05	14:01	0.0221	0.0208	0.0337	0.0068	< 0.0003	< 0.0003	< 0.0003
Chromium [mg/L]	02-Nov-05	14:01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Copper [mg/L]	02-Nov-05	14:01	0.0016	0.0014	0.0500	0.0073	< 0.0008	< 0.0008	< 0.0008

OnLine LIMS

APPENDIX E

Chain of Custody Forms

Pg 2 of 2

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 1016-001-2

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):
	Address:	Logged in by (Date):
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send Invoice to:	Name: Linda Elliott	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:	Sample condition upon receipt:
	Packed and Shipped by: Date /Time:	10382 10383 10384 10385
	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:______

Save all reject sample.

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	EPA 1311 TCLP	EPA 1311 TCLP Duplicate Leach	EPA 1312 SPLP	EPA 1312 SPLP Duplicate Leaches			
1		SEOZD-1ML (L9+00E 150-150.97m)	1 bag	Apr 25/05		X		X				
2		A-SEOZD -2ML	1 bag	Apr 25/05		X	X	X	X			
3		SEOZB-1ML (L9+00E 126.6-129.94m)	1 bag	Apr 25/05		X		X				
4		SEFG-1ML (L11+00E 250-251m)	1 bag	Apr 25/05		X		X				
5		SEFG-2ML (L9+00E 210-211m)	1 bag	Apr 25/05		X		X				
6		SWFG-1ML (L17+00W 40-41m)	1 bag	Apr 25/05		X		X				
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): B Bowman Date: Apr 25/05

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

APPENDIX F

SGS Lakefield Research Limited
Statement of Qualifications & Limitations

November 2005

Knight Piésold
CONSULTING

APPENDIX F2

TAILINGS INTERIM REPORT 3

- Report 223 pages

NB101-00222/1-2
Revision 0
December 15, 2005

SGS

November 25, 2005

URSA Major Minerals Incorporated
8 King Street East, Suite #1300
Toronto, Ontario
M5C 1B5

Attn: Richard Sutcliffe, PhD., P.Geo.

Re: Acid Rock Drainage and Metal Leaching Characterization of Tailings, Interim Report 3
Shakespeare Project
SGS Lakefield Reference No. 11016-001

Dear Richard:

Please find enclosed one copy of the SGS Lakefield Research Limited report entitled, "Acid Rock Drainage and Metal Leaching Characterization of Tailings, Interim Report 3" prepared for URSA Major Minerals Incorporated. Appendices have been provided separately to keep the size of the file manageable.

If you have any questions or comments concerning the aforementioned report, or if we can be of further assistance, please do not hesitate to contact Jennifer LaBelle at (705) 652-2148.

Best regards,

SGS LAKEFIELD RESEARCH LIMITED
Environmental Services

Jennifer LaBelle

Jennifer LaBelle
Environmental Testing and Research

BB/jl
Attachment
c.c. *S. Aiken, Knight Piesold Ltd.*
J.P. Chauvin, Patricia Mining Corp.
Richard Gowans, Micon International
Che McRae, Golder Associates
R. Caldwell, SGS Lakefield

F:\Projects\11000-11049\11016-001 URSA Major Minerals - Env\ReportsDeliverables\Tailings Reports\Nov 25-05 Tailings ARD and Metal Leaching Potential Interim Report 3 BB RJC.doc

F2-1

EXECUTIVE SUMMARY

SGS Lakefield Research Limited was contracted by URSA Major Minerals Incorporated to complete environmental characterization testing of tailings generated from metallurgical testing of ore from the Shakespeare project located near Sudbury, Ontario. The purpose of the environmental test program was to identify the acid rock drainage (ARD) potential and the metal leaching characteristics of the tailings samples. Samples tested include: 1) Combined Flotation Tailings Test F19 (flotation tailings pulp); 2) Test F30 Rougher Tailings (sulphur reduced rougher flotation tailings).

This interim report provides a summary of the environmental test work completed to November 21, 2005 and the results thereof. The following test work was complete at the time of report preparation: mineralogical examination, Rietveld X-ray diffraction (XRD) analyses, whole rock analyses, inductively coupled plasma-optical emission spectroscopy / mass spectroscopy (ICP-OES / MS) strong acid digest trace metal scans, modified acid base accounting (modified ABA), net acid generation (NAG) testing, US EPA toxicity characteristic leaching procedure (TCLP) method 1311 and US EPA synthetic precipitation leaching procedure (SPLP) method 1312 testing. Humidity cell testing of the Combined Flotation Tailings Test F19 was initiated on June 24, 2005 and is currently in the twenty second week of testing. The Test F30 Rougher Tailings humidity cell test was initiated on July 29, 2005 and is currently in the seventeenth week of testing. Results of the humidity cell leachate analyses to November 21, 2005 are provided within this report. Reporting of the updated results from the Test F30 Rougher Tailings humidity cell test is scheduled to occur after 20 weeks of testing. Updated interim data reports for the Combined Flotation Tailings Test F19 humidity cell, consisting of data tables and graphs, are scheduled to be provided after 25, 30, 35 and 40 weeks of leaching.

Results of the optical microscopy component of the mineralogical examination indicate that both the Combined Flotation Tailings Test F19 and Test F30 Rougher Tailings samples are comprised primarily of amphibole (~26 and 25 wt.%, respectively) and plagioclase feldspar (~23 and 26 wt.%), with moderate amounts of quartz, chlorite and biotite. Overall, the two samples are mineralogically similar, with only minor variations in mineral abundance. Sulphides occur primarily as pyrrhotite (~82% of the total sulphides), typically as liberated grains in both samples, with only a minor component occurring as inclusions within silicate mineral hosts. Trace amounts of pentlandite and chalcopyrite typically occur as inclusions within silicate mineral hosts. Rare pyrite is present as liberated grains. Carbonate minerals were present in trace amounts as fine, liberated grains in both samples. SEM-EDS analysis of the carbonate grains indicated a dominant calcite composition, with only rare occurrence of dolomite. The higher abundance of sulphides, typically present as liberated grains, indicates a high availability for oxidation and subsequent acid generation. Although neutralizing carbonate minerals are present in both samples, their lower relative abundance indicates insufficient neutralization capacity.

dissolved metal concentrations in the Test F30 Rougher Tailings weekly leachates revealed that all controlled parameters reported at concentrations within the MMER limits during the initial fifteen weeks of testing.

Analysis of the TCLP leachate from the Combined Flotation Tailings Test F19 revealed a pH (5.07) below the lower limit dictated by the MMER, and Ni (1.02 mg/L) and Zn (0.719 mg/L) concentrations greater than the MMER limits. The Test F30 Rougher Tailings TCLP leachate also reported a depressed pH (4.96) and a Zn (0.88 mg/L) concentration above the MMER limit. Results from the SPLP leachate analyses reported all controlled parameters at concentrations within the MMER limits for both the Combined Flotation Tailings Test F19 and the Test F30 Rougher Tailings.

Analysis of the fresh Day 0 and the aged supernatant decants from the Combined Flotation Tailings Test F19 indicated that all controlled parameters, with the exception of Cu and Ni in the Day 0 decant, reported at concentrations below the MMER limits. Chemical analysis of the Test F30 Rougher Tailings fresh Day 0 and aged supernatant decants reported all controlled parameters at concentrations below the limits dictated by the MMER.

Daphnia magna LC_{50} acute lethality tests completed on the Combined Flotation Tailings Test F19 Decant Day 7 and Test F30 Rougher Tailings Decant Day 1 samples reported as non-lethal with a 0% mortality rate. Results of the LC50 *Daphnia magna* and rainbow trout acute lethality tests completed on the Combined Flotation Tailings Test F19 Decant Day 28 and Test F30 Rougher Tailings Decant Day 28 samples reported as non-lethal (0% mortality rate) for both species.

SGS LAKEFIELD RESEARCH LIMITED
Environmental Services

Barbara Bowman
Environmental Testing and Research

Jennifer LaBelle
Environmental Testing and Research

LIST OF FIGURES

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1.0 INTRODUCTION

SGS Lakefield Research Limited (SGS Lakefield) was contracted by URSA Major Minerals Incorporated to complete environmental characterization of tailings generated from metallurgical testing of ore from the Shakespeare project located near Sudbury, Ontario. Selected tailings samples were submitted for testing and analysis according to the proposed environmental characterization program. The environmental test program was designed in consultation with Mr. Richard Sutcliffe and Mr. Harold Tracanelli of URSA Major Minerals Incorporated, Mr. Malcolm Buck of Wireless Mining Technologies Limited and Mr. Steve Aiken of Knight Piesold Limited. The purpose of the environmental test program was to identify the acid rock drainage (ARD) potential and the metal leaching characteristics of tailings from the Shakespeare project.

The following report provides a summary of the environmental test work completed to November 21, 2005 and the results thereof.

1.1 SCOPE OF WORK

The scope of test work completed on the samples received includes:

- Mineralogical examination.
- Rietveld XRD analyses.
- Whole rock analyses.
- ICP-OES / MS strong acid digest trace metal scans.
- Modified acid base accounting.
- Net acid generation testing.
- Humidity cell testing.
- US EPA toxicity characteristic leaching procedure method 1311.
- US EPA synthetic precipitation leaching procedure method 1312.
- Chemical analysis of the aged tailings decants.
- LC_{50} toxicity testing.

2.0 SAMPLE DESCRIPTIONS AND TEST METHODS

The following sections provide brief descriptions of the samples tested, overviews of sample preparation and a summary of the test methods used in the Shakespeare tailings test program.

2.1 SAMPLE DESCRIPTIONS

Environmental samples were received from the metallurgical operations department at SGS Lakefield. Descriptions of the tailings samples subjected to environmental testing are shown in Table 1.

Table 1 Environmental Sample Descriptions

Sample Identifier	SGS LR Project Reference No.	Description
Combined Flotation Tailings Test F19	10616-003	Flotation tailings pulp
Test F30 Rougher Tailings	10616-003	Sulphur (S) reduced rougher flotation tailings pulp

2.2 SAMPLE PREPARATION AND HANDLING

Specific handling procedures used in the Shakespeare tailings test program are summarized in the following sections. Representative portions of the samples received were submitted for environmental testing and analyses at SGS Lakefield. Samples were prepared for the proposed test work and analyses according to SGS Lakefield Standard Operating Procedures.

2.2.1 COMBINED FLOTATION TAILINGS TEST F19

The Combined Flotation Tailings Test F19 pulp was received from metallurgical operations on June 16, 2005. The pulp was mixed for 60 minutes at 250 rpm to ensure all solids had been thoroughly recombined before approximately 6 L of pulp was extracted and filtered through a No. 1 Whatman filter paper. The resultant filter cake solids were reserved in refrigerated storage. Mixing of the remaining Combined Flotation Tailings Test F19 pulp continued while individual ageing test pulp samples were extracted to create Day 0, 1, 7, 14, 28 and 56 samples that maintained the original ratio of liquids to solids. The fresh Day 0 sample was allowed to settle undisturbed for 2 hours prior to the supernatant being decanted and submitted for analyses. The residual solids from the Days 0 and 1 ageing tests were also filtered on a No. 1 Whatman filter paper to remove additional water and the resultant filter cake solids were blended manually with the filter cake solids that had previously been reserved in storage to create sufficient representative sample weight in order to complete the analyses requested.

2.3.3 WHOLE ROCK ANALYSES

Whole rock analyses were completed on the Shakespeare tailings samples using a semi-quantitative X-ray fluorescence (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).

2.3.4 ICP-OES / MS STRONG ACID DIGEST TRACE METAL SCANS

The tailings samples were digested using an acid mixture of HNO_3, HF, $HClO_4$, and HCl to obtain a near total digest of the parameters being analyzed. The ICP-OES / MS metal scan was performed to provide quantitative analyses of the elemental components of the sample material. Parameters analysed included: Ag, Al, As, 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, Y and Zn.

2.3.5 MODIFIED ACID BASE ACCOUNTING

Modified ABA testing 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 also determined the neutralization potential (NP) of the tailings samples by facilitating a reaction with excess acid, then titrating to pH 8.3 with NaOH. The balance between the AP and NP assists in defining the potential of the samples to generate acid drainage.

2.3.6 NET ACID GENERATION TESTING

NAG tests were conducted to determine the balance between the acid producing and acid consuming components of the Shakespeare tailings samples. The NAG test uses hydrogen peroxide to force complete oxidation. Carbonates and / or other acid consuming components of the samples are forced to react with the resultant acid. The samples were heated and gently boiled until the acid product and neutralization reaction ceased. After the solution cooled, 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 sample was calculated and expressed in units of kg H_2SO_4 equivalent per tonne. Titration to pH 7.0 provided additional information for sample characterization. The $NAG_{4.5}$ is indicative the contribution from free acid, Al and Fe, while the $NAG_{7.0}$ is indicative of additional acidity due to other metals such as Cu and Zn.

2.3.9 US EPA SYNTHETIC PRECIPITATION LEACHING PROCEDURE 1312

The major objective of the synthetic precipitation leach procedure (SPLP) 1312 is to determine the leachability of metals from solid samples under acidic rainfall conditions. For the Shakespeare tailings samples, the SPLP leachant was adjusted to a pH of 5 through the addition of a 60:40 weight percent mix of sulphuric and nitric acid to deionised water. The leachant was combined with the sample in a 20:1 ratio and the sample container was rotated end over end for 18 hours. The resultant slurry was then filtered through a 0.7 µm glass fibre filter and the leachate analysed for total metals.

2.3.10 CHEMICAL ANALYSIS OF THE AGED SUPERNATANT DECANTS

Aged supernatants were decanted from the settled tailings samples after defined periods of ageing and analyzed. Parameters measured in the supernatant solutions included: pH, alkalinity, acidity, conductivity, total suspended solids (TSS), total dissolved solids (TDS), total thiosalts, ammonia (NH_3), ammonium (NH_4^+) and total fluoride (F^-). An anion scan which included chloride (Cl^-), sulphate (SO_4^{2-}), nitrite (NO_2^-) and nitrate (NO_3^-) was also completed. Inductively coupled plasma-optical emission spectroscopy / mass spectroscopy (ICP-OES / MS) was used to provide quantitative analyses of the total elemental components of the sample supernatants. These analyses aid in the identification of elements present at potential environmentally significant concentrations. Analyses performed included: Ag, Al, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Ni, Pb, Sb, Sn, Sr, Ti, Tl, U, V, W, Y and Zn. Total Hg was analyzed by cold vapour atomic adsorption (CVAA). Total As and Se were analyzed by hydride.

2.3.11 TOXICITY TESTING

The Day 7 decant from the aged Combined Flotation Tailings Test F19 and the Day 1 decant from the aged Test F30 Rougher Tailings were subjected to lethal concentration 50 (LC_{50}) acute lethality testing of *Daphnia magna*. LC_{50} acute lethality testing of rainbow trout was completed on the Day 28 decants from both samples. The test measured the percent mortality of *Daphnia magna* and rainbow trout in varying concentrations of effluent. The test followed the *Daphnia magna* Acute Lethality Toxicity Test Protocol EPS 1/RM/14 and Acute Lethality of Liquid Effluents to Fish EPS 1/RM/13 protocols from Environment Canada. These analyses were subcontracted to Stantec Consulting Limited.

higher abundance of sulphides, typically present as liberated grains, indicates a high availability for oxidation and subsequent acid generation. Although neutralizing carbonate minerals are present in both samples, their lower relative abundance indicates insufficient neutralization capacity.

Table 3 Optical Microscopy - Carbonate vs. Sulphide Mineral Components

Mineral	Units	Combined Flotation Tailings Test F19	Distribution	Test F30 Rougher Tailings	Distribution
Calcite	%	0.5	100	0.4	100
Dolomite	%	rare	<1	rare	<1
Total Carbonate	**%**	**0.5**	**100**	**0.4**	**100**
Pyrrhotite	%	2.6	83	1.3	82
Pentlandite	%	<0.1	<1	<0.1	<1
Chalcopyrite	%	0.3	8	0.3	17
Pyrite	%	0.3	9	<0.1	<1
Total Sulphide	**%**	**3.2**	**100**	**1.6**	**100**

3.2 RIETVELD XRD

Summary results of the Rietveld XRD analyses completed on the Shakespeare tailings are presented in Table 4. Complete test reports are provided in Appendix A. Results showed that both the Combined Flotation Tailings Test F19 and Test F30 Rougher Tailings samples were predominantly comprised of actinolite with moderate amounts of plagioclase, clinochlore and quartz. The Test F 30 Rougher Tailings also reported minor amounts of clinozoisite and biotite.

Table 4 Rietveld XRD – Combined Flotation Tailings Test F19

Parameter	Units	Combined Flotation Tailings Test F19	Test F30 Rougher Tailings
Quartz	%	13.3	15.0
Muscovite	%	5.6	---
Clinochlore	%	14.1	14.7
Plagioclase	%	18.6	18.0
Actinolite	%	41.8	39.9
Dolomite	%	1.4	---
Pyrrhotite	%	5.3	---
Biotite	%	---	2.7
Ilmenite	%	---	0.9
Calcite	%	---	0.3
Clinozoisite	%	---	8.4

3.5 MODIFIED ACID BASE ACCOUNTING

Guidelines regarding the interpretation of modified ABA data are included in the following sections along with the results of the modified ABA tests completed on the Shakespeare tailings samples

3.5.1 MODIFIED ABA INTERPRETATION

The standard approach to interpretation of the potential for acid generation from modified ABA test data involves examination of the Net NP and the NP/AP ratio. The Net NP results are expressed in metric tonnes of calcium carbonate ($CaCO_3$) per 1000 metric tonnes of material. Net NP values greater than 20 and NP/AP ratios greater than 4 are considered indicative of a low potential for acid generation. Typically, a Net NP value less than 20 and NP/AP ratios of less than 4 indicate an uncertain potential for acid rock drainage, while Net NP values below zero and NP/AP ratios less than 1 indicate a potential for acid generation.

The ABA test methods create fast and aggressive neutralization reactions. In reality, in an environment where acidification and neutralization kinetics occur (such as in tailings deposits), carbonate minerals are typically the only minerals that can react at a fast enough rate to counteract the acidities released by sulphide mineral oxidation before the acids migrate. As a result, the static ABA test methods may overestimate the practical NP available by including slower reacting minerals (such as hydrated silicates) that may not effectively provide any neutralization potential in the field. Thus, it is difficult to characterize samples as non-acid generating based on ABA test data alone. Calculation of the theoretical carbonate NP based on CO_2 assays is used to indicate how much of the ABA test NP is related to carbonate mineralization alone.

3.5.2 MODIFIED ABA RESULTS

Modified ABA test results for the Shakespeare tailings samples are summarized in Table 7 and presented in detail in Appendix B. The Combined Flotation Tailings Test F19 reported a sulphide ($S^=$) content of 1.43% resulting in an acid potential of 44.7 t $CaCO_3$/1000 t. The low carbonate content (0.18%) and resultant neutralization potential to acid potential (NP/AP) ratio of 0.44 indicate a strong potential for acid generation upon oxidation for this sample.

Results from the modified ABA test performed on the Test F30 Rougher Tailings (sulphur reduced) sample show a similar carbonate content (0.17%) and a much lower $S^=$ content (0.09%) than reported for the Combined Flotation Tailings F19 sample. The neutralization potential of 13.7 t $CaCO_3$/1000 t reported from the ABA test method is higher than the theoretical NP available from carbonate mineralization alone. Based on the theoretical CO_3 NP of 2.82 t $CaCO_3$/1000 t and resultant CO_3 NP/AP ratio of 1.0, an uncertain potential for acid generation is

3.7 HUMIDITY CELL TESTING

Humidity cell testing of the Combined Flotation Tailings Test F19 was initiated on June 24, 2005 and is currently in the twenty second week of testing. The Test F30 Rougher Tailings humidity cell test initiated on July 29, 2005 is currently in the seventeenth week of testing. Analytical results of the humidity cell tests available to November 21, 2005 are summarized below and presented in detail in Appendix C. Certificates of Analysis are included in Appendix D. Reporting of the updated results from the Test F30 Rougher Tailings humidity cell test is scheduled to occur after 20 weeks of testing. Updated interim data reports for the Combined Flotation Tailings Test F19 humidity cell, consisting of data tables and graphs, are scheduled to be provided after 25, 30, 35 and 40 weeks.

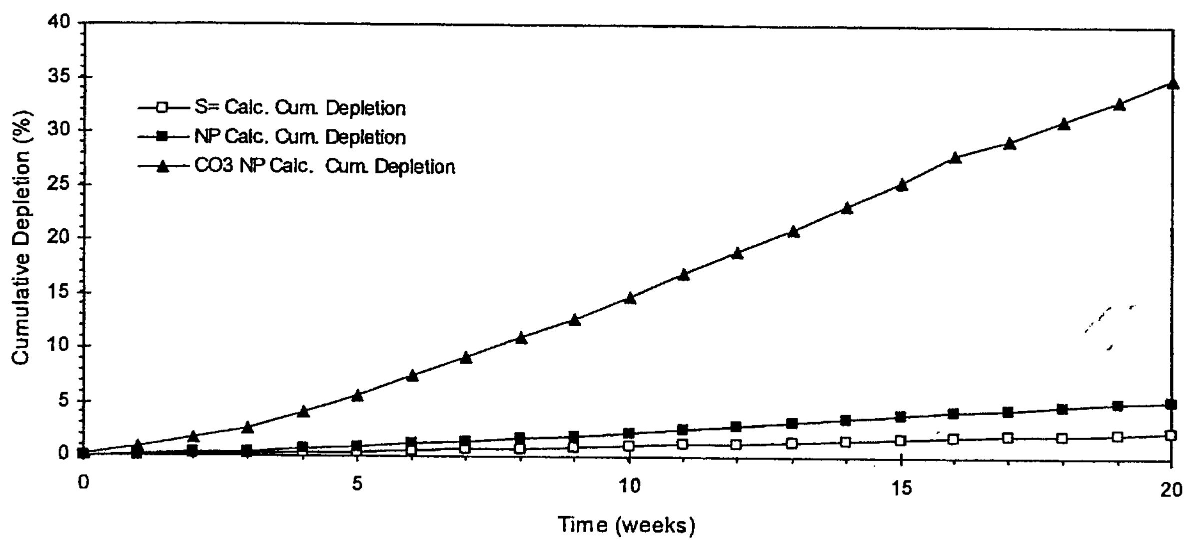
3.7.1 COMBINED FLOTATION TAILINGS TEST F19 HUMIDITY CELL

Preliminary results of the pH, acidity, alkalinity, conductivity and sulphate analyses on the weekly leachates from the Combined Flotation Tailings Test F19 humidity cell are summarized in Table 9. Figure 1 illustrates the pH values, conductivity and sulphate concentrations reported in the weekly leachates. Over the initial twenty weeks of the humidity cell test period, a decline in the pH of the Combined Flotation Tailings Test F19 leachates from 8.03 (Week 0) to 6.70 (Week 20) has been observed. Sulphate concentrations released into the weekly leachates have steadily increased from 6.5 mg/L (Week 0) to 61 mg/L (Week 20). Although alkalinity has shown a decreasing trend to date, acidity levels have remained below the analytical detection limit.

Modified ABA test results for the Combined Flotation Tailings Test F19 reported a $S^{=}$ content of 1.43%, low carbonate content (0.18%) and NP/AP ratio of 0.44; indicating a strong potential for acid generation. This correlates well with the NAG test results, which reported a net acid generated with a final pH of 2.74, a $NAG_{4.5}$ of 19.7 and $NAG_{7.0}$ of 31.0.

Preliminary cumulative depletion rates for sulphide sulphur, NP and CO_3 NP for the Combined Flotation Tailings Test F19 humidity cell are presented in Figure 2. The cumulative sulphide depletion over the initial twenty week test period was calculated to be 2.35%. With an originally determined sulphide content of 1.43%, these results indicate that 1.40% sulphide is still present in the Combined Flotation Tailings Test F19 sample after twenty weeks of leaching. Based on the measured NP of 19.7 t $CaCO_3$/1000 t determined in the ABA test performed on the head sample and the calculated cumulative depletion of 5.32%; a remaining NP of 18.65 t $CaCO_3$/1000 t was calculated. Results based on the theoretical CO_3 NP of 3.0 t $CaCO_3$/1000 t indicate a calculated CO_3 NP depletion of 35.06% and a remaining CO_3 NP of 1.95 t $CaCO_3$/1000 t, suggesting that the available carbonate is being depleted at a rate almost fifteen times faster than the sulphide is being depleted. If the CO_3 NP continues to be depleted at the indicated rate, the excess sulphide remaining in the Combined Flotation Tailings Test F19 sample may be expected to generate acidity in the future.

Figure 2 Cumulative Depletion Rates – Combined Flotation Tailings Test F19

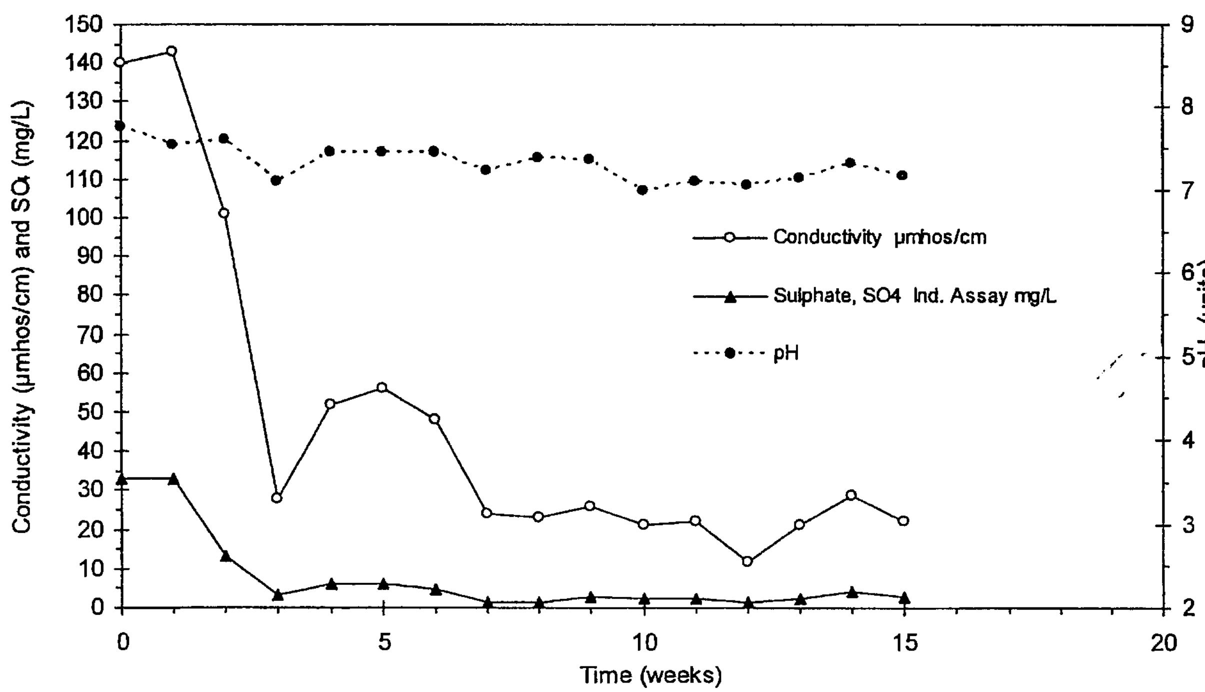


Preliminary summary results of dissolved metal concentrations in the Combined Flotation Tailings Test F19 humidity cell leachate are shown in Table 10. Analysis of the Combined Flotation Tailings Test F19 leachate revealed that all controlled parameters reported at concentrations within the MMER limits used in this report for

Table 11 Weekly Leachate Results – Test F30 Rougher Tailings

Week	Leachate Volume	pH	Acidity	Alkalinity	Conductivity	Sulphate (SO_4)
	mL	units	$CaCO_3$ eq. mg/L	$CaCO_3$ eq. mg/L	µmhos/cm	Ind. Assay mg/L
0	542	7.77	< 2	27	140	33
1	980	7.54	< 2	33	143	33
2	965	7.61	< 2	33	101	13
3	988	7.11	< 2	11	28	3.3
4	965	7.45	< 2	17	52	6.3
5	981	7.45	< 2	22	56	6.2
6	987	7.47	< 2	16	48	4.9
7	980	7.25	< 2	7	24	1.5
8	976	7.39	< 2	8	23	1.3
9	966	7.37	< 2	9	26	2.7
10	948	7.00	< 2	7	21	2.3
11	938	7.11	< 2	6	22	2.4
12	896	7.06	< 2	3	12	1.2
13	954	7.14	< 2	6	21	2.5
14	961	7.33	< 2	9	29	4.2
15	930	7.17	< 2	7	22	2.6

Figure 3 Conductivity, pH and Sulphate Concentrations – Test F30 Rougher Tailings



F2-25

concentrations within the MMER guidelines during the initial fifteen weeks of the humidity cell test. Detailed analytical tables are presented in Appendix C and the certificates of analyses are located in Appendix D.

Table 12 Dissolved Metal Concentrations – Test F30 Rougher Tailings

Parameter	Units	MMER*	Week 0	1	2	3	4	5	6	7
pH	units	6.0-9.5	7.77	7.54	7.61	7.11	7.45	7.45	7.47	7.25
Hg	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	---	---
As	mg/L	0.50	0.006	0.007	0.007	0.005	0.007	0.002	---	---
Cu	mg/L	0.30	0.0017	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008	---	---
Ni	mg/L	0.50	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	---	---
Pb	mg/L	0.20	< 0.0002	0.0003	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---
Zn	mg/L	0.50	0.002	0.002	0.001	< 0.001	0.001	< 0.001	---	---

Parameter	Units	MMER*	Week 8	9	10	11	12	13	14	15
pH	units	6.0-9.5	7.39	7.37	7.00	7.11	7.06	7.14	7.33	7.17
Hg	mg/L		---	---	< 0.0001	---	---	---	---	< 0.0001
As	mg/L	0.50	---	---	0.002	---	---	---	---	0.003
Cu	mg/L	0.30	---	---	< 0.0008	---	---	---	---	< 0.0008
Ni	mg/L	0.50	---	---	< 0.001	---	---	---	---	< 0.001
Pb	mg/L	0.20	---	---	< 0.0002	---	---	---	---	< 0.0002
Zn	mg/L	0.50	---	---	< 0.001	---	---	---	---	< 0.001

[1]*Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.*

3.8 UP EPA TOXICITY CHARACTERISTIC LEACHING PROCEDURE METHOD 1311

Summary results from the analyses performed on the Shakespeare tailings TCLP leachates are presented in Table 13 and provided in detail in Appendix B. Analysis of the Combined Flotation Tailings Test F19 leachate revealed a pH below the MMER criteria, and Ni and Zn concentrations greater than the MMER limits. The Test F30 Rougher Tailings also reported a pH less than the MMER lower level limit and As and Zn concentrations above the MMER limits. The As result reported is anomalous as at a liquid / solid ratio of 20:1 the total quantity of As leached from the solid is over 200 µg/g while the total As concentration available for leaching is <2 µg/g (Table 6). Parameters reporting at concentrations outside the MMER are indicated in bold.

MMER limits. High turbidity was observed in the Combined Flotation Tailing Test F19 sample for approximately 3 days following the extraction of the ageing test samples. Since Cu and Ni have minimal solubility at the reported pH of 9.32 (Day 0), the high concentrations reported may be due to solid carryover from the suspended solids.

Table 15 Combined Flotation Tailings Test F19 Fresh and Aged Decant Analyses

Parameter	Units	MMER[1]	Day 0	Day 1	Day 7	Day 14	Day 28	Day 56
pH	units	6.0 - 9.5	9.32	7.53	7.67	7.83	7.62	7.88
Hg	mg/L		0.0010	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
As	mg/L	0.50	0.11	0.026	0.015	0.028	0.011	0.11
Cu	mg/L	0.30	**0.541**	0.046	0.0009	0.0014	0.0065	< 0.0008
Ni	mg/L	0.50	**1.60**	0.190	0.006	0.008	0.040	0.006
Pb	mg/L	0.20	0.106	0.0145	0.0005	0.0007	0.0018	< 0.0002
Zn	mg/L	0.50	0.163	0.021	0.001	< 0.001	0.007	< 0.001

[1]Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.

3.10.2 TEST F30 ROUGHER TAILINGS FRESH AND AGED DECANT ANALYSES

Summary results from the analyses performed on the Test F30 Rougher Tailings fresh and aged supernatant decants are presented below in Table 16 and detailed in Appendix B. Results indicate that all controlled parameters reported at concentrations below the MMER limits.

Table 16 Test F30 Rougher Tailings Fresh and Aged Decant Analyses

Parameter	Units	MMER[1]	Day 0	Day 1	Day 7	Day 14	Day 28	Day 56
pH	units	6.0 - 9.5	8.09	7.84	8.02	8.24	7.99	8.00
Hg	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
As	mg/L	0.50	0.005	0.009	0.006	0.006	0.008	0.005
Cu	mg/L	0.30	0.0096	< 0.0008	0.0033	0.0008	0.0010	< 0.0008
Ni	mg/L	0.50	0.030	0.005	0.014	0.005	0.004	0.003
Pb	mg/L	0.20	0.0013	< 0.0002	0.0010	0.0007	0.0004	< 0.0002
Zn	mg/L	0.50	0.006	< 0.001	0.004	0.002	0.003	0.002

[1]Metal Mining Effluent Regulations (SOR/2002-222), Environment Canada. Maximum authorized monthly mean concentration.

3.11 TOXICITY TESTING

Result from the toxicity tests conducted on the Shakespeare tailings samples are summarised below in Tables 17 and 18. Complete toxicity test reports are provided in Appendix E. It was observed that the finer solids in the Combined Flotation Tailing Test F19 sample remained suspended in solution for approximately 3 days following the extraction of the ageing and toxicity test samples, causing the supernatant to remain very cloudy and consequently lethal to the *Daphnia magna*. Due to this noted turbidity, the Day 1 toxicity sampling event was postponed until the Day 7 by which time the suspended solids settled out of the solution.

4.0 CLOSING

This report has been provided as an interim report summarising the environmental test work completed to November 21, 2005 and results thereof. Reporting of the updated results from the Test F30 Rougher Tailings humidity cell test is scheduled to occur after 20 weeks of testing. Updated interim data reports for the Combined Flotation Tailings Test F19 humidity cell, consisting of data tables and graphs, are scheduled to be provided after 25, 30, 35 and 40 weeks of leaching. A summary report is scheduled to be provided upon completion of the test program.

SGS Lakefield Research Limited

Mineralogical Investigation of Tailings

prepared for

URSA MAJOR MINERALS - SHAKESPEARE

LR 11016-001– MI5026-JUL05

September 9, 2005

NOTE:
This report refers to the samples as received.

The practice of this Company in issuing reports of this nature is to require the recipient not to publish the report or any part thereof without the written consent of SGS Lakefield Research Limited.

Lakefield Research

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Member of SGS SA Group (Société Générale de Surveillance)

Mineralogical Results

1. Procedures

A representative portion of each tailings sample was initially pulverized and submitted for whole rock analysis (WRA) by X-ray fluorescence. The bulk chemistry of the sample is presented in Appendix 2.

The as-received samples were initially air-dried to remove any moisture. One polished section and one polished thin section were prepared from a representative portion of each of the as-received tailings. Each polished section was examined optically under incident and transmitted light at 50x to 500x magnifications. The mineral assemblage and modal abundance of the sample were determined by point counting over 500 particles from the polished thin section, using combined incident and transmitted light. Weight percentages of minerals were calculated from volume percentage using standard grain densities of documented mineral chemistries. A summary of the major elemental oxides determined through modal estimation by optical methods is compared to the whole rock analyses of the samples in Appendix 2. Photomicrographs were taken of pertinent mineral phases and textures and are presented in Appendix 1.

Scanning electron microscopy (SEM) was carried out on selected mineral grains to help determine the chemistry of the carbonate mineral species, as well as confirm the sulphide mineral species. The dominant silicate mineral species were also examined by SEM-EDS in order to assess their long-term neutralization potential.

2.2. *Comb Flot Tails Test F19*

Microscopic examination of the Comb Flot Tails Test F19 sample indicates that it is composed primarily of amphibole (~26 wt. %) and plagioclase feldspar (~23 wt. %), with moderate amounts of quartz (~14 wt. %), chlorite (~19 wt. %), and biotite (~7 wt. %). Minor amounts of epidote (~5 wt. %) and pyrrhotite (2.6 wt. %) are also present. Other minerals including muscovite, clays, rutile, ilmenite, goethite, dolomite, chalcopyrite and pyrite are present in trace amounts (each representing < 1.0 wt. % of the total sample). A summary of the bulk mineralogy and typical grain size of the sample is presented in Table 2 below.

Table 2. Mineral Assemblage of the Comb Flot Tails Test F19 by Optical Microscopy

Mineral	Formula or chemical composition	Wt.%	Typical Grain Size
Plagioclase	$(Ca,Na)(Si,Al)_4O_8$	22.6	10 to 200 µm
Amphibole	$Ca_2Mg_5(Si_8O_{22})(OH)_2$	26.4	20 to 280 µm
Quartz	SiO_2	13.5	10 to 260 µm
Chlorite	$(Mg,Al,Fe)_{12}[(Si,Al)_8O_{20}](OH)_{16}$	19.2	5 to 240 µm
Biotite	$K(Mg,Fe)_3AlSi_3O_{10}(OH,F)_2$	7.3	10 to 220 µm
Muscovite/Sericite	$KAl_2(Si_3Al)O_{10}(OH,F)_2$	0.7	10 to 120 µm
Epidote	$Ca_2(Fe,Al)_3(SiO_4)_3(OH)$	4.8	5 to 150 µm
Goethite	FeO•OH	0.3	70 µm
Nontronite (clays)	$Na_{0.3}Fe^{3+}{}_2Si_3AlO_{10}(OH)_2 \cdot 4(H_2O)$	0.4	agg.s up to 140 µm
Rutile	TiO_2	0.5	20 to 100 µm
Ilmenite	$FeTiO_3$	0.6	40 to 100 µm
Calcite/Dolomite	$(Ca,Mg)CO_3$	0.5	20 to 80 µm
Pyrrhotite	$Fe_{1-x}S$	2.6	20 to 200 µm
Pentlandite	$(Fe,Ni)_9S_8$	< 0.1	<8 to 40 µm
Chalcopyrite	$CuFeS_2$	0.3	8 to 20 µm
Pyrite	FeS_2	0.3	28 µm
Total		**100.0**	

EDS analysis of selected plagioclase grains indicates a predominant intermediate composition (Ca-Na) indicative of labradorite plagioclase feldspar, with only a minor component of Na-rich albite plagioclase. A minor proportion of plagioclase (~10%) shows alteration to sericite in both samples. Amphibole grains show differing optical properties indicative of more than one population of amphibole chemistry, and commonly show alteration to chlorite and/or chloritoid. SEM-EDS analysis of selected amphibole grains confirms optical observations, indicating both ferro-hornblende and actinolite amphibole compositions. Epidote or clinozoisite was also present as liberated grains, and to a minor extent, as aggregated particles with other silicate minerals (namely quartz and feldspar).

2.4.2. Oxides

Ilmenite is the main oxide mineral present in both samples and commonly occurs as liberated grains showing alteration along its grain boundaries to rutile. Rare liberated grains of rutile are also present. Rare Fe-oxy/hydroxides of goethite are also present as liberated particles.

2.4.3. Carbonates

Carbonate minerals are present in trace amounts in both samples (< 0.6 wt. %), showing a slightly higher abundance in the Comb Flot Tails Test F19 sample. SEM-EDS analysis of the carbonate grains indicates a dominant calcite composition, with only rare occurrence of dolomite. All carbonate minerals observed occur as fine (20 to 80 μm) liberated grains.

2.4.4. Sulphides

Sulphides mainly occur as pyrrhotite (~82% of total sulphides). Pyrrhotite typically occurs (~95%) as liberated grains in both samples. Only a minor component (~5%) occurs as inclusions within silicate mineral hosts. Pentlandite occurs in trace amounts typically as exsolution in pyrrhotite. A few (2) liberated grains occur in sample Test F19 Flot Tail. Pentlandite also occurs as attached grains (8 to 20 μm) to pyrrhotite, forming inclusions within silicate mineral hosts. Chalcopyrite typically occurs as inclusions (8 to 20 μm) within silicate mineral hosts. It is also found as fine (2 to 8 μm) liberated grains (~10% of total cp) within both samples. Rare pyrite (< 30 μm) is present as liberated grains.

Conclusions

- Both Tail samples show a higher abundance of sulphides than carbonate minerals by weight, indicative of potential acid generating conditions under oxidizing environments. The liberated nature and coarser grain size of pyrrhotite relative to calcite, add to this effect.

- Trace amounts of other sulphides (chalcopyrite and pentlandite) typically occur as inclusions within silicate host minerals, indicating a relatively benign effect of these sulphides under oxidizing conditions.

- The presence of calcium-rich silicate minerals indicates a significant contribution to the long-term neutralization potential of both samples from this source.

- A satisfactory agreement between major elemental oxides from assay reconciliation (Tables 4 and 5) indicates a reasonably accurate phase abundance was achieved by optical microscopy.

Test F30 Ro Tail

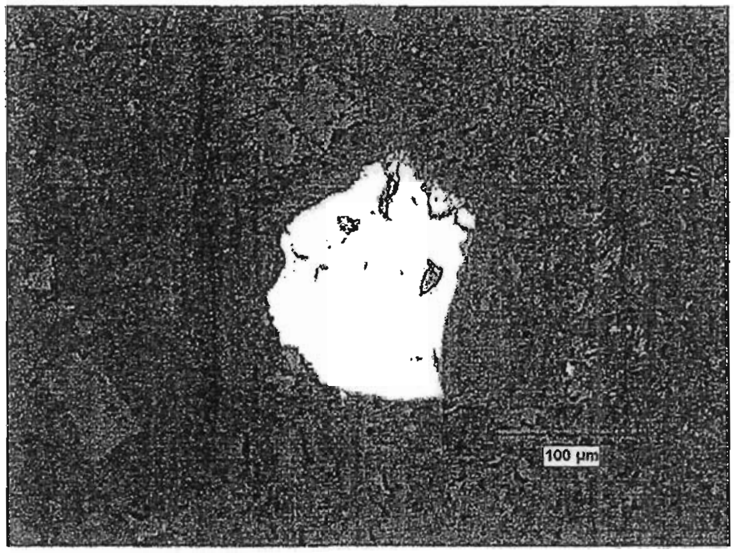

Figure 1.
Reflected Light (RL) photomicrograph of a liberated pyrrhotite grain. This grain does not show signs of oxidation.

