



May 4, 2012

Mackenzie Valley Environmental Impact Review Board
200 Scotia Centre
P.O. Box 938
Yellowknife, NWT X1A 2N7

Attention: Mr. Paul Mercredi, Environmental Assessment Officer

Subject: April 2012 Groundwater Quality Sampling Results for the Nechalacho (Thor Lake) and Pine Point Plant Sites

Dear Mr. Mercredi,

Avalon Rare Metals Inc. (Avalon) is pleased to submit the April 2012 groundwater quality sampling results from the Nechalacho and Pine Point sites to the Mackenzie Valley Environmental Impact Review Board (MVEIRB). Submission of these results (see attached KPL memoranda NB12-00199 and NB12-00200) fulfills Avalon's commitment to provide the pending test results, as stated in Avalon's Response to Aboriginal Affairs and Northern Development Canada's Information Requests #20 and #22 (submitted February 2012), and in Avalon's Response to MVEIRB's Information Request Clarification (submitted April 2, 2012).

Yours truly,

A handwritten signature in blue ink, appearing to read "D. Swisher", is positioned above the typed name of the signatory.

(on behalf of)

David Swisher
VP Operations
Avalon Rare Metals Inc.

Corporate Office:

130 Adelaide St. W., Suite 1901, Toronto, ON M5H 3P5
Tel: (416) 364-4938 Fax: (416) 364-5162

Operations Office:

Unit 330 – 6165 Hwy 17, Delta, BC V4K 5B8
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MEMORANDUM

To: Mr. David Swisher
Copy To: Rick Hoos
From: Cara Stapley
Re: Thor Lake Project - Thor Lake Site Groundwater Quality Test Results (Event 3)

Date: May 3, 2012
File No.: NB101-390/3-A.01
Cont. No.: NB12-00199

Seven (7) groundwater monitoring wells were previously installed near the proposed infrastructure for the Thor Lake Project at the Nechalacho Mine Site in Northwest Territories. In 2011, the wells were installed, developed and sampled, where possible. In late April 2012, a program was carried out by Knight Piésold to check and sample (where possible) all seven wells for the purpose of collecting additional baseline water quality data, including Rare Earth Elements (REE) background data. One (1) groundwater monitoring well was sampled (HG-7), although there was insufficient water volume available for collection of a complete sample (general chemistry sample available only, unable to complete REE testing on the sample). Monitoring well HG-1 was found to have insufficient water volume for collection of a sample. Monitoring wells HG-2, HG-3B, HG-4, HG-5 and HG-6 could not be accessed due to significant snow cover over access trails. Figure 1 shows the locations of the monitoring wells.

The one (1) water sample from HG-7 was sent to ALS Laboratory Group (ALS) in Yellowknife for completion of a complete suite of analytical tests, including:

- Physical tests
- Anions and nutrients
- Cyanide
- Total metals
- Dissolved metals

The results from the laboratory testing are summarized on Table 1. The laboratory certificate of analysis is included in Appendix A.

It is recommended that two additional water sampling events take place in July/August, 2012 and October 2012, for the purpose of continuing collection of baseline data, including REE data, where possible. Should you have any questions, please do not hesitate to contact us.

Signed: 
Cara Stapley, P.Eng.
Geological Engineer

Approved: 
Kevin Hawton, P.Eng.
Senior Engineer

Attachments:

Table 1 Rev 0 Laboratory Results Summary
Figure 1 Rev 0 Thor Lake Site - Monitoring Wells and Instrumentation Locations
Appendix A Laboratory Certificate of Analysis