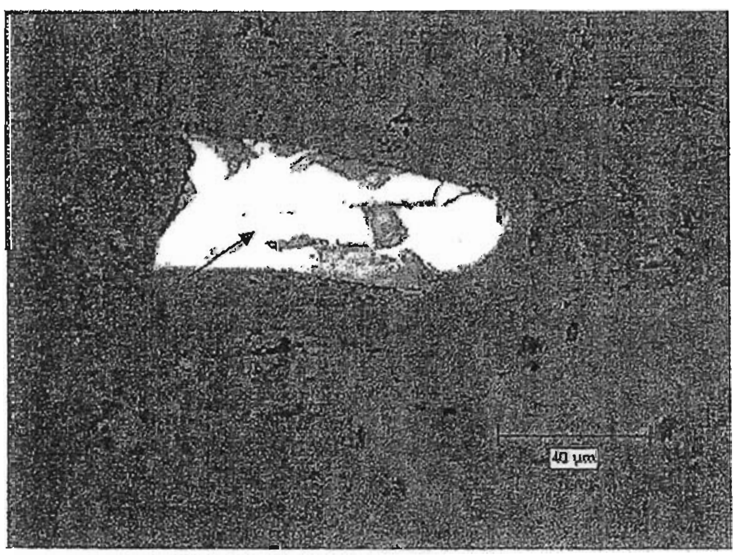

Figure 2.
RL photomicrograph of a liberated pyrrhotite grain, showing exsolution lamellae of pentlandite (indicated by arrow). There are no visible signs of oxidation on this grain; apparent discolouration is an artefact of sample preparation.

Test F30 Ro Tail

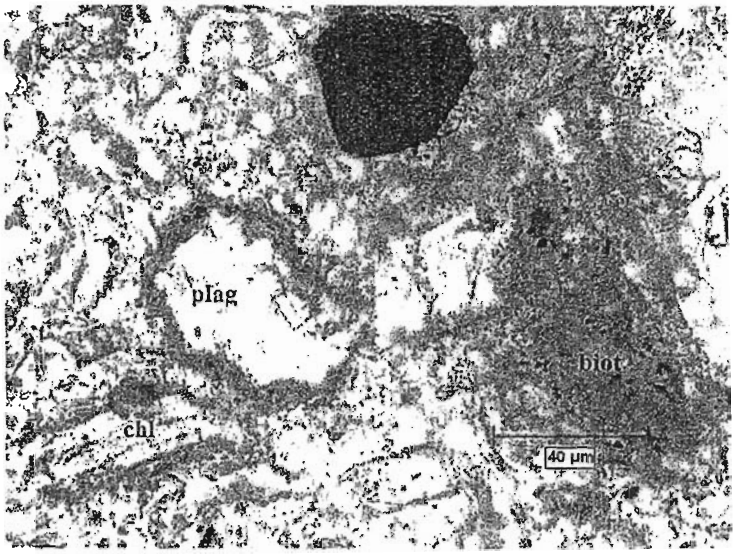

Figure 5.
Plane polarized transmitted light (PPTL) photomicrograph showing a liberated opaque mineral (black), chlorite (chl), plagioclase (plag), and biotite (biot).

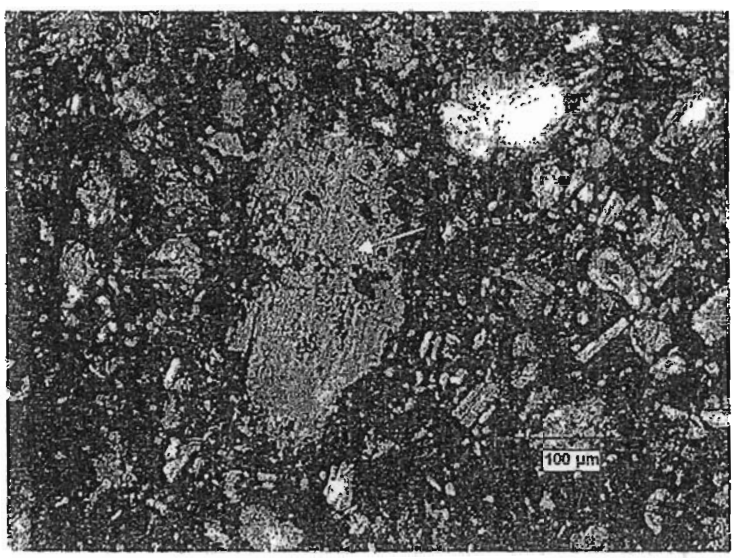

Figure 6.
Crossed polars transmitted light (XPTL) photomicrograph showing a large amphibole grain in centre altering to chlorite (white arrow). Fine (< 50 µm) grains of quartz, plagioclase, biotite, and amphibole are scattered throughout the photomicrograph.

Test F19 Flot Tail

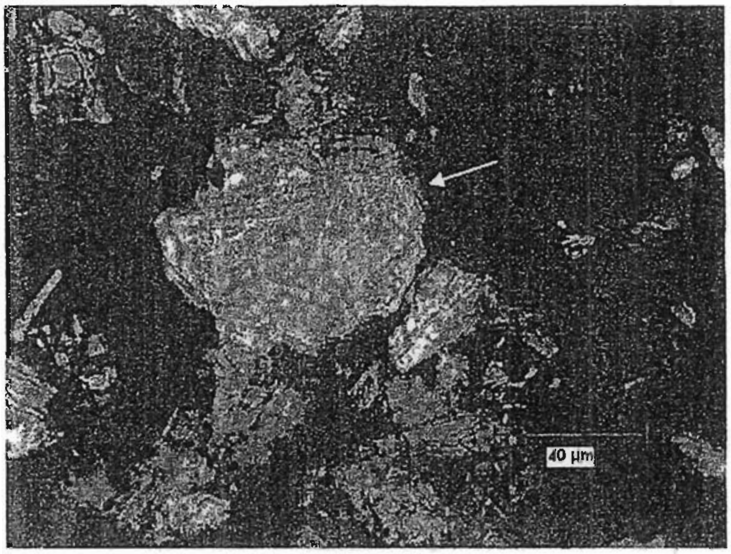

Figure 9.
XPTL photomicrograph showing a liberated carbonate grain (60 µm) in the centre (indicated by the white arrow).

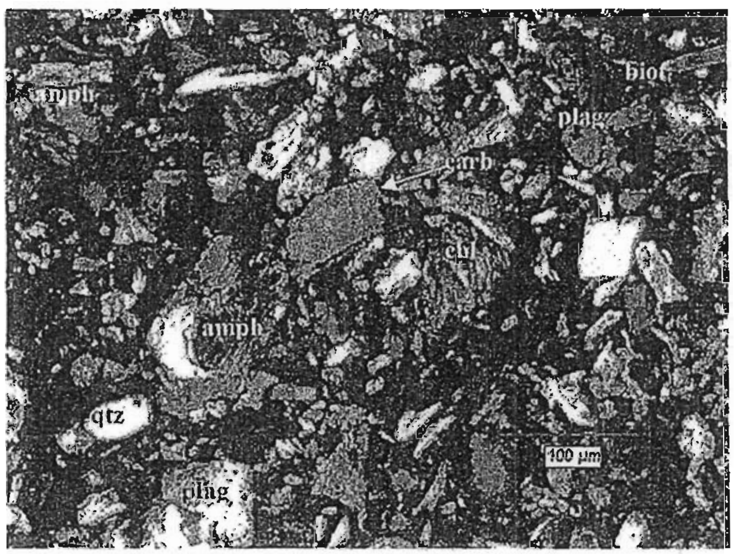

Figure 10.
XPTL photomicrograph showing a liberated carbonate grain near the centre (white arrow), surrounded by amphibole (amph), plagioclase (plag), quartz (qtz), chlorite and biotite.

Appendix 2

Assay Reconciliation and Whole Rock Analysis

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Phone: --
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Wednesday, August 03, 2005

Date Rec. : 28 July 2005
LR Report : CA01825-JUL05
Project : CALR-11016-001
Client Ref : MI5026-JUL05

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	V2O5 %	LOI %	Sum %
1: Test F30 Ro Tails	51.4	13.8	13.6	7.50	7.22	1.74	0.84	0.80	0.06	0.18	0.04	0.05	2.36	99.6
2: Comb Flot Tails Test F19	50.9	14.0	14.8	7.44	6.91	1.75	0.84	0.62	0.07	0.17	0.04	0.05	2.79	100.4

Debbie Waldon
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Project Coordinator,
Minerals Services, Analytical

SGS Lakefield Research Limited

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EXPERIMENTAL METHODS

The particle size of the sample **"SGS 11130 Proj. 11016-001"** was reduced to the optimum grain-size range for X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone Micronising Mill (McCrone Scientific Ltd., London, UK) for 7 minutes. Fine grain-size is an important factor in reducing micro-absorption contrast between phases.

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

RESULTS AND DISCUSSION

The X-ray diffractogram was analyzed using the International Centre for Diffraction Database PDF-4 using Search-Match software by Siemens (Bruker). X-ray powder-diffraction data were refined with Rietveld Topas 2.1 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinement are given in Table 1. These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plot is given in Figure 1.

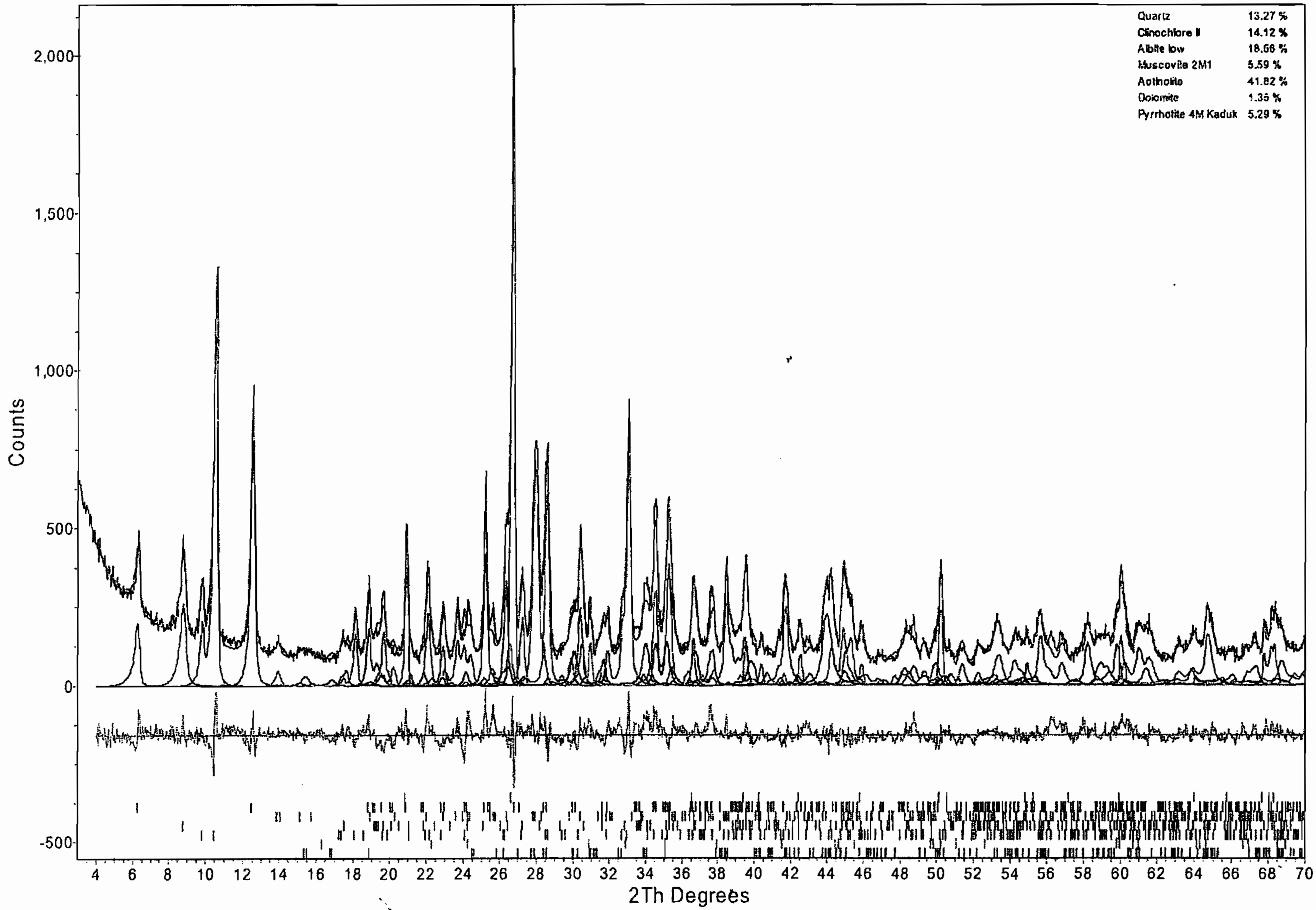

Figure 1. Rietveld refinement plot for sample **"SGS 11130 – Proj. 11016-001"** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

EXPERIMENTAL METHODS

The particle size of the sample **"SGS 11134 Proj. 11016-001"** was reduced to the optimum grain-size range for X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone Micronising Mill (McCrone Scientific Ltd., London, UK) for 7 minutes. Fine grain-size is an important factor in reducing micro-absorption contrast between phases.

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

RESULTS AND DISCUSSION

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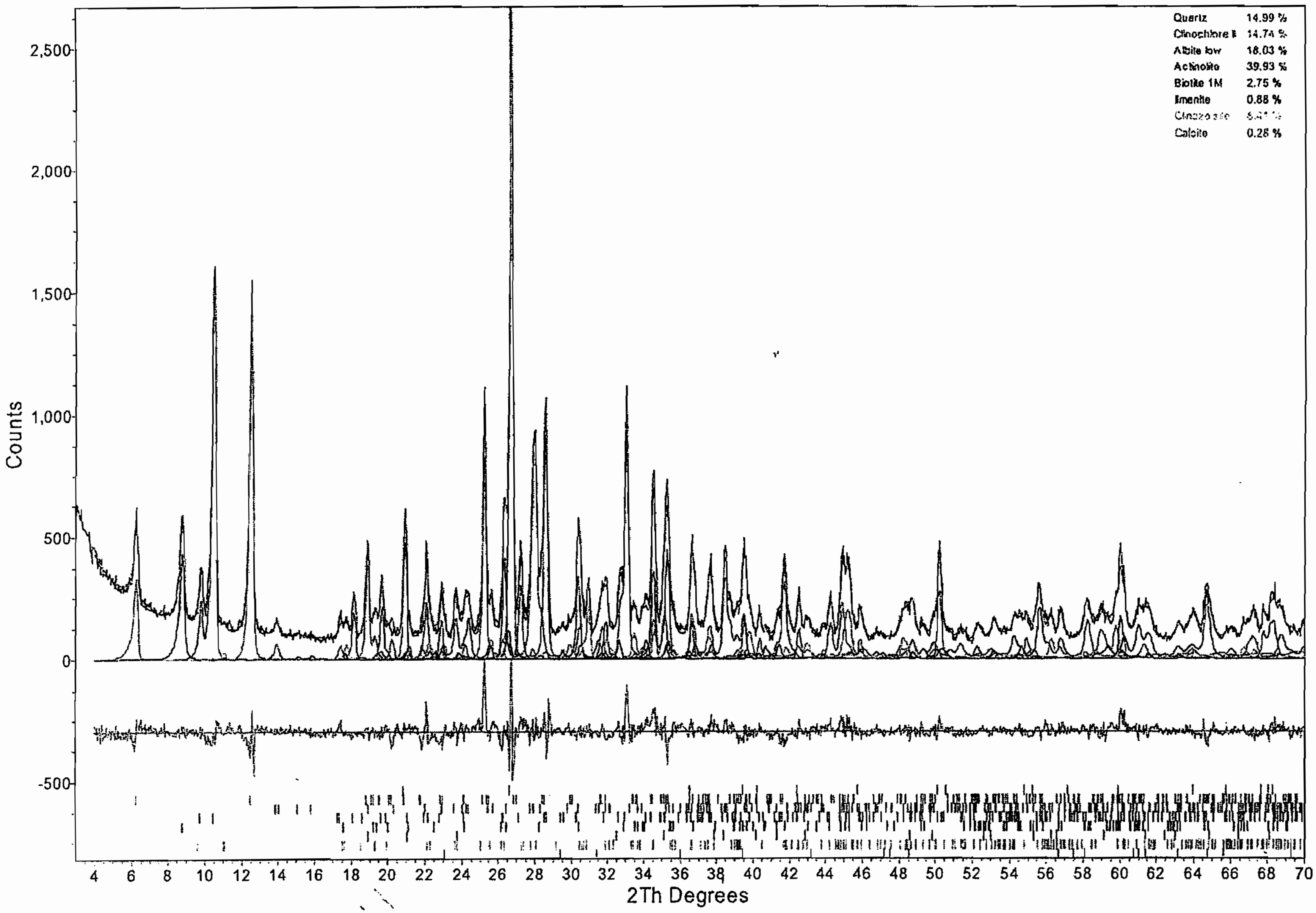


Figure 1. Rietveld refinement plot for sample **"SGS 11134 – Proj. 11016-001"** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

Whole Rock Analysis

Parameter	Units	Combined Flotation Tails Test F19	Test F30 Ro Tails
SiO_2	%	48.0	51.3
Al_2O_3	%	13.3	13.8
Fe_2O_3	%	15.7	13.6
MgO	%	7.10	7.49
CaO	%	7.10	7.17
Na_2O	%	1.63	1.62
K_2O	%	0.77	0.84
TiO_2	%	0.85	0.77
P_2O_5	%	0.06	0.06
MnO	%	0.18	0.18
Cr_2O_3	%	0.05	0.04
V_2O_5	%	0.04	0.04
LOI	%	2.76	2.41
Sum	%	97.5	99.4

LIMS 10352JUN05 and 10232JUL05

Modified ABA

Parameter	Units	Combined Flotation Tails Test F19	Test F30 Ro Tails
Paste pH	units	9.45	9.26
Fizz Rate	---	1	1
Sample	weight(g)	2.01	1.95
HCl added	mL	34.85	28.15
HCl	Normality	0.10	0.10
NaOH	Normality	0.10	0.10
NaOH to	pH=8.3 mL	26.95	22.80
Final pH	units	1.61	1.66
NP	t $CaCO_3$/1000 t	19.7	13.7
AP	t $CaCO_3$/1000 t	44.7	2.8
Net NP	t $CaCO_3$/1000 t	-25.0	10.9
NP/AP	ratio	0.44	4.9
S	%	1.81	0.16
$S^=$	%	1.43	0.09
SO_4	%	< 0.4	< 0.4
C(t)	%	0.09	0.07
CO_3	%	0.18	0.17
Calculated CO_3 NP	t $CaCO_3$/1000 t	2.99	2.82
Calculated CO_3 NP/AP	ratio	0.07	1.0

LIMS 10353JUN05 and 10233JUL05

TCLP 1311

Parameter	Units	MMER[1]	Combined Flotation Tails Test F19	Test F30 Ro Tails
Moisture	%		12.0	12.6
% solids	%		88.0	87.4
Sample	weight(g)		100.0	100.0
Ext. Fluid	#1 or #2		1	1
Ext. Volume	mL		1760.0	1747.0
Initial pH	units		5.05	5.00
Final pH	units		5.06	5.01
pH	units	6.0 - 9.5	**5.07**	**4.96**
Conductivity	uS/cm		5180	4290
Alkalinity	mg/L as $CaCO_3$		1600	1011.38
Acidity	mg/L as $CaCO_3$		136	< 2
SO_4	mg/L		14	13
Hg	mg/L		< 0.0001	< 0.1
Al	mg/L		0.81	1.04
As	mg/L	0.50	0.082	10.56
Ag	mg/L		< 0.0001	< 0.005
Ba	mg/L		1.65	1.82
Be	mg/L		< 0.005	< 0.001
B	mg/L		0.42	0.54
Bi	mg/L		0.0006	< 0.05
Ca	mg/L		51.5	37.9
Cd	mg/L		0.0008	< 0.005
Co	mg/L		0.109	0.02
Cr	mg/L		< 0.02	0.05
Cu	mg/L	0.30	0.0018	0.080
Fe	mg/L		9.42	6.97
K	mg/L		39.3	31.4
Li	mg/L		< 0.005	< 0.005
Mg	mg/L		5.18	4.11
Mn	mg/L		0.476	0.539
Mo	mg/L		< 0.0003	< 0.02
Ni	mg/L	0.50	**1.02**	0.23
Pb	mg/L	0.20	0.03	< 0.02
Sb	mg/L		0.0015	< 0.05
Se	mg/L		< 0.005	0.005
Sn	mg/L		< 0.001	< 0.1
Sr	mg/L		0.0993	0.0491
Ti	mg/L		< 0.003	< 0.005
Tl	mg/L		0.0006	< 0.1
U	mg/L		0.0032	< 2
V	mg/L		0.0014	< 0.002
W	mg/L		< 0.0002	< 0.05
Y	mg/L		0.0035	0.002
Zn	mg/L	0.50	**0.719**	**0.88**

LIMS 10354-JUN05 and 10235-JUL05

SGS

Shakespeare Property
Ursa Major Minerals Corporation
SGS Lakefield Reference No.: 11016-001

Combined FlotationTailings Test F19 - Ageing Tests

Parameter	Units	MMER[1]	Day 0	Day 1	Day 7	Day 14	Day 28	Day 56
LIMS			10293-JUN05	10319-JUN05	10423-JUN05	10548-JUN05	10194-JUL05	10191-AUG05
Temperature Upon	Receipt °C		22.2	22.0	21.6	13.4	27.1	23.9
Tot.Suspended Solids	mg/L		3440	89	16	5	3	< 2
pH	units	6.0 - 9.5	9.32	7.53	7.67	7.83	7.62	7.88
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2	< 2
Alkalinity	mg/L as $CaCO_3$		64	35	34	39*	52	52
Conductivity	uS/cm		232	241	247	290*	325	396
Tot.Dissolved Solids	mg/L		286	280	191	190*	243	266
F	mg/L		0.12	0.20	0.26	0.32	0.29	0.39
Cl	mg/L		18	17	17	18	17	17
SO_4	mg/L		16	56	35	49	85	120
NO_2	as N mg/L		< 0.6	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
NO_3	as N mg/L		< 0.5	0.11	< 0.05	< 0.05	< 0.05	< 0.05
$NH_3 + NH_4$	as N mg/L		0.1	< 0.1	0.2	0.2	< 0.1	< 0.1
Thiosalts	as S_2O_3 mg/L		25	28	22	15	< 10	< 10
Hg	mg/L		0.0010	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Ag	mg/L		0.0019	0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Al	mg/L		93.1	17.8	0.68	0.24	1.99	0.08
As	mg/L	0.50	0.11	0.026	0.015	0.028	0.011	0.11
Ba	mg/L		0.519	0.086	0.022	0.027	0.053	0.040
Be	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
B	mg/L		0.19	0.08	0.05	0.18	0.05	0.05
Bi	mg/L		0.0201	0.0022	< 0.0003	< 0.0003	< 0.0003	< 0.0003
Ca	mg/L		58.0	24.4	16.3	19.6	32.4	42.3
Cd	mg/L		0.0009	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Co	mg/L		0.132	0.0133	0.0006	0.0006	0.0032	0.0013
Cr	mg/L		0.441	0.052	0.002	0.002	0.010	< 0.001
Cu	mg/L	0.30	0.541	0.046	0.0009	0.0014	0.0065	< 0.0008
Fe	mg/L		140	19.3	0.44	0.14	2.20	< 0.02
K	mg/L		31.9	19.0	18.0	16.8	21.1	24.5
Li	mg/L		0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Mg	mg/L		50.4	12.9	1.70	2.21	5.30	4.68
Mn	mg/L		1.40	0.165	0.0064	0.0037	0.0437	0.0042
Mo	mg/L		0.0102	0.0143	0.0140	0.0180	0.0193	0.0224
Ni	mg/L	0.50	1.60	0.190	0.006	0.008	0.040	0.006
Pb	mg/L	0.20	0.106	0.0145	0.0005	0.0007	0.0018	< 0.0002
Sb	mg/L		0.0016	0.0034	0.0042	0.0055	0.0049	0.0041
Se	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Sn	mg/L		0.007	0.004	0.004	0.001	0.001	0.007
Sr	mg/L		0.237	0.0934	0.0590	0.0656	0.0963	0.124
Ti	mg/L		5.57	0.583	0.010	0.004	0.087	< 0.003
Tl	mg/L		0.0005	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
U	mg/L		0.0069	0.0010	0.0002	0.0004	0.0006	0.0014
V	mg/L		0.325	0.0442	0.0036	0.0023	0.0101	0.0037
W	mg/L		0.0012	0.0028	0.0028	0.0030	0.0018	0.0033
Y	mg/L		0.019	0.004	< 0.001	< 0.001	< 0.001	< 0.001
Zn	mg/L	0.50	0.163	0.021	0.001	< 0.001	0.007	< 0.001

**Results of reassay LIMS 10160AUG05*

---Results of reassay LIMS 10160AUG05 pending

APPENDIX C

Humidity Cell Analytical Tables

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

Combined Flotation Tailings Test F19
Dissolved Metal Concentrations in Humidity Cell Leachate

Parameter	Units	MMER*	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Date			June 24/05	July 1/05	July 8/05	July 15/05	July 22/05	July 29/05	Aug 5/05	Aug 12/05	Aug 17/05	Aug 26/05	Sept 2/05
LIMS #			10362JUN05	10459JUN05	10002JUL05	10124JUL05	10255JUL05	10346JUL05	10012AUG05	10114AUG05	10252AUG05	10378AUG05	10007SEP05
Hum Cell Leachate Vol	mLs		503	918	929	866	889	873	961	940	937	916	909
pH	units	6.0-9.5	8.03	7.40	7.24	6.97	6.80	6.95	6.93	6.71	6.99	6.73	***
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	***
Alkalinity	mg/L as $CaCO_3$		14	9	7	6	5	5	5	5	4	3	***
Conductivity	uS/cm		55	81	90	87	114	137	147	137	134	138	***
SO_4	mg/L		6.5	22	29	28	45	51	55	52	57	55	65
Hg	µg/L		<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	---	---	---	---	< 0.1
Ag	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	---	---	---	---	< 0.0001
Al	mg/L		0.32	0.04	0.03	0.05	0.02	0.02	---	---	---	---	< 0.01
As	mg/L	0.50	0.021	0.020	0.018	0.020	0.012	0.014	---	---	---	---	0.002
Ba	mg/L		0.010	0.014	0.012	0.013	0.011	0.011	---	---	---	---	0.007
Be	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	---	---	---	---	< 0.005
B	mg/L		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	---	---	---	---	< 0.01
Bi	mg/L		< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	< 0.0003	---	---	---	---	< 0.0003
Ca	mg/L		7.07	8.13	9.44	9.71	14.6	17.5	---	---	---	---	16.9
Cd	mg/L		0.0002	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	---	---	---	---	< 0.0001
Co	mg/L		< 0.0003	0.0005	0.0006	0.0004	0.0003	0.0006	---	---	---	---	0.0006
Cr	mg/L		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.020	---	---	---	---	< 0.001
Cu	mg/L	0.30	0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008	< 0.0008	---	---	---	---	< 0.0008
Fe	mg/L		0.06	< 0.02	< 0.02	< 0.02	< 0.02	0.03	---	---	---	---	< 0.02
K	mg/L		3.19	3.98	4.18	3.23	4.36	3.91	---	---	---	---	2.95
Li	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	---	---	---	---	< 0.005
Mg	mg/L		0.497	1.32	1.58	1.70	2.08	2.24	---	---	---	---	2.23
Mn	mg/L		0.0008	0.0026	0.0027	0.0030	0.0025	0.0035	---	---	---	---	0.0048
Mo	mg/L		0.0011	0.0029	0.0030	0.0034	0.0030	0.0024	---	---	---	---	0.0016
Ni	mg/L	0.50	0.002	0.003	0.003	0.002	0.001	0.002	---	---	---	---	0.003
Pb	mg/L	0.20	0.0052	0.0013	0.0005	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	< 0.0002
Sb	mg/L		0.0007	0.0011	0.0010	0.0007	0.0013	0.0007	---	---	---	---	0.0006
Se	mg/L		< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	---	---	---	---	< 0.005
Sn	mg/L		0.051	0.026	0.011	0.005	0.004	0.002	---	---	---	---	< 0.001
Sr	mg/L		0.0133	0.0207	0.0236	0.0215	0.0289	0.0314	---	---	---	---	0.0249
Ti	mg/L		< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	---	---	---	---	< 0.003
Tl	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	< 0.0002
U	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	< 0.0002
V	mg/L		0.0011	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	---	---	---	---	< 0.0009
W	mg/L		< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	---	---	---	---	< 0.0002
Y	mg/L		< 0.001	< 0.001	< 0.001	< 0.001	< 0.0001	< 0.001	---	---	---	---	< 0.001
Zn	mg/L	0.50	0.001	0.001	0.002	< 0.001	< 0.001	0.002	---	---	---	---	0.002

Week #0 signifies the initial flooding of the humidity cell initiating the 20 week test period.

--- Not analysed.

****Analytical results not available due to sample contamination.*

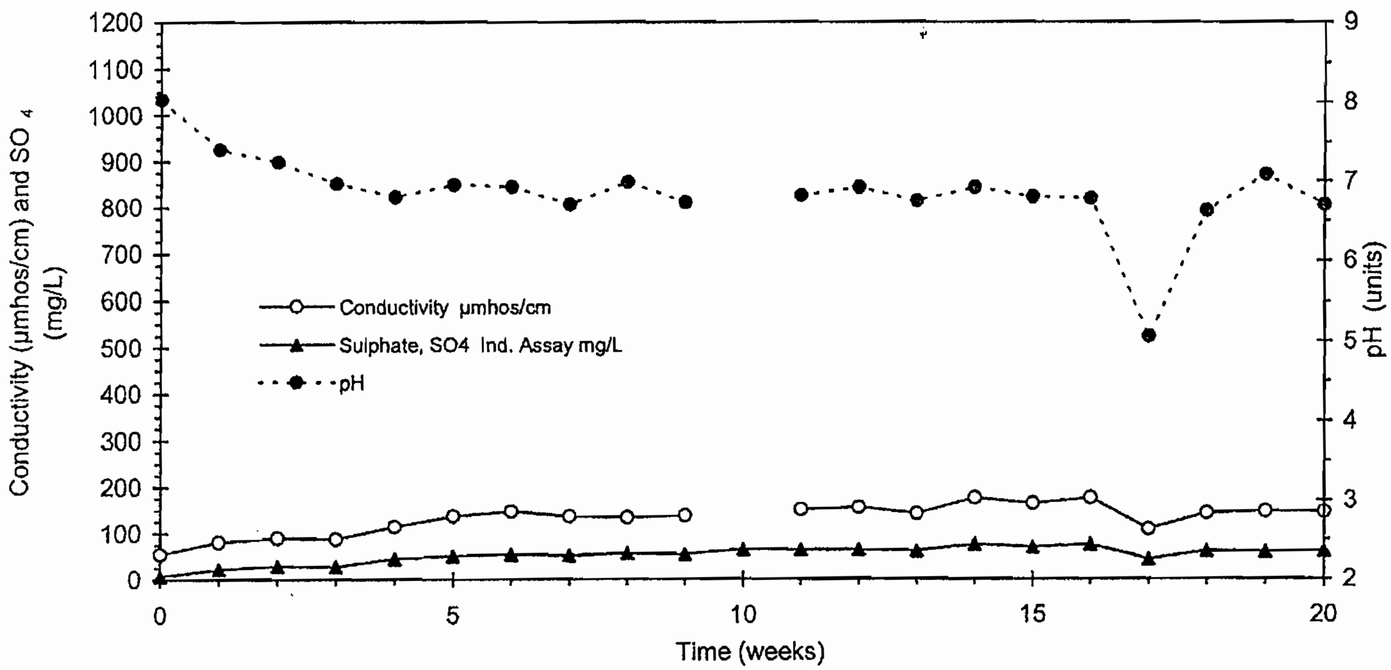
This report refers to the samples as-received. SGS Lakefield Research is not responsible for any use of this data beyond the result of this test method.

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

E7-73

Humidity Cell Test Report (ASTM D 5744-96)
Sample I.D.: Combined Flotation Tailings Test F19

Conductivity, Sulphate and pH vs. Time



This report refers to the samples as-received. SGS Lakefield Research is not responsible for any use of this data beyond the result of this test method.

E7-75

Shakespeare Property
Ursa Major Minerals Incorporated
SGS Lakefield Ref. No. 11016-001

SGS

Humidity Cell Test Report (ASTM D 5744-96)

Head Assay

Parameter	Units	Value
S%:	%	0.16
$S^=$%:	%	0.09
NP:	t $CaCO_3$/1000 tonne of material	13.7
CO_3 NP:	t $CaCO_3$/1000 tonne of material	2.8

Sample I.D.: Test F30 Rougher Tailings (S reduced)
Sample Weight: 1000 g
NP results from Modified ABA Testing
LIMS Ref. # 10353JUN05

	Leachate Analyses					Sulphate (SO_4)			Sulphide Depletion		NP Depletion		
Week	Leachate Volume mL	pH units	Acidity $CaCO_3$ eq. mg/L	Alkalinity $CaCO_3$ eq. mg/L	Conductivity µmhos/cm	Ind. Assay mg/L	Production Rate g/t/wk	Cum. Production g/t	Ind Depletion %	$S^=$ Calc. Cum. Depletion %	Calculated Consumption $CaCO_3$, g/t/wk	NP Calc. Cum. Depletion %	CO_3 NP Calc. Cum. Depletion %
0	542	7.77	< 2	27	140	33	17.9	17.9	0.66	0.66	18.63	0.14	0.66
1	980	7.54	< 2	33	143	33	32.3	50.2	1.20	1.86	33.69	0.38	1.86
2	965	7.61	< 2	33	101	13	12.5	62.8	0.46	2.32	13.07	0.48	2.32
3	988	7.11	< 2	11	28	3.3	3.3	66.0	0.12	2.45	3.40	0.50	2.44
4	965	7.45	< 2	17	52	6.3	6.1	72.1	0.23	2.67	6.33	0.55	2.66
5	981	7.45	< 2	22	56	6.2	6.1	78.2	0.23	2.90	6.34	0.59	2.89
6	987	7.47	< 2	16	48	4.9	4.8	83.0	0.18	3.08	5.04	0.63	3.07
7	980	7.25	< 2	7	24	1.5	1.5	84.5	0.05	3.13	1.53	0.64	3.12
8	976	7.39	< 2	8	23	1.3	1.3	85.8	0.05	3.18	1.32	0.65	3.17
9	966	7.37	< 2	9	26	2.7	2.6	88.4	0.10	3.27	2.72	0.67	3.26
10	948	7.00	< 2	7	21	2.3	2.2	90.6	0.08	3.35	2.27	0.69	3.35
11	938	7.11	< 2	6	22	2.4	2.3	92.8	0.08	3.44	2.35	0.71	3.43
12	896	7.06	< 2	3	12	1.2	1.1	93.9	0.04	3.48	1.12	0.71	3.47
13	954	7.14	< 2	6	21	2.5	2.4	96.3	0.09	3.57	2.48	0.73	3.56
14	961	7.33	< 2	9	29	4.2	4.0	100.3	0.15	3.71	4.20	0.76	3.71
15	930	7.17	< 2	7	22	2.6	2.4	102.7	0.09	3.80	2.52	0.78	3.79
Maximum Value		7.77	-	33	143	33	32.3	-	1.20	-	33.69	-	-
Minimum Value		7.00	-	3	12	1	1.1	-	0.04	-	1.12	-	-
Average Value		7.28	-	14	48	8	6.4	-	0.24	-	6.69	-	-

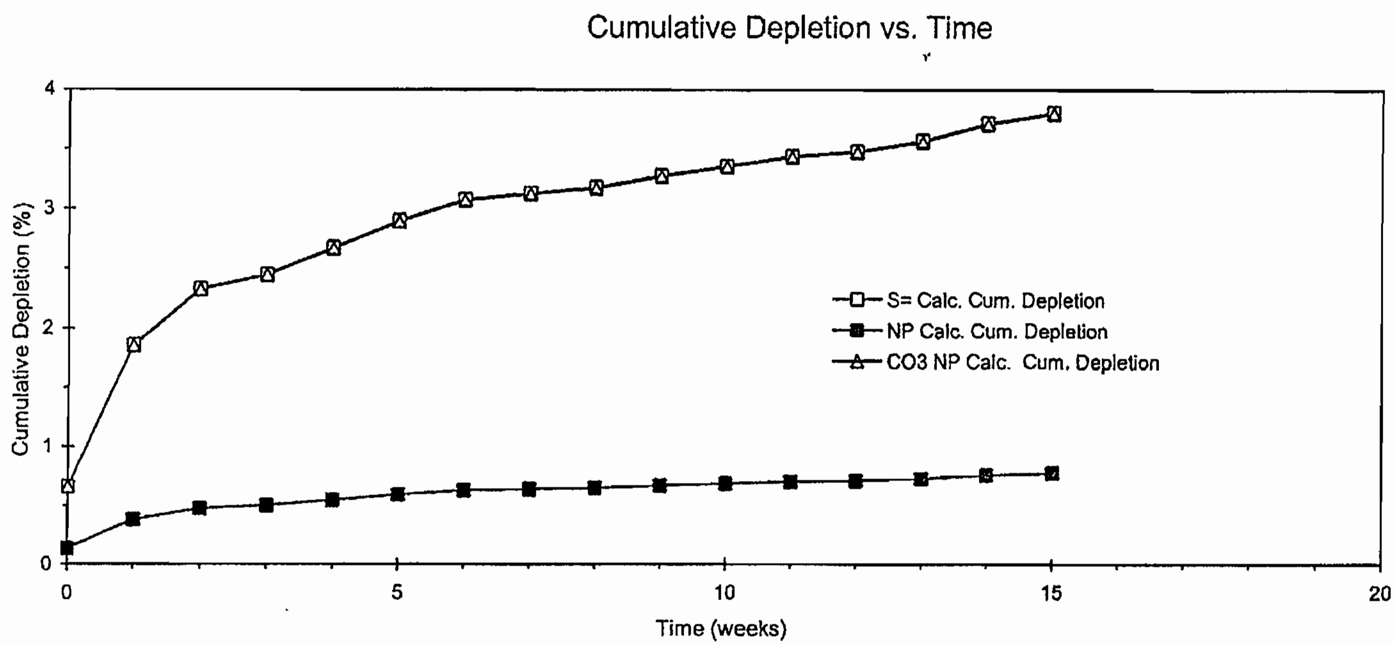
Test F30 Rougher Tailings
Dissolved Metal Concentrations

Parameter	Units	MMER*	Week 11	Week 12	Week 13	Week 14	Week 15
Date			Oct 14/05	Oct 21/05	Oct 28/05	Nov 4/05	Nov 11/05
LIMS #			10182OCT05	10292OCT05	10456OCT05	10009NOV05	10096NOV05
HumCell Leachate Vol	mLs		938	896	954	961	930
pH	units	6.0-9.5	7.11	7.06	7.14	7.33	7.17
Acidity	mg/L as $CaCO_3$		< 2	< 2	< 2	< 2	< 2
Alkalinity	mg/L as $CaCO_3$		6	3	6	9	7
Conductivity	uS/cm		22	12	21	29	22
SO_4	mg/L		2.4	1.2	2.5	4.2	2.6
Hg	µg/L		---	---	---	---	< 0.1
Ag	mg/L		---	---	---	---	< 0.0001
Al	mg/L		---	---	---	---	0.03
As	mg/L	0.50	---	---	---	---	0.003
Ba	mg/L		---	---	---	---	0.005
Be	mg/L		---	---	---	---	< 0.005
B	mg/L		---	---	---	---	< 0.01
Bi	mg/L		---	---	---	---	< 0.0003
Ca	mg/L		---	---	---	---	2.23
Cd	mg/L		---	---	---	---	< 0.0001
Co	mg/L		---	---	---	---	< 0.0003
Cr	mg/L		---	---	---	---	< 0.001
Cu	mg/L	0.30	---	---	---	---	< 0.0008
Fe	mg/L		---	---	---	---	< 0.02
K	mg/L		---	---	---	---	1.38
Li	mg/L		---	---	---	---	< 0.005
Mg	mg/L		---	---	---	---	0.404
Mn	mg/L		---	---	---	---	0.0013
Mo	mg/L		---	---	---	---	0.0004
Ni	mg/L	0.50	---	---	---	---	< 0.001
Pb	mg/L	0.20	---	---	---	---	< 0.0002
Sb	mg/L		---	---	---	---	< 0.0004
Se	mg/L		---	---	---	---	< 0.005
Sn	mg/L		---	---	---	---	0.002
Sr	mg/L		---	---	---	---	0.0048
Ti	mg/L		---	---	---	---	< 0.003
Tl	mg/L		---	---	---	---	< 0.0002
U	mg/L		---	---	---	---	< 0.0002
V	mg/L		---	---	---	---	< 0.0009
W	mg/L		---	---	---	---	< 0.0002
Y	mg/L		---	---	---	---	< 0.001
Zn	mg/L	0.50	---	---	---	---	< 0.001

--- Not analysed.

SGS

Humidity Cell Test Report (ASTM D 5744-96)
Sample I.D.: Test F30 Rougher Tailings



SGS

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

Project: CALR-11016-001

Environmental Services
Attn : Linda Elliott marilyn.kelly@sgs.com

Tuesday, June 28, 2005

Date Rec. : 24 June 2005
LR Report: **CA10362-JUN05**
Reference: Shakespeare wk#0

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19 Wk # 0
Sample Date & Time			21-Jun-05
Hum Cell Leachate Volume [mLs]	---	---	503
pH [no unit]	24-Jun-05	13:15	8.03
Acidity [mg/L as CaCO3]	27-Jun-05	10:40	< 2
Alkalinity [mg/L as CaCO3]	24-Jun-05	13:15	14
Conductivity [uS/cm]	24-Jun-05	13:15	55
Sulphate [mg/L]	24-Jun-05	08:05	6.5
Mercury [ug/L]	28-Jun-05	07:38	< 0.1
Silver [mg/L]	27-Jun-05	10:11	< 0.0001
Aluminum [mg/L]	24-Jun-05	10:29	0.32
Arsenic [mg/L]	27-Jun-05	09:28	0.021
Barium [mg/L]	27-Jun-05	10:11	0.010
Beryllium [mg/L]	27-Jun-05	10:11	< 0.005
Boron [mg/L]	24-Jun-05	10:29	< 0.01
Bismuth [mg/L]	27-Jun-05	10:11	< 0.0003
Calcium [mg/L]	24-Jun-05	10:29	7.07
Cadmium [mg/L]	27-Jun-05	10:11	0.0002
Cobalt [mg/L]	27-Jun-05	10:12	< 0.0003
Chromium [mg/L]	27-Jun-05	10:12	< 0.001
Copper [mg/L]	27-Jun-05	10:12	0.0008
Iron [mg/L]	24-Jun-05	10:29	0.06
Potassium [mg/L]	24-Jun-05	10:29	3.19
Lithium [mg/L]	24-Jun-05	10:29	< 0.005
Magnesium [mg/L]	24-Jun-05	10:29	0.497
Manganese [mg/L]	27-Jun-05	10:12	0.0008
Molydenum [mg/L]	27-Jun-05	10:12	0.0011
Nickel [mg/L]	27-Jun-05	10:12	0.002
Lead [mg/L]	27-Jun-05	10:12	0.0052
Antimony [mg/L]	27-Jun-05	10:12	0.0007
Selenium [mg/L]	27-Jun-05	09:28	< 0.005

OnLine LIMS

SGS

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

Project : CALR-11016-001

Environmental Services
Attn : Linda Eliott marilyn.kelly@sgs.com

Monday, July 11, 2005

Date Rec. : 01 July 2005
LR Report: **CA10459-JUN05**
Reference: Shakespeare wk#1

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotaion Tails Test F19 WK # 1
Sample Date & Time			28-Jun-05
Hum Cell Leachate Volume [mLs]	05-Jul-05	15:56	918
pH [no unit]	05-Jul-05	14:48	7.40
Acidity [mg/L as CaCO3]	05-Jul-05	14:48	< 2
Alkalinity [mg/L as CaCO3]	05-Jul-05	14:48	9
Conductivity [uS/cm]	05-Jul-05	14:48	81
Sulphate [mg/L]	04-Jul-05	14:33	22
Mercury [ug/L]	05-Jul-05	07:12	< 0.1
Silver [mg/L]	11-Jul-05	11:28	< 0.0001
Aluminum [mg/L]	05-Jul-05	15:34	0.04
Arsenic [mg/L]	04-Jul-05	09:38	0.020
Barium [mg/L]	11-Jul-05	11:28	0.014
Beryllium [mg/L]	11-Jul-05	11:28	< 0.005
Boron [mg/L]	05-Jul-05	15:34	< 0.01
Bismuth [mg/L]	11-Jul-05	11:28	< 0.0003
Calcium [mg/L]	05-Jul-05	15:34	8.13
Cadmium [mg/L]	11-Jul-05	11:28	0.0001
Cobalt [mg/L]	11-Jul-05	11:28	0.0005
Chromium [mg/L]	11-Jul-05	11:28	< 0.001
Copper [mg/L]	11-Jul-05	11:28	< 0.0008
Iron [mg/L]	05-Jul-05	15:34	< 0.02
Potassium [mg/L]	05-Jul-05	15:34	3.98
Lithium [mg/L]	05-Jul-05	15:34	< 0.005
Magnesium [mg/L]	05-Jul-05	15:34	1.32
Manganese [mg/L]	11-Jul-05	11:29	0.0026
Molydenum [mg/L]	11-Jul-05	11:29	0.0029
Nickel [mg/L]	11-Jul-05	11:29	0.003
Lead [mg/L]	11-Jul-05	11:29	0.0013

OnLine LIMS

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Project : CALR-11016-001

Environmental Services
Attn : Linda Elliott marilyn.kelly@sgs.com

Thursday, July 14, 2005

Date Rec. : 08 July 2005
LR Report: **CA10002-JUL05**
Reference: Shakespeare wk#2

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19 Wk# 2
Sample Date & Time>			05-July-05
Hum Cell Leachate Volume [mLs]	---	---	929
pH [no unit]	11-Jul-05	12:36	7.24
Acidity [mg/L as CaCO3]	11-Jul-05	12:36	< 2
Alkalinity [mg/L as CaCO3]	11-Jul-05	12:36	7
Conductivity [uS/cm]	11-Jul-05	12:36	90
Sulphate [mg/L]	11-Jul-05	09:50	29
Mercury [ug/L]	11-Jul-05	09:03	< 0.1
Silver [mg/L]	13-Jul-05	19:18	< 0.0001
Aluminum [mg/L]	14-Jul-05	12:28	0.03
Arsenic [mg/L]	13-Jul-05	03:24	0.018
Barium [mg/L]	13-Jul-05	19:18	0.012
Beryllium [mg/L]	13-Jul-05	19:18	< 0.005
Boron [mg/L]	14-Jul-05	12:28	< 0.01
Bismuth [mg/L]	13-Jul-05	19:18	< 0.0003
Calcium [mg/L]	14-Jul-05	12:28	9.44
Cadmium [mg/L]	13-Jul-05	19:18	< 0.0001
Cobalt [mg/L]	13-Jul-05	19:18	0.0006
Chromium [mg/L]	13-Jul-05	19:18	< 0.001
Copper [mg/L]	13-Jul-05	19:18	< 0.0008
Iron [mg/L]	14-Jul-05	12:28	< 0.02
Potassium [mg/L]	14-Jul-05	12:28	4.18
Lithium [mg/L]	14-Jul-05	12:28	< 0.005
Magnesium [mg/L]	14-Jul-05	12:28	1.58
Manganese [mg/L]	13-Jul-05	19:18	0.0027
Molydenum [mg/L]	13-Jul-05	19:18	0.0030
Nickel [mg/L]	13-Jul-05	19:18	0.003
Lead [mg/L]	13-Jul-05	19:18	0.0005

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Environmental Services
Attn : Linda Elliot

July 27, 2005

Date Rec. : 15 July 2005
LR. Ref. : **CA10124-JUL05**
Project : CALR-11016-001

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	**3: Analysis Approval Date**	**4: Analysis Approval Time**	**5: Combined Flotation Tails Test F19 Wk# 3**
Sample Date & Time			12-Jul-05
HumCell Leachate Vol [mLs]	18-Jul-05	12:19	866
pH [units]	20-Jul-05	08:59	6.97
Acidity [mg/L as CaCO3]	20-Jul-05	08:59	< 2
Alkalinity [mg/L as CaCO3]	20-Jul-05	08:59	6
Conductivity [uS/cm]	20-Jul-05	08:59	87
SO4 [mg/L]	18-Jul-05	12:33	28
Hg [µg/L]	20-Jul-05	13:47	< 0.1
Ag [mg/L]	22-Jul-05	09:16	< 0.0001
Al [mg/L]	19-Jul-05	11:24	0.05
As [mg/L]	18-Jul-05	09:02	0.020
Ba [mg/L]	22-Jul-05	09:16	0.013
Be [mg/L]	22-Jul-05	09:16	< 0.005
B [mg/L]	19-Jul-05	11:24	< 0.01
Bi [mg/L]	22-Jul-05	09:16	< 0.0003
Ca [mg/L]	19-Jul-05	11:24	9.71
Cd [mg/L]	22-Jul-05	09:16	< 0.0001
Co [mg/L]	22-Jul-05	09:16	0.0004
Cr [mg/L]	22-Jul-05	09:16	< 0.001
Cu [mg/L]	22-Jul-05	09:16	< 0.0008
Fe [mg/L]	19-Jul-05	11:24	< 0.02
K [mg/L]	19-Jul-05	11:24	3.23
Li [mg/L]	19-Jul-05	11:24	< 0.005
Mg [mg/L]	19-Jul-05	11:24	1.70

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Project : CALR-11016-001

Environmental Services
Attn : Linda Eliiott marilyn.kelly@sgs.com

Thursday, August 04, 2005

Date Rec. : 22 July 2005
LR Report: CA10255-JUL05
Reference: Shakespeare wk#4

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19 Wk # 4
Sample Date & Time			19-Jul-05
Hum Cell Leachate Volume [mLs]	29-Jul-05	13:22	889
pH [no unit]	26-Jul-05	15:52	6.80
Acidity [mg/L as CaCO3]	26-Jul-05	15:52	< 2
Alkalinity [mg/L as CaCO3]	26-Jul-05	15:52	5
Conductivity [uS/cm]	26-Jul-05	15:52	114
Sulphate [mg/L]	25-Jul-05	11:36	45
Mercury [ug/L]	26-Jul-05	13:46	< 0.1
Silver [mg/L]	02-Aug-05	09:03	< 0.0001
Aluminum [mg/L]	26-Jul-05	10:25	0.02
Arsenic [mg/L]	27-Jul-05	11:17	0.012
Barium [mg/L]	02-Aug-05	09:03	0.011
Beryllium [mg/L]	02-Aug-05	09:03	< 0.005
Boron [mg/L]	26-Jul-05	10:25	< 0.01
Bismuth [mg/L]	02-Aug-05	09:03	< 0.0003
Calcium [mg/L]	26-Jul-05	10:25	14.6
Cadmium [mg/L]	02-Aug-05	09:03	< 0.0001
Cobalt [mg/L]	02-Aug-05	09:03	0.0003
Chromium [mg/L]	02-Aug-05	09:03	< 0.001
Copper [mg/L]	02-Aug-05	09:03	< 0.0008
Iron [mg/L]	26-Jul-05	10:26	< 0.02
Potassium [mg/L]	26-Jul-05	10:26	4.36
Lithium [mg/L]	26-Jul-05	10:26	< 0.005
Magnesium [mg/L]	26-Jul-05	10:26	2.08
Manganese [mg/L]	02-Aug-05	09:03	0.0025
Molydenum [mg/L]	02-Aug-05	09:03	0.0030
Nickel [mg/L]	02-Aug-05	09:03	0.001
Lead [mg/L]	02-Aug-05	09:03	< 0.0002

Online LIMS

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Monday, August 29, 2005

Date Rec. : 29 July 2005
LR Report: CA10346-JUL05
Reference: Shakespeare wk#5

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19 WK # 5
Sample Date & Time			26-Jul-05
Hum Cell Leachate Volume [mLs]	03-Aug-05	09:00	873
pH [no unit]	29-Aug-05	12:58	6.95
Acidity [mg/L as CaCO3]	29-Aug-05	12:58	< 2
Alkalinity [mg/L as CaCO3]	29-Aug-05	12:58	5
Conductivity [uS/cm]	29-Aug-05	12:58	137
Sulphate [mg/L]	08-Aug-05	08:01	51
Mercury [ug/L]	03-Aug-05	14:16	< 0.1
Silver [mg/L]	03-Aug-05	14:10	< 0.0001
Aluminum [mg/L]	03-Aug-05	11:23	0.02
Arsenic [mg/L]	09-Aug-05	09:51	0.014
Barium [mg/L]	03-Aug-05	14:10	0.011
Beryllium [mg/L]	03-Aug-05	14:10	< 0.005
Boron [mg/L]	03-Aug-05	11:23	< 0.01
Bismuth [mg/L]	03-Aug-05	14:10	< 0.0003
Calcium [mg/L]	03-Aug-05	11:23	17.5
Cadmium [mg/L]	03-Aug-05	14:10	< 0.0001
Cobalt [mg/L]	03-Aug-05	14:10	0.0006
Chromium [mg/L]	03-Aug-05	14:10	0.020
Copper [mg/L]	03-Aug-05	14:10	< 0.0008
Iron [mg/L]	03-Aug-05	11:23	0.03
Potassium [mg/L]	03-Aug-05	11:23	3.91
Lithium [mg/L]	03-Aug-05	11:23	< 0.005
Magnesium [mg/L]	03-Aug-05	11:23	2.24
Manganese [mg/L]	03-Aug-05	14:10	0.0035
Molydenum [mg/L]	03-Aug-05	14:10	0.0024
Nickel [mg/L]	03-Aug-05	14:10	0.002
Lead [mg/L]	03-Aug-05	14:10	< 0.0002
Antimony [mg/L]	03-Aug-05	14:11	0.0007

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Project : CALR-11016-001

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Monday, August 15, 2005

Date Rec. : 05 August 2005
LR Report: **CA10012-AUG05**
Reference: Shakespeare wk#6

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined FLotation Tails Test F19 Wk # 6
Sample Date & Time			02-Aug-05
Hum Cell Leachate Volume [mLs]	05-Aug-05	15:32	961
pH [no unit]	12-Aug-05	13:10	6.93
Acidity [mg/L as CaCO3]	12-Aug-05	13:10	< 2
Alkalinity [mg/L as CaCO3]	12-Aug-05	13:10	5
Conductivity [uS/cm]	15-Aug-05	10:11	147
Sulphate [mg/L]	09-Aug-05	13:15	55

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

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Project : CALR-11016-001

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Attn : Jenn LaBelle marilyn.kelly@sgs.com

Tuesday, August 23, 2005

Date Rec. : 17 August 2005
LR Report: **CA10252-AUG05**
Reference: Shakespeare wk#8

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19 WK # 8
Sample Date & Time			16-Aug-05
Hum Cell Leachate Volume [mLs]	19-Aug-05	08:53	937
pH [no unit]	19-Aug-05	09:00	6.99
Acidity [mg/L as CaCO3]	19-Aug-05	09:00	< 2
Alkalinity [mg/L as CaCO3]	19-Aug-05	09:00	4
Conductivity [uS/cm]	19-Aug-05	09:00	134
Sulphate [mg/L]	18-Aug-05	15:15	57

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Tuesday, September 13, 2005

Date Rec. : 02 September 2005
LR Report: **CA10007-SEP05**
Reference: Shakespeare wk#10

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	**3: Analysis Approval Date**	**4: Analysis Approval Time**	**5: Combined Flotation Tails Test F19 Wk # 10**
Sample Date & Time			30-Aug-05
Hum Cell Leachate Volume [mLs]	02-Sep-05	09:25	909
pH [no unit]	06-Sep-05	13:14	3.57
Acidity [mg/L as CaCO3]	09-Sep-05	08:39	118
Alkalinity [mg/L as CaCO3]	06-Sep-05	13:14	< 2
Conductivity [uS/cm]	06-Sep-05	13:14	1200
Sulphate [mg/L]	02-Sep-05	12:02	65
Mercury [ug/L]	02-Sep-05	14:04	< 0.1
Silver [mg/L]	08-Sep-05	11:42	< 0.0001
Aluminum [mg/L]	08-Sep-05	09:02	< 0.01
Arsenic [mg/L]	13-Sep-05	10:00	0.002
Barium [mg/L]	08-Sep-05	11:42	0.007
Beryllium [mg/L]	08-Sep-05	11:42	< 0.005
Boron [mg/L]	08-Sep-05	09:02	< 0.01
Bismuth [mg/L]	08-Sep-05	11:42	< 0.0003
Calcium [mg/L]	08-Sep-05	09:02	16.9
Cadmium [mg/L]	08-Sep-05	11:42	< 0.0001
Cobalt [mg/L]	08-Sep-05	11:42	0.0006
Chromium [mg/L]	08-Sep-05	11:42	< 0.001
Copper [mg/L]	08-Sep-05	11:42	< 0.0008
Iron [mg/L]	08-Sep-05	09:02	< 0.02
Potassium [mg/L]	08-Sep-05	09:02	2.95
Lithium [mg/L]	08-Sep-05	09:02	< 0.005
Magnesium [mg/L]	08-Sep-05	09:02	2.23
Manganese [mg/L]	08-Sep-05	11:42	0.0048
Molydenum [mg/L]	08-Sep-05	11:42	0.0016
Nickel [mg/L]	08-Sep-05	11:42	0.003
Lead [mg/L]	08-Sep-05	11:42	< 0.0002

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Thursday, September 15, 2005

Date Rec. : 09 September 2005
LR Report: **CA12081-SEP05**
Reference: Shakespeare wk#11

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	**3: Analysis Approval Date**	**4: Analysis Approval Time**	**5: Combined Flotation Tails Test F19 WK#11**
Sample Date & Time			06-Sep-05
Hum Cell Leachate Volume [mLs]	12-Sep-05	10:46	948
pH [no unit]	13-Sep-05	15:24	6.82
Acidity [mg/L as CaCO3]	13-Sep-05	15:24	< 2
Alkalinity [mg/L as CaCO3]	13-Sep-05	15:24	4
Conductivity [uS/cm]	13-Sep-05	15:24	151
Sulphate [mg/L]	13-Sep-05	15:35	64

Brian Graham B.Sc.
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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Wednesday, September 28, 2005

Date Rec. : 23 September 2005
LR Report: CA10274-SEP05
Reference: Shakespeare wk#13

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Foltation Tails Test F19 WK # 13
Sample Date & Time			20-Sep-05
Hum Cell Leachate Volume [mLs]	26-Sep-05	10:53	913
pH [no unit]	28-Sep-05	09:36	6.75
Acidity [mg/L as CaCO3]	28-Sep-05	09:36	< 2
Alkalinity [mg/L as CaCO3]	28-Sep-05	09:36	8
Conductivity [uS/cm]	28-Sep-05	09:36	142
Sulphate [mg/L]	26-Sep-05	12:17	61

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Project : CALR-11016-001

LR Report : CA10488-SEP05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19 Wk# 14
Antimony [mg/L]	05-Oct-05	12:00	0.0005
Selenium [mg/L]	05-Oct-05	12:00	< 0.005
Tin [mg/L]	05-Oct-05	12:00	< 0.001
Strontium [mg/L]	05-Oct-05	12:00	0.0287
Titanium [mg/L]	05-Oct-05	12:00	< 0.003
Thallium [mg/L]	05-Oct-05	12:00	< 0.0002
Uranium [mg/L]	05-Oct-05	12:00	< 0.0002
Vanadium [mg/L]	05-Oct-05	12:00	< 0.0009
Tungsten [mg/L]	05-Oct-05	12:00	< 0.0002
Yttrium [mg/L]	05-Oct-05	08:52	< 0.001
Zinc [mg/L]	05-Oct-05	12:00	0.002

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Project : CALR-11016-001

LR Report : CA10031-OCT05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19 Wk # 15
Antimony [mg/L]	13-Oct-05	07:33	0.0004
Selenium [mg/L]	13-Oct-05	07:33	< 0.005
Tin [mg/L]	13-Oct-05	07:33	< 0.001
Strontium [mg/L]	13-Oct-05	07:33	0.0306
Titanium [mg/L]	13-Oct-05	07:33	< 0.003
Thallium [mg/L]	13-Oct-05	07:33	< 0.0002
Uranium [mg/L]	13-Oct-05	07:33	< 0.0002
Vanadium [mg/L]	13-Oct-05	07:33	< 0.0009
Tungsten [mg/L]	13-Oct-05	07:33	< 0.0002
Yttrium [mg/L]	11-Oct-05	14:03	< 0.001
Zinc [mg/L]	13-Oct-05	07:33	0.004

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Thursday, October 27, 2005

Date Rec. : 21 October 2005
LR Report: **CA10295-OCT05**
Reference: Week #17

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	**3: Analysis Approval Date**	**4: Analysis Approval Time**	**5: Combined Flotation Tails Test F19 Wk# 17**
Sample Date & Time			18-Oct-05
Hum Cell Leachate Volume [mLs]	---	---	913
pH [no unit]	24-Oct-05	09:05	5.06
Acidity [mg/L as CaCO3]	24-Oct-05	09:05	< 2
Alkalinity [mg/L as CaCO3]	24-Oct-05	09:05	2
Conductivity [uS/cm]	24-Oct-05	09:23	108
Sulphate [mg/L]	21-Oct-05	11:51	43

Brian Graham B.Sc.
Project Coordinator
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F2-107

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Friday, November 11, 2005

Date Rec. : 04 November 2005
LR Report: CA10013-NOV05
Reference: WK# 19

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combine Flotation Tails Test F19 Wk# 19
Sample Date & Time			01-Nov-05
Hum Cell Leachate Volume [mLs]	---	---	923
pH [no unit]	07-Nov-05	13:49	7.09
Acidity [mg/L as CaCO3]	07-Nov-05	13:49	< 2
Alkalinity [mg/L as CaCO3]	07-Nov-05	13:49	4
Conductivity [uS/cm]	07-Nov-05	14:16	147
Sulphate [mg/L]	10-Nov-05	15:59	59

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F2 - 109

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Project : CALR-11016-001

LR Report : CA10092-NOV05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19 Wk # 20
Antimony [mg/L]	16-Nov-05	08:36	< 0.0004
Selenium [mg/L]	16-Nov-05	08:36	< 0.005
Tin [mg/L]	16-Nov-05	08:36	< 0.001
Strontium [mg/L]	15-Nov-05	13:16	0.0222
Titanium [mg/L]	16-Nov-05	08:36	< 0.003
Thallium [mg/L]	16-Nov-05	08:36	< 0.0002
Uranium [mg/L]	16-Nov-05	08:37	< 0.0002
Vanadium [mg/L]	16-Nov-05	08:37	< 0.0009
Tungsten [mg/L]	16-Nov-05	08:37	< 0.0002
Yttrium [mg/L]	15-Nov-05	13:16	< 0.001
Zinc [mg/L]	16-Nov-05	08:37	< 0.001

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FZ-111

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Project : CALR-11016-001

LR Report : CA10410-JUL05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails Wk #0
Antimony [mg/L]	03-Aug-05	14:12	0.0018
Selenium [mg/L]	09-Aug-05	09:52	< 0.005
Tin [mg/L]	03-Aug-05	14:12	0.055
Strontium [mg/L]	03-Aug-05	14:12	0.0326
Titanium [mg/L]	03-Aug-05	14:12	< 0.003
Thallium [mg/L]	03-Aug-05	14:12	< 0.0002
Uranium [mg/L]	03-Aug-05	14:12	< 0.0002
Vanadium [mg/L]	03-Aug-05	14:12	< 0.0009
Tungsten [mg/L]	03-Aug-05	14:12	0.0004
Yttrium [mg/L]	03-Aug-05	11:27	< 0.001
Zinc [mg/L]	03-Aug-05	14:12	0.002

Brian Graham B.Sc.
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F2-113

SGS Lakefield Research Limited
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Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

Project : CALR-11016-001

LR Report : CA10009-AUG05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails WK # 1
Antimony [mg/L]	09-Aug-05	12:46	0.0026
Selenium [mg/L]	11-Aug-05	08:39	< 0.005
Tin [mg/L]	09-Aug-05	12:46	0.039
Strontium [mg/L]	09-Aug-05	12:46	0.0390
Titanium [mg/L]	09-Aug-05	12:46	< 0.003
Thallium [mg/L]	09-Aug-05	12:46	< 0.0002
Uranium [mg/L]	09-Aug-05	12:46	0.0003
Vanadium [mg/L]	09-Aug-05	12:46	< 0.0009
Tungsten [mg/L]	09-Aug-05	12:46	0.0005
Yttrium [mg/L]	08-Aug-05	15:41	< 0.002
Zinc [mg/L]	09-Aug-05	12:46	0.002

Brian Graham B.Sc.
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F7-115

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Project : CALR-11016-001
LR Report : CA10111-AUG05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails Wk#2
Antimony [mg/L]	15-Aug-05	10:40	0.0018
Selenium [mg/L]	17-Aug-05	08:49	< 0.005
Tin [mg/L]	15-Aug-05	10:40	0.026
Strontium [mg/L]	15-Aug-05	10:40	0.0250
Titanium [mg/L]	15-Aug-05	10:40	< 0.003
Thallium [mg/L]	15-Aug-05	10:40	< 0.0002
Uranium [mg/L]	15-Aug-05	10:40	< 0.0002
Vanadium [mg/L]	15-Aug-05	10:40	0.0012
Tungsten [mg/L]	15-Aug-05	10:40	0.0006
Yttrium [mg/L]	16-Aug-05	07:17	< 0.001
Zinc [mg/L]	15-Aug-05	10:40	0.001

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Project : CALR-11016-001

LR Report : CA10249-AUG05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails Wk #3
Tin [mg/L]	19-Aug-05	13:54	0.009
Strontium [mg/L]	19-Aug-05	13:54	0.0080
Titanium [mg/L]	19-Aug-05	13:54	< 0.003
Thallium [mg/L]	19-Aug-05	13:54	< 0.0002
Uranium [mg/L]	19-Aug-05	13:54	< 0.0002
Vanadium [mg/L]	19-Aug-05	13:54	< 0.0009
Tungsten [mg/L]	19-Aug-05	13:54	0.0003
Yttrium [mg/L]	18-Aug-05	13:05	< 0.001
Zinc [mg/L]	19-Aug-05	13:54	< 0.001

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F2-119

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Project : CALR-11016-001

LR Report : CA10381-AUG05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 RO Tails WK #4
Tin [mg/L]	31-Aug-05	13:33	0.009
Strontium [mg/L]	31-Aug-05	13:33	0.0132
Titanium [mg/L]	31-Aug-05	13:33	< 0.003
Thallium [mg/L]	31-Aug-05	13:33	< 0.0002
Uranium [mg/L]	31-Aug-05	13:33	< 0.0002
Vanadium [mg/L]	31-Aug-05	13:33	< 0.0009
Tungsten [mg/L]	31-Aug-05	13:33	0.0002
Yttrium [mg/L]	26-Aug-05	15:48	< 0.001
Zinc [mg/L]	31-Aug-05	13:33	0.001

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Project : CALR-11016-001

LR Report : CA10002-SEP05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 RO Tails Wk # 5
Antimony [mg/L]	08-Sep-05	11:36	0.0015
Selenium [mg/L]	08-Sep-05	11:36	< 0.005
Tin [mg/L]	08-Sep-05	11:37	0.009
Strontium [mg/L]	08-Sep-05	11:37	0.0144
Titanium [mg/L]	08-Sep-05	11:37	< 0.003
Thallium [mg/L]	08-Sep-05	11:37	< 0.0002
Uranium [mg/L]	08-Sep-05	11:37	< 0.0002
Vanadium [mg/L]	08-Sep-05	11:37	0.0010
Tungsten [mg/L]	08-Sep-05	11:37	0.0004
Yttrium [mg/L]	08-Sep-05	09:00	< 0.001
Zinc [mg/L]	08-Sep-05	11:37	< 0.001

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F2-123

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Tuesday, September 20, 2005

Date Rec. : 16 September 2005
LR Report: CA10153-SEP05
Reference: Shakespeare wk#7

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails WK # 7
Sample Date & Time			13-Sep-05
Hum Cell Leachate Volume [mLs]	15-Sep-05	10:43	980
pH [no unit]	19-Sep-05	09:19	7.25
Acidity [mg/L as CaCO3]	19-Sep-05	09:19	< 2
Alkalinity [mg/L as CaCO3]	19-Sep-05	09:19	7
Conductivity [uS/cm]	19-Sep-05	09:19	24
Sulphate [mg/L]	20-Sep-05	08:07	1.5

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Friday, October 07, 2005

Date Rec. : 30 September 2005
LR Report: CA10485-SEP05
Reference: Shakespeare wk#9

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails Wk#9
Sample Date & Time			27-Sep-05
Hum Cell Leachate Volume [mLs]	03-Oct-05	09:08	966
pH [no unit]	06-Oct-05	16:27	7.37
Acidity [mg/L as CaCO3]	06-Oct-05	16:27	< 2
Alkalinity [mg/L as CaCO3]	06-Oct-05	16:27	9
Conductivity [uS/cm]	06-Oct-05	09:07	26
Sulphate [mg/L]	05-Oct-05	10:55	2.7

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Friday, October 14, 2005

Date Rec. : 07 October 2005
LR Report: **CA10028-OCT05**
Reference: Shakespeare wk#10

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails Wk# 10
Sample Date & Time			04-Oct-05
Hum Cell Leachate Volume [mLs]	07-Oct-05	10:37	948
pH [no unit]	14-Oct-05	10:18	7.00
Acidity [mg/L as CaCO3]	14-Oct-05	10:18	< 2
Alkalinity [mg/L as CaCO3]	14-Oct-05	10:18	7
Conductivity [uS/cm]	14-Oct-05	10:18	21
Sulphate [mg/L]	11-Oct-05	14:11	2.3
Mercury [ug/L]	11-Oct-05	13:53	< 0.1
Silver [mg/L]	13-Oct-05	07:42	< 0.0001
Aluminum [mg/L]	11-Oct-05	14:06	0.02
Arsenic [mg/L]	14-Oct-05	10:25	0.002
Barium [mg/L]	13-Oct-05	07:42	0.008
Beryllium [mg/L]	13-Oct-05	07:42	< 0.005
Boron [mg/L]	11-Oct-05	14:06	< 0.01
Bismuth [mg/L]	13-Oct-05	07:42	< 0.0003
Calcium [mg/L]	11-Oct-05	14:06	2.27
Cadmium [mg/L]	13-Oct-05	07:42	< 0.0001
Cobalt [mg/L]	13-Oct-05	07:42	< 0.0003
Chromium [mg/L]	13-Oct-05	07:42	< 0.001
Copper [mg/L]	13-Oct-05	07:42	< 0.0008
Iron [mg/L]	11-Oct-05	14:06	< 0.02
Potassium [mg/L]	11-Oct-05	14:06	1.58
Lithium [mg/L]	11-Oct-05	14:06	< 0.005
Magnesium [mg/L]	11-Oct-05	14:06	0.434
Manganese [mg/L]	13-Oct-05	07:42	0.0018
Molydenum [mg/L]	13-Oct-05	07:42	0.0003
Nickel [mg/L]	13-Oct-05	07:42	< 0.001
Lead [mg/L]	13-Oct-05	07:42	< 0.0002

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E2-128

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Project : CALR-11016-001
LR Report : CA10028-OCT05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails Wk# 10
Antimony [mg/L]	13-Oct-05	07:42	0.0005
Selenium [mg/L]	13-Oct-05	07:43	< 0.005
Tin [mg/L]	13-Oct-05	07:43	0.002
Strontium [mg/L]	13-Oct-05	07:43	0.0061
Titanium [mg/L]	13-Oct-05	07:43	< 0.003
Thallium [mg/L]	13-Oct-05	07:43	< 0.0002
Uranium [mg/L]	13-Oct-05	07:43	< 0.0002
Vanadium [mg/L]	13-Oct-05	07:43	< 0.0009
Tungsten [mg/L]	13-Oct-05	07:43	0.0006
Yttrium [mg/L]	11-Oct-05	14:07	< 0.001
Zinc [mg/L]	13-Oct-05	07:43	< 0.001

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Project : CALR-11016-001

Environmental Services
Attn : Jennifer LaBelle marilyn.kelly@sgs.com

Wednesday, October 26, 2005

Date Rec. : 14 October 2005
LR Report: CA10182-OCT05
Reference: Week # 11

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails Wk#11
Sample Date & Time			11-Oct-05
Hum Cell Leachate Volume [mLs]	---	---	938
pH [no unit]	20-Oct-05	10:30	7.11
Acidity [mg/L as CaCO3]	20-Oct-05	10:30	< 2
Alkalinity [mg/L as CaCO3]	20-Oct-05	10:30	6
Conductivity [uS/cm]	19-Oct-05	16:18	22
Sulphate [mg/L]	17-Oct-05	15:24	2.4

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Project : CALR-11016-001

Environmental Services
Attn : Jenn LaBelle marilyn.kelly@sgs.com

Thursday, October 27, 2005

Date Rec. : 21 October 2005
LR Report: CA10292-OCT05
Reference: Wk#12

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails WK#12
Sample Date & Time			18-Oct-05
Hum Cell Leachate Volume [mLs]	---	---	896
pH [no unit]	24-Oct-05	09:03	7.06
Acidity [mg/L as CaCO3]	24-Oct-05	09:03	< 2
Alkalinity [mg/L as CaCO3]	24-Oct-05	09:03	3
Conductivity [uS/cm]	24-Oct-05	09:23	12
Sulphate [mg/L]	21-Oct-05	11:51	1.2

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Project : CALR-11016-001

Environmental Services
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Tuesday, November 01, 2005

Date Rec. : 28 October 2005
LR Report: CA10456-OCT05
Reference: wk#13

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails Wk# 13
Sample Date & Time			25-Oct-05
Hum Cell Leachate Volume [mLs]	---	---	954
pH [no unit]	27-Oct-05	14:43	7.14
Acidity [mg/L as CaCO3]	27-Oct-05	14:43	< 2
Alkalinity [mg/L as CaCO3]	27-Oct-05	14:43	6
Conductivity [uS/cm]	27-Oct-05	15:53	21
Sulphate [mg/L]	28-Oct-05	12:03	2.5

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Project : CALR-11016-001

Environmental Services
Attn : Jen LaBelle marilyn.kelly@sgs.com

Friday, November 11, 2005

Date Rec. : 04 November 2005
LR Report: CA10009-NOV05
Reference: wk# 14

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails WK# 14
Sample Date & Time			01-Nov-05
Hum Cell Leachate Volume [mLs]	---	---	961
pH [no unit]	07-Nov-05	13:44	7.33
Acidity [mg/L as CaCO3]	07-Nov-05	13:44	< 2
Alkalinity [mg/L as CaCO3]	07-Nov-05	13:44	9
Conductivity [uS/cm]	07-Nov-05	14:15	29
Sulphate [mg/L]	10-Nov-05	15:59	4.2

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Project : CALR-11016-001

Environmental Services
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Thursday, November 17, 2005

Date Rec. : 11 November 2005
LR Report: CA10096-NOV05
Reference: Week #15

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails WK# 15
Sample Date & Time			08-Nov-05
Hum Cell Leachate Volume [mLs]	---	---	930
pH [no unit]	14-Nov-05	13:37	7.17
Acidity [mg/L as CaCO3]	14-Nov-05	13:37	< 2
Alkalinity [mg/L as CaCO3]	14-Nov-05	13:37	7
Conductivity [uS/cm]	14-Nov-05	13:37	22
Sulphate [mg/L]	14-Nov-05	08:30	2.6
Mercury [ug/L]	14-Nov-05	14:54	< 0.1
Silver [mg/L]	16-Nov-05	08:37	< 0.0001
Aluminum [mg/L]	15-Nov-05	13:16	0.03
Arsenic [mg/L]	17-Nov-05	10:25	0.003
Barium [mg/L]	16-Nov-05	08:37	0.005
Beryllium [mg/L]	16-Nov-05	08:37	< 0.005
Boron [mg/L]	15-Nov-05	13:16	< 0.01
Bismuth [mg/L]	16-Nov-05	08:37	< 0.0003
Calcium [mg/L]	15-Nov-05	13:16	2.23
Cadmium [mg/L]	16-Nov-05	08:37	< 0.0001
Cobalt [mg/L]	16-Nov-05	08:37	< 0.0003
Chromium [mg/L]	16-Nov-05	08:37	< 0.001
Copper [mg/L]	16-Nov-05	08:37	< 0.0008
Iron [mg/L]	15-Nov-05	13:16	< 0.02
Potassium [mg/L]	15-Nov-05	13:16	1.38
Lithium [mg/L]	15-Nov-05	13:16	< 0.005
Magnesium [mg/L]	15-Nov-05	13:16	0.404
Manganese [mg/L]	16-Nov-05	08:37	0.0013
Molydenum [mg/L]	16-Nov-05	08:37	0.0004
Nickel [mg/L]	16-Nov-05	08:37	< 0.001
Lead [mg/L]	16-Nov-05	08:37	< 0.0002

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Project : CALR-11016-001
LR Report : CA10096-NOV05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails WK# 15
Antimony [mg/L]	16-Nov-05	08:37	< 0.0004
Selenium [mg/L]	16-Nov-05	08:37	< 0.005
Tin [mg/L]	16-Nov-05	08:37	0.002
Strontium [mg/L]	15-Nov-05	13:17	0.0048
Titanium [mg/L]	16-Nov-05	08:37	< 0.003
Thallium [mg/L]	16-Nov-05	08:37	< 0.0002
Uranium [mg/L]	16-Nov-05	08:37	< 0.0002
Vanadium [mg/L]	16-Nov-05	08:37	< 0.0009
Tungsten [mg/L]	16-Nov-05	08:37	< 0.0002
Yttrium [mg/L]	15-Nov-05	13:17	< 0.001
Zinc [mg/L]	16-Nov-05	08:37	< 0.001

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APPENDIX E

Certificates of Analysis

SGS

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Project : CALR-11016-001

Environmental Services
Attn : Barab Bowman marilyn.kelly@sgs.com

Wednesday, June 29, 2005

Date Rec. : 21 June 2005
LR Report: **CA10352-JUN05**
Reference: Whole Rock Analysis

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19
Sample Date & Time			17-Jun-05
SiO2 [%]	29-Jun-05	09:03	48.0
Al2O3 [%]	29-Jun-05	09:03	13.3
Fe2O3 [%]	29-Jun-05	09:03	15.7
MgO [%]	29-Jun-05	09:03	7.10
CaO [%]	29-Jun-05	09:03	7.10
Na2O [%]	29-Jun-05	09:03	1.63
K2O [%]	29-Jun-05	09:03	0.77
TiO2 [%]	29-Jun-05	09:03	0.85
P2O5 [%]	29-Jun-05	09:03	0.06
MnO [%]	29-Jun-05	09:03	0.18
Cr2O3 [%]	29-Jun-05	09:03	0.05
V2O5 [%]	29-Jun-05	09:03	0.04
LOI [%]	29-Jun-05	09:03	2.76
Sum [%]	29-Jun-05	09:03	97.5

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Environmental Services, Analytical

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Environmental Services
Attn : Barb Bowman

July 27, 2005

Date Rec. : 15 July 2005
LR. Ref. : **CA10232-JUL05**
Project : CALR-11016-001

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CERTIFICATE OF ANALYSIS

Whole Rock Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails
Sample Date & Time			15-Jul-05
SiO2 [%]	25-Jul-05	10:27	51.3
Al2O3 [%]	25-Jul-05	10:27	13.8
Fe2O3 [%]	25-Jul-05	10:27	13.6
MgO [%]	25-Jul-05	10:27	7.49
CaO [%]	25-Jul-05	10:27	7.17
Na2O [%]	25-Jul-05	10:27	1.62
K2O [%]	25-Jul-05	10:27	0.84
TiO2 [%]	25-Jul-05	10:27	0.77
P2O5 [%]	25-Jul-05	10:27	0.06
MnO [%]	25-Jul-05	10:27	0.18
Cr2O3 [%]	25-Jul-05	10:27	0.04
V2O5 [%]	25-Jul-05	10:27	0.04
LOI [%]	25-Jul-05	10:27	2.41
Sum [%]	25-Jul-05	10:27	99.4

Deborah Masson Stogran, B.Sc, C.Chem
GM, Environmental Services, Analytical

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F2-138

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Wednesday, June 29, 2005

Date Rec. : 21 June 2005
LR Report: CA10351-JUN05

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19
Sample Date & Time			17-Jun-05
Silver [g/t]	29-Jun-05	10:44	0.74
Aluminum [µg/g]	29-Jun-05	10:44	62000
Arsenic [g/t]	29-Jun-05	10:44	36
Barium [g/t]	29-Jun-05	10:44	160
Beryllium [g/t]	29-Jun-05	10:44	0.6
Bismuth [g/t]	29-Jun-05	10:44	17
Calcium [µg/g]	28-Jun-05	13:29	44000
Cadmium [g/t]	29-Jun-05	10:44	0.36
Cobalt [g/t]	29-Jun-05	10:44	56
Chromium [g/t]	29-Jun-05	10:44	210
Copper [g/t]	29-Jun-05	10:44	140
Iron [µg/g]	28-Jun-05	13:29	110000
Potassium [µg/g]	28-Jun-05	13:29	8600
Lithium [µg/g]	28-Jun-05	13:29	< 3
Magnesium [µg/g]	28-Jun-05	13:29	40000
Manganese [µg/g]	29-Jun-05	10:44	1300
Molybdenum [g/t]	29-Jun-05	10:44	16
Sodium [µg/g]	28-Jun-05	13:29	630000
Nickel [µg/g]	29-Jun-05	10:44	910
Lead [g/t]	29-Jun-05	10:44	17
Antimony [g/t]	29-Jun-05	10:44	3.3
Selenium [g/t]	29-Jun-05	10:44	4
Tin [g/t]	29-Jun-05	10:44	1.7
Strontium [g/t]	29-Jun-05	10:44	150
Titanium [µg/g]	29-Jun-05	10:44	4700
Thallium [g/t]	29-Jun-05	10:44	0.3
Uranium [g/t]	29-Jun-05	10:44	1.1

OnLine LIMS

F2-139

SGS Lakefield Research Limited
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Project : CALR-11016-001
LR Report : CA10351-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19
Vanadium [g/t]	29-Jun-05	10:44	210
Yttrium [g/t]	29-Jun-05	10:44	14
Zinc [g/t]	29-Jun-05	10:44	63

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

OnLine LIMS

F2-140

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SGS Lakefield Research Limited
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Lakefield - Ontario - KOL 2HO
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Environmental Services
Attn : Barb Bowman

July 27, 2005

Date Rec. : 15 July 2005
LR. Ref. : **CA10231-JUL05**
Project : CALR-11016-001

Copy to : Final # 1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails
Sample Date & Time					15-Jul-05
Ag [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	0.50
Al [µg/g]	22-Jul-05	15:14	26-Jul-05	11:39	65000
As [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	< 2
Ba [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	180
Be [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	0.50
Bi [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	1.4
Ca [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	43000
Cd [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	0.12
Co [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	42
Cr [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	280
Cu [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	170
Fe [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	88000
K [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	9500
Li [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	3.4
Mg [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	43000
Mn [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	1200
Mo [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	2.1
Na [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	11000
Ni [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	520
Pb [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	12
Sb [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	0.3
Se [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	3
Sn [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	1.0
Sr [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	120

E7-141

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LR Report : CA10231-JULO5

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails
Ti [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	2600
Tl [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	0.2
U [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	1.1
V [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	250
Y [µg/g]	26-Jul-05	16:02	27-Jul-05	10:39	11
Zn [µg/g]	22-Jul-05	15:14	26-Jul-05	11:40	66

Deborah Masson Stogran, B.Sc, C.Chem
GM, Environmental Services, Analytical

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F2-142

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Thursday, September 08, 2005

Date Rec. : 19 August 2005
LR Report: CA10342-AUG05
Reference: CofC:11016-001-10

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails	6: Combined Flotation Tails Test F19	7: Test F30 Ro Tails Dup	8: Combined Flotation Tails Test F19 Dup
Sample Date & Time			15-Jul-05	17-Jun-05	15-Jul-05	17-Jun-05
Mercury [µg/g]	19-Aug-05	14:37	< 0.1	< 0.1	< 0.1	< 0.1
Silver [µg/g]	07-Sep-05	07:58	0.61	0.77	---	---
Aluminum [µg/g]	07-Sep-05	07:58	56000	54000	---	---
Arsenic [µg/g]	07-Sep-05	07:58	2	42	---	---
Barium [µg/g]	07-Sep-05	07:58	150	140	---	---
Beryllium [µg/g]	07-Sep-05	07:58	0.36	0.34	---	---
Bismuth [µg/g]	07-Sep-05	07:58	< 10	< 10	---	---
Calcium [µg/g]	07-Sep-05	07:58	39000	37000	---	---
Cadmium [µg/g]	07-Sep-05	07:58	0.19	0.22	---	---
Cobalt [µg/g]	07-Sep-05	07:58	40	62	---	---
Chromium [µg/g]	07-Sep-05	07:58	170	220	---	---
Copper [µg/g]	07-Sep-05	07:58	150	160	---	---
Iron [µg/g]	07-Sep-05	07:58	84000	105000	---	---
Potassium [µg/g]	07-Sep-05	07:58	8700	7900	---	---
Lithium [µg/g]	07-Sep-05	07:58	2.5	2.2	---	---
Magnesium [µg/g]	07-Sep-05	07:58	40000	38000	---	---
Manganese [µg/g]	07-Sep-05	07:58	1000	990	---	---
Molybdenum [µg/g]	07-Sep-05	07:58	3.0	3.5	---	---
Sodium [µg/g]	07-Sep-05	07:58	8300	7700	---	---
Nickel [µg/g]	07-Sep-05	07:58	470	802	---	---
Lead [µg/g]	07-Sep-05	07:58	11	15	---	---
Antimony [µg/g]	07-Sep-05	07:58	< 0.1	< 0.1	---	---
Selenium [µg/g]	07-Sep-05	07:58	2	8	---	---
Tin [µg/g]	07-Sep-05	07:58	0.8	0.4	---	---
Strontium [µg/g]	07-Sep-05	07:58	96	87	---	---
Titanium [µg/g]	07-Sep-05	07:58	2400	2300	---	---
Thallium [µg/g]	07-Sep-05	07:58	0.2	0.1	---	---

OnLine LIMS

E7-143

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Project : CALR-11016-001

LR Report : CA10342-AUG05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails	6: Combined Flotation Tails Test F19	7: Test F30 Ro Tails Dup	8: Combined Flotation Tails Test F19 Dup
Uranium [µg/g]	07-Sep-05	07:58	1.0	1.2	---	---
Vanadium [µg/g]	07-Sep-05	07:58	220	200	---	---
Yttrium [µg/g]	07-Sep-05	07:58	10	9.8	---	---
Zinc [µg/g]	07-Sep-05	07:58	64	64	---	---

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Tuesday, November 22, 2005

Date Rec. : 27 September 2005
LR Report: CA10492-SEP05

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19
Sample Date & Time			17-Jun-05
Aluminum [µg/g]	11-Oct-05	11:29	63000
Barium [µg/g]	11-Oct-05	11:29	170
Beryllium [µg/g]	11-Oct-05	11:29	0.42
Bismuth [µg/g]	11-Oct-05	11:29	< 4
Calcium [µg/g]	11-Oct-05	11:29	43000
Copper [µg/g]	11-Oct-05	11:29	170
Iron [µg/g]	11-Oct-05	11:29	120000
Potassium [µg/g]	11-Oct-05	11:29	8100
Lithium [µg/g]	11-Oct-05	11:29	4.6
Magnesium [µg/g]	11-Oct-05	11:29	40000
Manganese [µg/g]	11-Oct-05	11:29	1200
Sodium [µg/g]	11-Oct-05	11:29	11000
Nickel [µg/g]	11-Oct-05	11:29	850
Strontium [µg/g]	11-Oct-05	11:29	140
Titanium [µg/g]	11-Oct-05	11:29	3900
Vanadium [µg/g]	11-Oct-05	11:29	250
Zinc [µg/g]	11-Oct-05	11:29	72

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OnLine LIMS

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Modified ABA

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman   marilyn.kelly@sgs.com

Wednesday, July 06, 2005

Date Rec. : 21 June 2005
LR Report: **CA10353-JUN05**

Copy: **#1**

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Test F19
Sample Date & Time			17-Jun-05
Paste pH [units]	29-Jun-05	11:28	9.45
Fizz Rate [--]	29-Jun-05	11:28	1
Sample [weight(g)]	29-Jun-05	11:28	2.01
HCl added [mL]	29-Jun-05	11:28	34.85
HCl [Normality]	29-Jun-05	11:28	0.10
NaOH [Normality]	29-Jun-05	11:28	0.10
NaOH to [pH=8.3 mL]	29-Jun-05	11:28	26.95
Final pH [units]	29-Jun-05	11:28	1.61
NP [t CaCO3/1000t]	29-Jun-05	11:28	19.7
AP [t CaCO3/1000 t]	06-Jul-05	10:26	44.7
Net NP [t CaCO3/1000 t]	06-Jul-05	10:26	-25.0
NP/AP [ratio]	06-Jul-05	10:26	0.44
S [%]	06-Jul-05	10:09	1.81
S= [%]	06-Jul-05	10:09	1.43
SO4 [%]	06-Jul-05	16:22	< 0.4
C(t) [%]	06-Jul-05	10:08	0.09
CO3 [%]	06-Jul-05	10:08	0.18

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E2-146

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Modified ABA

Project : CALR-11016-001
LR Report : CA10353-JUN05

*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.