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TABLE 1

AVALON RARE METALS INC.
THOR LAKE PROJECT

THOR LAKE SITE GROUNDWATER QUALITY TEST RESULTS (EVENT 3)
LABORATORY RESULTS SUMMARY

Print May/03/12 16:52:57

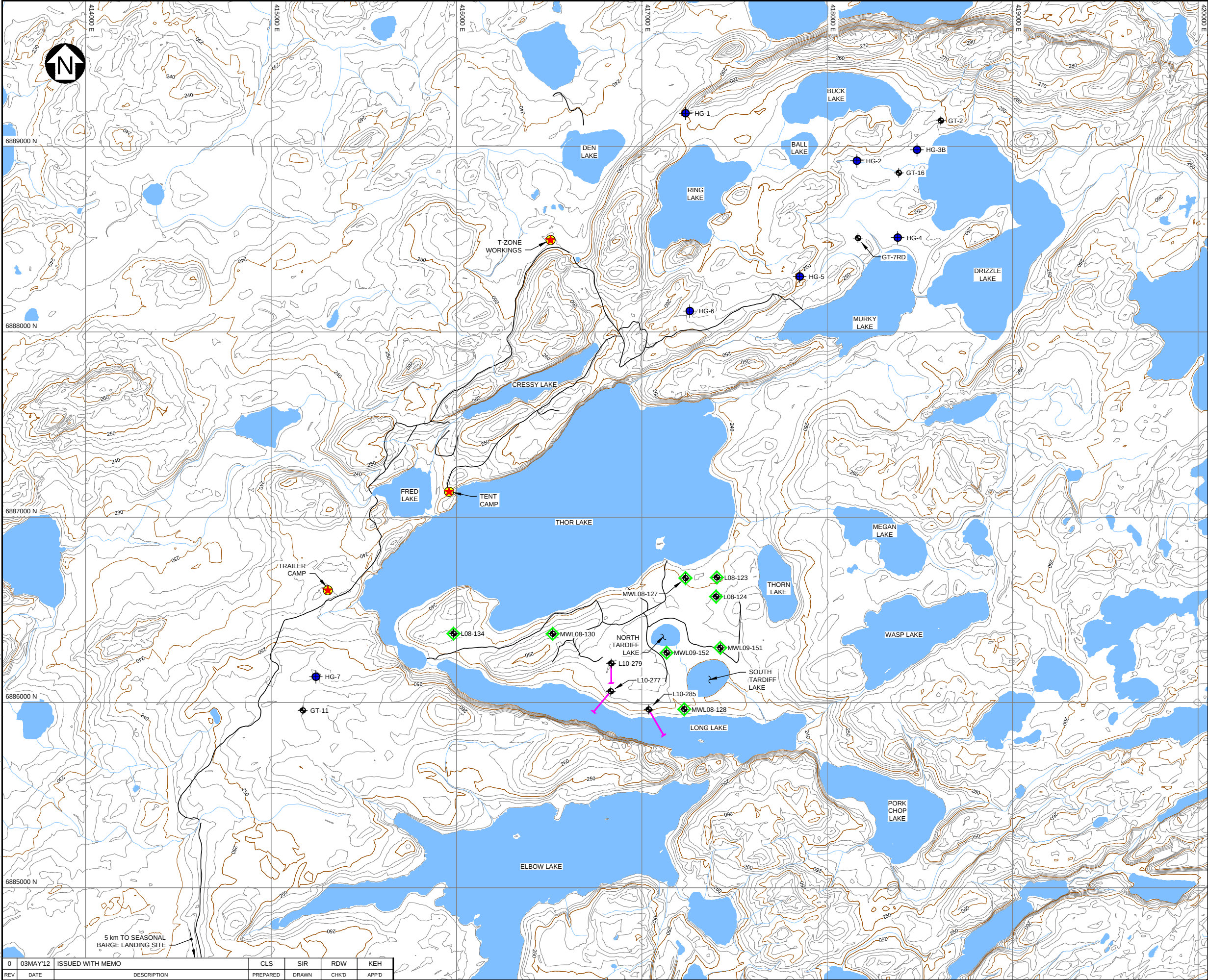
Date Sampled				-	-	-	-	-	-	22-Apr-12
Lab ID				-	-	-	-	-	-	L1137672-16
Samples	Sample Type	Units	MDL	HG-1	HG-2	HG-3B	HG-4	HG-5	HG-6	HG-7
Physical Tests	Colour, True	C.U.	2.0	-	-	-	-	-	-	10.0
	Conductivity	uS/cm	0.20	-	-	-	-	-	-	536
	Hardness (as CaCO3)	mg/L	-	-	-	-	-	-	-	285
	pH	pH	0.1	-	-	-	-	-	-	7.93
	Total Suspended Solids	mg/L	3.0	-	-	-	-	-	-	322
	Total Dissolved Solids (Calculated)	mg/L	-	-	-	-	-	-	-	287
Anions and Nutrients	Turbidity	NTU	0.1	-	-	-	-	-	-	238
	Acidity (as CaCO3)	mg/L	5.0	-	-	-	-	-	-	<5.0
	Alkalinity, Total (as CaCO3)	mg/L	5.0	-	-	-	-	-	-	299
	Ammonia-N, Total	mg/L	0.050	-	-	-	-	-	-	-
	Bicarbonate (HCO3)	mg/L	5.0	-	-	-	-	-	-	365
	Bromide (Br)	mg/L	0.10	-	-	-	-	-	-	<0.10
	Carbonate (CO3)	mg/L	5.0	-	-	-	-	-	-	<5.0
	Chloride (Cl)	mg/L	0.50	-	-	-	-	-	-	0.59
	Hydroxide (OH)	mg/L	5.0	-	-	-	-	-	-	<5.0
	Nitrate (as N)	mg/L	0.050	-	-	-	-	-	-	-
	Nitrate and Nitrite as N	mg/L	0.071	-	-	-	-	-	-	-
	Nitrite (as N)	mg/L	0.050	-	-	-	-	-	-	-
	Total Kjeldahl Nitrogen	mg/L	0.2	-	-	-	-	-	-	-
	Total Nitrogen	mg/L	0.21	-	-	-	-	-	-	-
	Total Phosphate as P	mg/L	0.020	-	-	-	-	-	-	-
	Sulfate (SO4)	mg/L	0.50	-	-	-	-	-	-	6.19
Cyanide	Cyanide, Total	mg/L	0.0020	-	-	-	-	-	-	-
Total Metals	Aluminum (Al)-Total	mg/L	0.010	-	-	-	-	-	-	7.08
	Antimony (Sb)-Total	mg/L	0.00080	-	-	-	-	-	-	<0.00080