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

OnLine LIMS

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Modified ABA

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Tuesday, August 09, 2005

Date Rec. : 15 July 2005
LR Report: **CA10233-JUL05**
Reference: CofC:11016-001-10

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails
Sample Date & Time			15-Jul-05
Paste pH [units]	09-Aug-05	15:41	9.26
Fizz Rate [---]	09-Aug-05	15:41	1
Sample [weight(g)]	09-Aug-05	15:41	1.95
HCl added [mL]	09-Aug-05	15:41	28.15
HCl [Normality]	09-Aug-05	15:41	0.10
NaOH [Normality]	09-Aug-05	15:41	0.10
NaOH to [pH=8.3 mL]	09-Aug-05	15:41	22.80
Final pH [units]	09-Aug-05	15:41	1.66
NP [t CaCO3/1000t]	09-Aug-05	15:41	13.7
AP [t CaCO3/1000 t]	05-Aug-05	12:14	2.8
Net NP [t CaCO3/1000 t]	09-Aug-05	15:41	10.9
NP/AP [ratio]	09-Aug-05	15:41	4.9
S [%]	22-Jul-05	17:31	0.16
S= [%]	22-Jul-05	17:31	0.09
SO4 [%]	26-Jul-05	11:32	< 0.4
C(t) [%]	22-Jul-05	17:31	0.07
CO3 [%]	22-Jul-05	17:31	0.17

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Modified ABA

Project : CALR-11016-001

LR Report : CA10233-JUL05

*NP (Neutralization Potential)

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

*AP (Acid Potential) = % Sulphide Sulphur x 31.25
*Net NP (Net Neutralization Potential) = NP-AP
NP/AP Ratio = NP/AP
*Results expressed as tonnes $CaCO_3$ equivalent/1000 tonnes of material
Samples with a % Sulphide value of <0.01 will be calculated using a 0.01 value.

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Online LIMS

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NAG Test

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Thursday, August 04, 2005

Date Rec. : 18 July 2005
LR Report: CA10239-JUL05

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Combined Flotation Tails Tes F19
Sample [weight(g)]	29-Jul-05	13:28	2.49
vol H2O2 [mL]	29-Jul-05	13:28	250
Final pH [units]	29-Jul-05	13:28	2.74
NaOH [Normality]	29-Jul-05	13:28	0.10
Vol NaOH to PH 4.5 [mL]	29-Jul-05	13:28	10.0
Vol NaOH to PH 7.0 [mL]	29-Jul-05	13:28	15.8
NAG [@pH4.5]	29-Jul-05	13:28	19.7
NAG [@pH7.0]	29-Jul-05	13:28	31.0
Alkalinity [mg/L as CaCO3]	29-Jul-05	16:08	< 2
Acidity [mg/L as CaCO3]	02-Aug-05	16:27	214

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

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OnLine LIMS

F2-150

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NAG Test

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Wednesday, August 03, 2005

Date Rec. : 15 July 2005
LR Report: **CA10236-JUL05**
Reference: CofC:11016-001-10

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails
Sample Date & Time			15-Jul-05
Sample [weight(g)]	29-Jul-05	13:21	2.53
vol H2O2 [mL]	29-Jul-05	13:21	250
Final pH [units]	29-Jul-05	13:21	7.65
NaOH [Normality]	29-Jul-05	13:21	0.10
Vol NaOH to PH 4.5 [mL]	29-Jul-05	13:21	0.00
Vol NaOH to PH 7.0 [mL]	29-Jul-05	13:21	0.00
NAG [@pH4.5]	29-Jul-05	13:21	0
NAG [@pH7.0]	29-Jul-05	13:21	0
Alkalinity [mg/L as CaCO3]	29-Jul-05	16:08	12
Acidity [mg/L as CaCO3]	02-Aug-05	16:27	< 2

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

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

OnLine LIMS

[7-16]

SGS

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TCLP1311

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Tuesday, August 09, 2005

Date Rec. : 21 June 2005
LR Report: CA10354-JUN05

Copy: #2

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	6: Combined Flotation Tails Test F19
Sample Date & Time			17-Jun-05
Moisture [%]	05-Jul-05	16:01	12.0
% solids [%]	05-Jul-05	16:01	88.0
Sample [weight(g)]	05-Jul-05	16:01	100.0
Ext.Fluid [#1 or #2]	05-Jul-05	16:01	1
ExtVolume [mL]	05-Jul-05	16:01	1760.0
InitialpH [units]	05-Jul-05	16:01	5.05
Final pH [units]	05-Jul-05	16:01	5.06
Arsenic [mg/L]	30-Jun-05	10:25	0.082
Silver [mg/L]	05-Jul-05	15:49	< 0.0001
Aluminum [mg/L]	05-Jul-05	15:49	0.81
Barium [mg/L]	05-Jul-05	15:49	1.65
Boron [mg/L]	04-Jul-05	14:14	0.42
Beryllium [mg/L]	05-Jul-05	15:49	< 0.005
Bismuth [mg/L]	05-Jul-05	15:49	0.0006
Calcium [mg/L]	04-Jul-05	14:14	51.5
Cadmium [mg/L]	05-Jul-05	15:49	0.0008
Cobalt [mg/L]	05-Jul-05	15:49	0.109
Chromium [mg/L]	04-Jul-05	14:15	< 0.02
Copper [mg/L]	05-Jul-05	15:49	0.0018
Iron [mg/L]	04-Jul-05	14:15	9.42
Potassium [mg/L]	04-Jul-05	14:15	39.3
Lithium [mg/L]	04-Jul-05	14:15	< 0.005
Magnesium [mg/L]	04-Jul-05	14:15	5.18
Manganese [mg/L]	05-Jul-05	15:49	0.476
Molybdenum [mg/L]	05-Jul-05	15:49	< 0.0003
Nickel [mg/L]	05-Jul-05	15:49	1.02
Lead [mg/L]	04-Jul-05	14:15	0.03
Antimony [mg/L]	05-Jul-05	15:49	0.0015
Selenium [mg/L]	30-Jun-05	10:25	< 0.005

Online LIMS

F2-152

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TCLP1311

Project : CALR-11016-001

LR Report : CA10354-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	6: Combined Flotation Tails Test F19
Tin [mg/L]	05-Jul-05	15:49	< 0.001
Strontium [mg/L]	05-Jul-05	15:49	0.0993
Titanium [mg/L]	05-Jul-05	15:49	< 0.003
Thallium [mg/L]	05-Jul-05	15:49	0.0006
Uranium [mg/L]	05-Jul-05	15:49	0.0032
Vanadium [mg/L]	05-Jul-05	15:49	0.0014
Tungsten [mg/L]	05-Jul-05	15:49	< 0.0002
Yttrium [mg/L]	05-Jul-05	15:49	0.0035
Zinc [mg/L]	05-Jul-05	15:49	0.719
Mercury [mg/L]	05-Jul-05	07:10	< 0.0001
pH [no unit]	05-Jul-05	14:50	5.07
Conductivity [uS/cm]	05-Jul-05	14:50	5180
Alkalinity [mg/L as CaCO3]	04-Jul-05	15:37	1600
Acidity [mg/L as CaCO3]	07-Jul-05	12:34	136
Sulphate [mg/L]	30-Jun-05	09:44	14

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Environmental Services, Analytical

OnLine LIMS

F2-153

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TCLP1311

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Tuesday, August 23, 2005

Date Rec. : 15 July 2005
LR Report: CA10235-JUL05
Reference: CofC:11016-001-10

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	5: Test F30 Ro Tails
Sample Date & Time			15-Jul-05
Moisture [%]	27-Jul-05	13:30	12.6
% solids [%]	27-Jul-05	13:30	87.4
Sample [weight(g)]	27-Jul-05	13:30	100.0
Ext.Fluid [#1 or #2]	27-Jul-05	13:30	1
ExtVolume [mL]	27-Jul-05	13:30	1747.0
InitialpH [units]	27-Jul-05	13:30	5.00
Final pH [units]	27-Jul-05	13:30	5.01
pH [no unit]	29-Jul-05	10:55	4.96
Conductivity [uS/cm]	29-Jul-05	10:55	4290
Alkalinity [mg/L as CaCO3]	29-Jul-05	10:55	1011.38
Acidity [mg/L as CaCO3]	29-Jul-05	10:55	< 2
Sulphate [mg/L]	28-Jul-05	23:32	13
Mercury [mg/L]	02-Aug-05	08:00	< 0.1
Aluminum [mg/L]	03-Aug-05	12:50	1.04
Arsenic [mg/L]	17-Aug-05	08:51	10.56
Silver [mg/L]	03-Aug-05	12:50	< 0.005
Barium [mg/L]	03-Aug-05	12:50	1.82
Beryllium [mg/L]	03-Aug-05	12:50	< 0.001
Boron [mg/L]	03-Aug-05	12:50	0.54
Bismuth [mg/L]	03-Aug-05	12:50	< 0.05
Calcium [mg/L]	03-Aug-05	12:50	37.9
Cadmium [mg/L]	03-Aug-05	12:50	< 0.005
Cobalt [mg/L]	03-Aug-05	12:50	0.02
Chromium [mg/L]	03-Aug-05	12:50	0.05
Copper [mg/L]	03-Aug-05	12:50	0.080
Iron [mg/L]	03-Aug-05	12:50	6.97
Potassium [mg/L]	03-Aug-05	12:50	31.4

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TCLP1311

Project : CALR-11016-001

LR Report : CA10235-JUL05

Analysis	1: Analysis Start Date	2: Analysis Start Time	5: Test F30 Ro Tails
Lithium [mg/L]	03-Aug-05	12:50	< 0.005
Magnesium [mg/L]	03-Aug-05	12:50	4.11
Manganese [mg/L]	03-Aug-05	12:50	0.539
Molybdenum [mg/L]	03-Aug-05	12:50	< 0.02
Nickel [mg/L]	03-Aug-05	12:50	0.23
Lead [mg/L]	03-Aug-05	12:50	< 0.02
Antimony [mg/L]	03-Aug-05	12:50	< 0.05
Selenium [mg/L]	22-Aug-05	19:39	0.005
Tin [mg/L]	03-Aug-05	12:50	< 0.1
Strontium [mg/L]	03-Aug-05	12:50	0.0491
Titanium [mg/L]	03-Aug-05	12:50	< 0.005
Thallium [mg/L]	03-Aug-05	12:50	< 0.1
Uranium [mg/L]	03-Aug-05	12:50	< 2
Vanadium [mg/L]	03-Aug-05	12:50	< 0.002
Tungsten [mg/L]	03-Aug-05	12:50	< 0.05
Yttrium [mg/L]	03-Aug-05	12:50	0.002
Zinc [mg/L]	03-Aug-05	12:50	0.88

Extraction Fluid #1 - pH 4.93 ± 0.05
= 5.7mLs of acetic acid plus 64.3 mLs of 1.0N NaOH bulked to 1L with deionized water.

Extraction Fluid #2 - pH 2.88 ± 0.05
=5.7 mLs of acetic acid bulked to 1L with deionized water.

SG

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

OnLine LIMS

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SPLP 1312 ext #1

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Thursday, July 07, 2005

Date Rec. : 21 June 2005
LR Report: CA10355-JUN05

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	6: Combined Flotation Tails Test F19
Sample Date & Time			17-Jun-05
Moisture [%]	24-Jun-05	13:41	12.3
% solids [%]	24-Jun-05	13:41	87.7
Sample [weight(g)]	24-Jun-05	13:41	100.0
Ext.Fluid [#1 or #2]	24-Jun-05	13:41	1
ExtVolume [mL]	24-Jun-05	13:41	1755.0
InitialpH [units]	24-Jun-05	13:41	9.51
Final pH [units]	24-Jun-05	13:41	9.21
Arsenic [mg/L]	29-Jun-05	09:28	0.015
Silver [mg/L]	07-Jul-05	10:56	< 0.0001
Aluminum [mg/L]	07-Jul-05	10:56	0.464
Barium [mg/L]	07-Jul-05	10:56	0.438
Boron [mg/L]	05-Jul-05	14:20	0.20
Beryllium [mg/L]	07-Jul-05	10:56	< 0.005
Bismuth [mg/L]	07-Jul-05	10:56	0.0004
Calcium [mg/L]	05-Jul-05	14:20	8.38
Cadmium [mg/L]	07-Jul-05	10:56	< 0.0005
Cobalt [mg/L]	07-Jul-05	10:56	0.0011
Chromium [mg/L]	05-Jul-05	14:20	< 0.02
Copper [mg/L]	07-Jul-05	10:56	0.0046
Iron [mg/L]	05-Jul-05	14:20	0.60
Potassium [mg/L]	05-Jul-05	14:20	1.07
Lithium [mg/L]	05-Jul-05	14:20	< 0.005
Magnesium [mg/L]	05-Jul-05	14:20	0.741
Manganese [mg/L]	07-Jul-05	10:56	0.0080
Molybdenum [mg/L]	07-Jul-05	10:56	0.0013
Nickel [mg/L]	07-Jul-05	10:56	0.011
Lead [mg/L]	05-Jul-05	14:20	< 0.02

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SPLP 1312 ext #1

Project : CALR-11016-001

LR Report : CA10355-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	6: Combined Flotation Tails Test F19
Antimony [mg/L]	07-Jul-05	10:56	0.0015
Selenium [mg/L]	29-Jun-05	09:28	< 0.005
Tin [mg/L]	07-Jul-05	10:56	< 0.001
Strontium [mg/L]	07-Jul-05	10:56	0.0234
Titanium [mg/L]	07-Jul-05	10:56	0.019
Thallium [mg/L]	07-Jul-05	10:56	< 0.0002
Uranium [mg/L]	07-Jul-05	10:57	< 0.0002
Vanadium [mg/L]	07-Jul-05	10:57	0.0044
Tungsten [mg/L]	07-Jul-05	10:57	< 0.0002
Yttrium [mg/L]	07-Jul-05	10:57	0.0001
Zinc [mg/L]	07-Jul-05	10:57	0.027
Mercury [mg/L]	04-Jul-05	11:54	< 0.0001
pH [no unit]	28-Jun-05	08:58	8.50
Conductivity [uS/cm]	28-Jun-05	08:58	89
Alkalinity [mg/L as CaCO3]	28-Jun-05	08:58	21
Acidity [mg/L as CaCO3]	28-Jun-05	08:58	< 2
Sulphate [mg/L]	27-Jun-05	07:43	16

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SPLP 1312 Fluid #1

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Thursday, August 11, 2005

Date Rec. : 15 July 2005
LR Report: **CA10234-JUL05**
Reference: CofC:11016-001-10

Copy: #2

CERTIFICATE OF ANALYSIS

Final Report - Reissue

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails	6: Test F30 Ro Tails Dup
Sample Date & Time			15-Jul-05	
Moisture [%]	29-Jul-05	13:26	10.0	10.0
% solids [%]	29-Jul-05	13:26	90.0	90.0
Sample [weight(g)]	29-Jul-05	13:26	100	100
Ext.Fluid [#1 or #2]	29-Jul-05	13:26	1	1
ExtVolume [ml]	29-Jul-05	13:26	1800	1800
InitialpH [units]	29-Jul-05	13:26	9.21	9.22
Final pH [units]	29-Jul-05	13:26	9.44	9.46
pH [no unit]	28-Jul-05	18:31	7.71	7.66
Conductivity [uS/cm]	28-Jul-05	18:31	73	66
Alkalinity [mg/L as CaCO3]	28-Jul-05	18:31	20	23
Acidity [mg/L as CaCO3]	28-Jul-05	18:31	< 2	< 2
Sulphate [mg/L]	28-Jul-05	08:16	9.4	11
Mercury [mg/L]	26-Jul-05	13:41	< 0.0001	< 0.0001
Aluminum [mg/L]	26-Jul-05	14:26	4.58	5.57
Arsenic [mg/L]	27-Jul-05	11:16	0.020	0.020
Silver [mg/L]	26-Jul-05	14:26	< 0.005	< 0.005
Barium [mg/L]	26-Jul-05	14:26	0.685	0.683
Beryllium [mg/L]	26-Jul-05	14:26	< 0.001	< 0.001
Boron [mg/L]	26-Jul-05	14:26	0.33	0.37
Bismuth [mg/L]	26-Jul-05	14:26	< 0.05	< 0.05
Calcium [mg/L]	26-Jul-05	14:26	8.31	8.49
Cadmium [mg/L]	26-Jul-05	14:26	< 0.005	< 0.005
Cobalt [mg/L]	26-Jul-05	14:26	< 0.01	< 0.01
Chromium [mg/L]	26-Jul-05	14:26	0.07	0.08
Copper [mg/L]	26-Jul-05	14:26	0.056	0.068
Iron [mg/L]	26-Jul-05	14:26	6.89	8.49
Potassium [mg/L]	26-Jul-05	14:26	2.64	2.31

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SPLP 1312 Fluid #1

Project : CALR-11016-001

LR Report : CA10234-JUL05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Test F30 Ro Tails	6: Test F30 Ro Tails Dup
Lithium [mg/L]	26-Jul-05	14:26	< 0.005	< 0.005
Magnesium [mg/L]	26-Jul-05	14:26	3.00	3.60
Manganese [mg/L]	26-Jul-05	14:26	0.075	0.091
Molybdenum [mg/L]	26-Jul-05	14:26	< 0.02	< 0.02
Nickel [mg/L]	26-Jul-05	14:26	0.05	0.06
Lead [mg/L]	26-Jul-05	14:26	< 0.02	< 0.02
Antimony [mg/L]	26-Jul-05	14:26	< 0.05	< 0.05
Selenium [mg/L]	28-Jul-05	09:11	< 0.005	< 0.005
Tin [mg/L]	26-Jul-05	14:26	< 0.1	< 0.1
Strontium [mg/L]	26-Jul-05	14:26	0.0258	0.0275
Titanium [mg/L]	26-Jul-05	14:27	0.200	0.250
Thallium [mg/L]	26-Jul-05	14:27	< 0.1	< 0.1
Uranium [mg/L]	26-Jul-05	14:27	0.02	0.02
Vanadium [mg/L]	26-Jul-05	14:27	0.019	0.022
Tungsten [mg/L]	26-Jul-05	14:27	< 0.05	< 0.05
Yttrium [mg/L]	26-Jul-05	14:27	< 0.001	0.001
Zinc [mg/L]	26-Jul-05	14:27	0.11	0.12

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Tuesday, July 05, 2005

Date Rec. : 16 June 2005
LR Report: CA10293-JUN05
Reference: 11016-001-1

Copy: #2

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: June 16/05 Combined Floatation Tails Test F19 Decant - Day 0
Sample Date & Time			16-Jun-05
Temperature [°C]	---	---	22.2
Tot. Suspended Solids [mg/L]	21-Jun-05	14:08	3440
pH [no unit]	22-Jun-05	15:26	9.32
Acidity [mg/L as CaCO3]	22-Jun-05	15:26	< 2
Alkalinity [mg/L as CaCO3]	22-Jun-05	15:26	64
Conductivity [uS/cm]	22-Jun-05	15:26	232
Solids (Total Dissolved) [mg/L]	28-Jun-05	15:06	286
Fluoride [mg/L]	22-Jun-05	12:33	0.12
Chloride [mg/L]	20-Jun-05	11:55	18
Sulphate [mg/L]	20-Jun-05	11:55	16
Nitrite (as nitrogen) [mg/L]	20-Jun-05	11:55	< 0.6
Nitrate (as nitrogen) [mg/L]	20-Jun-05	11:55	< 0.5
Ammonia+Ammonium (N) [mg/L]	21-Jun-05	09:01	0.1
Thiosalts [as S2O3 mg/L]	24-Jun-05	09:22	25
Mercury [mg/L]	22-Jun-05	10:34	0.0010
Silver [mg/L]	27-Jun-05	16:20	0.0019
Aluminum [mg/L]	27-Jun-05	16:27	93.1
Arsenic [mg/L]	22-Jun-05	08:24	0.11
Barium [mg/L]	27-Jun-05	16:20	0.519
Beryllium [mg/L]	27-Jun-05	16:20	< 0.005
Boron [mg/L]	27-Jun-05	16:27	0.19
Bismuth [mg/L]	27-Jun-05	16:20	0.0201
Calcium [mg/L]	27-Jun-05	16:27	58.0
Cadmium [mg/L]	27-Jun-05	16:20	0.0009
Cobalt [mg/L]	27-Jun-05	16:20	0.132
Chromium [mg/L]	27-Jun-05	16:20	0.441
Copper [mg/L]	27-Jun-05	16:20	0.541
Iron [mg/L]	28-Jun-05	11:40	140
Potassium [mg/L]	27-Jun-05	16:27	31.9

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Project : CALR-11016-001

LR Report : CA10293-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: June 16/05 Combined Floatation Tails Test F19 Decant - Day 0
Lithium [mg/L]	27-Jun-05	16:27	0.006
Magnesium [mg/L]	27-Jun-05	16:27	50.4
Manganese [mg/L]	27-Jun-05	16:20	1.40
Molydenum [mg/L]	27-Jun-05	16:20	0.0102
Nickel [mg/L]	27-Jun-05	16:20	1.60
Lead [mg/L]	27-Jun-05	16:20	0.106
Antimony [mg/L]	27-Jun-05	16:20	0.0016
Selenium [mg/L]	22-Jun-05	08:24	< 0.005
Tin [mg/L]	27-Jun-05	16:20	0.007
Strontium [mg/L]	27-Jun-05	16:20	0.237
Titanium [mg/L]	27-Jun-05	16:20	5.57
Thallium [mg/L]	27-Jun-05	16:20	0.0005
Uranium [mg/L]	27-Jun-05	16:20	0.0069
Vanadium [mg/L]	27-Jun-05	16:20	0.325
Tungsten [mg/L]	27-Jun-05	16:21	0.0012
Yttrium [mg/L]	27-Jun-05	16:27	0.019
Zinc [mg/L]	27-Jun-05	16:21	0.163

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F2-161

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Wednesday, June 29, 2005

Date Rec. : 17 June 2005
LR Report: CA10319-JUN05
Reference: CofC:11016-001-2

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: June 17/05 Combined Floatation Tails Test F19 Decant - Day 1
Sample Date & Time			17-Jun-05 13:20
Temperature [°C]	---	---	22.0
Tot. Suspended Solids [mg/L]	21-Jun-05	14:08	89
pH [no unit]	22-Jun-05	15:27	7.53
Acidity [mg/L as CaCO3]	22-Jun-05	15:27	< 2
Alkalinity [mg/L as CaCO3]	22-Jun-05	15:27	35
Conductivity [uS/cm]	22-Jun-05	15:27	241
Solids (Total Dissolved) [mg/L]	23-Jun-05	12:29	280
Fluoride [mg/L]	22-Jun-05	12:34	0.20
Chloride [mg/L]	23-Jun-05	07:17	17
Sulphate [mg/L]	23-Jun-05	07:17	56
Nitrite (as nitrogen) [mg/L]	23-Jun-05	12:25	< 0.06
Nitrate (as nitrogen) [mg/L]	23-Jun-05	12:25	0.11
Ammonia+Ammonium (N) [mg/L]	21-Jun-05	10:11	< 0.1
Thiosalts [as S2O3 mg/L]	24-Jun-05	09:22	28
Mercury [mg/L]	28-Jun-05	07:31	< 0.0001
Silver [mg/L]	27-Jun-05	11:25	0.0002
Aluminum [mg/L]	28-Jun-05	12:49	17.8
Arsenic [mg/L]	22-Jun-05	08:28	0.026
Barium [mg/L]	27-Jun-05	11:25	0.086
Beryllium [mg/L]	27-Jun-05	11:25	< 0.005
Boron [mg/L]	28-Jun-05	12:49	0.08
Bismuth [mg/L]	27-Jun-05	11:25	0.0022
Calcium [mg/L]	28-Jun-05	12:49	24.4
Cadmium [mg/L]	27-Jun-05	11:25	< 0.0001
Cobalt [mg/L]	27-Jun-05	11:25	0.0133
Chromium [mg/L]	27-Jun-05	11:26	0.052
Copper [mg/L]	27-Jun-05	11:26	0.0460

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Project : CALR-11016-001

LR Report : CA10319-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: June 17/05 Combined Floatation Tails Test F19 Decant - Day 1
Iron [mg/L]	28-Jun-05	12:49	19.3
Potassium [mg/L]	28-Jun-05	12:49	19.0
Lithium [mg/L]	28-Jun-05	12:49	< 0.005
Magnesium [mg/L]	28-Jun-05	12:49	12.9
Manganese [mg/L]	27-Jun-05	11:26	0.165
Molydenum [mg/L]	27-Jun-05	11:26	0.0143
Nickel [mg/L]	27-Jun-05	11:26	0.190
Lead [mg/L]	27-Jun-05	11:26	0.0145
Antimony [mg/L]	27-Jun-05	11:26	0.0034
Selenium [mg/L]	22-Jun-05	08:28	< 0.005
Tin [mg/L]	27-Jun-05	11:26	0.004
Strontium [mg/L]	27-Jun-05	11:26	0.0934
Titanium [mg/L]	27-Jun-05	11:26	0.583
Thallium [mg/L]	27-Jun-05	11:26	< 0.0002
Uranium [mg/L]	27-Jun-05	11:26	0.0010
Vanadium [mg/L]	27-Jun-05	11:26	0.0442
Tungsten [mg/L]	27-Jun-05	11:26	0.0028
Yttrium [mg/L]	28-Jun-05	12:49	0.004
Zinc [mg/L]	27-Jun-05	11:26	0.021

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OnLine LIMS

FZ-163

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Wednesday, July 06, 2005

Date Rec. : 23 June 2005
LR Report: CA10423-JUN05
Reference: 11016-001-4

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: June 23/05 Combined Flotation Tails Test F19 Decant Day 7
Sample Date & Time			23-Jun-05 09:30
Temperature [°C]	---	---	21.6
Tot. Suspended Solids [mg/L]	28-Jun-05	09:16	16
pH [no unit]	27-Jun-05	10:40	7.67
Acidity [mg/L as CaCO3]	27-Jun-05	10:40	< 2
Alkalinity [mg/L as CaCO3]	27-Jun-05	10:40	34
Conductivity [uS/cm]	27-Jun-05	10:40	247
Solids (Total Dissolved) [mg/L]	04-Jul-05	17:23	191
Fluoride [mg/L]	27-Jun-05	10:54	0.26
Chloride [mg/L]	28-Jun-05	09:31	17
Sulphate [mg/L]	28-Jun-05	09:31	35
Nitrite (as nitrogen) [mg/L]	28-Jun-05	09:32	< 0.06
Nitrate (as nitrogen) [mg/L]	28-Jun-05	09:32	< 0.05
Ammonia+Ammonium (N) [mg/L]	23-Jun-05	22:35	0.2
Thiosalts [as S2O3 mg/L]	05-Jul-05	14:26	22
Mercury [mg/L]	28-Jun-05	07:34	< 0.0001
Silver [mg/L]	04-Jul-05	13:17	< 0.0001
Aluminum [mg/L]	05-Jul-05	11:25	0.68
Arsenic [mg/L]	28-Jun-05	09:04	0.015
Barium [mg/L]	04-Jul-05	13:17	0.022
Beryllium [mg/L]	04-Jul-05	13:17	< 0.005
Boron [mg/L]	05-Jul-05	11:25	0.05
Bismuth [mg/L]	04-Jul-05	13:17	< 0.0003
Calcium [mg/L]	05-Jul-05	11:25	16.3
Cadmium [mg/L]	04-Jul-05	13:17	< 0.0001
Cobalt [mg/L]	04-Jul-05	13:17	0.0006
Chromium [mg/L]	04-Jul-05	13:17	0.002
Copper [mg/L]	04-Jul-05	13:17	0.0009

OnLine LIMS

F2-164

SGS Lakefield Research Limited
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Project : CALR-11016-001

LR Report : CA10423-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: June 23/05 Combined Flotation Tails Test F19 Decant Day 7
Iron [mg/L]	05-Jul-05	11:25	0.44
Potassium [mg/L]	05-Jul-05	11:25	18.0
Lithium [mg/L]	05-Jul-05	11:25	< 0.005
Magnesium [mg/L]	05-Jul-05	11:25	1.70
Manganese [mg/L]	04-Jul-05	13:17	0.0064
Molydenum [mg/L]	04-Jul-05	13:17	0.0140
Nickel [mg/L]	04-Jul-05	13:17	0.006
Lead [mg/L]	04-Jul-05	13:17	0.0005
Antimony [mg/L]	04-Jul-05	13:17	0.0042
Selenium [mg/L]	28-Jun-05	09:04	< 0.005
Tin [mg/L]	04-Jul-05	13:17	0.004
Strontium [mg/L]	04-Jul-05	13:17	0.0590
Titanium [mg/L]	04-Jul-05	13:17	0.010
Thallium [mg/L]	04-Jul-05	13:17	< 0.0002
Uranium [mg/L]	04-Jul-05	13:17	0.0002
Vanadium [mg/L]	04-Jul-05	13:17	0.0036
Tungsten [mg/L]	04-Jul-05	13:17	0.0028
Yttrium [mg/L]	05-Jul-05	11:25	< 0.001
Zinc [mg/L]	04-Jul-05	13:17	0.001

SG

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

OnLine LIMS

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Thursday, July 14, 2005

Date Rec. : 30 June 2005
LR Report: **CA10548-JUN05**
Reference: 11016-001-5

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: June 30/05 Combined Flotation Tails Test F19 Decant - Day 14
Sample Date & Time			30-Jun-05 13:30
Temperature [°C]	---	---	13.4
Tot. Suspended Solids [mg/L]	07-Jul-05	09:16	5
pH [no unit]	07-Jul-05	12:35	7.83
Acidity [mg/L as CaCO3]	07-Jul-05	12:35	< 2
Alkalinity [mg/L as CaCO3]	07-Jul-05	12:35	494
Conductivity [uS/cm]	07-Jul-05	12:35	2060
Solids (Total Dissolved) [mg/L]	06-Jul-05	11:59	1150
Fluoride [mg/L]	07-Jul-05	09:08	0.32
Chloride [mg/L]	05-Jul-05	14:33	18
Sulphate [mg/L]	05-Jul-05	14:33	49
Nitrite (as nitrogen) [mg/L]	05-Jul-05	14:33	< 0.06
Nitrate (as nitrogen) [mg/L]	05-Jul-05	14:33	< 0.05
Ammonia+Ammonium (N) [mg/L]	05-Jul-05	09:18	0.2
Thiosalts [as S2O3 mg/L]	08-Jul-05	14:45	15
Mercury [mg/L]	08-Jul-05	12:58	< 0.0001
Silver [mg/L]	13-Jul-05	19:07	< 0.0001
Aluminum [mg/L]	07-Jul-05	15:09	0.24
Arsenic [mg/L]	13-Jul-05	03:28	0.028
Barium [mg/L]	13-Jul-05	19:07	0.027
Beryllium [mg/L]	13-Jul-05	19:07	< 0.005
Boron [mg/L]	07-Jul-05	15:09	0.18
Bismuth [mg/L]	13-Jul-05	19:07	< 0.0003
Calcium [mg/L]	07-Jul-05	15:09	19.6
Cadmium [mg/L]	13-Jul-05	19:07	< 0.0001
Cobalt [mg/L]	13-Jul-05	19:07	0.0006
Chromium [mg/L]	13-Jul-05	19:07	0.002
Copper [mg/L]	13-Jul-05	19:07	0.0014
Iron [mg/L]	07-Jul-05	15:09	0.14
Potassium [mg/L]	07-Jul-05	15:09	16.8

OnLine LIMS

F2-166

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Project : CALR-11016-001

LR Report : CA10548-JUN05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: June 30/05 Combined Flotation Tails Test F19 Decant - Day 14
Lithium [mg/L]	07-Jul-05	15:09	< 0.005
Magnesium [mg/L]	07-Jul-05	15:09	2.21
Manganese [mg/L]	13-Jul-05	19:07	0.0037
Molydenum [mg/L]	13-Jul-05	19:07	0.0180
Nickel [mg/L]	13-Jul-05	19:07	0.008
Lead [mg/L]	13-Jul-05	19:07	0.0007
Antimony [mg/L]	13-Jul-05	19:07	0.0055
Selenium [mg/L]	13-Jul-05	03:28	< 0.005
Tin [mg/L]	13-Jul-05	19:08	0.001
Strontium [mg/L]	13-Jul-05	19:08	0.0656
Titanium [mg/L]	13-Jul-05	19:08	0.004
Thallium [mg/L]	13-Jul-05	19:08	< 0.0002
Uranium [mg/L]	13-Jul-05	19:08	0.0004
Vanadium [mg/L]	13-Jul-05	19:08	0.0023
Tungsten [mg/L]	13-Jul-05	19:08	0.0030
Yttrium [mg/L]	07-Jul-05	15:09	< 0.001
Zinc [mg/L]	13-Jul-05	19:08	< 0.001

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Project Coordinator
Environmental Services, Analytical

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Wednesday, August 17, 2005

Date Rec. : 10 August 2005
LR Report: CA10160-AUG05
Reference: 11016-001-5

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: June 30/05 Combined Flotation Tails Test F19 Decant - Day 14
Sample Date & Time			30-Jun-05 13:30
Alkalinity [mg/L as CaCO3]	12-Aug-05	13:26	39
Conductivity [uS/cm]	12-Aug-05	13:26	290
Solids (Total Dissolved) [mg/L]	17-Aug-05	09:37	190

Original results reported under CA10548-JUN05.

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

July 27, 2005

Date Rec. : 14 July 2005
LR Report: CA10194-JUL05
Reference: 11016-001-7

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CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 14/05 Combined Flotation Tails Test F19 Decant-Day 28
Sample Date & Time			14-Jul-05 10:30
Temperature Upon [Receipt °C]	---	---	27.1
Tot Suspended Solids [mg/L]	21-Jul-05	14:58	3
pH [units]	19-Jul-05	09:26	7.62
Acidity [mg/L as CaCO3]	19-Jul-05	09:26	< 2
Alkalinity [mg/L as CaCO3]	19-Jul-05	09:26	52
Conductivity [uS/cm]	19-Jul-05	09:26	325
Tot.Dissolved Solids [mg/L]	21-Jul-05	14:23	243
F [mg/L]	15-Jul-05	15:30	0.29
Cl [mg/L]	18-Jul-05	11:51	17
SO4 [mg/L]	18-Jul-05	11:51	85
NO2 [as N mg/L]	18-Jul-05	11:51	< 0.06
NO3 [as N mg/L]	18-Jul-05	11:51	< 0.05
NH3+NH4 [as N mg/L]	15-Jul-05	18:50	< 0.1
Thiosalts [as S2O3 mg/L]	18-Jul-05	13:27	< 10
Hg [mg/L]	20-Jul-05	13:46	< 0.0001
Ag [mg/L]	22-Jul-05	12:49	< 0.0001
Al [mg/L]	22-Jul-05	07:20	1.99
As [mg/L]	21-Jul-05	08:34	0.011
Ba [mg/L]	22-Jul-05	12:49	0.053
Be [mg/L]	22-Jul-05	12:49	< 0.005
B [mg/L]	22-Jul-05	07:20	0.05
Bi [mg/L]	22-Jul-05	12:49	< 0.0003
Ca [mg/L]	22-Jul-05	07:20	32.4
Cd [mg/L]	22-Jul-05	12:49	< 0.0001
Co [mg/L]	22-Jul-05	12:49	0.0032
Cr [mg/L]	22-Jul-05	12:49	0.010
Cu [mg/L]	22-Jul-05	12:49	0.0065
Fe [mg/L]	22-Jul-05	07:20	2.20
K [mg/L]	22-Jul-05	07:20	21.1
Li [mg/L]	22-Jul-05	07:20	< 0.005

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Project : CALR-11016-001

LR Report : CA10194-JUL05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 14/05 Combined Flotation Tails Test F19 Decant-Day 28
Mg [mg/L]	22-Jul-05	07:20	5.30
Mn [mg/L]	22-Jul-05	12:49	0.0437
Mo [mg/L]	22-Jul-05	12:49	0.0193
Ni [mg/L]	22-Jul-05	12:49	0.040
Pb [mg/L]	22-Jul-05	12:49	0.0018
Sb [mg/L]	22-Jul-05	12:49	0.0049
Se [mg/L]	21-Jul-05	08:34	< 0.005
Sn [mg/L]	22-Jul-05	12:49	0.001
Sr [mg/L]	22-Jul-05	12:49	0.0963
Ti [mg/L]	22-Jul-05	12:49	0.087
Tl [mg/L]	22-Jul-05	12:49	< 0.0002
U [mg/L]	22-Jul-05	12:49	0.0006
V [mg/L]	22-Jul-05	12:49	0.0101
W [mg/L]	22-Jul-05	12:49	0.0018
Y [mg/L]	22-Jul-05	07:20	< 0.001
Zn [mg/L]	22-Jul-05	12:50	0.007

Deborah Masson Stogran, B.Sc, C.Chem
GM, Environmental Services, Analytical

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Tuesday, August 23, 2005

Date Rec. : 11 August 2005
LR Report: CA10191-AUG05
Reference: 11016-001-13

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Aug 11/05 Combined Floation Tails Test F19 Decant - Day 56
Sample Date & Time			11-Aug-05 11:15
Temperature [°C]	---	---	23.9
Tot. Suspended Solids [mg/L]	17-Aug-05	09:48	< 2
pH [no unit]	17-Aug-05	13:46	7.88
Acidity [mg/L as CaCO3]	17-Aug-05	13:46	< 2
Alkalinity [mg/L as CaCO3]	17-Aug-05	13:46	52
Conductivity [uS/cm]	17-Aug-05	13:46	396
Solids (Total Dissolved) [mg/L]	19-Aug-05	09:54	266
Fluoride [mg/L]	18-Aug-05	13:45	0.39
Chloride [mg/L]	15-Aug-05	14:50	17
Sulphate [mg/L]	15-Aug-05	14:50	120
Nitrite (as nitrogen) [mg/L]	15-Aug-05	14:50	< 0.06
Nitrate (as nitrogen) [mg/L]	15-Aug-05	14:50	< 0.05
Ammonia+Ammonium (N) [mg/L]	15-Aug-05	20:14	< 0.1
Thiosalts [as S2O3 mg/L]	15-Aug-05	09:43	< 10
Mercury [mg/L]	17-Aug-05	14:49	< 0.0001
Silver [mg/L]	17-Aug-05	08:14	< 0.0001
Aluminum [mg/L]	17-Aug-05	08:23	0.08
Arsenic [mg/L]	17-Aug-05	08:51	0.11
Barium [mg/L]	17-Aug-05	08:14	0.040
Beryllium [mg/L]	17-Aug-05	08:14	< 0.005
Boron [mg/L]	17-Aug-05	08:23	0.05
Bismuth [mg/L]	17-Aug-05	08:14	< 0.0003
Calcium [mg/L]	17-Aug-05	08:23	42.3
Cadmium [mg/L]	17-Aug-05	08:14	< 0.0001
Cobalt [mg/L]	17-Aug-05	08:14	0.0013
Chromium [mg/L]	17-Aug-05	08:14	< 0.001
Copper [mg/L]	17-Aug-05	08:14	< 0.0008
Iron [mg/L]	17-Aug-05	08:23	< 0.02
Potassium [mg/L]	17-Aug-05	08:24	24.5
Lithium [mg/L]	17-Aug-05	08:24	< 0.005
Magnesium [mg/L]	17-Aug-05	08:24	4.68

SGS

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Project : CALR-11016-001

LR Report : CA10191-AUG05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Aug 11/05 Combined Floation Tails Test F19 Decant - Day 56
Manganese [mg/L]	17-Aug-05	08:14	0.0042
Molydenum [mg/L]	17-Aug-05	08:14	0.0224
Nickel [mg/L]	17-Aug-05	08:14	0.006
Lead [mg/L]	17-Aug-05	08:14	< 0.0002
Antimony [mg/L]	17-Aug-05	08:14	0.0041
Selenium [mg/L]	17-Aug-05	08:14	< 0.005
Tin [mg/L]	17-Aug-05	08:14	0.007
Strontium [mg/L]	17-Aug-05	08:14	0.124
Titanium [mg/L]	17-Aug-05	08:14	< 0.003
Thallium [mg/L]	17-Aug-05	08:14	< 0.0002
Uranium [mg/L]	17-Aug-05	08:14	0.0014
Vanadium [mg/L]	17-Aug-05	08:14	0.0037
Tungsten [mg/L]	17-Aug-05	08:14	0.0033
Yttrium [mg/L]	17-Aug-05	08:24	< 0.001
Zinc [mg/L]	17-Aug-05	08:14	< 0.001

SGJ

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

OnLine LIMS

F2-172

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

July 27, 2005

Date Rec. : 14 July 2005
LR Report: CA10193-JUL05
Reference: 11016-001-6

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CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 13/05 Test F30 Ro tails Decant-Day 0
Sample Date & Time			13-Jul-05 16:20
Temperature Upon [Receipt °C]	---	---	9.1
Tot Suspended Solids [mg/L]	21-Jul-05	14:57	138
pH [units]	19-Jul-05	09:26	8.09
Acidity [mg/L as CaCO3]	19-Jul-05	09:26	< 2
Alkalinity [mg/L as CaCO3]	19-Jul-05	09:26	77
Conductivity [uS/cm]	19-Jul-05	09:26	414
Tot.Dissolved Solids [mg/L]	21-Jul-05	14:23	317
F [mg/L]	15-Jul-05	15:30	0.22
Cl [mg/L]	18-Jul-05	11:51	16
SO4 [mg/L]	18-Jul-05	11:51	99
NO2 [as N mg/L]	18-Jul-05	11:51	< 0.06
NO3 [as N mg/L]	18-Jul-05	11:51	0.50
NH3+NH4 [as N mg/L]	15-Jul-05	18:50	0.1
Thiosalts [as S2O3 mg/L]	18-Jul-05	13:27	< 10
Hg [mg/L]	20-Jul-05	13:46	< 0.0001
Ag [mg/L]	22-Jul-05	12:48	< 0.0001
Al [mg/L]	22-Jul-05	07:19	3.16
As [mg/L]	21-Jul-05	08:35	0.005
Ba [mg/L]	22-Jul-05	12:48	0.075
Be [mg/L]	22-Jul-05	12:48	< 0.005
B [mg/L]	22-Jul-05	07:19	0.05
Bi [mg/L]	22-Jul-05	12:48	< 0.0003
Ca [mg/L]	22-Jul-05	07:19	46.8
Cd [mg/L]	22-Jul-05	12:48	< 0.0001
Co [mg/L]	22-Jul-05	12:48	0.0021
Cr [mg/L]	22-Jul-05	12:48	0.012
Cu [mg/L]	22-Jul-05	12:49	0.0096
Fe [mg/L]	22-Jul-05	07:19	3.73
K [mg/L]	22-Jul-05	07:19	26.4
Li [mg/L]	22-Jul-05	07:19	< 0.005
Mg [mg/L]	22-Jul-05	07:20	10.1

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Project : CALR-11016-001
LR Report : CA10193-JUL05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 13/05 Test F30 Ro tails Decant-Day 0
Mn [mg/L]	22-Jul-05	12:49	0.0494
Mo [mg/L]	22-Jul-05	12:49	0.0119
Ni [mg/L]	22-Jul-05	12:49	0.030
Pb [mg/L]	22-Jul-05	12:49	0.0013
Sb [mg/L]	22-Jul-05	12:49	0.0019
Se [mg/L]	21-Jul-05	08:35	0.008
Sn [mg/L]	22-Jul-05	12:49	0.007
Sr [mg/L]	22-Jul-05	12:49	0.149
Ti [mg/L]	22-Jul-05	12:49	0.113
Tl [mg/L]	22-Jul-05	12:49	< 0.0002
U [mg/L]	22-Jul-05	12:49	0.0007
V [mg/L]	22-Jul-05	12:49	0.0096
W [mg/L]	22-Jul-05	12:49	0.0008
Y [mg/L]	22-Jul-05	07:20	< 0.001
Zn [mg/L]	22-Jul-05	12:49	0.006

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Online LIMS

F2-174

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

,
,
Phone: , Fax:

July 29, 2005

Date Rec. : 15 July 2005
LR Report: CA10217-JUL05

Copy: #2

CERTIFICATE OF ANALYSIS
Final Report - Revised

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 14/05 Test F30 Fo Tails Decants - Day 1
Sample Date & Time			14-Jul-05 16:20
Temperature Upon [Receipt °C]	---	---	25.4
Tot Suspended Solids [mg/L]	21-Jul-05	10:40	< 2
pH [units]	20-Jul-05	08:59	7.84
Acidity [mg/L as CaCO3]	20-Jul-05	08:59	< 2
Alkalinity [mg/L as CaCO3]	20-Jul-05	08:59	75
Conductivity [uS/cm]	20-Jul-05	08:59	458
Tot.Dissolved Solids [mg/L]	21-Jul-05	14:23	277
F [mg/L]	19-Jul-05	15:35	0.25
Cl [mg/L]	18-Jul-05	11:39	17
SO4 [mg/L]	22-Jul-05	13:56	130
NO2 [as N mg/L]	18-Jul-05	11:40	< 0.06
NO3 [as N mg/L]	18-Jul-05	11:40	0.45
NH3+NH4 [as N mg/L]	19-Jul-05	07:56	< 0.1
Thiosalts [as S2O3 mg/L]	29-Jul-05	13:37	11
Hg [mg/L]	20-Jul-05	13:48	< 0.0001
Ag [mg/L]	22-Jul-05	12:48	< 0.0001
Al [mg/L]	22-Jul-05	07:17	0.18
As [mg/L]	21-Jul-05	08:33	0.009
Ba [mg/L]	22-Jul-05	12:48	0.065
Be [mg/L]	22-Jul-05	12:48	< 0.005
B [mg/L]	22-Jul-05	07:17	0.04
Bi [mg/L]	22-Jul-05	12:48	< 0.0003
Ca [mg/L]	22-Jul-05	07:17	46.5
Cd [mg/L]	22-Jul-05	12:48	< 0.0001
Co [mg/L]	22-Jul-05	12:48	< 0.0003
Cr [mg/L]	22-Jul-05	12:48	< 0.001
Cu [mg/L]	22-Jul-05	12:48	< 0.0008
Fe [mg/L]	22-Jul-05	07:17	0.12
K [mg/L]	22-Jul-05	07:17	24.7
Li [mg/L]	22-Jul-05	07:17	< 0.005
Mg [mg/L]	22-Jul-05	07:17	8.78
Mn [mg/L]	22-Jul-05	12:48	0.0138

OnLine LIMS

F2-175

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Project : CALR-11016-001

LR Report : CA10217-JUL05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 14/05 Test F30 Fo Tails Decants - Day 1
Mo [mg/L]	22-Jul-05	12:48	0.0125
Ni [mg/L]	22-Jul-05	12:48	0.005
Pb [mg/L]	22-Jul-05	12:48	< 0.0002
Sb [mg/L]	22-Jul-05	12:48	0.0020
Se [mg/L]	21-Jul-05	08:33	< 0.005
Sn [mg/L]	22-Jul-05	12:48	0.002
Sr [mg/L]	22-Jul-05	12:48	0.145
Ti [mg/L]	22-Jul-05	12:48	0.004
Tl [mg/L]	22-Jul-05	12:48	< 0.0002
U [mg/L]	22-Jul-05	12:48	0.0006
V [mg/L]	22-Jul-05	12:48	< 0.0009
W [mg/L]	22-Jul-05	12:48	0.0008
Y [mg/L]	22-Jul-05	07:17	< 0.001
Zn [mg/L]	22-Jul-05	12:48	< 0.001

Deborah Masson Stogran, B.Sc, C.Chem
GM, Environmental Services, Analytical

SGS

SGS Lakefield Research Limited
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Phone: 705-652-2038 FAX: 705-652-6441

Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Phone: , Fax:

July 29, 2005

Date Rec. : 20 July 2005
LR Report: CA10286-JUL05
Reference: 11016-001-11

Copy: #2

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 20/05 Test F30 Ro Tails Decant - Day 7
Sample Date & Time			20-Jul-05 08:45
Temperature Upon [Receipt °C]	---	---	25.1
Tot Suspended Solids [mg/L]	26-Jul-05	13:03	2
pH [units]	26-Jul-05	13:15	8.02
Acidity [mg/L as CaCO3]	26-Jul-05	13:15	< 2
Alkalinity [mg/L as CaCO3]	26-Jul-05	13:15	77
Conductivity [uS/cm]	26-Jul-05	13:15	464
Tot.Dissolved Solids [mg/L]	27-Jul-05	15:08	306
F [mg/L]	26-Jul-05	13:10	0.30
Cl [mg/L]	25-Jul-05	11:16	16
SO4 [mg/L]	25-Jul-05	11:16	120
NO2 [as N mg/L]	25-Jul-05	11:16	< 0.06
NO3 [as N mg/L]	25-Jul-05	11:16	< 0.05
NH3+NH4 [as N mg/L]	21-Jul-05	11:14	< 0.1
Thiosalts [as S2O3 mg/L]	29-Jul-05	13:37	< 10
Hg [mg/L]	22-Jul-05	14:26	< 0.0001
Ag [mg/L]	28-Jul-05	08:58	< 0.0001
Al [mg/L]	26-Jul-05	13:19	1.06
As [mg/L]	27-Jul-05	11:17	0.006
Ba [mg/L]	28-Jul-05	08:58	0.068
Be [mg/L]	28-Jul-05	08:58	< 0.005
B [mg/L]	26-Jul-05	13:19	0.06
Bi [mg/L]	28-Jul-05	08:58	< 0.0003
Ca [mg/L]	26-Jul-05	13:19	53.0
Cd [mg/L]	28-Jul-05	08:58	< 0.0001
Co [mg/L]	28-Jul-05	08:58	0.0010
Cr [mg/L]	28-Jul-05	08:58	0.005
Cu [mg/L]	28-Jul-05	08:58	0.0033
Fe [mg/L]	26-Jul-05	13:19	1.60
K [mg/L]	26-Jul-05	13:19	28.2
Li [mg/L]	26-Jul-05	13:19	< 0.005
Mg [mg/L]	26-Jul-05	13:19	10.4

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Project : CALR-11016-001
LR Report : CA10286-JUL05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 20/05 Test F30 Ro Tails Decant - Day 7
Mn [mg/L]	28-Jul-05	08:58	0.0313
Mo [mg/L]	28-Jul-05	08:58	0.0167
Ni [mg/L]	28-Jul-05	08:58	0.014
Pb [mg/L]	28-Jul-05	08:58	0.0010
Sb [mg/L]	28-Jul-05	08:58	0.0018
Se [mg/L]	28-Jul-05	08:58	< 0.005
Sn [mg/L]	28-Jul-05	08:58	0.006
Sr [mg/L]	28-Jul-05	08:58	0.145
Ti [mg/L]	28-Jul-05	08:58	0.045
Tl [mg/L]	28-Jul-05	08:58	< 0.0002
U [mg/L]	28-Jul-05	08:58	0.0009
V [mg/L]	28-Jul-05	08:58	0.0039
W [mg/L]	28-Jul-05	08:58	0.0010
Y [mg/L]	26-Jul-05	13:20	< 0.001
Zn [mg/L]	28-Jul-05	08:58	0.004

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Tuesday, August 09, 2005

Date Rec. : 27 July 2005
LR Report: CA10407-JUL05
Reference: 11016-001-12

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 27/05 Test F30 Ro Tails Decant - Day 14
Sample Date & Time			27-Jul-05 14:15
Temperature [°C]	---	---	24.6
Tot. Suspended Solids [mg/L]	02-Aug-05	15:50	6
pH [no unit]	29-Jul-05	16:09	8.24
Acidity [mg/L as CaCO3]	02-Aug-05	16:27	< 2
Alkalinity [mg/L as CaCO3]	29-Jul-05	16:09	76
Conductivity [uS/cm]	29-Jul-05	16:09	190
Solids (Total Dissolved) [mg/L]	02-Aug-05	15:34	306
Fluoride [mg/L]	02-Aug-05	14:31	0.47
Chloride [mg/L]	02-Aug-05	15:57	17
Sulphate [mg/L]	02-Aug-05	15:57	130
Nitrite (as nitrogen) [mg/L]	02-Aug-05	15:57	< 0.06
Nitrate (as nitrogen) [mg/L]	02-Aug-05	15:57	< 0.05
Ammonia+Ammonium (N) [mg/L]	28-Jul-05	08:53	< 0.1
Thiosalts [as S2O3 mg/L]	04-Aug-05	08:14	< 10
Mercury [mg/L]	02-Aug-05	14:41	< 0.0001
Silver [mg/L]	03-Aug-05	14:05	< 0.0001
Aluminum [mg/L]	04-Aug-05	08:42	0.15
Arsenic [mg/L]	09-Aug-05	09:47	0.006
Barium [mg/L]	03-Aug-05	14:05	0.060
Beryllium [mg/L]	03-Aug-05	14:05	< 0.005
Boron [mg/L]	04-Aug-05	08:42	0.05
Bismuth [mg/L]	03-Aug-05	14:05	< 0.0003
Calcium [mg/L]	04-Aug-05	08:42	49.9
Cadmium [mg/L]	03-Aug-05	14:05	< 0.0001
Cobalt [mg/L]	03-Aug-05	14:05	0.0003
Chromium [mg/L]	03-Aug-05	14:06	< 0.001
Copper [mg/L]	03-Aug-05	14:06	0.0008
Iron [mg/L]	04-Aug-05	08:42	0.13
Potassium [mg/L]	04-Aug-05	08:42	27.7

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Project : CALR-11016-001

LR Report : CA10407-JUL05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: July 27/05 Test F30 Ro Tails Decant - Day 14
Lithium [mg/L]	04-Aug-05	08:42	< 0.005
Magnesium [mg/L]	04-Aug-05	08:42	10.1
Manganese [mg/L]	03-Aug-05	14:06	0.0171
Molydenum [mg/L]	03-Aug-05	14:06	0.0177
Nickel [mg/L]	03-Aug-05	14:06	0.005
Lead [mg/L]	03-Aug-05	14:06	0.0007
Antimony [mg/L]	03-Aug-05	14:06	0.0020
Selenium [mg/L]	09-Aug-05	09:46	< 0.005
Tin [mg/L]	03-Aug-05	14:06	0.010
Strontium [mg/L]	03-Aug-05	14:06	0.144
Titanium [mg/L]	03-Aug-05	14:06	0.003
Thallium [mg/L]	03-Aug-05	14:06	< 0.0002
Uranium [mg/L]	03-Aug-05	14:06	0.0013
Vanadium [mg/L]	03-Aug-05	14:06	0.0013
Tungsten [mg/L]	03-Aug-05	14:06	0.0012
Yttrium [mg/L]	04-Aug-05	08:43	< 0.001
Zinc [mg/L]	03-Aug-05	14:06	0.002

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F2-180

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Thursday, August 25, 2005

Date Rec. : 10 August 2005
LR Report: CA10177-AUG05
Reference: 11016-001-13

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Aug 10/05 Test F30 Ro Tails Decant-Day 28
Sample Date & Time			10-Aug-05 12:00
Temperature [°C]	---	---	24.9
Tot. Suspended Solids [mg/L]	15-Aug-05	12:20	< 2
pH [no unit]	15-Aug-05	10:08	7.99
Acidity [mg/L as CaCO3]	15-Aug-05	10:08	< 2
Alkalinity [mg/L as CaCO3]	15-Aug-05	10:08	81
Conductivity [uS/cm]	15-Aug-05	10:08	507
Solids (Total Dissolved) [mg/L]	17-Aug-05	10:25	343
Fluoride [mg/L]	12-Aug-05	16:26	0.54
Chloride [mg/L]	12-Aug-05	13:48	16
Sulphate [mg/L]	12-Aug-05	13:48	130
Nitrite (as nitrogen) [mg/L]	12-Aug-05	13:48	< 0.06
Nitrate (as nitrogen) [mg/L]	12-Aug-05	13:48	< 0.05
Ammonia+Ammonium (N) [mg/L]	11-Aug-05	10:29	0.2
Thiosalts [as S2O3 mg/L]	15-Aug-05	09:42	< 10
Mercury [mg/L]	17-Aug-05	13:05	< 0.0001
Silver [mg/L]	17-Aug-05	13:05	< 0.0001
Aluminum [mg/L]	15-Aug-05	13:54	0.15
Arsenic [mg/L]	17-Aug-05	08:48	0.008
Barium [mg/L]	17-Aug-05	13:05	0.053
Beryllium [mg/L]	17-Aug-05	13:05	< 0.005
Boron [mg/L]	15-Aug-05	13:54	0.06
Bismuth [mg/L]	17-Aug-05	13:05	< 0.0003
Calcium [mg/L]	15-Aug-05	13:54	48.0
Cadmium [mg/L]	17-Aug-05	13:06	< 0.0001
Cobalt [mg/L]	17-Aug-05	13:06	< 0.0003
Chromium [mg/L]	17-Aug-05	13:06	< 0.001
Copper [mg/L]	17-Aug-05	13:06	0.0010
Iron [mg/L]	15-Aug-05	13:54	0.11
Potassium [mg/L]	15-Aug-05	13:54	27.4

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Project : CALR-11016-001

LR Report : CA10177-AUG05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Aug 10/05 Test F30 Ro Tails Decant-Day 28
Lithium [mg/L]	15-Aug-05	13:54	< 0.005
Magnesium [mg/L]	15-Aug-05	13:53	10.4
Manganese [mg/L]	17-Aug-05	13:06	0.0075
Molydenum [mg/L]	17-Aug-05	13:06	0.0216
Nickel [mg/L]	17-Aug-05	13:06	0.004
Lead [mg/L]	17-Aug-05	13:06	0.0004
Antimony [mg/L]	17-Aug-05	13:06	0.0022
Selenium [mg/L]	17-Aug-05	08:48	< 0.005
Tin [mg/L]	17-Aug-05	13:06	0.007
Strontium [mg/L]	17-Aug-05	13:06	0.147
Titanium [mg/L]	17-Aug-05	13:06	0.004
Thallium [mg/L]	17-Aug-05	13:06	< 0.0002
Uranium [mg/L]	17-Aug-05	13:06	0.0016
Vanadium [mg/L]	17-Aug-05	13:06	0.0020
Tungsten [mg/L]	17-Aug-05	13:06	0.0013
Yttrium [mg/L]	15-Aug-05	13:53	< 0.001
Zinc [mg/L]	17-Aug-05	13:06	0.003

Brian Graham B.Sc.
Project Coordinator
Environmental Services, Analytical

OnLine LIMS

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Project : CALR-11016-001

Environmental Services
Attn : Barb Bowman marilyn.kelly@sgs.com

Tuesday, September 13, 2005

Date Rec. : 07 September 2005
LR Report: CA10097-SEP05
Reference: 11016-001-15

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Sept 7/05 Test F30 Ro Tails Decant-Day 56
Sample Date & Time			07-Sep-05 11:30
Temperature [°C]	---	---	22.4
Tot. Suspended Solids [mg/L]	09-Sep-05	09:53	< 2
pH [no unit]	13-Sep-05	15:22	8.00
Acidity [mg/L as CaCO3]	13-Sep-05	15:22	< 2
Alkalinity [mg/L as CaCO3]	13-Sep-05	15:22	85
Conductivity [uS/cm]	13-Sep-05	15:22	493
Solids (Total Dissolved) [mg/L]	13-Sep-05	09:31	383
Fluoride [mg/L]	09-Sep-05	08:42	0.63
Chloride [mg/L]	09-Sep-05	13:04	17
Sulphate [mg/L]	09-Sep-05	13:04	130
Nitrite (as nitrogen) [mg/L]	09-Sep-05	13:05	< 0.06
Nitrate (as nitrogen) [mg/L]	09-Sep-05	13:05	< 0.05
Ammonia+Ammonium (N) [mg/L]	07-Sep-05	22:47	< 0.1
Thiosalts [as S2O3 mg/L]	13-Sep-05	09:32	< 10
Mercury [mg/L]	09-Sep-05	14:30	< 0.0001
Silver [mg/L]	12-Sep-05	08:37	< 0.0001
Aluminum [mg/L]	12-Sep-05	08:37	0.06
Arsenic [mg/L]	13-Sep-05	08:28	0.005
Barium [mg/L]	12-Sep-05	08:37	0.048
Beryllium [mg/L]	12-Sep-05	08:37	< 0.005
Boron [mg/L]	12-Sep-05	08:37	0.06
Bismuth [mg/L]	12-Sep-05	08:37	< 0.0003
Calcium [mg/L]	12-Sep-05	08:38	50.7
Cadmium [mg/L]	12-Sep-05	08:37	< 0.0001
Cobalt [mg/L]	12-Sep-05	08:37	< 0.0003
Chromium [mg/L]	12-Sep-05	08:37	< 0.001
Copper [mg/L]	12-Sep-05	08:37	< 0.0008
Iron [mg/L]	12-Sep-05	08:38	< 0.02
Potassium [mg/L]	12-Sep-05	08:38	25.9

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Project : CALR-11016-001

LR Report : CA10097-SEP05

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: Sept 7/05 Test F30 Ro Tails Decant-Day 56
Lithium [mg/L]	12-Sep-05	08:38	< 0.005
Magnesium [mg/L]	12-Sep-05	08:38	10.6
Manganese [mg/L]	12-Sep-05	08:35	0.0047
Molydenum [mg/L]	12-Sep-05	08:35	0.0225
Nickel [mg/L]	12-Sep-05	08:35	0.003
Lead [mg/L]	12-Sep-05	08:35	< 0.0002
Antimony [mg/L]	12-Sep-05	08:35	0.0019
Selenium [mg/L]	12-Sep-05	08:44	< 0.005
Tin [mg/L]	12-Sep-05	08:35	0.001
Strontium [mg/L]	12-Sep-05	08:35	0.155
Titanium [mg/L]	12-Sep-05	08:35	< 0.003
Thallium [mg/L]	12-Sep-05	08:35	< 0.0002
Uranium [mg/L]	12-Sep-05	08:35	0.0017
Vanadium [mg/L]	12-Sep-05	08:35	0.0018
Tungsten [mg/L]	12-Sep-05	08:35	0.0011
Yttrium [mg/L]	12-Sep-05	08:35	< 0.0001
Zinc [mg/L]	12-Sep-05	08:35	0.002

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Project Coordinator
Environmental Services, Analytical

OnLine LIMS

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REPORT SUMMARY
ACUTE LETHALITY

Workorder No: 207657

Stantec

Barbara Bowman
SGS Lakefield Research Limited
P.O. Box 4300, 185 Concession Street
Lakefield ON
K0L 2H0

RESULTS

Substance	Date Collected	Date Tested	Species / Test	LC50	% Mortality at 100% Effluent Concentration
11118 JULY 23/05 - COMBINED FLOTATION TAILS DECANT DAY 7	2005-06-23	2005-06-24	Dm LC50	>100%	0

RBT = rainbow trout

Dm = *Daphnia magna*

Test Protocols

Environment Canada. 1990. Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna. Environment Canada, Conservation and Protection. Ottawa, Ontario. Reference Method EPS1/RM14 (including Dec.2000 amendments).

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Stantec

Work Order : 207657
Sample Number : 12937

SAMPLE IDENTIFICATION

Company :	SGS Lakefield Research Limited	Time Collected :	09:30
Location :	Lakefield ON	Date Collected :	2005-06-23
Substance :	11118	Date Received :	2005-06-24
Sampling Method :	Not given	Date Tested :	2005-06-24
Sampled By :	B. Bowman	Temp. on arrival :	24.0° C
Sample Description:	Clear, colourless, odourless.		

Test Method : *Daphnia magna* Acute Lethality Toxicity Test Protocol EPS 1/RM/14, Environment Canada, 1990 (including December, 2000 amendments).

TEST RESULTS

Effect	Value	95% Confidence Limits	Slope	Calculation Method
48-h LC50	>100%	-	-	-

The results reported relate only to the sample tested.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Daphnia Batch # :	Dm05-12		
Date Tested (y/m/d) :	2005-06-24	Historical Mean LC50 :	6.4 g/L
LC50 (95% Confidence Limits) :	6.7 g/L (6.3 - 7.1)	Warning Limits (± 2SD) :	5.0 - 8.2 g/L
Statistical Method :	Probit	Analyst(s):	AS/LM

Daphnia magna CULTURE HEALTH DATA

Time to First Brood (days) :	10.2	Avg. # Young Per Brood :	23.2
Culture Mortality (prev. 7 d) (%):	0		

TEST CONDITIONS

Sample Treatment :	None	# Replicates :	4
pH Adjustment :	None	# Animals / Replicate :	3
Test Aeration :	None	Total # Animals / Test Level :	12
Daphnia Batch # :	Dm05-12	*Daphnia* Loading Rate :	16.7 mL/organism

Date: 2005-06-29

Approved by: [signature]
Project Manager

Stantec

Daphnia magna TOXICITY TEST REPORT

Work Order: 207657
Sample Number: 12937

	Temp. (°C)	pH	D.O. (mg/L)	O_2 Sat. (%)*	Cond. (µs)	Hardness (mg/L as $CaCO_3$)	Hardness Adjustment	Total Pre-Aeration Time (h) @ 30 mL/min/L
Initial Water Chemistry:	22.0	7.4	7.2	85	252	60	None	0:00

0 hours

Date & Time 2005-06-24 13:50
Technician: AS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*	Hardness
100	0	0	7.4	7.2	252	22.0	85	60
50	0	0	8.3	7.7	332	21.0		
25	0	0	8.4	8.4	370	21.0		
13	0	0	8.5	8.3	389	21.0		
6	0	0	8.4	8.4	400	21.0		
Control	0	0	8.4	8.5	403	21.0	100	210

Notes:

24 hours

Date & Time 2005-06-25 13:50
Technician: LM

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	21.0
50	0	0	–	–	–	21.0
25	0	0	–	–	–	21.0
13	0	0	–	–	–	21.0
6	0	0	–	–	–	21.0
Control	0	0	–	–	–	21.0

Notes:

48 hours

Date & Time 2005-06-26 13:50
Technician: LM

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	7.7	7.4	262	21.0
50	0	0	7.9	6.9	341	21.0
25	0	0	8.2	7.3	378	21.0
13	0	0	8.4	8.0	397	21.0
6	0	0	8.5	8.1	407	21.0
Control	0	0	8.6	8.3	415	21.0

Notes:

# of control organisms showing stress: 0
Daphnia Batch #: Dm05-12

Number immobile does not include number of mortalities.

– = not measured
* adjusted for actual temp. & barometric pressure

Test Data Reviewed By: VAB
Date: 2005-06-27

11016-001

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REPORT SUMMARY
ACUTE LETHALITY

Workorder No: 207771

Stantec

Barbara Bowman
SGS Lakefield Research Limited
P.O. Box 4300, 185 Concession Street
Lakefield ON
K0L 2H0

RESULTS

Substance	Date Collected	Date Tested	Species / Test	LC50	% Mortality at 100% Effluent Concentration
11125 Jul 14 05 Combined Flot Tails Test F19 Decant Day 28	2005-07-14	2005-07-15	Dm LC50	>100%	0
	2005-07-14	2005-07-15	RBT LC50	>100%	0

RBT = rainbow trout

Dm = *Daphnia magna*

Test Protocols

Environment Canada.1990. Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna. Environment Canada, Conservation and Protection. Ottawa, Ontario. Reference Method EPS1/RM14 (including Dec.2000 amendments).

Environment Canada.1990. Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout. Environment Canada, Conservation and Protection. Ottawa,Ontario. Reference Method EPS1/RM/13 (including Dec.2000 amendments).

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TOXICITY TEST REPORT

Daphnia magna

Stantec

Work Order : 207771
Sample Number : 13086

SAMPLE IDENTIFICATION

Company : SGS Lakefield Research Limited
Location : Lakefield ON
Substance : 11125
Sampling Method : Not given
Sampled By : B. Bowman
Sample Description: Cloudy, colourless, strong odour.

Time Collected : Not given
Date Collected : 2005-07-14
Date Received : 2005-07-15
Date Tested : 2005-07-15
Temp. on arrival : 25.0° C

Test Method : *Daphnia magna* Acute Lethality Toxicity Test Protocol EPS 1/RM/14, Environment Canada, 1990 (including December, 2000 amendments).

TEST RESULTS

Effect	Value	95% Confidence Limits	Slope	Calculation Method
48-h LC50	>100%	-	-	- -

The results reported relate only to the sample tested.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Daphnia Batch # : Dm05-13
Date Tested (y/m/d) : 2005-07-04
LC50 (95% Confidence Limits) : 6.2 g/L (5.8 - 6.6)
Statistical Method : Probit

Historical Mean LC50 : 6.4 g/L
Warning Limits (± 2SD) : 5.0 - 8.2 g/L
Analyst(s): RS/TG

Daphnia magna CULTURE HEALTH DATA

Time to First Brood (days) : 9.6
Culture Mortality (prev. 7 d) (%): 1.1
Avg. # Young Per Brood : 28.9

TEST CONDITIONS

Sample Treatment : None
pH Adjustment : None
Test Aeration : None
Daphnia Batch # : Dm05-13

Replicates : 4
Animals / Replicate : 3
Total # Animals / Test Level : 12
Daphnia Loading Rate : 16.7 mL/organism

Date: 2005-07-27

Approved by: [signature]
Project Manager

Stantec

Daphnia magna TOXICITY TEST REPORT

Work Order: 207771
Sample Number: 13086

	Temp. (°C)	pH	D.O. (mg/L)	O_2 Sat. (%)*	Cond. (µs)	Hardness (mg/L as $CaCO_3$)	Hardness Adjustment	Total Pre-Aeration Time (h) @ 30 mL/min/L
Initial Water Chemistry:	21.0	7.5	7.5	84	368	110	None	0:00

0 hours

Date & Time 2005-07-15 15:15
Technician: SW

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*	Hardness
100	0	0	7.5	7.5	368	21.0	84	110
50	0	0	8.2	8.0	374	21.0		
25	0	0	8.4	8.1	376	21.0		
13	0	0	8.5	8.2	380	21.0		
6	0	0	8.4	8.2	383	21.0		
Control	0	0	8.5	8.4	399	21.0	99	210

Notes:

24 hours

Date & Time 2005-07-16 15:15
Technician: TAB

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	21.0
50	0	0	–	–	–	21.0
25	0	0	–	–	–	21.0
13	0	0	–	–	–	21.0
6	0	0	–	–	–	21.0
Control	0	0	–	–	–	21.0

Notes:

48 hours

Date & Time 2005-07-17 15:15
Technician: TAB

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	8.4	8.5	362	21.0
50	0	0	8.5	8.6	380	21.0
25	0	0	8.5	8.6	388	21.0
13	0	0	8.5	8.5	392	21.0
6	0	0	8.5	8.5	395	21.0
Control	0	0	8.4	8.5	397	21.0

Notes:

# of control organisms showing stress: 0
Daphnia Batch #: Dm05-13

Number immobile does not include number of mortalities.

– = not measured
* adjusted for actual temp. & barometric pressure

Test Data Reviewed By: JL
Date: 2005-07-20

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TOXICITY TEST REPORT
Rainbow Trout

Stantec

Work Order : 207771
Sample Number : 13086

SAMPLE IDENTIFICATION

Company :	SGS Lakefield Research Limited	Time Collected :	Not given
Location :	Lakefield ON	Date Collected :	2005-07-14
Substance :	11125	Date Received :	2005-07-15
Sampling Method :	Not given	Date Tested :	2005-07-15
Sampled By :	B. Bowman	Temp. on arrival :	25.0 °C
Sample Description :	Cloudy, colourless, strong odour.		

Test Method : Acute Lethality of Liquid Effluents to Fish EPS 1/RM/13, Environment Canada, 1990 (including December, 2000 amendments).

TEST RESULTS

Effect	Value	95% Confidence Limits	Slope	Calculation Method
96-h LC50	>100%	-	-	-

The results reported relate only to the sample tested.

POTASSIUM CHLORIDE REFERENCE TOXICANT DATA

Trout Batch # :	T05-10		
Date Tested (y/m/d) :	2005-07-18	Historical Mean LC50 :	3647 mg/L
LC50 (95% Confidence Limits) :	3855 mg/L (3000 - 5200)	Warning Limits (± 2SD) :	2900 - 4594 mg/L
Statistical Method :	Non-linear Interpolation	Analyst(s) :	FS/ATC/AK

TEST FISH

Control Fish Sample Size :	10	Cumulative prev. 7d stock tank mortality :	0.6 %
Mean Fish Weight (g) (± 2 SD) :	0.46 (± 0.17)	Mean Fish Fork Length (mm) (± 2 SD) :	37.7 (± 5.8)
Range of Weights (g) :	0.29 - 0.55	Range of Fork Lengths (mm) :	30 - 40
Fish Loading Rate (g/L) :	0.23		

TEST CONDITIONS

Sample Treatment :	None	Volume Tested (L) :	20
pH Adjustment :	None	# Replicates :	1
Test Aeration :	Yes	# Animals Per Replicate :	10
Aeration Rate (mL/min/L) :	6.5 ± 1	Total # Animals Per Test Level :	10
Trout Batch # :	T05-10		

Date: 2005-07-27

Approved by: K Hoetzl
Project Manager

Certified by the Canadian Association of Environmental Analytical Laboratories (CAEAL)

RAINBOW TROUT TOXICITY TEST REPORT

Work Order: 207771
Sample Number: 13086

	Temp. (°C)	pH	D.O. (mg/L)	O_2 Sat. (%)*	Cond. (umhos)	Total Pre-Aeration Time(h) @ 6.5 mL/min/L
Initial Water Chemistry:	16.0	7.4	7.5	–	346	
Chemistry after 30min air:	16.0	7.4	7.9	85	345	0:30

0 hours

Date & Time: 2005-07-15 15:00
Technician: JG

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*
100	0	0	7.4	7.9	345	16.0	85
50	0	0	8.2	8.7	430	16.0	
25	0	0	8.3	9.0	479	16.0	
13	0	0	8.3	9.0	500	16.0	
6	0	0	8.3	8.9	510	16.0	
Control	0	0	8.2	8.7	506	16.0	93

Notes:

24 hours

Date & Time: 2005-07-16 15:00
Technician: TAB

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	15.0
50	0	0	–	–	–	15.0
25	0	0	–	–	–	15.0
13	0	0	–	–	–	15.0
6	0	0	–	–	–	15.0
Control	0	0	–	–	–	15.0

Notes:

48 hours

Date & Time: 2005-07-17 15:00
Technician: TAB

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	15.0
50	0	0	–	–	–	15.0
25	0	0	–	–	–	15.0
13	0	0	–	–	–	15.0
6	0	0	–	–	–	15.0
Control	0	0	–	–	–	15.0

Notes:

72 hours

Date & Time: 2005-07-18 15:00
Technician: FS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	15.5
50	0	0	–	–	–	15.5
25	0	0	–	–	–	15.5
13	0	0	–	–	–	15.5
6	0	0	–	–	–	15.5
Control	0	0	–	–	–	15.5

Notes:

96 hours

Date & Time: 2005-07-19 15:00
Technician: FS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	7.9	8.4	349	16.0
50	0	0	8.3	8.6	508	16.0
25	0	0	8.3	8.6	540	16.0
13	0	0	8.4	8.4	504	16.0
6	0	0	8.3	8.4	528	16.0
Control	0	0	8.3	8.7	525	16.0

Notes:

# of control organisms showing stress: 0
Trout Batch #: T05-10

Number immobile does not include number of mortalities.
* adjusted for actual temp. & barometric pressure
"–" = not measured

Test Data Reviewed By: [illegible]
Date: 2005-07-22

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REPORT SUMMARY
ACUTE LETHALITY

Workorder No: 207779

Stantec

Barbara Bowman
SGS Lakefield Research Limited
P.O. Box 4300, 185 Concession Street
Lakefield ON
K0L 2H0

RESULTS

Substance	Date Collected	Date Tested	Species / Test	LC50	% Mortality at 100% Effluent Concentration
11131 TEST F30 RO TAILS-DAY 1	2005-07-14	2005-07-19	Dm LC50	>100%	0

RBT = rainbow trout

Dm = *Daphnia magna*

Test Protocols

Environment Canada.1990. Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna. Environment Canada, Conservation and Protection. Ottawa, Ontario. Reference Method EPS1/RM14 (including Dec.2000 amendments).

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TOXICITY TEST REPORT
Daphnia magna

Stantec

Work Order : 207779
Sample Number : 13097

SAMPLE IDENTIFICATION

Company :	SGS Lakefield Research Limited	Time Collected :	04:30
Location :	Lakefield ON	Date Collected :	2005-07-14
Substance :	11131	Date Received :	2005-07-19
Sampling Method :	Not given	Date Tested :	2005-07-19
Sampled By :	B. Bowman	Temp. on arrival :	25.5° C
Sample Description:	Clear, colourless, odourless.		

Test Method : *Daphnia magna* Acute Lethality Toxicity Test Protocol EPS 1/RM/14, Environment Canada, 1990 (including December, 2000 amendments).

TEST RESULTS

Effect	Value	95% Confidence Limits	Slope	Calculation Method
48-h LC50	>100%	-	-	-

The results reported relate only to the sample tested.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Daphnia Batch # :	Dm05-14		
Date Tested (y/m/d) :	2005-07-19	Historical Mean LC50 :	6.3 g/L
LC50 (95% Confidence Limits) :	5.8 g/L (4.9 - 6.8)	Warning Limits (± 2SD) :	5.0 - 8.2 g/L
Statistical Method :	Non-Linear Interpolation	Analyst(s):	AS/RS/TAB

Daphnia magna CULTURE HEALTH DATA

Time to First Brood (days) :	8.4	Avg. # Young Per Brood :	31.8
Culture Mortality (prev. 7 d) (%):	1.7		

TEST CONDITIONS

Sample Treatment :	None	# Replicates :	4
pH Adjustment :	None	# Animals / Replicate :	3
Test Aeration :	None	Total # Animals / Test Level :	12
Daphnia Batch # :	Dm05-14	*Daphnia* Loading Rate :	16.7 mL/organism

Date: 2005-07-29

Approved by: [signature]
Project Manager

Certified by the Canadian Association of Environmental Analytical Laboratories (CAEAL)

Stantec

Daphnia magna TOXICITY TEST REPORT

Work Order: 207779
Sample Number: 13097

	Temp. (°C)	pH	D.O. (mg/L)	O_2 Sat. (%)*	Cond. (µs)	Hardness (mg/L as $CaCO_3$)	Hardness Adjustment	Total Pre-Aeration Time (h) @ 30 mL/min/L
Initial Water Chemistry:	22.0	7.3	5.4	65	466	160	None	0:00

0 hours

Date & Time: 2005-07-19 14:55
Technician: AS/RS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*	Hardness
100	0	0	7.3	5.4	466	21.0	65	160
50	0	0	8.2	8.0	431	21.0		
25	0	0	8.4	8.3	413	21.0		
13	0	0	8.5	8.3	404	21.0		
6	0	0	8.5	8.3	400	21.0		
Control	0	0	8.5	8.3	398	22.0	100	230

Notes:

24 hours

Date & Time: 2005-07-20 14:55
Technician: AB

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	20.0
50	0	0	–	–	–	20.0
25	0	0	–	–	–	20.0
13	0	0	–	–	–	20.0
6	0	0	–	–	–	20.0
Control	0	0	–	–	–	20.0

Notes:

48 hours

Date & Time: 2005-07-21 14:55
Technician: TAB/RS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	8.0	7.9	480	21.0
50	0	0	8.3	8.2	441	21.0
25	0	0	8.5	8.2	422	21.0
13	0	0	8.5	8.3	413	21.0
6	0	0	8.6	8.3	409	21.0
Control	0	0	8.6	8.4	411	21.0

Notes:

# of control organisms showing stress: 0
Daphnia Batch #: Dm05-14

Number immobile does not include number of mortalities.

– = not measured
* adjusted for actual temp. & barometric pressure

Test Data Reviewed By: TAB
Date: 2005-07-26

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REPORT SUMMARY
ACUTE LETHALITY

Workorder No: 207917

Stantec

Barbara Bowman
SGS Lakefield Research Limited
P.O. Box 4300, 185 Concession Street
Lakefield ON
K0L 2H0

RESULTS

Substance	Date Collected	Date Tested	Species / Test	LC50	% Mortality at 100% Effluent Concentration
11136	2005-08-10	2005-08-11	Dm LC50	>100%	0
TEST F30 RO TAILS DECANT DAY 28	2005-08-10	2005-08-12	RBT LC50	>100%	0

PROJECT 11016-001

RBT = rainbow trout

Dm = *Daphnia magna*

Test Protocols

Environment Canada.1990. Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna. Environment Canada, Conservation and Protection. Ottawa, Ontario. Reference Method EPS1/RM14 (including Dec.2000 amendments).

Environment Canada.1990. Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout. Environment Canada, Conservation and Protection. Ottawa,Ontario. Reference Method EPS1/RM/13 (including Dec.2000 amendments).

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TOXICITY TEST REPORT

Daphnia magna

Stantec

Work Order : 207917
Sample Number : 13344

SAMPLE IDENTIFICATION

Company :	SGS Lakefield Research Limited	Time Collected :	11:30
Location :	Lakefield ON	Date Collected :	2005-08-10
Substance :	11136	Date Received :	2005-08-11
Sampling Method :	Not given	Date Tested :	2005-08-11
Sampled By :	B. Bowman	Temp. on arrival :	24.0° C
Sample Description:	Clear, colourless, odourless.		

Test Method : *Daphnia magna* Acute Lethality Toxicity Test Protocol EPS 1/RM/14, Environment Canada, 1990 (including December, 2000 amendments).