	Arsenic (As)-Total	mg/L	0.00080	-	-	-	-	-	-	0.0513
	Barium (Ba)-Total	mg/L	0.0030	-	-	-	-	-	-	0.131
	Beryllium (Be)-Total	mg/L	0.0020	-	-	-	-	-	-	<0.0020
	Boron (B)-Total	mg/L	0.050	-	-	-	-	-	-	<0.050
	Cadmium (Cd)-Total	mg/L	0.0010	-	-	-	-	-	-	0.0017
	Calcium (Ca)-Total	mg/L	0.50	-	-	-	-	-	-	75.5
	Chromium (Cr)-Total	mg/L	0.0050	-	-	-	-	-	-	0.0446
	Cobalt (Co)-Total	mg/L	0.0020	-	-	-	-	-	-	0.0129
	Copper (Cu)-Total	mg/L	0.0010	-	-	-	-	-	-	0.105
	Iron (Fe)-Total	mg/L	0.010	-	-	-	-	-	-	15.3
	Lead (Pb)-Total	mg/L	0.005	-	-	-	-	-	-	0.0056
	Lithium (Li)-Total	mg/L	0.01	-	-	-	-	-	-	0.012
	Magnesium (Mg)-Total	mg/L	0.10	-	-	-	-	-	-	33.3
	Manganese (Mn)-Total	mg/L	0.0020	-	-	-	-	-	-	0.611
	Mercury (Hg)-Total	mg/L	0.00010	-	-	-	-	-	-	-
	Molybdenum (Mo)-Total	mg/L	0.0050	-	-	-	-	-	-	0.0296
	Nickel (Ni)-Total	mg/L	0.0020	-	-	-	-	-	-	0.0464
	Potassium (K)-Total	mg/L	0.10	-	-	-	-	-	-	4.95
	Selenium (Se)-Total	mg/L	0.00080	-	-	-	-	-	-	<0.00080
	Silver (Ag)-Total	mg/L	0.0050	-	-	-	-	-	-	0.0131
	Sodium (Na)-Total	mg/L	1.0	-	-	-	-	-	-	4.2
	Strontium (Sr)-Total	mg/L	0.0020	-	-	-	-	-	-	0.0915
	Thallium (Tl)-Total	mg/L	0.050	-	-	-	-	-	-	<0.050
	Tin (Sn)-Total	mg/L	0.050	-	-	-	-	-	-	<0.050
	Titanium (Ti)-Total	mg/L	0.0010	-	-	-	-	-	-	0.178
	Uranium (U)-Total	mg/L	0.00010	-	-	-	-	-	-	0.00284
	Vanadium (V)-Total	mg/L	0.0010	-	-	-	-	-	-	0.0116
	Zinc (Zn)-Total	mg/L	0.0040	-	-	-	-	-	-	0.112
Dissolved Metals	Aluminum (Al)-Dissolved	mg/L	0.010	-	-	-	-	-	-	0.034
	Antimony (Sb)-Dissolved	mg/L	0.00080	-	-	-	-	-	-	<0.00080
	Arsenic (As)-Dissolved	mg/L	0.00080	-	-	-	-	-	-	0.00798