TEST RESULTS

Effect	Value	95% Confidence Limits	Slope	Calculation Method
48-h LC50	>100%	-	-	-

The results reported relate only to the sample tested.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Daphnia Batch # :	Dm05-15		
Date Tested (y/m/d) :	2005-08-02	Historical Mean LC50 :	6.4 g/L
LC50 (95% Confidence Limits) :	6.3 g/L (5.8 - 6.8)	Warning Limits (± 2SD) :	5.1 - 8.1 g/L
Statistical Method :	Non-linear Interpolation	Analyst(s):	AS

Daphnia magna CULTURE HEALTH DATA

Time to First Brood (days) :	8.6	Avg. # Young Per Brood :	30.1
Culture Mortality (prev. 7 d) (%):	2.4		

TEST CONDITIONS

Sample Treatment :	None	# Replicates :	4
pH Adjustment :	None	# Animals / Replicate :	3
Test Aeration :	None	Total # Animals / Test Level :	12
Daphnia Batch # :	Dm05-15	*Daphnia* Loading Rate :	16.7 mL/organism

Date: 2005-09-01

Approved by: [signature]
Project Manager

Stantec

Daphnia magna TOXICITY TEST REPORT

Work Order: 207917
Sample Number: 13344

	Hardness (mg/L as $CaCO_3$)	Hardness Adjustment	pH	D.O. (mg/L)	Cond. (µs)	Temp. (°C)	O_2 Sat. (%)*	Total Pre-Aeration Time (h) @ 30 mL/min/L
Initial Water Chemistry:	190	None	7.9	8.1	528	21.0	94	0:00

0 hours

Date & Time: 2005-08-11 15:55
Technician: KD/AS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*	Hardness
100	0	0	7.9	8.1	528	21.0	94	190
50	0	0	8.3	8.1	463	22.0		
25	0	0	8.4	8.1	430	22.0		
13	0	0	8.4	8.1	414	22.0		
6	0	0	8.4	8.1	409	22.0		
Control	0	0	8.5	8.2	402	22.0	99	200

Notes:

24 hours

Date & Time: 2005-08-12 15:55
Technician: KD

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	21.0
50	0	0	–	–	–	21.0
25	0	0	–	–	–	21.0
13	0	0	–	–	–	21.0
6	0	0	–	–	–	21.0
Control	0	0	–	–	–	21.0

Notes:

48 hours

Date & Time: 2005-08-13 15:55
Technician: AS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	8.2	7.9	536	20.0
50	0	0	8.4	8.0	468	20.0
25	0	0	8.5	8.4	435	20.0
13	0	0	8.5	8.3	419	20.0
6	0	0	8.5	8.3	412	20.0
Control	0	0	8.5	8.3	403	20.0

Notes:

# of control organisms showing stress: 0
Daphnia Batch #: Dm05-15

Number immobile does not include number of mortalities.

– = not measured
* adjusted for actual temp. & barometric pressure

Test Data Reviewed By: JL
Date: 2005-08-17

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TOXICITY TEST REPORT
Rainbow Trout

Stantec

Work Order : 207917
Sample Number : 13344

SAMPLE IDENTIFICATION

Company :	SGS Lakefield Research Limited	Time Collected :	11:30
Location :	Lakefield ON	Date Collected :	2005-08-10
Substance :	11136	Date Received :	2005-08-11
Sampling Method :	Not given	Date Tested :	2005-08-12
Sampled By :	B. Bowman	Temp. on arrival :	24.0 °C
Sample Description :	Clear, colourless, odourless.		

Test Method : Acute Lethality of Liquid Effluents to Fish EPS 1/RM/13, Environment Canada, 1990 (including December, 2000 amendments).

TEST RESULTS

Effect	Value	95% Confidence Limits	Slope	Calculation Method
96-h LC50	>100%	-	-	-

The results reported relate only to the sample tested.

POTASSIUM CHLORIDE REFERENCE TOXICANT DATA

Trout Batch # :	T05-13		
Date Tested (y/m/d) :	2005-08-19	Historical Mean LC50 :	3733 mg/L
LC50 (95% Confidence Limits) :	3567 mg/L (3000 - 4000)	Warning Limits (± 2SD) :	3034 - 4601 mg/L
Statistical Method :	Non-linear Interpolation	Analyst(s) :	AK/ATC

TEST FISH

Control Fish Sample Size :	10	Cumulative prev. 7d stock tank mortality :	0.3 %
Mean Fish Weight (g) (± 2 SD) :	0.37 (± 0.17)	Mean Fish Fork Length (mm) (± 2 SD) :	36.0 (± 5.1)
Range of Weights (g) :	0.29 - 0.53	Range of Fork Lengths (mm) :	32 - 40
Fish Loading Rate (g/L) :	0.37		

TEST CONDITIONS

Sample Treatment :	None	Volume Tested (L) :	10
pH Adjustment :	None	# Replicates :	1
Test Aeration :	Yes	# Animals Per Replicate :	10
Trout Batch # :	T05-13	Total # Animals Per Test Level :	10
		Pre-aeration/Aeration Rate (mL/min/L) :	6.5 ± 1

Date: 2005-09-01

Approved by: [signature]
Project Manager

Work Order: 207917
Sample Number: 13344

Total Pre-Aeration		pH	D.O. (mg/L)	Cond. (umhos)	Temp. (°C)	O_2 Sat. (%)*
Time (h)	Initial Water Chemistry:	8.0	8.8	533	15.5	–
0:30	Chemistry after 30min air:	8.0	8.9	535	15.5	95

0 hours

Date & Time 2005-08-12 16:00
Technician: AK

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*
100	0	0	8.0	8.9	535	15.5	95
50	0	0	8.2	9.0	540	15.5	
25	0	0	8.3	9.1	539	15.5	
13	0	0	8.3	9.0	541	15.5	
6	0	0	8.3	9.2	544	15.5	
Control	0	0	8.3	9.2	545	15.5	98

Notes:

24 hours

Date & Time 2005-08-13 16:00
Technician: FS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	14.5
50	0	0	–	–	–	14.5
25	0	0	–	–	–	14.5
13	0	0	–	–	–	14.5
6	0	0	–	–	–	14.5
Control	0	0	–	–	–	14.5

Notes:

48 hours

Date & Time 2005-08-14 16:00
Technician: FS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	15.0
50	0	0	–	–	–	15.0
25	0	0	–	–	–	15.0
13	0	0	–	–	–	15.0
6	0	0	–	–	–	15.0
Control	0	0	–	–	–	15.0

Notes:

72 hours

Date & Time 2005-08-15 16:00
Technician: AK

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	–	–	–	15.0
50	0	0	–	–	–	15.0
25	0	0	–	–	–	15.0
13	0	0	–	–	–	15.0
6	0	0	–	–	–	15.0
Control	0	0	–	–	–	15.0

Notes:

96 hours

Date & Time 2005-08-16 16:00
Technician: FS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	0	8.1	9.1	531	15.0
50	0	0	8.4	9.0	536	15.0
25	0	0	8.5	9.0	544	15.0
13	0	0	8.5	9.1	548	15.0
6	0	0	8.5	9.1	534	15.0
Control	0	0	8.5	9.0	542	15.0

Notes:

# of control organisms showing stress: 0
Trout Batch #: T05-13

Number immobile does not include number of mortalities.
* adjusted for actual temp. & barometric pressure
"–" = not measured

Test Data Reviewed By: JL
Date: 2005-08-19

APPENDIX F

Chain of Custody Forms

SGS – Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-3

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): CW Jun 20/05
	Address:	Logged in by (Date):
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send Invoice to:	Name: Linda Elliott	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: 10351 10352 10353 10354 10355
	Packed and Shipped by: Date /Time:	
	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:

Analyses as per attached sheet.

Moisture Content = 13.66%

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	ICP-OES/MS Strong Acid Digest	XRF Whole Rock	Modified ABA	SPLP 1312	TCLP 1311	Humidity Cell	
1		Combined Flotation Tails Test F19	1 bag	June 14/05		X	X	X	X	X	X	
2												
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) B Bowman Date June 20/05

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

11130 = COMBINED FLOTATION TAILS TEST F19

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-9

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):
	Address: Postal Bag 4300, 185 Concession Street	Logged in by (Date):
	City: Lakefield	Lab Batch ID:
	Ontario, K0M 2H0	Project No.: 11016-001
	Telephone Number: (705) 652-2000 ext. 2524 Fax: (705) 652-0743	Plant No.:
Send Invoice to:	Name: Linda Elliott	Quote No.:
	Company: Same as Above	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: (705) 652-2043 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: °C

PO # 5480.

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	Reitveld XRD					
1		11130				X					
2											
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): B Bowman Date: July 14/05

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

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-1

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.: June 10293 R05
	Company: SGS Lakefield Research Ltd	Received by (Date & Time):
	Address:	Logged in by (Date): 06 16 G7
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send Invoice to:	Name: Linda Elliott	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:	Temperature upon receipt: °C 21+1.2

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

Guideline: Regulation: initial:

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		June 16/05 Combined Flotation Tails Test F19 Decant - Day 0	7	June 16/05	1:20	X	X	X	X	X	
2											
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): B Bowman Date: June 16/05

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

F2-204

SGS – Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-2

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.: June 10319 R05
	Company: SGS Lakefield Research Ltd	Received by (Date & Time):
	Address:	Logged in by (Date): June 17 14:00
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send Invoice to:	Name: Linda Elliott	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:	22.0
	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:

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		June 17/05 Combined Flotation Tails Test F19 Decant - Day 1	6	June 17	1:20	X	X	X	X	X	
2											
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): [signature] Date: June 17/05

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

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-4

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.: June 10923
	Company: SGS Lakefield Research Ltd	Received by (Date & Time):
	Address:	Logged in by (Date): June 23 10:00
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send Invoice to:	Name: Linda Elliott	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: 21.6
	Packed and Shipped by: Date /Time:	
	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:

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		June 23/05 Combined Flotation Tails Test F19 Decant - Day 7	6	June 23/05	9:30	X	X	X	X	X	
2											
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): B Bowman Date: June 23/0

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

F2-206

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form No 11016-001-5

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: 2524 Fax:
Send Invoice to:	Name: Linda Elliott
	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.: June 10548
Received by (Date & Time): June 30 13:4
Logged in by (Date): JR
Lab Batch ID:
Project No.: 11016-001
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: 2441.6

Temperature upon receipt: °C

Please specify any guideline or regulation that those samples may apply(i.e. ODWS, PWQO, Reg 5.8, GCSO, MISA, MMER, CBWA).

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

Analyses as per attached sheet. Same analyses as June 10293

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		June 30/05 Combined Flotation Tails Test F19 Decant - Day 14	6	June 30/05	1:30	X	X	X	X	X	
2											
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): B Bowman Date: June 30/05

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

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-7

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.: July 10194.R05
	Company: SGS Lakefield Research Ltd	Received by (Date & Time):
	Address:	Logged in by (Date): JB July 14/05
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send Invoice to:	Name: Linda Elliott	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:_____ °C

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		July 14/05 Combined Flotation Tails Test F19 Decant - Day 28	5	Jul 14/05	10:30	X	X	X	X	X	
2											
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): B Bowman **Date:** July 14/05

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

1062

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-14

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: 2524 Fax:

Send Invoice to:
Name: J LaBelle
Company:
Address:
City
Province, Postal Code
Telephone Number: 2148 Fax:

Chain of Custody
Sampled by: B. Bowman
Packed and Shipped by: Date /Time:
Shipment Method and WB#: Date /Time:

LRL LIMS No.: Aug 10191 ROS
Received by (Date & Time):
Logged in by (Date): 08 11 KG
Lab Batch ID:
Project No.: 11016-001
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 23.5 ± 4

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

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		Aug 11/05 Combined Flotation Tails Test F19 Decant - Day 56	7	Aug 11/05	11:15	X	X	X	X	X	
2											
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): B Bowman Date: Aug 11/05

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

CHAIN OF CUSTODY RECORD

Stantec Project No.:

Stantec Work Order No:

Shipping Address: Stantec Consulting Ltd.
11B Nicholas Beaver Road RR#3, Guelph, Ontario Canada N1H 6H9
Voice: (519) 763-4412
Fax: (519) 763-4419

Stantec

P.O. Number:	5050
Field Sampler Name (print):	BARB BOWMAN
Signature:	B Bowman
Affiliation:	SGS LAKEFIELD
Sample Storage (prior to shipping):	AMBIENT TEMP.
Custody Relinquished by:	B Bowman
Date/Time Shipped:	10:00 June 23/05

Client:	SGS LAKEFIELD RESEARCH LTD. POSTAL BAG 4300 185 CONCESSION STR. LAKEFIELD, ON K0L 2H0
Phone:	(705) 652-2046
Fax:	(705) 652-0743
Contact:	L. ELLIOT / B. BOWMAN

Sample Identification					Analyses Requested									Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	Stantec Sample Number	Temp. on arrival	rainbow trout single conc.	rainbow trout LC50	Daphnia magna single conc.	Daphnia magna LC50	fathead minnow survival & growth	C. dubia survival & reproduction	Lemna minor growth	Selenastrum capricornutum growth	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2005/06/23	9:30	11118						✓								

For Lab Use Only
Received By:
Date:
Time:
Storage Location:
Storage Temp:

Please list any special requests or instructions:
Project 11016-001

#11118 = COMBINED FLOTATION TAILS TEST F19 DECANT DAY 7

CHAIN OF CUSTODY RECORD

Stantec Project No.:

Stantec Work Order No:

Stantec

Shipping Address: Stantec Consulting Ltd.
118 Nicholas Beaver Road RR#3, Guelph, Ontario Canada N1H 6H9
Voice: (519) 763-4412
Fax: (519) 763-4419

P.O. Number:	5482
Field Sampler Name (print):	B. BOWMAN
Signature:	B Bowman
Affiliation:	SGS LAKEFIELD
Sample Storage (prior to shipping):	AMBIENT TEMP
Custody Relinquished by:	B Bowman
Date/Time Shipped:	JULY 14/05

Client:	SGS LAKEFIELD RESEARCH LTD. POSTAL BAG 4300 185 CONCESSION STR. LAKEFIELD, ON K0L 2H0
Phone:	(705) 652-2000
Fax:	(705) 652-0743
Contact:	L. ELLIOTT / B. BOWMAN

Sample Identification					Analyses Requested									Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	Stantec Sample Number	Temp. on arrival	rainbow trout single conc.	rainbow trout LC50	Daphnia magna single conc.	Daphnia magna LC50	fathead minnow survival & growth	C. dubia survival & reproduction	Lemna minor growth	Selenastrum capricornutum growth	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2005-07-14		11125				✓		✓								

For Lab Use Only
Received By:
Date:
Time:
Storage Location:
Storage Temp (°C):

Please list any special requests or instructions:
PROJECT: 11016-001

#11125 = COMBINED FLOTATION TAILS TEST F-19 DECANT DAY 28

SGS Lakefield Research Sample Control Sheet for Mineralogy Samples

Mineralogy LIMS Number: M15026-JUL05
Date Prepared:
Department: ENV
Project Number: 11016-001
Test Number: MIN
Met. Project Manager LE

Date Required:
Sample Description: TAILINGS
Number of samples: 2
*Mineralogy Proj Manager: STEPHANIE
Quote/Proposal Number:

Quoted Price $ 1500 initialed by Project Manager *Not to be exceded without prior authorization*
per Sample = Total $3000

Sample Description	Weight wt/g	Mineralogical Testing Information
TEST F30	172g	Request from client:
RO TAILS		SEM / MICROPROBE
		OBJECTIVE:
COMBINED FLOTATION	153g	~~For~~ IDENIFICATION, QUANTIFICATION
TAILS TEST F19		+ AVAILABILITY OF ACID
		GENERATING + NEUTRALIZING
		MINERALS
		(XRD being done by Reitveld at UBC - we will forward
		results for your use)

* Please fill in Mineralogy Proj. Manager to speed up login of samples.

Attach proposal/quote if possible.

SGS – Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-10

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.: July 10231.R05
	Company: SGS Lakefield Research Ltd	Received by (Date & Time): JB July 15/05
	Address:	Logged in by (Date):
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send Invoice to:	Name: Linda Elliott	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: °C

Analyses as per attached sheet.

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	ICP-OES/MS Strong Acid Digest 10231	XRF Whole Rock 10232	Modified ABA 10233	SPLP 1312 10234	TCLP 1311 10235	Humidity Cell 4	NAG Test 10236
1		Test F30 Ro Tails	1 bag	July 15/05		X	X	X	X	X	X	X
2												
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): B Bowman Date: July 15/05

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

#F 11134 = TEST F30 ROUGHER TAILS

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form 26096

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

Report Results to:	Name: B. BOWMAN	LRL LIMS No.:
	Company: SGS LAKEFIELD RESEARCH	Received by (Date & Time):
	Address: POSTAL BAG 4300, 185 CONCESSION ST	Logged in by (Date):
	City LAKEFIELD	Lab Batch ID:
	Province, Postal Code ON K0L 2H0	Project No.: 11016-001
	Telephone Number: 705 652-2000 ext 2524 Fax: 705 652-6365	Plant No.:
Send Invoice to:	Name: LINDA ELLIOTT	Quote No.:
	Company: SAME AS ABOVE	Purchase Order No.:
	Address:	TAT (Turnaround Time) * Some exceptions apply, please contact lab
	City	Standard RUSH Specify Date:
	Province, Postal Code	Time:
	Telephone Number: 705 652-2043 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:	

As per Safe Drinking Water Act this section must be filled out prior to processing samples. Please check (X) off appropriate area and initial.

Regulated:____ Unregulated:____ Initial:____ Temperature upon receipt:____°C

Special Instructions:

PO # 5614

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

	Sample Source Code*	Location Name	Date Sampled	Time Sampled	No. Bottles	Field Res. Cl Total	Free	EC/TC	Background	HPC	REITVELD XRD					
1		#11134			1 pet	68g					X					
2																
3																
4		Sample in														
5		oven			MOST											
6		"TEST F30			OF SAMPLE											
7		Ro TAILS"			TO MINERALOGY											
8																
9																
10																

* Sample Source 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): B Bowman Date: July 24/05

Note: Please read reverse page for terms and conditions. Priority service of 24 to 48 hours may be available at twice the quoted price. Please confirm with the laboratory prior to shipping priority samples.

Chain of Custody Distribution: White copy retained by sampler. Yellow, Pink & Gold copies accompany samples. Pink & Gold copy retained by laboratory. Yellow copy returned with certificate of analysis.

Part No. CofC-1

F3-711

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-6

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: 2524 Fax:

LRL LIMS No.: July 10193.R05
Received by (Date & Time):
Logged in by (Date): JB July 14/05
Lab Batch ID:
Project No.: 11016-001
Plant No.:
Quote No.:
Purchase Order No.:

Send Invoice to:
Name: Linda Elliott
Company:
Address:
City
Province, Postal Code
Telephone Number: 2043 Fax:

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

PLEASE CONTACT LAB PRIOR TO SUBMITTING RUSH PROJECTS

Chain of Custody
Sampled by: B. Bowman
Packed and Shipped by: Date /Time:
Shipment Method and WB#: Date /Time:

Sample condition upon receipt:

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: °C

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		July 13/05 Test F30 Ro Tails Decant - Day 0	5	July 13/05	4:20	X	X	X	X	X	
2											
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): B Bowman Date: July 13/05

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

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-8

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.: JUL 10217.R03
	Company: SGS Lakefield Research Ltd	Received by (Date & Time): 07 15 05 LK
	Address:	Logged in by (Date):
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send invoice to:	Name: Linda Elliott	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:	Temperature upon receipt: 25.0 °C ±0.4

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

Guideline: ______ Regulation: ______ Initial: ______

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		July 14/05 Test F30 Ro Tails Decant - Day 1	6	July 14/05	4:20	X	X	X	X	X	
2											
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): B Bowman Date: July 14/05

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

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-11

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: 2524 Fax:

Send Invoice to:
Name: Linda Elliott
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:

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

Guideline: Regulation: initial:

LRL LIMS No.: July 10286.R05
Received by (Date & Time): CW July 20.
Logged in by (Date):
Lab Batch ID:
Project No.: 11016-001
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: 24 T. 1
Temperature upon receipt: °C

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		July 20/05 Test F30 Ro Tails Decant - Day 7	5	July 20/05	8:45	X	X	X	X	X	
2											
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) B Bowman Date: July 20/05

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

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-13

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.: Aug 10177.R05
	Company: SGS Lakefield Research Ltd	Received by (Date & Time): JB Aug 10/05
	Address:	Logged in by (Date):
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send Invoice to:	Name: J LaBelle	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: 2148 Fax:	PLEASE CONTACT LAB PRIOR TO SUBMITTING RUSH PROJECTS
Chain of Custody	Sampled by:	Sample condition upon receipt:
	Packed and Shipped by: Date /Time:	
	Shipment Method and WB#: Date /Time:	

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

Guideline:____ Regulation:____ Initial:____

Temperature upon receipt: 24.5c ±0.4°

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		Aug 10/05 Test F30 Ro Tails Decant - Day 28	5	Aug 10/05	12:00	X	X	X	X	X	
2											
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): B Bowman Date: Aug 10/05

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

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

No 11016-001-15

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.: Sept 10097 R05
	Company: SGS Lakefield Research Ltd	Received by (Date & Time):
	Address:	Logged in by (Date): 09 07 K4
	City	Lab Batch ID:
	Province, Postal Code	Project No.: 11016-001
	Telephone Number: 2524 Fax:	Plant No.:
Send Invoice to:	Name: J LaBelle	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: 2148 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: °C 22.2+.2

Analyses as per attached sheet.

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	TSS, TDS, pH, Conductivity, Alkalinity, Acidity, Total Fluoride, SO4, NO3, NO2, Cl	ICP-MS Total Metals, As and Se by hydride	Total Hg by CVAA	Total Ammonia	Total Thiosalts	
1		Sept 7/05 Test F30 Ro Tails Decant - Day 56	8	Sept 7/05	11:30	X	X	X	X	X	
2											
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): B Bowman Date: Sept 7/05

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

CHAIN OF CUSTODY RECORD

Stantec Project No.: [redacted] Stantec Work Order No: [redacted]

Shipping Address:	Stantec Consulting Ltd.
	11B Nicholas Beaver Road RR#3, Guelph, Ontario Canada N1H 6H9
Voice:	(519) 763-4412
Fax:	(519) 763-4419

Stantec

P.O. Number:	← WILL EMAIL PO#
Field Sampler Name (print):	B. Bowman
Signature:	B. BOWMAN
Affiliation:	SGS LAKEFIELD
Sample Storage (prior to shipping):	REFRIGERATED
Custody Relinquished by:	B Bowman
Date/Time Shipped:	

Client:	SGS LAKEFIELD RESEARCH POSTAL BAG 4300 185 CONCESSION STREET LAKEFIELD, ON K0L 2H0
Phone:	(705) 652-~~2000~~ 2043
Fax:	(705) 652-0743
Contact:	L. ELLIOTT / B. BOWMAN

Sample Identification					Analyses Requested									Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	Stantec Sample Number	Temp. on arrival	rainbow trout single conc.	rainbow trout LC50	Daphnia magna single conc.	Daphnia magna LC50	fathead minnow survival & growth	C. dubia survival & reproduction	Lemna minor growth	Selenastrum capricornutum growth	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2005/07/14	4:30	11131						✓								

For Lab Use Only

Received by:

Date:

Time:

Storage Location:

Storage Temp (°C):

Please list any special requests or instructions:

PROJECT 11016-001

11131 = TEST F30 ROUGHER TAILS DECANT DAY 1

CHAIN OF CUSTODY RECORD

Stantec Project No.:

Stantec Work Order No:

Shipping Address: Stantec Consulting Ltd.
11B Nicholas Beaver Road RR#3, Guelph, Ontario Canada N1H 6H9

Voice: (519) 763-4412

Fax: (519) 763-4419

Stantec

P.O. Number:	
Field Sampler Name (print):	BARB BOWMAN
Signature:	B Bowman
Affiliation:	SGS LAKEFIELD RESEARCH
Sample Storage (prior to shipping):	AMBIENT TEMP
Custody Relinquished by:	B Bowman
Date/Time Shipped:	Aug 10/05

Client:	SGS LAKEFIELD RESEARCH LTD. POSTAL BAG 4300 185 CONCESSION STREET LAKEFIELD, ON K0L 2H0
Phone:	(705) 652-2000
Fax:	(705) 652-0743
Contact:	B. BOWMAN / J. LABELLE

Sample Identification					Analyses Requested									Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	Stantec Sample Number	Temp. on arrival	rainbow trout single conc.	rainbow trout LC50	Daphnia magna single conc.	Daphnia magna LC50	fathead minnow survival & growth	C. dubia survival & reproduction	Lemna minor growth	Selenastrum capricornutum growth	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2005/08/10		11136				✓		✓								

For Lab Use Only
Received by:
Date:
Time:
Storage Location:
Storage Temp:

Please list any special requests or instructions:
PROJECT: 11016-001

11136 = TEST F30 ROUGHER TAILS DECANT DAY 28

APPENDIX G

SGS Lakefield Research Limited
Statement of Qualifications & Limitations

SGS Lakefield Research Limited – Qualifications and Limitations

Limited Warranty

In performing work on behalf of a client, SGS Lakefield relies on its client to provide instructions on the scope of its retainer and, on that basis, SGS Lakefield determines the precise nature of the work to be performed. SGS Lakefield undertakes all work in accordance with applicable accepted industry practices and standards. Unless required under local laws, other than as expressly stated herein, no other warranties or conditions, either expressed or implied, are made regarding the services, work or reports provided.

Reliance on Materials and Information

The findings and results presented in reports prepared by SGS Lakefield are based on the materials and information provided by the client to SGS Lakefield and on the facts, conditions and circumstances encountered by SGS Lakefield during the performance of the work requested by the client. In formulating its findings and results into a report, SGS Lakefield assumes that the information and materials provided by the client or obtained by SGS Lakefield from the client or otherwise are factual, accurate and represent a true depiction of the circumstances that exist. SGS Lakefield relies on its client to inform SGS Lakefield if there are changes to any such information and materials. SGS Lakefield does not review, analyze or attempt to verify the accuracy or completeness of the information or materials provided, or circumstances encountered, other than in accordance with applicable accepted industry practice. SGS Lakefield will not be responsible for matters arising from incomplete, incorrect or misleading information or from facts or circumstances that are not fully disclosed to or that are concealed from SGS Lakefield during the provision of services, work or reports.

Facts, conditions, information and circumstances may vary with time and locations and SGS Lakefield's work is based on a review of such matters as they existed at the particular time and location indicated in its reports. No assurance is made by SGS Lakefield that the facts, conditions, information, circumstances or any underlying assumptions made by SGS Lakefield in connection with the work performed will not change after the work is completed and a report is submitted. If any such changes occur or additional information is obtained, SGS Lakefield should be advised and requested to consider if the changes or additional information affect its findings or results.

When preparing reports, SGS Lakefield considers applicable legislation, regulations, governmental guidelines and policies to the extent they are within its knowledge, but SGS Lakefield is not qualified to advise with respect to legal matters. The presentation of information regarding applicable legislation, regulations, governmental guidelines and policies is for information only and is not intended to and should not be interpreted as constituting a legal opinion concerning the work completed or conditions outlined in a report. All legal matters should be reviewed and considered by an appropriately qualified legal practitioner.

Site Assessments

A site assessment is created using data and information collected during the investigation of a site and based on conditions encountered at the time and particular locations at which fieldwork is conducted. The information, sample results and data collected represent the conditions only at the specific times at which and at those specific locations from which the information, samples and data were obtained and the information, sample results and data may vary at other locations and times. To the extent that SGS Lakefield's work or report considers any locations or times other than those from which information, sample results and data was specifically received, the work or report is based on a reasonable extrapolation from such information, sample results and data but the actual conditions encountered may vary from those extrapolations.

Only conditions at the site and locations chosen for study by the client are evaluated; no adjacent or other properties are evaluated unless specifically requested by the client. Any physical or other aspects of the site chosen for study by the client, or any other matter not specifically addressed in a report prepared by SGS Lakefield, are beyond the scope of the work performed by SGS Lakefield and such matters have not been investigated or addressed.

No Reliance

SGS Lakefield's services, work and reports are provided solely for the exclusive use of the client which has retained the services of SGS Lakefield and to which its reports are addressed. SGS Lakefield is not responsible for the use of its work or reports by any other party, or for the reliance on, or for any decision which is made by any party using the services or work performed by or a report prepared by SGS Lakefield without SGS Lakefield's express written consent. Any party that relies on services or work performed by SGS Lakefield or a report prepared by SGS Lakefield without SGS Lakefield's express written consent, does so at its own risk. No report of SGS Lakefield may be disclosed or referred to in any public document without SGS Lakefield's express prior written consent. SGS Lakefield specifically disclaims any liability or responsibility to any such party for any loss, damage, expense, fine, penalty or other such thing which may arise or result from the use of any information, recommendation or other matter arising from the services, work or reports provided by SGS Lakefield.

Limitation of Liability

SGS Lakefield is not responsible for any lost revenues, lost profits, cost of capital, or any special, indirect, consequential or punitive damages suffered by the client or any other party in reliance on any SGS Lakefield work or report. SGS Lakefield's total liability and responsibility to the client or any other person for any and all losses, costs, expenses, damages, claims, causes of action or other liability whatsoever which do or may result or arise from or be in relation to SGS Lakefield's services, work (or failure to perform services or work) or reports shall be limited to the invoiced charges for the work performed by SGS Lakefield.

Fiscal Allowances in Canada for Organizations Conducting Experimental Research

SGS Lakefield may apply to CCRA (Canada Customs and Revenue Agency) for fiscal allowances permitted to Canadian laboratories undertaking accreditable experimental research and development within Canada. The high success rate of SGS Lakefield in meeting the technological objectives of its clients and in providing quality experimental work and results requires it to undertake internal experimental research. This is done to perfect its technological approaches and methodology, as well as overcome unanticipated or unavoidable technical challenges that occur in the course of much work undertaken for its clients.

It is implicit in this contract that the experimental work performed by SGS Lakefield may sometimes be cited, in an anonymous manner, for the purpose of requesting fiscal credits for risks assumed by SGS Lakefield Research in the course of performing services for its clients.

Notwithstanding the presence of an obligatory agreement of confidentiality between CCRA and SGS Lakefield any information used by the latter to support claims for the assumption of risk in experimental research, will be presented in an anonymous form. For example, no mention will be made of the names of companies, ore bodies or proprietary processes in these claims. Throughout this process, SGS Lakefield will fully respect the trust and the agreements of confidentiality that exist with all of its clients.

APPENDIX G

METEOROLOGICAL DATA

- Table G.1 4 pages

Knight Piésold
CONSULTING

TABLE G.1

URSA MAJOR MINERALS INCORPORATED
SHAKESPEARE PROJECT

ENVIRONMENTAL BASELINE REPORT FOR FEASIBILITY STUDY

WEATHER STATION RECORDED DATA AND ESTIMATED POTENTIAL DAILY EVAPORATION

	Data Collected from Weather Station																		Calculated Parameters			
Date	Total Rainfall (mm)	Total Rainfall (in)	Average Temperature (°C)	Minimum Temperature (°C)	Maximum Temperature (°C)	Average Temperature (°F)	Average Dew Point (°C)	Average Dew Point (°F)	Average RH (%)	Average Wind Speed (m/s)	Average Wind Speed (KPH)	Average Wind Speed (MPH)	Average Wind Speed (Knots)	Average Wind Direction (ø)	Gust Speed (m/s)	Gust Speed (KPH)	Gust Speed (MPH)	Gust Speed (Knots)	e_s	Slope Δ	e_a	Estimated Potential Evaporation (Penman) (mm)
17-Mar-05	0.00	0.00	-4.50	-10.01	2.03	23.89	-10.12	13.79	67.33	1.16	4.17	2.60	2.26	197.95	3.28	11.80	7.33	6.37	4.38	0.33	2.95	0.81
18-Mar-05	0.00	0.00	-5.03	-12.29	2.03	22.95	-12.01	10.39	62.60	0.71	2.53	1.58	1.37	202.40	2.37	8.54	5.31	4.61	4.21	0.32	2.63	0.76
19-Mar-05	0.00	0.00	-2.43	-10.01	2.89	27.64	-11.29	11.68	53.27	2.06	7.40	4.60	4.00	92.33	5.19	18.67	11.61	10.08	5.11	0.38	2.72	1.76
20-Mar-05	0.00	0.00	-0.05	-2.44	2.46	31.91	-9.04	15.73	51.00	2.16	7.76	4.83	4.19	92.09	5.80	20.87	12.97	11.27	6.09	0.44	3.10	2.25
21-Mar-05	0.00	0.00	0.29	-5.81	6.62	32.53	-9.48	14.94	50.13	1.14	4.12	2.56	2.22	202.98	3.67	13.19	8.20	7.12	6.24	0.45	3.13	1.76
22-Mar-05	0.00	0.00	-0.85	-5.31	4.15	30.47	-12.27	9.91	43.94	1.21	4.34	2.70	2.34	239.02	4.19	15.08	9.38	8.15	5.74	0.42	2.52	1.86
23-Mar-05	0.00	0.00	-2.97	-8.91	1.60	26.65	-12.25	9.96	49.75	1.44	5.18	3.22	2.80	121.67	3.83	13.80	8.58	7.45	4.91	0.37	2.44	1.53
24-Mar-05	0.00	0.00	-1.13	-8.91	4.15	29.97	-10.26	13.53	54.73	1.83	6.57	4.08	3.55	279.16	4.78	17.20	10.69	9.29	5.63	0.41	3.08	1.76
25-Mar-05	0.00	0.00	-4.76	-8.91	0.73	23.42	-15.00	5.00	47.40	1.27	4.56	2.84	2.47	195.84	4.13	14.86	9.24	8.03	4.29	0.32	2.03	1.33
26-Mar-05	0.00	0.00	-3.61	-11.70	3.31	25.49	-11.11	12.00	61.13	1.39	5.01	3.12	2.70	254.51	3.62	13.03	8.09	7.03	4.68	0.35	2.86	1.11
27-Mar-05	0.00	0.00	-0.03	-7.33	7.03	31.95	-6.96	19.47	65.15	0.98	3.54	2.20	1.91	199.47	2.95	10.63	6.61	5.74	6.10	0.44	3.97	1.14
28-Mar-05	0.00	0.00	3.75	-2.44	11.77	38.75	-7.76	18.03	48.00	0.62	2.23	1.39	1.20	172.58	2.06	7.43	4.62	4.01	7.99	0.56	3.83	1.94
29-Mar-05	0.00	0.00	6.01	-3.37	13.32	42.82	-4.15	24.54	50.15	0.87	3.12	1.94	1.68	173.85	2.78	10.02	6.23	5.41	9.35	0.65	4.69	2.39
30-Mar-05	0.00	0.00	7.36	3.31	11.77	45.26	-2.25	27.95	50.71	1.99	7.15	4.45	3.86	103.59	5.42	19.51	12.12	10.54	10.26	0.70	5.21	3.66
31-Mar-05	0.00	0.00	5.83	1.60	11.77	42.50	1.72	35.10	76.40	1.84	6.62	4.12	3.58	153.90	5.13	18.48	11.48	9.98	9.24	0.64	7.06	1.52
1-Apr-05	0.00	0.00	4.07	0.29	9.42	39.33	-0.63	30.86	74.21	1.69	6.10	3.79	3.29	226.50	5.02	18.06	11.22	9.75	8.17	0.57	6.06	1.41
2-Apr-05	0.00	0.00	3.36	-1.51	8.63	38.05	-6.16	20.92	54.85	1.75	6.32	3.93	3.41	93.76	5.88	21.15	13.14	11.42	7.77	0.55	4.26	2.39
3-Apr-05	0.00	0.00	5.38	0.73	11.38	41.69	-12.29	9.87	29.08	2.34	8.42	5.24	4.55	279.68	7.78	27.99	17.40	15.12	8.96	0.62	2.60	5.02
4-Apr-05	0.00	0.00	6.66	0.73	13.32	43.98	-9.80	14.36	31.94	1.45	5.21	3.24	2.81	302.49	4.82	17.37	10.79	9.38	9.78	0.67	3.12	4.14
5-Apr-05	0.00	0.00	6.19	0.29	12.16	43.15	-7.70	18.14	41.69	1.66	5.96	3.70	3.22	159.28	4.29	15.45	9.60	8.34	9.47	0.65	3.95	3.65
6-Apr-05	13.40	0.53	5.70	2.03	10.21	42.25	1.00	33.80	75.19	2.07	7.46	4.64	4.03	94.50	5.33	19.20	11.93	10.37	9.15	0.63	6.88	1.68
7-Apr-05	11.80	0.47	7.37	2.89	13.32	45.26	2.02	35.64	72.44	1.56	5.62	3.50	3.04	175.73	4.82	17.37	10.79	9.38	10.27	0.70	7.44	1.82
8-Apr-05	0.00	0.00	6.41	-0.16	13.32	43.53	-6.48	20.33	44.00	1.01	3.62	2.25	1.95	246.33	3.54	12.75	7.92	6.88	9.61	0.66	4.23	2.90
9-Apr-05	0.00	0.00	5.95	-3.37	14.09	42.70	-5.96	21.27	48.94	1.10	3.95	2.46	2.13	248.26	3.26	11.75	7.30	6.34	9.31	0.64	4.56	2.65
10-Apr-05	0.00	0.00	7.29	2.46	13.32	45.13	-7.09	19.23	38.60	1.68	6.04	3.75	3.26	138.59	4.41	15.89	9.88	8.58	10.22	0.70	3.94	4.17
11-Apr-05	0.00	0.00	4.09	-2.44	10.60	39.36	-12.68	9.18	31.10	2.41	8.68	5.40	4.69	100.45	5.82	20.96	13.02	11.32	8.18	0.57	2.54	4.53
12-Apr-05	0.00	0.00	5.16	-1.06	11.38	41.28	-13.04	8.53	27.10	1.83	6.60	4.10	3.56	94.19	4.59	16.53	10.27	8.93	8.81	0.61	2.39	4.46
13-Apr-05	0.00	0.00	8.56	1.17	16.76	47.40	-13.14	8.34	22.02	1.45	5.23	3.25	2.83	147.83	4.91	17.67	10.98	9.54	11.14	0.76	2.45	5.41
14-Apr-05	0.00	0.00	7.01	-0.16	13.70	44.62	-7.90	17.78	38.19	1.82	6.57	4.08	3.55	84.59	5.30	19.09	11.87	10.31	10.02	0.69	3.83	4.29
15-Apr-05	0.00	0.00	6.80	0.29	12.55	44.25	-13.71	7.33	22.63	1.49	5.34	3.32	2.89	117.36	3.89	14.00	8.70	7.56	9.88	0.68	2.23	4.81
16-Apr-05	0.00	0.00	9.19	1.60	17.52	48.54	-6.56	20.20	33.79	1.07	3.84	2.39	2.07	146.42	3.15	11.33	7.04	6.11	11.62	0.78	3.93	4.24
17-Apr-05	0.00	0.00	12.63	4.99	21.71	54.74	-1.50	29.31	42.69	1.01	3.62	2.25	1.95	203.05	3.32	11.94	7.42	6.45	14.62	0.96	6.24	4.52
18-Apr-05	0.00	0.00	13.29	7.03	20.19	55.92	-1.50	29.30	37.33	1.75	6.32	3.93	3.41	190.64	4.26	15.34	9.53	8.28	15.26	1.00	5.70	6.50
19-Apr-05	0.40	0.02	16.50	8.63	24.40	61.70	5.71	42.28	51.06	1.97	7.10	4.41	3.83	221.19	4.88	17.56	10.91	9.48	18.78	1.20	9.59	6.62
20-Apr-05	10.20	0.40	6.64	1.60	13.70	43.95	0.07	32.12	66.90	1.86	6.71	4.17	3.62	86.74	5.88	21.18	13.16	11.44	9.77	0.67	6.53	2.26
21-Apr-05	0.00	0.00	4.61	-0.61	11.38	40.31	-7.95	17.69	41.23	1.41	5.07	3.15	2.73	190.47	4.21	15.17	9.43	8.19	8.49	0.59	3.50	3.06
22-Apr-05	0.00	0.00	5.45	-2.44	14.85	41.81	-5.02	22.97	51.15	1.04	3.73	2.32	2.01	175.43	3.70	13.33	8.29	7.20	8.99	0.63	4.60	2.39
23-Apr-05	0.00	0.00	0.20	-2.44	5.81	32.36	-5.67	21.80	67.10	2.27	8.16	5.07	4.41	88.10	8.16	29.36	18.25	15.85	6.20	0.45	4.16	1.58
24-Apr-05	2.00	0.08	-0.37	-1.97	1.17	31.33	-0.67	30.80	97.90	2.04	7.35	4.57	3.97	90.73	7.26	26.13	16.24	14.11	5.95	0.43	5.82	0.09
25-Apr-05	14.00	0.55	1.68	0.29	3.74	35.03	1.54	34.77	99.02	0.90	3.23	2.01	1.74	186.07	2.90	10.44	6.49	5.64	6.90	0.49	6.83	0.04
26-Apr-05	12.60	0.50	3.62	-0.16	5.40	38.51	3.53	38.36	99.44	1.06	3.81	2.37	2.06	144.43	3.09	11.10	6.90	6.00	7.91	0.56	7.87	0.02
27-Apr-05	10.20	0.40	5.89	3.31	9.82	42.61	5.04	41.08	94.77	1.03	3.70	2.30	2.00	195.55	3.07	11.05	6.87	5.97	9.28	0.64	8.79	0.26
28-Apr-05	0.00	0.00	3.52	-0.61	6.62	38.33	-0.64	30.84	76.10	1.83	6.60	4.10	3.56	278.93	5.09	18.31	11.38	9.89	7.86	0.55	5.98	1.30
29-Apr-05	0.00	0.00	5.41	1.60	9.03	41.74	-3.54	25.62	54.54	1.47	5.29	3.29	2.85	291.61	4.62	16.64	10.34	8.99	8.97	0.62	4.89	2.55
30-Apr-05	0.00	0.00	6.15	1.60	10.99	43.07	-2.85	26.86	55.60	1.34	4.82	2.99	2.60	256.34	3.83	13.80	8.58	7.45	9.44	0.65	5.25	2.52
1-May-05	0.20	0.01	4.36	0.73	9.03	39.85	-1.94	28.52	65.27	2.30	8.27	5.14	4.46	279.98	5.79	20.84	12.95	11.25	8.34	0.58	5.44	2.26
2-May-05	0.60	0.02	2.71	-2.44	6.62	36.87	-2.90	26.78	69.81	2.18	7.85	4.88	4.24	286.77	5.39	19.40	12.06	10.47	7.42	0.53	5.18	1.70
3-May-05	0.60	0.02	1.75	-1.51	5.40	35.16	-2.86	26.86	72.92	1.96	7.04	4.38	3.80	276.47	4.76	17.14	10.65	9.26	6.93	0.50	5.05	1.35
4-May-05	0.00	0.00	4.60	-3.37	10.99	40.28	-4.45	23.99	57.33	1.74	6.26	3.89	3.38	277.45	4.77	17.17	10.67	9.27	8.48	0.59	4.86	2.45
5-May-05	0.00	0.00	8.13	-0.61	16.00	46.64	-3.28	26.09	49.40	1.42	5.12	3.18	2.76	181.85	4.01	14.42	8.96	7.78	10.82	0.74	5.34	3.38
6-May-05	0.00	0.00	9.87	4.15	15.62	49.77	-1.57	29.18	47.65	1.31	4.73	2.94	2.55	118.68	3.66	13.16	8.18	7.11	12.17	0.82	5.80	3.80
7-May-05	0.00	0.00	13.05	7.83	19.04	55.49	2.21	35.98	49.92	1.17	4.20	2.61	2.27	136.43	3.13	11.27	7.01	6.09	15.03	0.98	7.50	4.29
8-May-05	0.00	0.00	14.21	4.15	20.95	57.58	1.82	35.27	48.58	1.04	3.73	2.32	2.01	216.96	3.22	11.58	7.20	6.25	16.21	1.05	7.87	4.54
9-May-05	0.00	0.00	16.49	10.99	22.09	61.69	1.93	35.48	38.13	1.26	4.54	2.82	2.45	141.38	3.69	13.28	8.25	7.17	18.77	1.20	7.16	6.82
10-May-05	1.00	0.04	15.12	9.82	21.71	59.22	9.58	49.25	71.13	1.43	5.15	3.20	2.78	184.15	4.20	15.11	9.39	8.16	17.19	1.11	12.23	3.07
11-May-05	0.00	0.00	7.66	-1.51	12.55	45.80	1.13	34.04	65.56	1.81	6.51	4.05	3.52	217.91	6.11	21.99	13.66	11.87	10.48	0.72	6.87	2.49
12-May-05	0.00	0.00	3.01	-4.33	11.38	37.42	-10.22	13.61	42.21	1.50	5.40	3.36	2.92	82.65	4.78	17.20	10.69	9.29	7.58	0.54	3.20	2.77
13-May-05	1.60	0.06	4.85	1.17	8.23	40.73	-3.61	25.50	57.73	1.93	6.93	4.31	3.74	100.27	5.43	19.54	12.14	10.55	8.63	0.60	4.98	2.60
14-May-05	2.80	0.11	6.69	4.57	8.63	44.05	6.29	43.32	97.23	1.17	4.20	2.61	2.27	126.41	3.01	10.83	6.73	5.85	9.80	0.67	9.53	0.15
15-May-05	0.00	0.00	5.76	3.74	7.03	42.36	4.16	39.49	89.75	2.07	7.43	4.62	4.01	270.61	5.40	19.42	12.07	10.49	9.19	0.64	8.25	0.70
16-May-05	1.20	0.05	5.10	-0.16	9.42	41.18	1.67	35.01	79.52	1.36	4.90	3.05	2.65	286.94	4.57	16.45	10.22	8.88	8.78	0.61	6.98	1.09
17-May-05	0.00	0.00	7.52	3.31	13.70	45.54	0.00	32.01	62.27	1.23	4.43	2.75	2.39	172.03	3.77	13.58	8.44	7.33	10.38	0.71	6.46	2.27
18-May-05	0.00	0.00	10.26	0.73	18.66	50.46	0.38	32.68	54.94	1.12	4.01	2.49	2.16	232.23	3.39	12.22	7.59	6.60	12.49	0.84	6.86	3.15
19-May-05	0.00	0.00	12.54	3.31	19.81	54.58	0.94	33.70	49.85	1.00	3.59	2.23	1.94	184.15	3.08	11.10	6.90	6.00	14.53	0.96	7.24	3.92
20-May-05	0.00	0.00	14.77	5.81	23.24	58.59	3.55	38.39	50.65	1.08	3.87	2.41	2.09	251.13	3.40	12.25	7.61	6.61	16.81	1.09	8.51	4.58
21-May-05	0.00	0.00	17.39	7.83	23.63	63.31	3.70	38.65	45.19	1.35	4.87	3.03	2.63	215.86	3.96	14.25	8.86	7.69	19.88	1.26	8.98	6.59

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Revision 0
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Knight Piésold
CONSULTING

TABLE G.1

URSA MAJOR MINERALS INCORPORATED
SHAKESPEARE PROJECT

ENVIRONMENTAL BASELINE REPORT FOR FEASIBILITY STUDY

WEATHER STATION RECORDED DATA AND ESTIMATED POTENTIAL DAILY EVAPORATION

	Data Collected from Weather Station																		Calculated Parameters			
Date	Total Rainfall (mm)	Total Rainfall (in)	Average Temperature (°C)	Minimum Temperature (°C)	Maximum Temperature (°C)	Average Temperature (°F)	Average Dew Point (°C)	Average Dew Point (°F)	Average RH (%)	Average Wind Speed (m/s)	Average Wind Speed (KPH)	Average Wind Speed (MPH)	Average Wind Speed (Knots)	Average Wind Direction (ø)	Gust Speed (m/s)	Gust Speed (KPH)	Gust Speed (MPH)	Gust Speed (Knots)	e_s	Slope Δ	e_a	Estimated Potential Evaporation (Penman) (mm)
22-May-05	0.00	0.00	13.64	9.03	17.52	56.55	5.38	41.67	58.96	1.61	5.79	3.60	3.13	124.61	4.34	15.64	9.72	8.45	15.61	1.02	9.20	4.18
23-May-05	0.00	0.00	11.47	9.03	14.09	52.65	6.70	44.05	72.96	1.45	5.20	3.24	2.81	98.11	4.23	15.22	9.46	8.22	13.54	0.90	9.88	2.28
24-May-05	0.00	0.00	16.53	9.82	23.24	61.76	6.51	43.71	56.56	1.92	6.90	4.29	3.73	102.13	5.46	19.65	12.21	10.61	18.82	1.20	10.64	5.81
25-May-05	0.00	0.00	18.24	7.83	27.12	64.84	5.37	41.68	47.69	1.28	4.59	2.86	2.48	212.75	3.87	13.92	8.65	7.51	20.97	1.32	10.00	6.47
26-May-05	0.00	0.00	18.03	10.99	23.63	64.44	6.47	43.65	49.58	1.56	5.62	3.50	3.04	263.70	4.13	14.86	9.24	8.02	20.69	1.31	10.26	6.71
27-May-05	0.80	0.03	16.05	10.21	21.33	60.89	8.20	46.77	64.08	1.49	5.34	3.32	2.88	282.29	4.27	15.39	9.57	8.31	18.24	1.17	11.69	4.12
28-May-05	0.00	0.00	12.76	7.03	19.04	54.97	7.05	44.69	72.10	1.29	4.65	2.89	2.51	267.28	3.73	13.44	8.35	7.26	14.74	0.97	10.63	2.44
29-May-05	1.00	0.04	13.45	8.23	19.04	56.21	9.17	48.50	77.08	1.04	3.76	2.34	2.03	286.40	3.26	11.74	7.30	6.34	15.42	1.01	11.89	1.93
30-May-05	7.80	0.31	13.60	11.38	16.38	56.48	12.59	54.67	93.69	0.64	2.31	1.44	1.25	269.91	2.19	7.88	4.90	4.25	15.57	1.02	14.59	0.46
31-May-05	0.00	0.00	17.15	10.21	25.17	62.86	4.97	40.94	51.92	1.10	3.95	2.46	2.13	278.91	3.73	13.41	8.34	7.24	19.57	1.24	10.16	5.24
1-Jun-05	0.00	0.00	19.30	8.63	26.73	66.74	5.99	42.79	45.04	1.08	3.87	2.41	2.09	228.48	3.16	11.38	7.07	6.15	22.42	1.40	10.10	6.80
2-Jun-05	0.00	0.00	18.96	10.21	25.95	66.14	9.10	48.38	56.04	0.77	2.76	1.71	1.49	183.62	2.40	8.66	5.38	4.67	21.95	1.38	12.30	4.77
3-Jun-05	0.00	0.00	19.64	11.38	27.12	67.36	10.07	50.13	58.65	0.81	2.90	1.80	1.56	177.31	2.59	9.32	5.80	5.03	22.90	1.43	13.43	4.75
4-Jun-05	0.00	0.00	18.26	11.77	24.79	64.88	12.90	55.21	73.02	0.76	2.73	1.70	1.47	217.50	2.63	9.46	5.88	5.11	21.00	1.32	15.34	2.79
5-Jun-05	12.00	0.47	18.17	14.85	22.48	64.71	16.50	61.70	90.10	1.10	3.95	2.46	2.13	106.93	3.39	12.22	7.59	6.60	20.88	1.32	18.81	1.15
6-Jun-05	0.40	0.02	17.60	12.93	20.95	63.68	15.54	59.98	88.15	2.11	7.60	4.72	4.10	247.10	6.30	22.68	14.10	12.25	20.14	1.28	17.75	1.78
7-Jun-05	0.00	0.00	16.89	10.60	24.01	62.40	11.35	52.42	72.52	1.86	6.68	4.15	3.61	259.03	5.06	18.23	11.33	9.84	19.25	1.23	13.96	3.70
8-Jun-05	0.00	0.00	14.37	10.99	19.42	57.88	10.38	50.68	77.54	1.93	6.93	4.31	3.74	101.68	5.33	19.18	11.92	10.35	16.38	1.06	12.70	2.62
9-Jun-05	0.00	0.00	20.40	12.55	28.31	68.73	15.77	60.39	76.52	1.28	4.62	2.87	2.50	137.00	3.97	14.28	8.87	7.71	24.01	1.49	18.37	3.33
10-Jun-05	0.00	0.00	23.71	17.14	30.71	74.68	17.25	63.06	70.25	0.73	2.65	1.65	1.43	174.14	2.67	9.60	5.97	5.18	29.40	1.78	20.65	4.27
11-Jun-05	0.20	0.01	23.67	18.66	30.31	74.60	19.67	67.40	80.13	0.89	3.20	1.99	1.73	201.00	3.12	11.24	6.99	6.07	29.32	1.78	23.49	3.01
12-Jun-05	0.00	0.00	22.33	18.66	26.34	72.19	20.05	68.08	87.50	0.93	3.34	2.08	1.80	198.28	3.17	11.41	7.09	6.16	27.03	1.65	23.65	1.77
13-Jun-05	1.00	0.04	21.29	18.28	24.40	70.32	19.71	67.47	90.96	0.23	0.81	0.50	0.44	186.78	1.26	4.54	2.82	2.45	25.36	1.56	23.06	0.90
14-Jun-05	8.20	0.32	21.96	17.14	28.31	71.52	18.49	65.28	82.65	0.94	3.40	2.11	1.83	194.56	3.47	12.50	7.77	6.75	26.42	1.62	21.84	2.42
15-Jun-05	0.40	0.02	15.22	12.55	17.14	59.39	12.94	55.30	86.60	1.45	5.23	3.25	2.83	274.82	4.93	17.73	11.02	9.57	17.30	1.11	14.98	1.44
16-Jun-05	1.00	0.04	13.77	10.99	18.66	56.79	9.97	49.95	78.52	1.21	4.37	2.72	2.36	323.85	4.48	16.11	10.01	8.70	15.75	1.03	12.37	1.96
17-Jun-05	0.80	0.03	13.82	10.60	17.52	56.88	11.36	52.45	85.35	1.19	4.29	2.66	2.31	283.35	4.11	14.81	9.20	7.99	15.80	1.03	13.49	1.33
18-Jun-05	0.00	0.00	14.84	10.60	19.04	58.71	10.56	51.00	77.38	0.95	3.42	2.13	1.85	168.53	3.22	11.58	7.20	6.25	16.88	1.09	13.06	2.02
19-Jun-05	0.00	0.00	15.79	9.42	21.33	60.41	10.70	51.26	74.38	0.74	2.67	1.66	1.44	217.38	2.68	9.66	6.00	5.21	17.94	1.15	13.34	2.25
20-Jun-05	0.00	0.00	17.75	10.21	25.17	63.94	13.03	55.45	76.10	1.49	5.37	3.34	2.90	244.03	4.20	15.11	9.39	8.16	20.33	1.29	15.47	3.06
21-Jun-05	0.20	0.01	20.67	13.70	27.12	69.20	14.53	58.16	71.52	1.20	4.31	2.68	2.33	256.50	3.66	13.19	8.20	7.12	24.40	1.51	17.45	4.00
22-Jun-05	0.00	0.00	17.82	11.77	24.01	64.07	6.55	43.79	49.83	1.35	4.84	3.01	2.62	176.60	4.14	14.92	9.27	8.05	20.42	1.29	10.18	6.18
23-Jun-05	0.00	0.00	17.94	11.77	24.40	64.30	11.25	52.25	66.33	1.36	4.90	3.05	2.65	237.61	4.31	15.53	9.65	8.39	20.58	1.30	13.65	4.20
24-Jun-05	2.60	0.10	23.96	18.28	29.90	75.12	18.82	65.87	74.35	1.99	7.15	4.45	3.86	255.63	5.87	21.12	13.13	11.41	29.84	1.80	22.19	5.54
25-Jun-05	0.00	0.00	21.88	17.90	27.12	71.39	13.94	57.09	63.10	1.08	3.90	2.42	2.10	273.02	3.53	12.69	7.89	6.85	26.30	1.61	16.60	5.37
26-Jun-05	0.00	0.00	20.88	14.09	28.70	69.58	11.92	53.45	59.31	1.04	3.73	2.32	2.01	235.09	3.08	11.08	6.88	5.98	24.73	1.53	14.67	5.48
27-Jun-05	0.00	0.00	22.21	14.85	31.12	71.98	15.60	60.08	67.25	0.50	1.81	1.13	0.98	138.34	2.03	7.32	4.55	3.95	26.84	1.64	18.05	3.91
28-Jun-05	0.00	0.00	24.20	19.81	28.70	75.55	19.02	66.24	73.79	1.06	3.81	2.37	2.06	164.72	3.35	12.08	7.51	6.52	30.27	1.83	22.34	4.36
29-Jun-05	0.00	0.00	19.38	16.76	22.09	66.88	15.99	60.77	81.02	1.10	3.95	2.46	2.13	91.25	3.49	12.55	7.80	6.78	22.52	1.41	18.25	2.38
30-Jun-05	0.00	0.00	20.53	15.23	25.56	68.96	17.16	62.88	81.63	1.52	5.48	3.41	2.96	149.97	4.45	16.00	9.95	8.64	24.20	1.50	19.75	2.83
1-Jul-05	0.00	0.00	17.16	8.63	19.81	62.89	12.05	53.68	72.54	2.12	7.63	4.74	4.12	245.69	6.40	23.04	14.32	12.44	19.59	1.24	14.21	4.02
2-Jul-05	0.00	0.00	15.88	7.03	23.63	60.59	9.09	48.36	67.29	1.72	6.21	3.86	3.35	278.40	4.73	17.03	10.59	9.20	18.05	1.16	12.15	3.98
3-Jul-05	0.00	0.00	18.21	10.99	24.79	64.78	9.36	48.84	60.21	1.11	4.01	2.49	2.16	150.68	3.69	13.28	8.25	7.17	20.94	1.32	12.60	4.66
4-Jul-05	4.20	0.17	17.28	14.85	19.04	63.11	15.54	59.97	89.73	0.50	1.81	1.13	0.98	148.23	1.92	6.93	4.31	3.74	19.74	1.25	17.71	0.90
5-Jul-05	23.41	0.92	16.39	12.55	19.04	61.50	13.74	56.73	85.25	0.91	3.26	2.03	1.76	146.18	3.69	13.28	8.25	7.17	18.65	1.19	15.90	1.43
6-Jul-05	0.00	0.00	17.54	10.99	24.01	63.58	6.14	43.05	50.31	1.42	5.10	3.17	2.75	114.08	4.13	14.86	9.24	8.02	20.07	1.27	10.10	6.14
7-Jul-05	0.00	0.00	19.48	10.21	26.73	67.06	7.46	45.43	50.27	0.81	2.90	1.80	1.56	161.39	2.57	9.27	5.76	5.00	22.66	1.42	11.39	5.65
8-Jul-05	0.00	0.00	20.98	12.55	28.31	69.75	10.27	50.48	53.94	0.84	3.03	1.89	1.64	227.33	2.68	9.66	6.00	5.21	24.87	1.54	13.42	5.83
9-Jul-05	0.00	0.00	22.41	14.85	29.90	72.34	8.78	47.80	45.44	1.28	4.59	2.86	2.48	293.53	4.28	15.42	9.58	8.33	27.16	1.66	12.34	8.74
10-Jul-05	0.00	0.00	23.21	15.23	29.90	73.78	17.15	62.87	70.71	1.45	5.23	3.25	2.83	274.19	4.09	14.72	9.15	7.95	28.52	1.73	20.17	5.21
11-Jul-05	0.00	0.00	26.50	20.19	33.17	79.69	18.68	65.63	65.54	1.00	3.59	2.23	1.94	280.55	3.24	11.66	7.25	6.30	34.74	2.06	22.77	6.44
12-Jul-05	0.00	0.00	25.73	19.81	32.76	78.31	18.25	64.86	66.83	0.70	2.51	1.56	1.35	230.82	2.42	8.71	5.41	4.70	33.19	1.98	22.18	5.29
13-Jul-05	0.00	0.00	23.96	19.04	32.76	75.13	18.22	64.79	72.79	0.91	3.26	2.03	1.76	279.78	3.31	11.91	7.40	6.43	29.85	1.80	21.73	4.23
14-Jul-05	0.00	0.00	22.45	17.52	27.91	72.41	14.66	58.39	63.96	1.45	5.21	3.24	2.81	87.87	4.60	16.56	10.29	8.94	27.23	1.66	17.42	6.10
15-Jul-05	0.00	0.00	23.85	17.52	30.31	74.93	13.94	57.10	55.29	1.06	3.81	2.37	2.06	163.04	3.14	11.30	7.02	6.10	29.65	1.79	16.39	7.28
16-Jul-05	0.00	0.00	25.38	17.90	32.76	77.68	18.38	65.08	67.98	0.61	2.20	1.37	1.19	190.41	2.30	8.29	5.16	4.48	32.50	1.94	22.09	4.84
17-Jul-05	7.40	0.29	23.72	19.81	29.50	74.70	21.30	70.34	87.00	0.64	2.28	1.42	1.23	148.51	2.37	8.54	5.31	4.61	29.43	1.78	25.60	1.80
18-Jul-05	11.60	0.46	22.73	19.81	27.91	72.91	21.17	70.10	91.42	0.94	3.37	2.10	1.82	212.93	3.68	13.25	8.23	7.15	27.70	1.69	25.32	1.25
19-Jul-05	0.00	0.00	20.14	15.23	24.40	68.26	14.19	57.55	71.27	1.15	4.15	2.58	2.24	301.21	3.91	14.08	8.75	7.60	23.62	1.47	16.84	3.85
20-Jul-05	0.00	0.00	19.61	12.55	26.34	67.29	14.22	57.60	73.98	1.01	3.62	2.25	1.95	182.33	3.25	11.69	7.27	6.31	22.85	1.43	16.90	3.20
21-Jul-05	0.00	0.00	23.43	17.14	29.10	74.17	16.98	62.57	70.56	1.31	4.73	2.94	2.55	253.30	4.14	14.89	9.25	8.04	28.90	1.75	20.39	5.08
22-Jul-05	0.00	0.00	21.14	15.62	27.12	70.05	12.18	53.92	60.00	0.94	3.40	2.11	1.83	226.50	3.46	12.44	7.73	6.72	25.13	1.55	15.08	5.30
23-Jul-05	0.00	0.00	21.56	15.62	28.31	70.81	10.93	51.67	53.21	1.14	4.12	2.56	2.22	276.10	3.28	11.80	7.33	6.37	25.79	1.59	13.72	6.82
24-Jul-05	3.60	0.14	18.62	14.85	20.95	65.51	17.43	63.38	92.90	0.77	2.78	1.73	1.50	127.53	3.00	10.80	6.71	5.83	21.47	1.35	19.95	0.76
25-Jul-05	0.20	0.01	23.19	15.23	31.52	73.74	13.15	55.67	61.60	1.39	5.01	3.12	2.70	277.57	3.92	14.11	8.77	7.62	28.48	1.73	17.55	6.69
26-Jul-05	2.80	0.11	18.27	14.47	21.71	64.88	14.23	57.62	79.58	0.67	2.39	1.49	1.29	202.28	2.96	10.66	6.63	5.75	21.01	1.32	16.72	2.04
27-Jul-05	0.00	0.00	16.55	11.77	22.86	61.78	8.33	46.99	62.27	1.03	3.70	2.30	2.00	262.89	4.03	14.50	9.01	7.83	18.83	1.20	11.73	3.86
28-Jul-05	3.00	0.12	15.84	9.42	21.71	60.51	11.67	53.01	78.29	1.14	4.09	2.54	2.21	252.23	3.74	13.47	8.37	7.27	18.00	1.16	14.09	2.20

Knight Piésold
CONSULTING

TABLE G.1

URSA MAJOR MINERALS INCORPORATED
SHAKESPEARE PROJECT

ENVIRONMENTAL BASELINE REPORT FOR FEASIBILITY STUDY

WEATHER STATION RECORDED DATA AND ESTIMATED POTENTIAL DAILY EVAPORATION

Data Collected from Weather Station																				Calculated Parameters			
Date	Total Rainfall (mm)	Total Rainfall (in)	Average Temperature (°C)	Minimum Temperature (°C)	Maximum Temperature (°C)	Average Temperature (°F)	Average Dew Point (°C)	Average Dew Point (°F)	Average RH (%)	Average Wind Speed (m/s)	Average Wind Speed (KPH)	Average Wind Speed (MPH)	Average Wind Speed (Knots)	Average Wind Direction (ø)	Gust Speed (m/s)	Gust Speed (KPH)	Gust Speed (MPH)	Gust Speed (Knots)	e_s	Slope Δ	e_a	Estimated Potential Evaporation (Penman) (mm)	
29-Jul-05	11.60	0.46	16.40	11.77	22.48	61.52	11.19	52.14	75.17	0.75	2.70	1.68	1.46	289.85	3.34	12.02	7.47	6.49	18.66	1.19	14.03	2.28	
30-Jul-05	0.00	0.00	17.13	11.38	23.63	62.84	9.28	48.71	62.48	0.97	3.51	2.18	1.89	149.91	2.97	10.69	6.64	5.77	19.55	1.24	12.22	3.91	
31-Jul-05	7.40	0.29	15.69	11.77	19.04	60.24	14.61	58.30	93.38	0.81	2.92	1.82	1.58	182.04	3.02	10.85	6.75	5.86	17.83	1.15	16.65	0.59	
1-Aug-05	0.00	0.00	21.93	16.00	28.31	71.48	18.26	64.87	81.63	0.87	3.15	1.96	1.70	247.68	2.97	10.69	6.64	5.77	26.39	1.62	21.54	2.49	
2-Aug-05	0.00	0.00	24.13	15.62	30.71	75.43	16.60	61.89	66.52	1.04	3.73	2.32	2.01	285.93	3.32	11.94	7.42	6.45	30.15	1.82	20.06	5.50	
3-Aug-05	0.00	0.00	24.59	18.28	30.31	76.26	19.77	67.58	76.88	1.07	3.84	2.39	2.07	258.13	3.45	12.41	7.72	6.70	31.00	1.86	23.83	3.95	
4-Aug-05	7.80	0.31	21.54	16.76	24.01	70.77	20.27	68.49	92.50	1.42	5.09	3.17	2.75	205.04	4.48	16.11	10.01	8.70	25.75	1.58	23.82	1.19	
5-Aug-05	0.00	0.00	19.21	13.32	25.56	66.58	11.93	53.47	66.25	1.79	6.43	4.00	3.47	278.53	5.06	18.23	11.33	9.84	22.29	1.39	14.77	5.16	
6-Aug-05	0.00	0.00	18.76	11.38	24.79	65.77	11.26	52.27	64.25	1.42	5.12	3.18	2.76	286.39	4.07	14.64	9.10	7.90	21.67	1.36	13.92	4.78	
7-Aug-05	0.00	0.00	21.29	16.00	27.52	70.32	16.05	60.89	75.65	1.36	4.90	3.05	2.65	271.95	4.18	15.06	9.36	8.13	25.36	1.56	19.18	3.74	
8-Aug-05	0.00	0.00	22.18	14.85	28.70	71.92	16.41	61.54	72.52	1.06	3.81	2.37	2.06	233.58	3.79	13.64	8.48	7.36	26.78	1.64	19.42	4.04	
9-Aug-05	27.41	1.08	22.29	19.42	28.70	72.12	19.67	67.41	86.08	1.07	3.84	2.39	2.07	254.15	3.89	14.00	8.70	7.56	26.97	1.65	23.21	2.07	
10-Aug-05	14.40	0.57	21.55	17.90	27.52	70.79	17.69	63.85	81.06	0.99	3.56	2.22	1.92	261.42	3.36	12.11	7.53	6.54	25.77	1.58	20.89	2.62	
11-Aug-05	0.00	0.00	18.01	12.55	23.24	64.42	10.29	50.51	62.44	0.81	2.92	1.82	1.58	261.18	2.80	10.07	6.26	5.44	20.67	1.31	12.91	3.90	
12-Aug-05	2.00	0.08	16.57	14.85	18.66	61.82	15.87	60.56	95.54	0.68	2.45	1.52	1.32	141.62	2.43	8.74	5.43	4.72	18.86	1.20	18.02	0.40	
13-Aug-05	0.00	0.00	17.85	12.93	22.86	64.13	13.83	56.90	79.21	1.24	4.45	2.77	2.41	285.43	3.61	13.00	8.08	7.02	20.46	1.29	16.21	2.48	
14-Aug-05	0.00	0.00	18.18	11.77	24.40	64.73	11.12	52.01	66.27	0.94	3.40	2.11	1.83	224.28	3.39	12.22	7.59	6.60	20.90	1.32	13.85	3.72	
15-Aug-05	0.00	0.00	18.15	12.55	24.01	64.68	11.51	52.72	66.94	1.28	4.62	2.87	2.49	290.37	3.96	14.25	8.86	7.69	20.86	1.32	13.96	4.08	
16-Aug-05	6.60	0.26	18.90	14.85	24.40	66.03	14.89	58.81	79.35	1.49	5.37	3.34	2.90	274.02	4.54	16.34	10.15	8.82	21.86	1.37	17.35	2.85	
17-Aug-05	0.00	0.00	16.36	9.42	22.86	61.45	8.57	47.43	62.29	0.93	3.34	2.08	1.80	238.31	2.99	10.77	6.70	5.81	18.62	1.19	11.60	3.68	
18-Aug-05	0.00	0.00	16.63	13.70	19.81	61.93	13.47	56.25	81.56	1.15	4.15	2.58	2.24	116.87	3.32	11.94	7.42	6.45	18.93	1.21	15.44	1.98	
19-Aug-05	10.80	0.42	14.88	13.32	17.14	58.79	13.72	56.70	92.83	1.85	6.65	4.13	3.59	121.16	5.26	18.93	11.76	10.22	16.93	1.09	15.71	0.85	
20-Aug-05	4.20	0.17	16.31	13.70	19.04	61.36	16.01	60.81	97.94	0.74	2.67	1.66	1.44	273.48	2.47	8.91	5.54	4.81	18.56	1.19	18.17	0.19	
21-Aug-05	0.20	0.01	16.05	11.77	19.42	60.90	13.51	56.32	85.54	1.59	5.73	3.56	3.10	281.73	4.42	15.92	9.89	8.59	18.25	1.17	15.61	1.71	
22-Aug-05	0.00	0.00	14.22	10.99	17.90	57.60	10.96	51.74	81.23	0.86	3.09	1.92	1.67	247.85	3.32	11.97	7.44	6.46	16.22	1.05	13.17	1.56	
23-Aug-05	0.00	0.00	17.05	11.38	23.63	62.69	10.05	50.10	67.69	0.86	3.09	1.92	1.67	150.98	3.38	12.16	7.56	6.57	19.45	1.24	13.16	3.21	
24-Aug-05	0.00	0.00	17.64	9.03	25.95	63.75	8.91	48.03	60.50	0.60	2.14	1.33	1.16	202.17	2.35	8.46	5.26	4.57	20.19	1.28	12.21	3.68	
25-Aug-05	0.00	0.00	17.10	10.21	23.63	62.78	11.56	52.82	72.42	0.52	1.87	1.16	1.01	201.45	1.86	6.68	4.15	3.61	19.51	1.24	14.13	2.41	
26-Aug-05	0.00	0.00	17.75	10.60	24.79	63.95	12.34	54.20	73.67	0.60	2.14	1.33	1.16	85.99	1.90	6.85	4.26	3.70	20.33	1.29	14.98	2.47	
27-Aug-05	12.40	0.49	18.30	14.85	22.09	64.94	16.49	61.69	89.42	0.93	3.34	2.08	1.80	129.28	3.46	12.47	7.75	6.73	21.05	1.33	18.82	1.17	
28-Aug-05	0.20	0.01	18.06	14.47	23.24	64.51	15.34	59.62	86.21	1.30	4.68	2.91	2.52	232.99	3.82	13.75	8.54	7.42	20.73	1.31	17.88	1.70	
29-Aug-05	3.00	0.12	17.44	12.93	22.48	63.39	15.17	59.30	87.83	0.74	2.67	1.66	1.44	185.79	2.57	9.27	5.76	5.00	19.94	1.26	17.51	1.19	
30-Aug-05	0.20	0.01	18.52	14.47	22.86	65.34	15.69	60.25	84.94	0.49	1.75	1.09	0.95	211.47	2.09	7.52	4.67	4.06	21.34	1.34	18.13	1.42	
31-Aug-05	0.00	0.00	17.14	13.70	22.09	62.85	13.97	57.15	82.75	1.10	3.95	2.46	2.13	276.17	3.88	13.97	8.68	7.54	19.56	1.24	16.18	1.88	
1-Sep-05	0.00	0.00	17.39	12.16	22.86	63.30	14.56	58.20	84.38	1.23	4.43	2.75	2.39	296.86	3.59	12.91	8.03	6.97	19.87	1.26	16.77	1.80	
2-Sep-05	0.40	0.02	16.26	12.93	21.33	61.27	12.50	54.51	80.00	1.34	4.82	2.99	2.60	248.93	4.52	16.25	10.10	8.78	18.50	1.18	14.80	2.23	
3-Sep-05	0.00	0.00	16.98	10.99	21.71	62.56	12.10	53.77	74.63	1.13	4.06	2.53	2.19	255.40	4.04	14.56	9.05	7.86	19.36	1.23	14.45	2.76	
4-Sep-05	0.00	0.00	14.46	7.83	20.95	58.03	9.44	48.99	74.48	0.68	2.45	1.52	1.32	166.13	2.69	9.68	6.02	5.23	16.47	1.07	12.27	2.01	
5-Sep-05	0.00	0.00	15.91	9.03	23.63	60.63	12.20	53.96	81.42	0.60	2.17	1.35	1.17	147.94	2.18	7.85	4.88	4.24	18.08	1.16	14.72	1.56	
6-Sep-05	0.00	0.00	19.27	14.09	25.17	66.69	14.62	58.32	77.00	0.95	3.42	2.13	1.85	169.42	3.33	12.00	7.45	6.48	22.37	1.40	17.23	2.72	
7-Sep-05	0.00	0.00	20.64	16.76	26.34	69.15	15.82	60.48	74.71	1.05	3.76	2.34	2.03	262.72	3.32	11.97	7.44	6.46	24.36	1.51	18.20	3.37	
8-Sep-05	0.00	0.00	17.71	11.38	24.01	63.88	7.94	46.29	55.65	0.97	3.48	2.17	1.88	282.84	3.45	12.41	7.71	6.70	20.28	1.28	11.28	4.78	
9-Sep-05	0.00	0.00	15.50	9.42	22.09	59.90	8.23	46.81	64.29	0.93	3.34	2.08	1.80	157.76	3.02	10.88	6.76	5.87	17.62	1.13	11.33	3.30	
10-Sep-05	0.00	0.00	15.58	9.82	20.95	60.05	11.91	53.44	80.94	0.50	1.78	1.11	0.96	102.36	1.92	6.90	4.29	3.73	17.71	1.14	14.33	1.50	
11-Sep-05	0.00	0.00	20.20	14.85	26.34	68.36	16.22	61.20	79.08	1.05	3.79	2.35	2.04	191.15	3.45	12.41	7.71	6.70	23.70	1.47	18.75	2.72	
12-Sep-05	0.00	0.00	22.64	17.52	29.50	72.75	18.56	65.42	80.10	1.36	4.90	3.05	2.64	250.14	3.77	13.58	8.44	7.33	27.54	1.68	22.06	3.32	
13-Sep-05	0.00	0.00	21.88	17.90	27.12	71.39	17.79	64.03	78.67	0.79	2.84	1.77	1.53	164.25	2.90	10.44	6.49	5.63	26.30	1.61	20.69	2.80	
14-Sep-05	0.60	0.02	18.95	12.93	23.24	66.11	14.30	57.74	76.75	1.36	4.90	3.05	2.65	257.81	4.30	15.47	9.62	8.36	21.93	1.37	16.83	3.09	
15-Sep-05	0.00	0.00	15.12	8.63	22.48	59.22	8.09	46.57	65.29	0.96	3.45	2.15	1.86	245.80	3.10	11.16	6.94	6.03	17.19	1.11	11.22	3.16	
16-Sep-05	0.00	0.00	16.24	11.77	22.09	61.24	8.42	47.16	61.58	1.12	4.04	2.51	2.18	93.18	3.16	11.38	7.07	6.14	18.47	1.18	11.38	3.98	
17-Sep-05	0.00	0.00	16.57	8.63	25.56	61.83	8.66	47.58	63.48	0.74	2.65	1.65	1.43	255.10	2.46	8.85	5.50	4.78	18.87	1.20	11.98	3.36	
18-Sep-05	0.00	0.00	17.24	10.99	23.24	63.04	12.31	54.17	74.77	1.08	3.90	2.42	2.10	251.01	3.33	12.00	7.46	6.48	19.69	1.25	14.72	2.75	
19-Sep-05	32.21	1.27	15.95	12.93	18.66	60.70	14.95	58.92	93.90	1.46	5.26	3.27	2.84	139.34	4.70	16.89	10.50	9.12	18.13	1.16	17.02	0.69	
20-Sep-05	0.00	0.00	16.03	13.70	20.19	60.84	12.08	53.75	79.19	2.20	7.90	4.91	4.27	268.46	6.58	23.68	14.72	12.79	18.22	1.17	14.43	2.89	
21-Sep-05	3.00	0.12	17.79	12.55	25.17	64.02	12.52	54.53	76.46	1.23	4.43	2.75	2.39	269.56	3.79	13.64	8.48	7.36	20.39	1.29	15.59	2.79	
22-Sep-05	2.20	0.09	15.72	10.21	18.66	60.29	15.03	59.05	95.63	0.77	2.78	1.73	1.50	259.85	3.39	12.22	7.59	6.60	17.86	1.15	17.08	0.39	
23-Sep-05	0.20	0.01	10.12	4.99	16.38	50.21	5.43	41.76	76.02	0.69	2.48	1.54	1.34	223.21	2.82	10.16	6.31	5.48	12.37	0.83	9.40	1.42	
24-Sep-05	0.00	0.00	10.96	4.15	16.76	51.72	7.67	45.81	81.50	1.00	3.59	2.23	1.94	142.55	3.42	12.30	7.65	6.64	13.09	0.87	10.66	1.30	
25-Sep-05	7.60	0.30	15.96	13.70	17.90	60.73	15.34	59.61	96.00	0.40	1.45	0.90	0.78	194.85	1.80	6.49	4.03	3.50	18.15	1.16	17.42	0.31	
26-Sep-05	9.60	0.38	11.66	6.62	14.47	52.99	10.25	50.44	91.96	0.73	2.62	1.63	1.41	179.24	3.48	12.52	7.78	6.76	13.71	0.91	12.61	0.54	
27-Sep-05	0.00	0.00	12.82	4.99	21.33	55.08	9.28	48.70	81.73	1.22	4.37	2.72	2.36	242.88	3.60	12.94	8.04	6.99	14.80	0.97	12.10	1.56	
28-Sep-05	21.40	0.84	15.38	10.60	19.81	59.69	12.98	55.36	86.73	1.22	4.40	2.73	2.38	179.29	4.73	17.03	10.59	9.20	17.48	1.13	15.16	1.34	
29-Sep-05	12.20	0.48	5.43	2.89	8.63	41.78	1.48	34.67	77.50	1.83	6.60	4.10	3.56	282.84	6.74	24.27	15.08	13.10	8.98	0.62	6.96	1.40	
30-Sep-05	0.00	0.00	11.14	4.57	14.85	52.06	6.78	44.20	75.31	1.25	4.48	2.79	2.42	237.73	4.35	15.67	9.74	8.46	13.25	0.88	9.98	1.91	
1-Oct-05	0.00	0.00	15.45	11.77	20.19	59.80	9.94	49.90	70.63	1.43	5.15	3.20	2.78	244.15	4.25	15.31	9.51	8.26	17.55	1.13	12.40	3.19	
2-Oct-05	0.00	0.00	16.27	9.82	24.01	61.28	12.08	53.75	79.06	0.51	1.84	1.14	0.99	122.61	2.15	7.74	4.81	4.18	18.50	1.18	14.63	1.73	
3-Oct-05	1.80	0.07	17.79	15.62	20.95	64.02	16.87	62.37	94.38	0.53	1.89	1.18	1.02	134.72	2.90	10.44	6.49	5.64	20.39	1.29	19.24	0.51	
4-Oct-05	0.00	0.00	20.80	17.52	26.73	69.44	18.92	66.05	89.77	0.65	2.34	1.46	1.26	204.91	2.79	10.05	6.24	5.43	24.61	1.52	22.09	1.19	

Knight Piésold
CONSULTING

TABLE G.1

URSA MAJOR MINERALS INCORPORATED
SHAKESPEARE PROJECT

ENVIRONMENTAL BASELINE REPORT FOR FEASIBILITY STUDY

WEATHER STATION RECORDED DATA AND ESTIMATED POTENTIAL DAILY EVAPORATION

Data Collected from Weather Station																				Calculated Parameters			
Date	Total Rainfall (mm)	Total Rainfall (in)	Average Temperature (°C)	Minimum Temperature (°C)	Maximum Temperature (°C)	Average Temperature (°F)	Average Dew Point (°C)	Average Dew Point (°F)	Average RH (%)	Average Wind Speed (m/s)	Average Wind Speed (KPH)	Average Wind Speed (MPH)	Average Wind Speed (Knots)	Average Wind Direction (ø)	Gust Speed (m/s)	Gust Speed (KPH)	Gust Speed (MPH)	Gust Speed (Knots)	e_s	Slope Δ	e_a	Estimated Potential Evaporation (Penman) (mm)	
5-Oct-05	0.00	0.00	20.27	17.14	25.17	68.49	17.36	63.24	84.02	0.87	3.12	1.94	1.68	153.37	3.19	11.49	7.14	6.21	23.82	1.48	20.01	1.95	
6-Oct-05	2.20	0.09	14.30	8.63	19.42	57.74	11.89	53.40	85.65	1.79	6.46	4.01	3.49	198.97	5.26	18.95	11.78	10.23	16.30	1.06	13.96	1.61	
7-Oct-05	0.00	0.00	4.12	0.73	7.83	39.42	-0.69	30.76	71.67	1.37	4.93	3.06	2.66	156.71	5.27	18.98	11.80	10.25	8.20	0.58	5.88	1.41	
8-Oct-05	0.00	0.00	4.07	-1.06	10.60	39.32	-1.23	29.79	70.42	1.24	4.45	2.77	2.40	88.40	4.48	16.11	10.02	8.70	8.17	0.57	5.75	1.41	
9-Oct-05	0.00	0.00	6.74	-0.16	14.85	44.12	0.93	33.67	70.21	1.12	4.04	2.51	2.18	157.07	3.77	13.58	8.44	7.33	9.83	0.68	6.90	1.64	
10-Oct-05	0.00	0.00	9.54	5.81	12.93	49.17	6.75	44.15	82.98	1.00	3.62	2.25	1.95	98.22	3.51	12.64	7.85	6.82	11.90	0.80	9.87	1.09	
11-Oct-05	0.00	0.00	12.83	10.21	19.04	55.10	8.57	47.42	77.33	0.99	3.56	2.22	1.92	78.16	3.44	12.38	7.70	6.69	14.81	0.97	11.46	1.80	
12-Oct-05	0.40	0.02	10.51	6.62	14.47	50.93	7.06	44.71	79.98	1.50	5.40	3.36	2.92	108.51	3.90	14.03	8.72	7.57	12.70	0.85	10.16	1.61	
13-Oct-05	4.20	0.17	11.49	10.21	12.55	52.69	11.56	52.82	100.40	0.75	2.70	1.68	1.46	118.86	2.51	9.04	5.62	4.88	13.56	0.90	13.61	-0.03	
14-Oct-05	2.00	0.08	13.40	10.60	16.38	56.11	12.45	54.41	94.46	0.55	1.98	1.23	1.07	194.74	2.18	7.85	4.88	4.24	15.37	1.00	14.52	0.39	
15-Oct-05	1.20	0.05	9.50	7.83	12.55	49.10	8.06	46.52	91.17	1.52	5.48	3.41	2.96	273.90	5.04	18.15	11.28	9.80	11.87	0.80	10.82	0.67	
16-Oct-05	0.00	0.00	7.03	4.15	9.82	44.66	3.60	38.48	79.02	1.55	5.59	3.48	3.02	300.08	6.12	22.01	13.68	11.89	10.04	0.69	7.93	1.35	
17-Oct-05	3.00	0.12	5.68	1.60	9.42	42.23	3.99	39.19	89.23	0.97	3.48	2.16	1.88	236.97	3.26	11.72	7.28	6.33	9.14	0.63	8.16	0.52	
18-Oct-05	0.20	0.01	8.63	6.62	10.21	47.53	6.12	43.02	84.98	1.38	4.96	3.08	2.68	275.95	4.45	16.00	9.95	8.64	11.19	0.76	9.51	1.02	
19-Oct-05	19.40	0.76	4.85	2.03	7.43	40.73	2.55	36.59	86.27	1.28	4.59	2.86	2.48	224.56	4.62	16.62	10.33	8.97	8.63	0.60	7.44	0.70	
20-Oct-05	0.00	0.00	4.07	-0.16	9.42	39.32	-0.48	31.13	75.67	0.67	2.39	1.49	1.29	257.44	2.61	9.38	5.83	5.06	8.17	0.57	6.18	0.94	
21-Oct-05	0.00	0.00	2.31	-2.44	9.42	36.15	-2.47	27.56	73.52	0.44	1.59	0.99	0.86	202.45	1.86	6.71	4.17	3.62	7.21	0.51	5.30	0.83	
22-Oct-05	0.00	0.00	3.03	-0.61	6.62	37.46	-0.31	31.44	79.66	1.19	4.27	2.65	2.30	121.73	3.62	13.04	8.10	7.04	7.59	0.54	6.05	0.88	
23-Oct-05	0.00	0.00	4.34	2.46	7.03	39.81	1.16	34.08	80.11	0.99	3.58	2.23	1.93	66.59	4.21	15.15	9.42	8.18	8.33	0.58	6.67	0.89	
24-Oct-05	0.20	0.01	5.11	3.74	7.03	41.21	2.38	36.28	82.73	1.04	3.73	2.32	2.01	60.49	4.01	14.44	8.98	7.80	8.79	0.61	7.27	0.83	
25-Oct-05	0.00	0.00	3.36	0.29	6.62	38.04	-0.31	31.45	77.98	1.05	3.79	2.35	2.04	102.89	4.33	15.59	9.69	8.41	7.77	0.55	6.06	0.94	
26-Oct-05	0.00	0.00	2.51	0.29	4.15	36.51	-1.96	28.46	72.94	1.04	3.73	2.32	2.01	285.00	3.81	13.72	8.53	7.41	7.31	0.52	5.33	1.08	
27-Oct-05	0.00	0.00	2.16	-1.51	6.62	35.88	-0.68	30.78	82.50	0.52	1.87	1.16	1.01	265.40	2.34	8.43	5.24	4.55	7.13	0.51	5.89	0.56	
28-Oct-05	0.00	0.00	3.00	-2.90	10.60	37.41	-0.27	31.51	81.46	0.81	2.92	1.82	1.58	293.08	2.81	10.10	6.28	5.46	7.58	0.54	6.17	0.71	
29-Oct-05	0.00	0.00	7.60	2.89	13.32	45.68	5.39	41.71	86.88	1.85	6.65	4.14	3.59	279.63	4.89	17.59	10.93	9.50	10.43	0.71	9.06	0.95	
30-Oct-05	0.80	0.03	8.00	4.99	12.16	46.39	6.61	43.90	91.40	0.83	2.98	1.85	1.61	255.34	2.88	10.35	6.44	5.59	10.72	0.73	9.80	0.47	
31-Oct-05	2.40	0.10	9.35	8.23	10.60	48.84	9.09	48.36	98.23	1.06	3.81	2.37	2.06	268.21	3.55	12.77	7.94	6.90	11.75	0.79	11.54	0.11	
1-Nov-05	9.00	0.35	6.64	0.29	9.82	43.96	4.54	40.17	87.56	1.13	4.06	2.53	2.19	238.62	3.67	13.22	8.22	7.14	9.77	0.67	8.55	0.68	
2-Nov-05	0.00	0.00	3.83	-1.51	9.42	38.90	1.25	34.26	84.90	0.79	2.84	1.76	1.53	215.91	2.53	9.10	5.66	4.91	8.03	0.57	6.82	0.60	
3-Nov-05	0.00	0.00	8.04	2.46	12.55	46.48	4.46	40.02	78.85	1.93	6.96	4.33	3.76	217.51	5.68	20.45	12.71	11.04	10.75	0.73	8.48	1.62	
4-Nov-05	0.00	0.00	2.31	1.17	4.15	36.17	0.99	33.79	91.06	2.30	8.29	5.16	4.48	111.45	6.50	23.41	14.55	12.64	7.21	0.51	6.57	0.50	
5-Nov-05	0.00	0.00	1.70	0.29	3.31	35.07	-0.31	31.43	86.60	1.17	4.20	2.61	2.27	96.13	3.72	13.39	8.32	7.23	6.91	0.49	5.98	0.53	
6-Nov-05	20.40	0.80	2.64	-0.16	11.38	36.75	2.04	35.67	95.90	3.23	11.63	7.23	6.28	156.20	8.38	30.17	18.75	16.29	7.38	0.52	7.08	0.29	
7-Nov-05	1.60	0.06	2.39	-1.06	5.40	36.30	0.90	33.62	90.19	1.86	6.68	4.15	3.61	280.45	4.75	17.12	10.64	9.24	7.25	0.52	6.54	0.50	
8-Nov-05	0.20	0.01	2.31	-0.16	4.57	36.15	1.11	34.00	92.25	0.46	1.64	1.02	0.89	159.35	2.19	7.88	4.90	4.25	7.21	0.51	6.65	0.24	
9-Nov-05	11.00	0.43	2.57	-0.61	8.23	36.63	0.95	33.71	89.40	3.05	10.97	6.82	5.92	176.20	8.41	30.28	18.82	16.35	7.35	0.52	6.57	0.72	
10-Nov-05	0.00	0.00	-0.67	-2.44	1.17	30.79	-5.80	21.56	68.81	1.82	6.54	4.07	3.53	277.86	6.61	23.80	14.79	12.85	5.82	0.42	4.00	1.25	
11-Nov-05	0.00	0.00	0.63	-3.37	5.40	33.13	-2.70	27.15	79.10	0.67	2.39	1.49	1.29	200.94	2.01	7.24	4.50	3.91	6.39	0.46	5.06	0.63	
12-Nov-05	0.00	0.00	6.27	1.17	11.77	43.29	4.29	39.72	88.27	0.88	3.17	1.97	1.71	106.53	3.24	11.66	7.25	6.30	9.52	0.66	8.41	0.58	
13-Nov-05	19.80	0.78	8.45	2.89	12.55	47.21	5.98	42.75	84.96	2.71	9.74	6.05	5.26	219.78	8.42	30.31	18.83	16.36	11.05	0.75	9.39	1.43	
14-Nov-05	0.00	0.00	0.95	-0.61	3.31	33.72	-3.05	26.51	75.23	2.30	8.29	5.16	4.48	218.44	6.08	21.90	13.61	11.83	6.54	0.47	4.92	1.27	
15-Nov-05	0.20	0.01	-0.45	-1.97	1.17	31.20	-1.57	29.17	92.25	2.81	10.13	6.30	5.47	97.01	7.39	26.61	16.53	14.37	5.91	0.43	5.45	0.40	
16-Nov-05	9.80	0.39	2.26	-1.51	9.42	36.08	0.25	32.44	87.10	3.73	13.44	8.35	7.26	230.78	9.72	34.98	21.74	18.89	7.19	0.51	6.26	0.97	

I:\101-00222-1\Assignment\Report\Report 2, Rev 0\[Table 2.7 and App G Met Data.xls]Averages Shakespeare

13-Dec-05

Notes:

1. Data recorded by an on-site HOBO meteorological station from March 17, 2005 to November 16, 2005.
2. Potential evaporation was estimated using the Penman formula.