	Barium (Ba)-Dissolved	mg/L	0.0030	-	-	-	-	-	-	0.0679
	Beryllium (Be)-Dissolved	mg/L	0.0010	-	-	-	-	-	-	<0.0010
	Bismuth (Bi)-Dissolved	mg/L	0.000050	-	-	-	-	-	-	-
	Boron (B)-Dissolved	mg/L	0.050	-	-	-	-	-	-	<0.050
	Cadmium (Cd)-Dissolved	mg/L	0.0010	-	-	-	-	-	-	<0.0010
	Calcium (Ca)-Dissolved	mg/L	0.50	-	-	-	-	-	-	66.7
	Chromium (Cr)-Dissolved	mg/L	0.0050	-	-	-	-	-	-	<0.0050
	Cobalt (Co)-Dissolved	mg/L	0.0020	-	-	-	-	-	-	0.0022
	Copper (Cu)-Dissolved	mg/L	0.0010	-	-	-	-	-	-	0.0035
	Iron (Fe)-Dissolved	mg/L	0.010	-	-	-	-	-	-	0.028
	Lead (Pb)-Dissolved	mg/L	0.0050	-	-	-	-	-	-	<0.0050
	Lithium (Li)-Dissolved	mg/L	0.0030	-	-	-	-	-	-	0.0065
	Magnesium (Mg)-Dissolved	mg/L	0.10	-	-	-	-	-	-	28.7
	Manganese (Mn)-Dissolved	mg/L	0.0020	-	-	-	-	-	-	0.323
	Mercury (Hg)-Dissolved	mg/L	0.00010	-	-	-	-	-	-	-
	Molybdenum (Mo)-Dissolved	mg/L	0.005	-	-	-	-	-	-	0.0253
	Nickel (Ni)-Dissolved	mg/L	0.0020	-	-	-	-	-	-	0.0223
	Potassium (K)-Dissolved	mg/L	0.50	-	-	-	-	-	-	1.95
	Selenium (Se)-Dissolved	mg/L	0.00080	-	-	-	-	-	-	<0.00080
	Silver (Ag)-Dissolved	mg/L	0.0050	-	-	-	-	-	-	<0.0050
	Sodium (Na)-Dissolved	mg/L	1.0	-	-	-	-	-	-	3.0
	Strontium (Sr)-Dissolved	mg/L	0.0050	-	-	-	-	-	-	0.0825
	Thallium (Tl)-Dissolved	mg/L	0.050	-	-	-	-	-	-	<0.050
	Tin (Sn)-Dissolved	mg/L	0.05	-	-	-	-	-	-	<0.050
	Titanium (Ti)-Dissolved	mg/L	0.0010	-	-	-	-	-	-	<0.0010
	Uranium (U)-Dissolved	mg/L	0.00010	-	-	-	-	-	-	0.00250
	Vanadium (V)-Dissolved	mg/L	0.0010	-	-	-	-	-	-	<0.0010
	Zinc (Zn)-Dissolved	mg/L	0.0020	-	-	-	-	-	-	0.0042
Ion Balance		%	-	-	-	-	-	-	-	95.8