APPENDIX H

STAGE ONE AND TWO ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT PROPOSED AGNEW LAKE MINE DEVELOPMENT, AGNEW LAKE, ONTARIO (HORIZON ARCHAEOLOGY)

- Report 12 pages

HORIZON ARCHAEOLOGY

STAGE ONE, TWO AND THREE PROJECT REPORT

STAGE ONE AND TWO ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT PROPOSED AGNEW LAKE MINE DEVELOPMENT, AGNEW LAKE, ONTARIO

Prepared for

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Oct. 5, 2005

<u>HORIZON ARCHAEOLOGY</u>

North Bay Office
October 5, 2005

H-1

Knight Piésold Consulting
Box 10
North Bay, ON
P1B 8G8

Attention: Deena Duff (P. Eng.)

Re: Stage 1 and 2 Archaeological and Heritage Impact Assessment of the Proposed Agnew Lake Mine, Agnew Lake, Ontario.

Please find attached three copies of an Archaeological and Heritage Impact Assessment Report for the above captioned project. You should send one copy to the proponent and another to the relevant government department.

As required for licence and regulatory purposes, we are sending an additional three copies on your behalf to the following offices:

> Archaeological Licence Office (two copies) and
> Development Plans Review Office (Winston Wong) (one copy)
> Heritage Operations Unit
> Ministry of Culture, Tourism and Recreation, 4th Floor,
> 400 University Ave
> TORONTO, Ontario
> M7A 2R9

We were pleased to have assisted you with this project and hope to be of continuing service with your future undertakings.

Yours truly,
HORIZON ARCHAEOLOGY

Dr.David J.G. Slattery
PY/ds, Enclosures

ABSTRACT AND REPORT

Location: The property in question is located just north of Agnew Lake, near the area of the Lake known as Big Bend in the Township of Shakespeare. It is accessible either by boat from the south, west and north, or overland from the east on an enhanced logging road. It can roughly be defined based upon the following coordinates: 437986.7 E, 5135257.6 N; 43573.0 E, 5133213.4N; 436841.1 E, 5135032.9 N; and 436445.6 E, 5133204.4 N. Agnew lake is actually a widening of the Spanish River created by the back up of waters as a result of the construction of several hydro electric dams further down stream. Most notable of these are the Big Eddy, High Falls, Nairn Falls and Espanola Generating Stations. It is approximately 12 kilometres north-east of Webbwood and 13 kilometres north-west of Espanola. The area is predominantly large gneiss outcroppings with limited soil developing. While stunted hardwoods dominate (esp. Manitoba Maples), conifers and some red and white pines are also found. The lack if old growth trees suggests that intensive logging has occurred in the past 50 years or so. In fact, the largest numbers of old growth trees are found as "dead heads" in the water; the result of the raising of the water - level.

Purpose: As it is proposed to construct a mine on the site, an archaeological assessment of potential impact on cultural remains was ordered. Local tradition spoke of a burial site on top of the highest point on the property, known as "The Mountain". However, it appears that Mr. Luke Dalla Bona of Woodland Heritage Services has located this particular site considerably north of the proposed development.

Methodology: As required by the Ministry of Culture, a Stage 1 assessment was conducted by the author. Aside from the potential burial site noted above, several other sites are listed in the Ministry's data base. However, none appear to be within a five kilometre vicinity of the proposed development.

A Stage 2 assessement was undertaken by Horizon Archaeology under the field direction of the author, Dr. David J.G. Slattery. This involved three specific approaches to the site. Firstly, the edges of the site were visited by boat. The intent was to determine potential modern access points and to attempt to document the changes to the area as a result of the artificially raised water levels noted above. These changes were noted by Hanks in his discussion of CcHl-2 (Hanks 1980-F-0416) in his 1980 report for the Ministry. Secondly, access to the main mine site was gained via a series of trails used by the proponent to reach the rock face for exploratory core sampling. Areas where bedrock did not protrude the surface were tested with 1 x 1 metre hand excavated pits. These were dug at random as soil conditions allowed. Finally, the eastern part of the site was visited on ATV's via the old logging road which runs into the property from the north-east. The area in question is to be used for tailings and as a waste rock dump. Again, test pits were randomly excavated where soil levels allowed.

Results: The preliminary study along the waterways showed clear indications that much of Agnew Lake was artificially created by the down stream dams. For example, Stumpy Bay, which gives access to the property from the south-west, is extremely shallow. It is estimated that the original water level was some 4 metres lower than is the case today. Most of this Bay is less than two metres in depth. It did not exist prior to the construction of the dam. Thus, to the south, the proposed location of the mine site is some 1.5 kilometres from the original banks of the Spanish River. The channel to the west and north-west of the proposed development also showed similar shallow water levels. Thus, it is possible to recreate the original water levels to suggest that modern channel from Big Bend through Sutherland Creek and into O'Brien and Sutherland Lakes was, if anything, no more than a small creek. In fact, reference to a topographic map gives clear indications that the study area was actually centrally located on a large promontory jutting into the Spanish River. As such the location of the proposed mine would have been some two kilometres from the original shoreline. Furthermore, as documented in the photographic record, with the exception of several areas along the north-west shores of Stumpy Bay, there are few other access points to the property from the water which do not entail a steep climb up a rock face. No areas suitable for the landing of canoes were located.

The second aspect of the study involved accessing the property from the south-south-west via paths cut by the proponent as part of the test drilling process. These were walked and areas where soil conditions allowed were test pitted. None of the test pits yielded any evidence of cultural material.

Finally, during our second visit to the property we accessed the far eastern areas to be developed. Again, within the property limits, all areas with soil development were test pitted at random. No remains of cultural value were uncovered. Special attention was paid to the most easterly part of the area under consideration as the tailings and waste rock dump. This area is just inside a 1 kilometre range of the subject property.

Conclusions: Given the changes in the water level of Agnew Lake and the inaccessibility of the summit of "The Mountain", the likelihood of discovering cultural remains appeared low. The original shoreline would have been a considerable distance further away than is the case today. The lack of appreciable soil deposits also limited the usefulness of this area. Finally, as noted above, the test pit strategy employed by Horizon Archaeology failed to uncover any signs of cultural activity, nor even locate areas where probability modeling would indicate special need be given.

Recommendations: It is the opinion of Horizon Archaeology that there are no concerns related to the destruction of cultural materials by the continued development of this project.

Report Authors: Dr. David J.G. Slattery

Field Visit: Dr. David J.G. Slattery

GPS Readings: Supplied by the consultant on behalf of the proponent

BACKGROUND DATA

Archaeological Licence Regulations

Recommendations: Any recommendation made in this report are subject to approval by the Minister responsible for the Ontario Heritage Act, R.S.O. 1990. Pursuant to Section 65(1) of the Act, it is required that the licensee shall include in any report the following: a statement of impacts that the proposed undertaking may reasonably be expected to have upon archaeological heritage, any recommendations made to the proponent regarding the protection, preservation or conservation of archaeological heritage in the area of the undertaking, and a statement of the reasons for those recommendations.

Site Record Form: Every newly discovered site must be recorded on an Archaeological Site Record Form. Each site revisited or previously recorded must be documented on a Site Update Sheet.

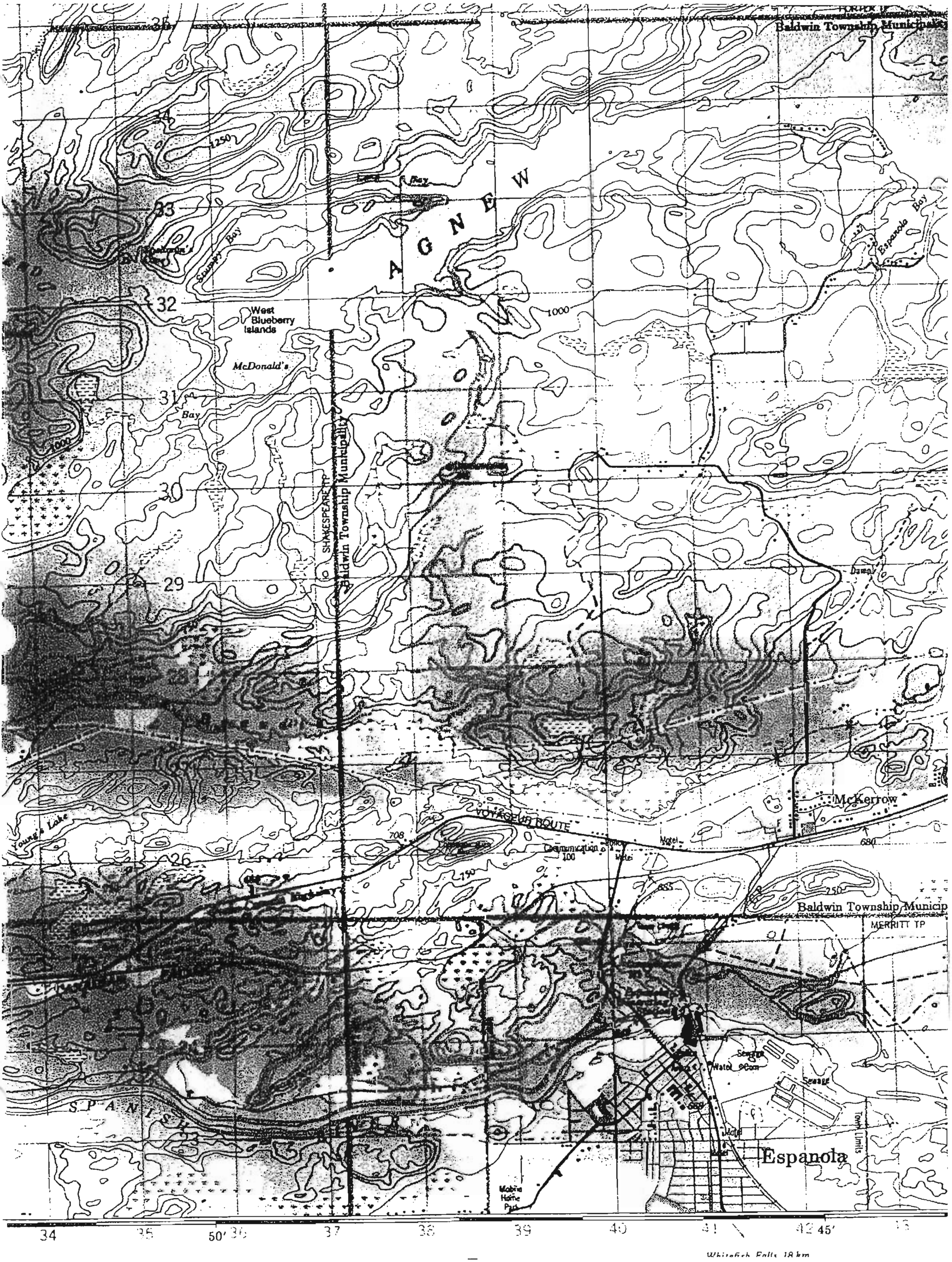
Prior Notice: The licensee must, before initiating field work on a particular undertaking, provide the Ministry of Culture with notice concerning the identity of the proponent and/or contractor, the identity of the Project Director, the nature, purpose, location, duration and extent of the planned field work, the anticipated staffing of the project, and the details of special arrangements or conditions of the contract. Before commencing field work, the licensee must receive confirmation of receipt of this notice from MOC.

Human Remains: An archaeological licence does not authorize disinterment of human remains. Disinterment must be conducted in compliance with the Cemeteries Act, R.S.O. 1990, C.C.4 and the Ministry of Consumer and Commercial Relations.

Deeply Buried Remains: There remains the possibility of deeply buried remains on this site. Should they be uncovered, the developer must cease work immediately and contact the Ministry. It is also requested that Horizon Archaeology be informed of such an occurrence.

Archaeological licenses are issued pursuant to the Ontario Heritage Ace. R.S.O. 1990, C.O.18, and are subject to the provisions of this Act. Licences are not transferable.

Under archaeological licence regulations, three copies of this report must be submitted to the Ministry of Culture (MOC) within one year of undertaking the archaeological fieldwork.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Swampy Bay
West Blueberry Islands
McDonald's
Bay
Espanola Bay
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1000
SHAKESPEARE TP
Baldwin Township Municipality
Dump
Young's Lake
VOYAGEUR ROUTE
McKerrow
708
680
Communication
Motel
750
Baldwin Township Municip
MERRITT TP
SPANISH
Sewage
Espanola
Mobile Home Park
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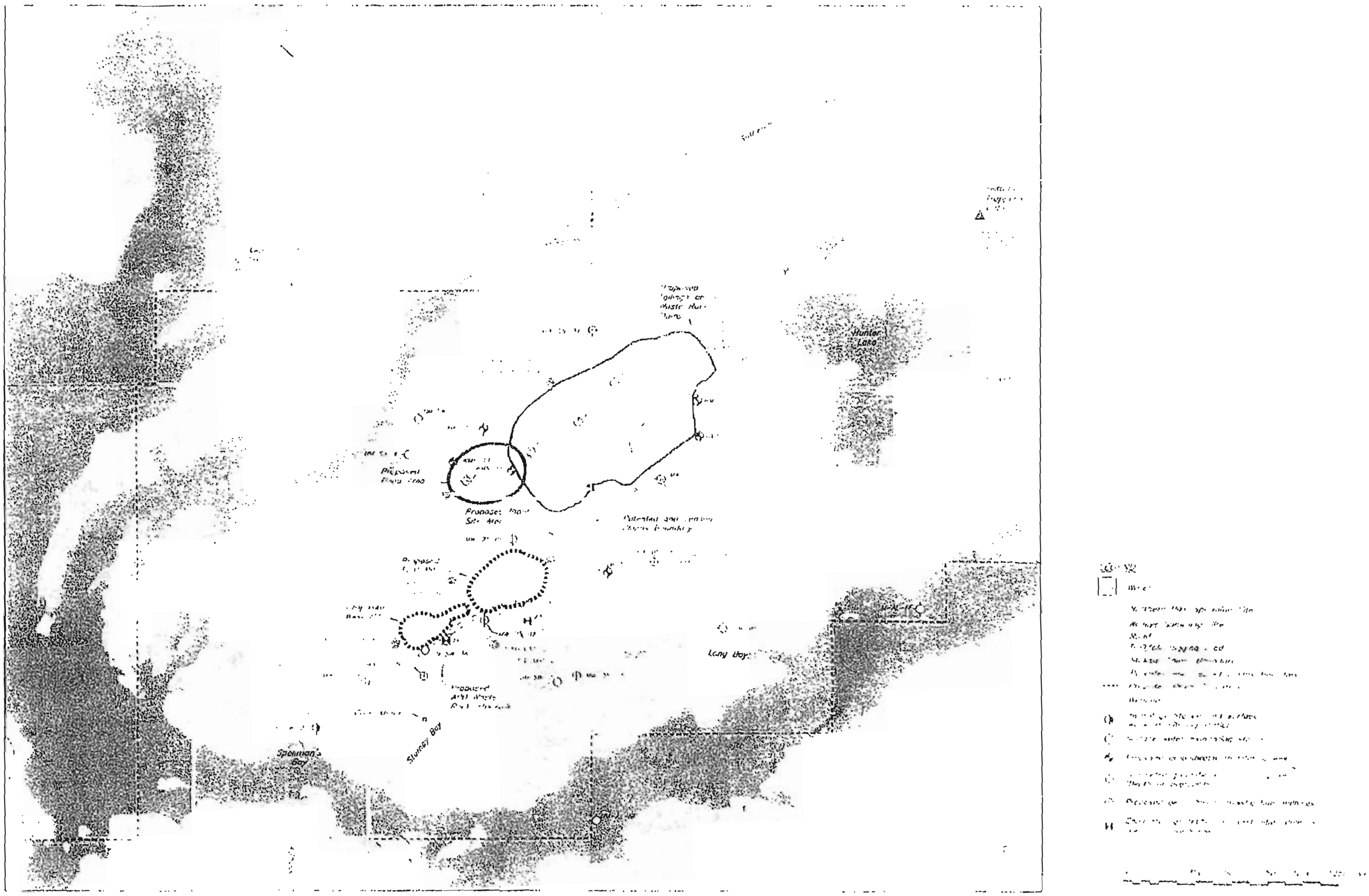

Hunter Lake
Long Bay

PHOTO PLATE 1

Top: Agnew Lake facing N
Bottom: Mine outcropping from water

PHOTO PLATE 2

Top: Mine outcropping from water
Bottom: Mine outcropping from core shack

PHOTO PLATE 3

Top: Mine outcropping from water
Bottom: Mine outcropping from water

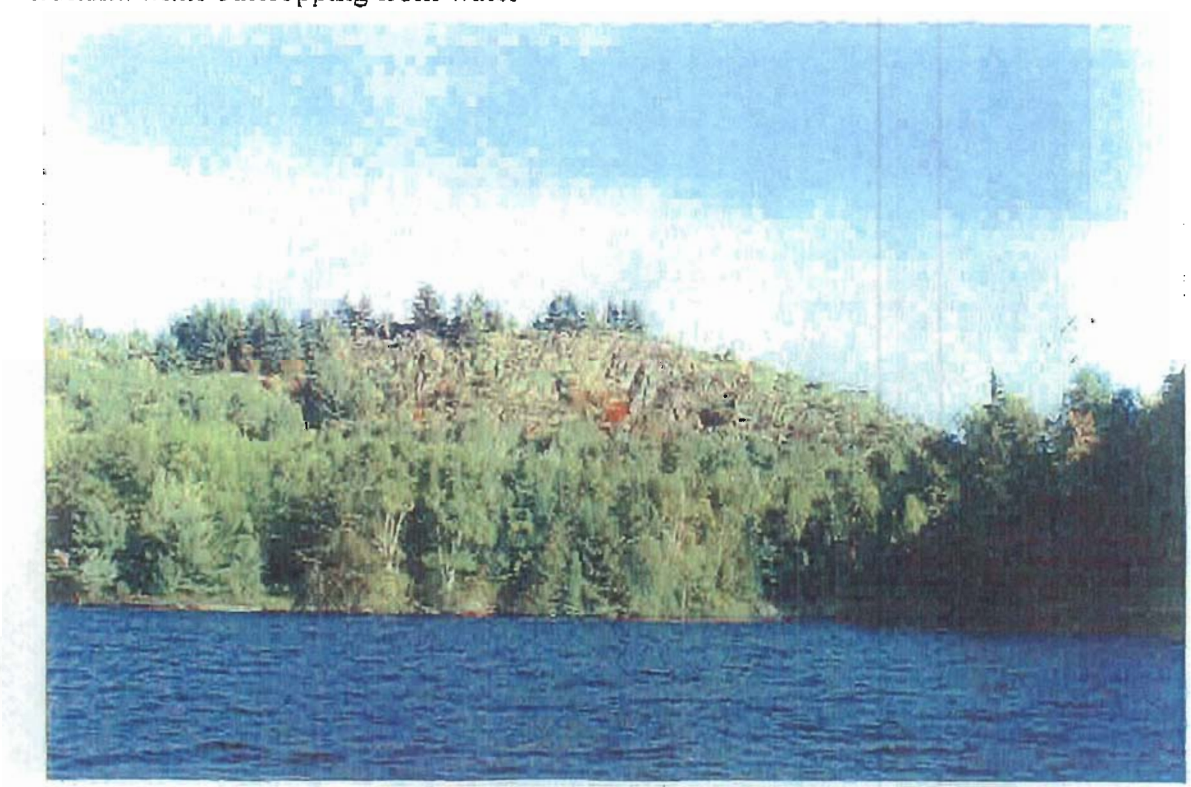
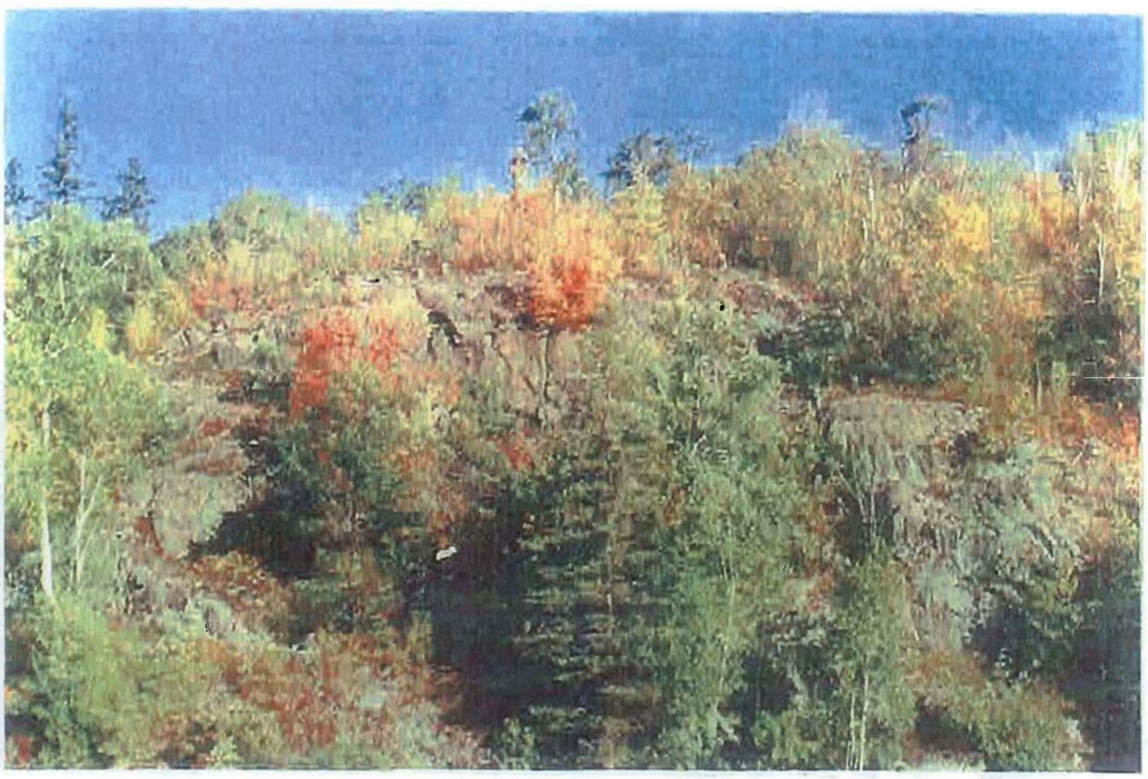


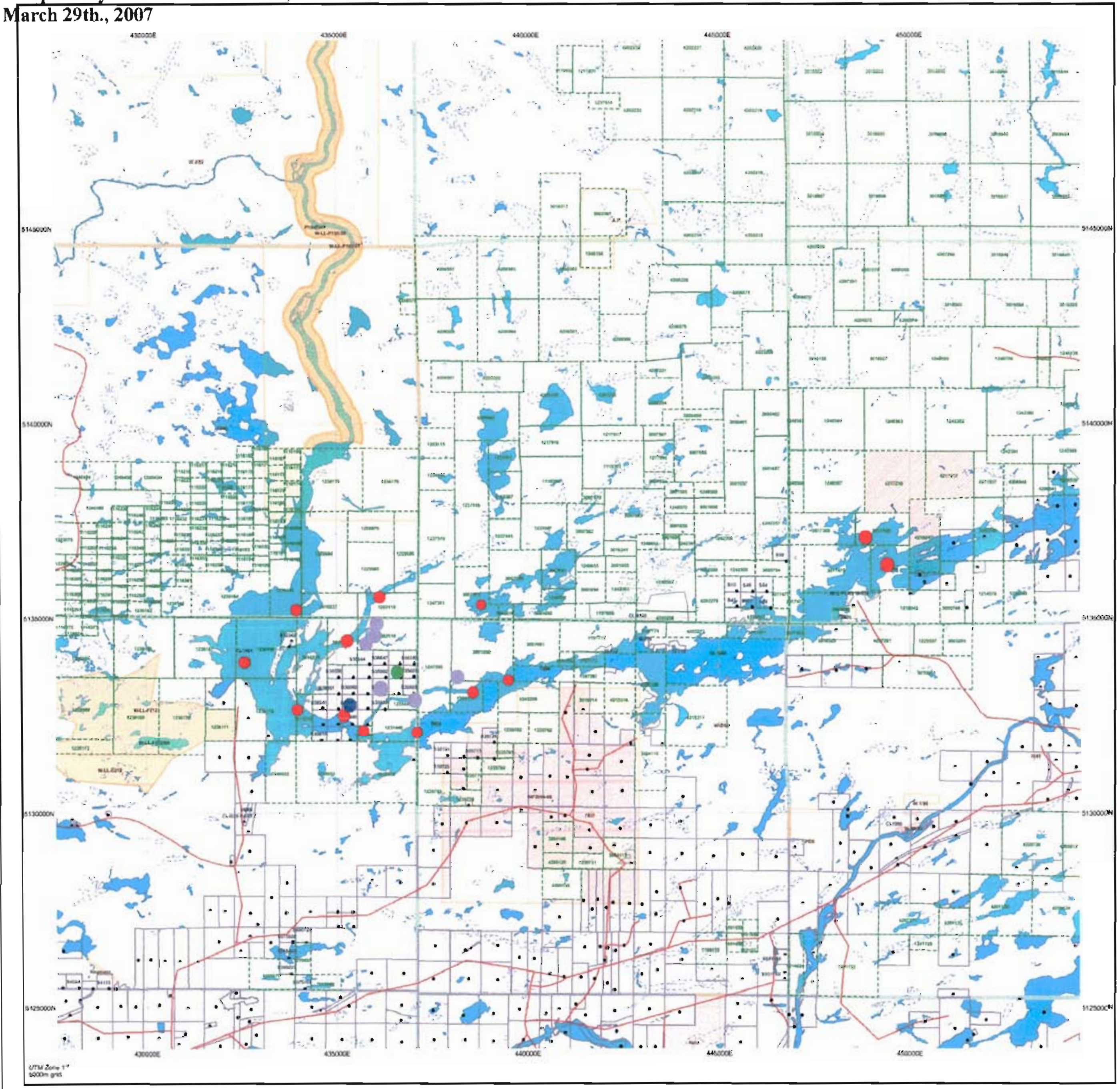
PHOTO PLATE 4

Top: Mine outcropping from near base
Bottom: Mine outcropping from near base



Ursa Major [illegible]erals Incorporated
Environmental Base Line Studies Water Sampling Sites

Compiled By: Harold J. Tracanelli, Getn P.Geo
March 29th., 2007



ONTARIO CANADA

Mining Lan[illegible] [illegible]re Map

Date / Time of Issue: Thu Mar 29 09:46:10 EST 2007

TOWNSHIP / AREA	PLAN
PORTER	G-2865

ADMINISTRATIVE DISTRICTS / DIVISIONS

Mining Division	Sudbury
Land Titles/Registry Division	SUDBURY
Ministry of Natural Resources District	SUDBURY

TOPOGRAPHIC

Land Tenure

LAND TENURE WITHDRAWALS

IMPORTANT NOTICES

LAND TENURE WITHDRAWAL DESCRIPTIONS

IMPORTANT NOTICES

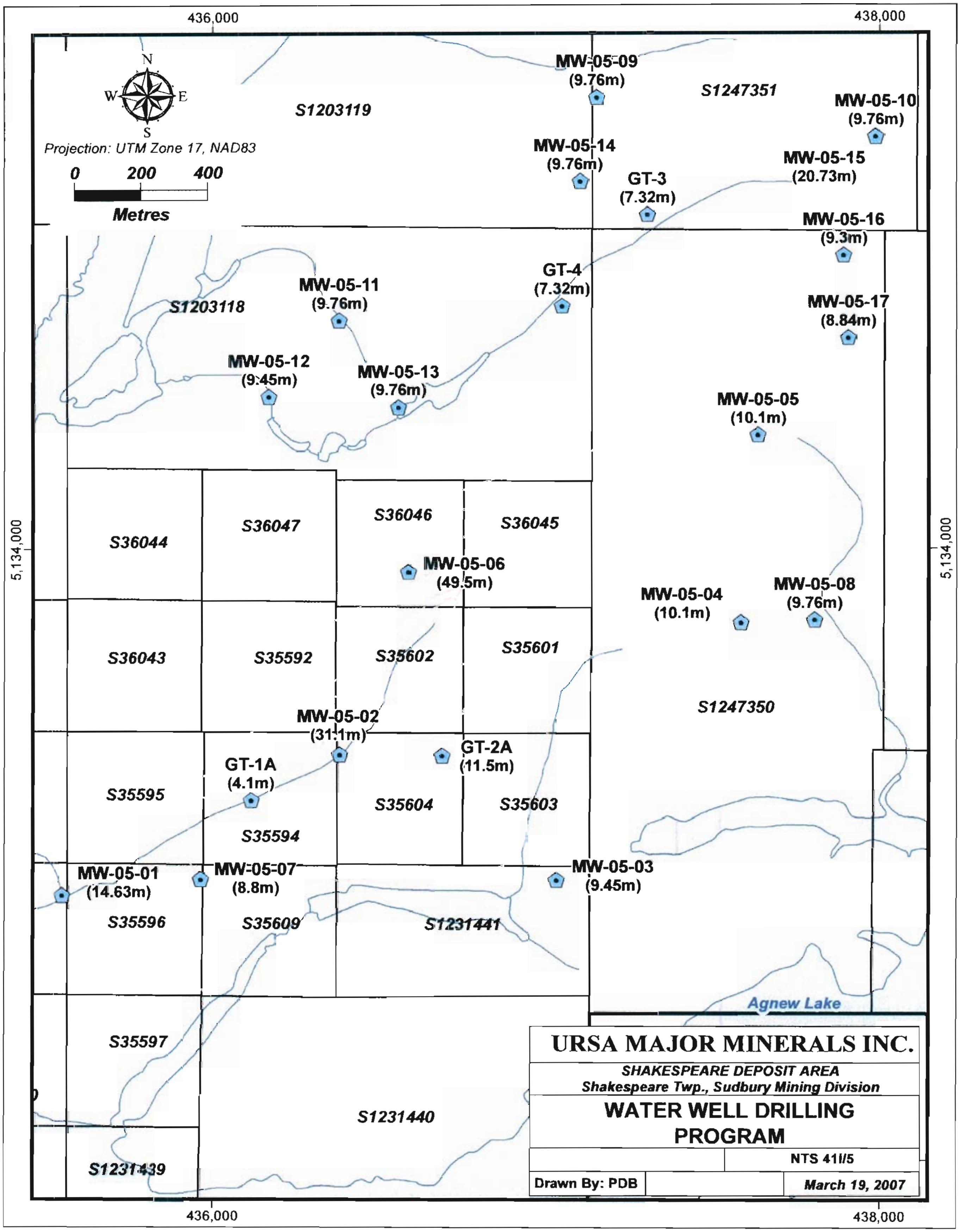
General Information and Limitations

● Pre Operative Water Monitoring Station

● Hydrology Station

● Weather Station

● Surface Water Station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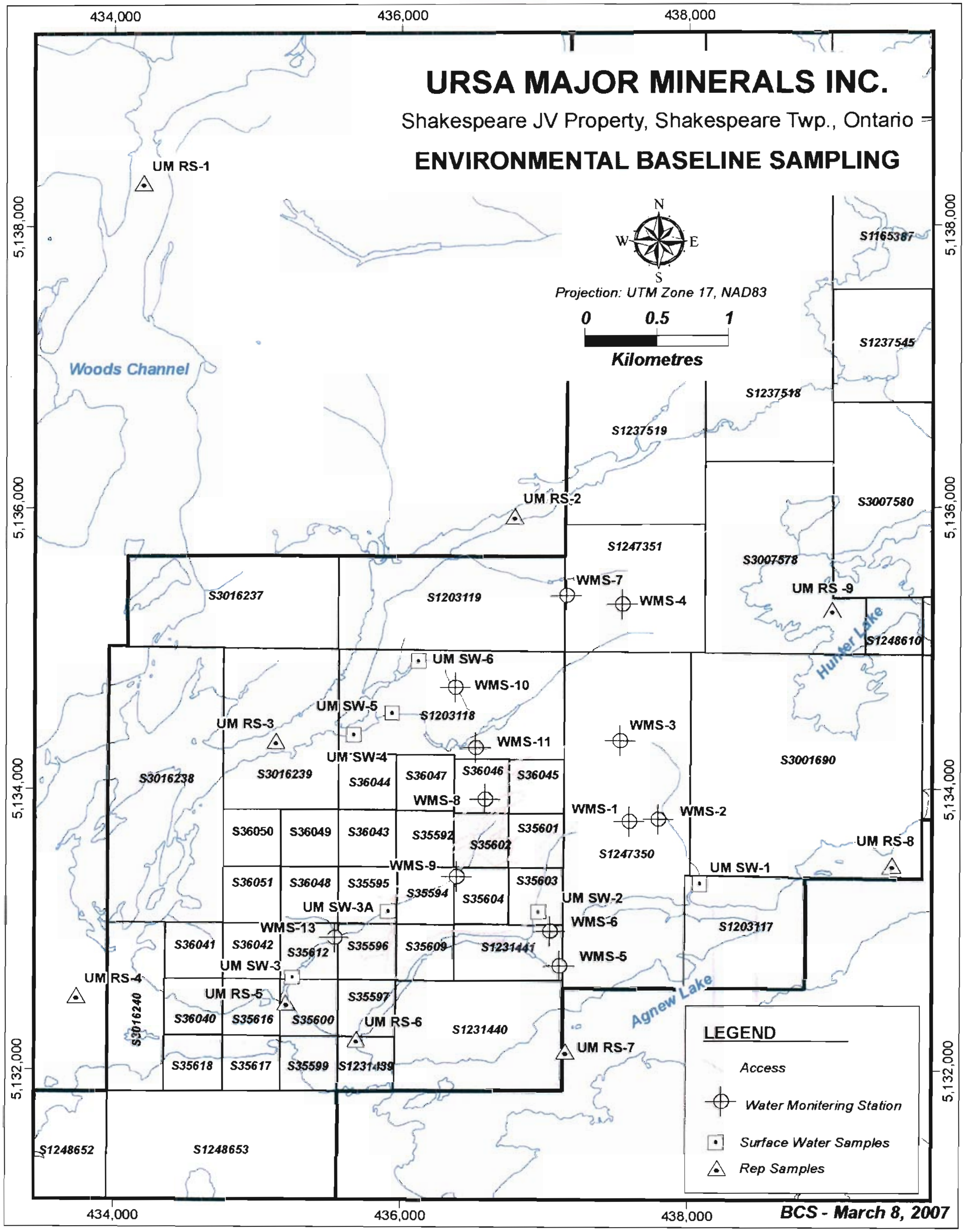
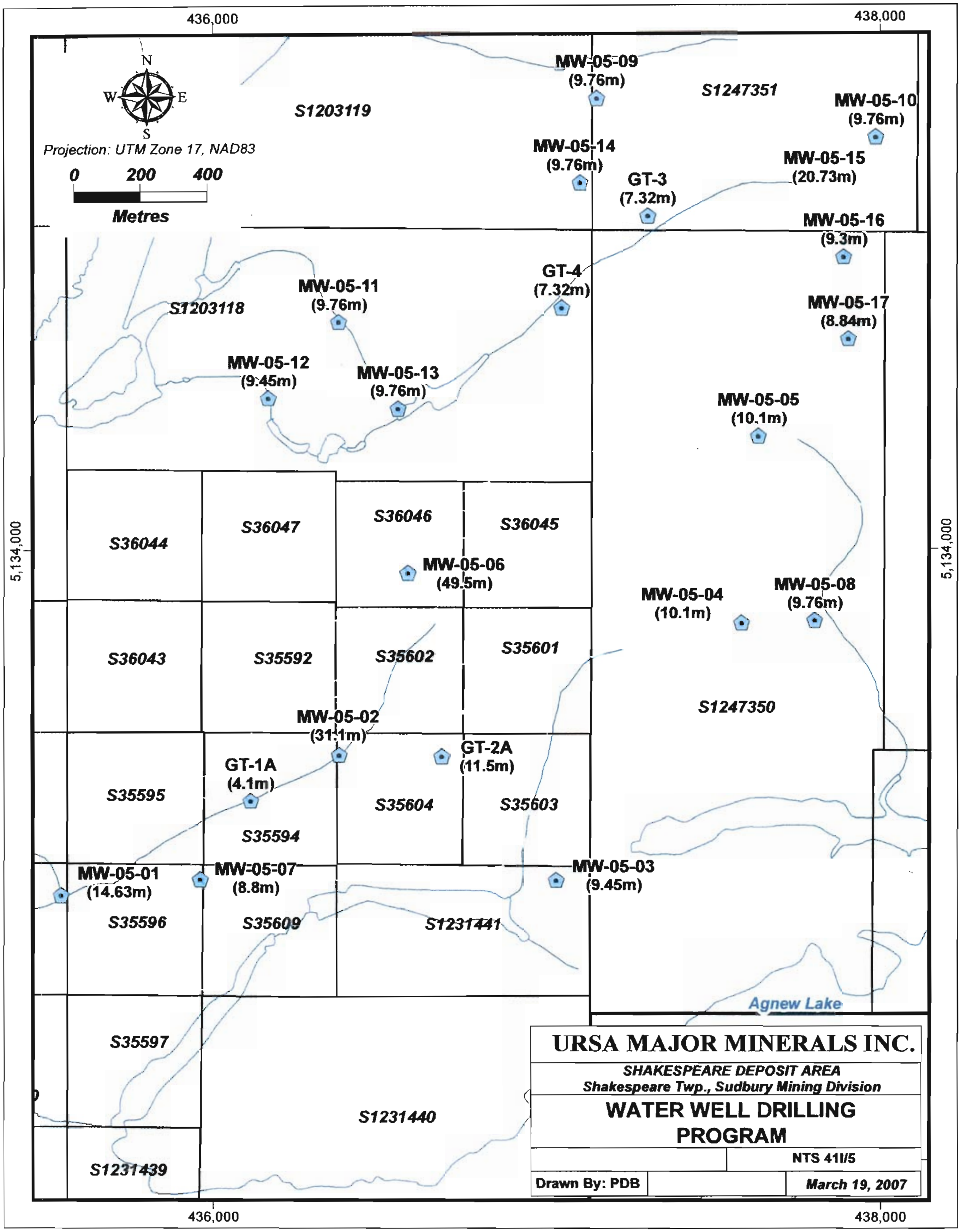
URSA MAJOR MINERALS INC.
SHAKESPEARE DEPOSIT AREA
Shakespeare Twp., Sudbury Mining Division
WATER WELL DRILLING PROGRAM
NTS 41I/5
Drawn By: PDB
March 19, 2007



BCS - March 8, 2007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Shakespeare Twp., Sudbury Mining Division
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Drawn By: PDB
March 19, 2007