I:\1101\00390\03\A\Correspondence\NB12-00199 - Thor Water Quality Event 3\Table 1.xlsx

NOTES:

1. NO SAMPLES WERE COLLECTED AT HG-1, HG-2, HG-3B, HG-4, HG-5 OR HG-6. WELL HG-1 HAD INSUFFICIENT VOLUME TO SAMPLE AND THE REMAINING WELLS WERE INACCESSIBLE.
2. THE VOLUME OF WATER COLLECTED FROM WELL HG-7 WAS INSUFFICIENT FOR RARE EARTH ELEMENTS TESTING.

0	03MAY'12	ISSUED WITH MEMO NB12-00199	ML	CLS	KEH
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D



LEGEND:

- WATER
- EXISTING ACCESS ROAD
- MONITORING WELL (BY STANTEC)
- MONITORING WELL (BY KPL)
- EXISTING GEOMECHANICAL / GEOTECHNICAL THERMISTOR INSTALLATION

NOTES:

- COORDINATE GRID IS UTM (NAD83) ZONE 12N AND IS IN METRES.
- PLAN BASED ON INFORMATION PROVIDED BY AVALON RARE METALS INC.
- CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 2 METRES.

SCALE 200 100 0 200 400 600 800 1000 m

AVALON RARE METALS INC.

THOR LAKE PROJECT

THOR LAKE SITE - MONITORING WELLS
AND INSTRUMENTATION LOCATIONS

Knight Piesold
CONSULTING

P/A NO. NB101-390/3	REF NO. NB12-00199
FIGURE 1	
REV 0	

SAVED: I:\10\0030\03\Avalon\Figs\8802_0_502012.311.24 PM PRINTED: 5/30/2012 3:15:28 PM Layer: 1, SRICHARD
THOR LAKE SITE - MONITORING WELLS AND INSTRUMENTATION LOCATIONS 2012-05-22 - THOR LAKE SITE - MONITORING WELLS AND INSTRUMENTATION LOCATIONS 2012-05-22

0	03MAY'12	ISSUED WITH MEMO	CLS	SIR	RDW	KEH
REV	DATE	DESCRIPTION	PREPARED	DRAWN	CHK'D	APP'D

APPENDIX A

LABORATORY CERTIFICATE OF ANALYSIS

(Pages A-1 to A-17)



KNIGHT PIESOLD LTD.
ATTN: RYAN WEIR / CARA STAPLEY /
KEVIN HAWTON
1650 Main Street West
North Bay ON P1B 8G5

Date Received: 23-APR-12
Report Date: 26-APR-12 17:06 (MT)
Version: DRAFT

Client Phone: 705-476-2165

Certificate of Analysis

Lab Work Order #: **L1137672**
Project P.O. #: SET UP WITH AVALON
Job Reference: AVALON KNI225
C of C Numbers: 1 of 2, 2 of 2
Legal Site Desc:

Jessica Spira
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 9936-67 Avenue, Edmonton, AB T6E 0P5 Canada | Phone: +1 780 413 5227 | Fax: +1 780 437 2311
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

26-APR-12 17:06 (MT)

Version: DRAFT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-1 GROUNDWATER 21-APR-12 08:20 HG-PP11-02	L1137672-2 GROUNDWATER 21-APR-12 08:50 HG-PP11-04	L1137672-3 GROUNDWATER 21-APR-12 09:10 HG-PP11-03	L1137672-4 GROUNDWATER 21-APR-12 09:40 GT-PP11-08	L1137672-5 SURFACEWATER 21-APR-12 10:20 SW2
Grouping	Analyte					
WATER						
Physical Tests	Color, True (C.U.)	19.0	9.0	8.0	9.0	7.0
	Total Suspended Solids (mg/L)	344	194	12.0	32.0	18.0
	Turbidity (NTU)	35.7	129	15.0	9.36	111
Anions and Nutrients	Acidity (as CaCO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Alkalinity, Total (as CaCO ₃) (mg/L)	355	408	238	168	70.3
	Ammonia, Total (as N) (mg/L)	1.96	<0.050	0.457	<0.050	0.069
	Bicarbonate (HCO ₃) (mg/L)	433	498	290	205	85.7
	Bromide (Br) (mg/L)	<1.0 ^{DLM}	<0.10	<1.0 ^{DLM}	<1.0 ^{DLM}	<0.10
	Carbonate (CO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	25.2 ^{RRV}	2.63	6.64	3.60	4.13
	Conductivity (EC) (uS/cm)	1230	949	1110	1730	204
	Hardness (as CaCO ₃) (mg/L)	732	543	545	1090	
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	98.4	97.6	97.8	100	
	Nitrate and Nitrite (as N) (mg/L)	<0.071	<0.071	<0.071	<0.071	0.382
	Nitrate (as N) (mg/L)	<0.050	<0.050	<0.050	<0.050	0.382
	Nitrite (as N) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Kjeldahl Nitrogen (mg/L)	23.7	<0.20	0.63	<0.20	0.25
	Total Nitrogen (mg/L)	23.7	<0.21	0.63	<0.21	0.64
	pH (pH)	7.69	7.54	7.68	7.58	8.09
	Phosphorus (P)-Total (mg/L)	<0.020	0.227	<0.020	<0.020	<0.020
	TDS (Calculated) (mg/L)	831	595	760	1400	
	Sulfate (SO ₄) (mg/L)	346 ^{RRV}	156	380 ^{RRV}	895 ^{RRV}	
Cyanides	Cyanide, Total (mg/L)	<0.2 ^{DLM}	<0.0020	<0.0020	<0.0020	<0.0020
Total Metals	Aluminum (Al)-Total (mg/L)	0.369	1.39	0.179	0.190	3.55
	Antimony (Sb)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Total (mg/L)	0.00095	0.00581	0.00483	<0.00080	<0.00080
	Barium (Ba)-Total (mg/L)	0.0512	0.0312	0.0258	0.0120	0.0685
	Beryllium (Be)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/L)	157	189	159	315	35.4
	Chromium (Cr)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.0024	0.0025	<0.0010	<0.0010	0.0026
	Iron (Fe)-Total (mg/L)	3.23	2.15	1.70	0.815	2.40
	Lead (Pb)-Total (mg/L)	0.0499 ^{A-2 of 17}	0.0113	<0.0050	0.0091	0.0307

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-6 SURFACEWATE 21-APR-12 10:40 SW3	L1137672-7 SURFACEWATE 21-APR-12 11:10 SW1	L1137672-8 GROUNDWATER 21-APR-12 11:40 DH-2010-05	L1137672-9 SURFACEWATE 21-APR-12 12:00 SW4	L1137672-10 GROUNDWATER 21-APR-12 12:25 HG-PP11-01
Grouping	Analyte					
WATER						
Physical Tests	Color, True (C.U.)	9.0	13.0	5.0	8.0	7.0
	Total Suspended Solids (mg/L)	<3.0	<3.0	62.0	<3.0	2460
	Turbidity (NTU)	1.33	7.61	49.8	11.1	1010
Anions and Nutrients	Acidity (as CaCO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0	55.1
	Alkalinity, Total (as CaCO ₃) (mg/L)	209	30.7	190	11.7	394
	Ammonia, Total (as N) (mg/L)	<0.050	0.088	<0.050	0.092	<0.050
	Bicarbonate (HCO ₃) (mg/L)	254	37.4	231	14.3	480
	Bromide (Br) (mg/L)	<1.0 ^{DLM}	<0.10	<0.10	<0.10	<1.0 ^{DLM}
	Carbonate (CO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	1.91	1.65	<0.50	<0.50	6.52
	Conductivity (EC) (uS/cm)	899	256	363	92.6	1860
	Hardness (as CaCO ₃) (mg/L)	516	118	185	38.6	1180
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	99.7	101	93.2	Low EC	99.4
	Nitrate and Nitrite (as N) (mg/L)	0.154	1.01	0.185	0.403	<0.071
	Nitrate (as N) (mg/L)	0.154	1.01	0.185	0.403	<0.050
	Nitrite (as N) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Kjeldahl Nitrogen (mg/L)	<0.20	0.36	<0.20	<0.20	0.38
	Total Nitrogen (mg/L)	<0.21	1.37	<0.21	0.40	0.38
	pH (pH)	7.59	7.59	8.02	7.22	7.23
	Phosphorus (P)-Total (mg/L)	<0.020	<0.020	0.020	<0.020	0.298
	TDS (Calculated) (mg/L)	610	148	191	47.4	1440
	Sulfate (SO ₄) (mg/L)	300 ^{RRV}	80.8	11.3	25.3	775 ^{RRV}
Cyanides	Cyanide, Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Total Metals	Aluminum (Al)-Total (mg/L)	0.020	0.390	0.516	0.541	5.80
	Antimony (Sb)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	0.0189
	Barium (Ba)-Total (mg/L)	0.0082	0.0124	0.0621	0.0136	0.0719
	Beryllium (Be)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Total (mg/L)	<0.0010	<0.0010	<0.0010	0.0019	<0.0010
	Calcium (Ca)-Total (mg/L)	140	28.8	63.4	11.5	366
	Chromium (Cr)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0071
	Cobalt (Co)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0029
	Copper (Cu)-Total (mg/L)	<0.0010	<0.0010	0.0026	<0.0010	0.0060
	Iron (Fe)-Total (mg/L)	0.021	0.229	0.534	0.442	9.19
	Lead (Pb)-Total (mg/L)	0.0109	0.0072	<0.0050	0.0494	0.0134

A-3 of 17

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

26-APR-12 17:06 (MT)

Version: DRAFT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-11 GROUNDWATER 21-APR-12 12:35 HG-PP11-01A	L1137672-12 GROUNDWATER 21-APR-12 13:05 DH-2010-04	L1137672-13 SURFACEWATE 21-APR-12 13:40 SW5	L1137672-14 GROUNDWATER 21-APR-12 14:10 HG-PP11-05	L1137672-15 SURFACEWATE 21-APR-12 15:30 SW6
Grouping	Analyte					
WATER						
Physical Tests	Color, True (C.U.)	23.0	6.0	9.0	11.0	4.0
	Total Suspended Solids (mg/L)	2480	1120	20.0	350	6.0
	Turbidity (NTU)	1110	671	37.5	158	13.3
Anions and Nutrients	Acidity (as CaCO ₃) (mg/L)	19.4	<5.0	<5.0	<5.0	<5.0
	Alkalinity, Total (as CaCO ₃) (mg/L)	390	279	44.0	316	24.9
	Ammonia, Total (as N) (mg/L)	<0.050	<0.050	0.072	0.131	0.072
	Bicarbonate (HCO ₃) (mg/L)	475	340	53.6	386	30.3
	Bromide (Br) (mg/L)	<1.0 ^{DLM}	<1.0 ^{DLM}	<0.10	<1.0 ^{DLM}	<1.0 ^{DLM}
	Carbonate (CO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0 ^{RRV}	<5.0
	Chloride (Cl) (mg/L)	6.57	0.83	<0.50	13.1	0.79
	Conductivity (EC) (uS/cm)	1850	865	99.3	1180	560
	Hardness (as CaCO ₃) (mg/L)	1130	474	48.6	544	262
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	95.6	95.2	Low EC	88.9 ^{BL:INT}	90.7
	Nitrate and Nitrite (as N) (mg/L)	<0.071	<0.071	0.178	<0.071	0.294
	Nitrate (as N) (mg/L)	<0.050	<0.050	0.178	<0.050	0.294
	Nitrite (as N) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Kjeldahl Nitrogen (mg/L)	0.54	0.29	0.21	<0.20	<0.20
	Total Nitrogen (mg/L)	0.54	0.29	0.39	<0.21	0.29
	pH (pH)	7.22	7.72	7.95	7.47	7.51
	Phosphorus (P)-Total (mg/L)	0.412	0.285	<0.020	0.052	<0.020
	TDS (Calculated) (mg/L)	1420	555	52.3	782	368
	Sulfate (SO ₄) (mg/L)	777 ^{RRV}	221 ^{RRV}	5.70	350 ^{RRV}	252 ^{RRV}
Cyanides	Cyanide, Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Total Metals	Aluminum (Al)-Total (mg/L)	14.9	9.94	1.52	5.26	0.535
	Antimony (Sb)-Total (mg/L)	<0.00080	0.00082	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Total (mg/L)	0.0313	0.0167	<0.00080	0.00159	<0.00080
	Barium (Ba)-Total (mg/L)	0.191	0.254	0.0209	0.0504	0.0153
	Beryllium (Be)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/L)	0.051	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Total (mg/L)	0.0023	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/L)	569	214	18.8	177	96.0
	Chromium (Cr)-Total (mg/L)	0.0196	0.0228	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Total (mg/L)	0.0066	0.0117	<0.0020	0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.0174	0.0223	0.0013	0.0059	<0.0010
	Iron (Fe)-Total (mg/L)	20.3	16.9	1.05	5.66	0.444
	Lead (Pb)-Total (mg/L)	0.0427 ^{RRV}	0.0457	0.0178	0.0794	0.0343

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* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L1137672-16 GROUNDWATER 21-APR-12 07:30 HG7	L1137672-17 SURFACEWATER 21-APR-12 18:30 SW6A			
Grouping	Analyte						
WATER							
Physical Tests	Color, True (C.U.)		10.0	6.0			
	Total Suspended Solids (mg/L)		322	14.0			
	Turbidity (NTU)		238	10.6			
Anions and Nutrients	Acidity (as CaCO ₃) (mg/L)		<5.0	<5.0			
	Alkalinity, Total (as CaCO ₃) (mg/L)		299	23.4	RRV		
	Ammonia, Total (as N) (mg/L)			0.079			
	Bicarbonate (HCO ₃) (mg/L)		365	28.6	RRV		
	Bromide (Br) (mg/L)		<0.10	<1.0	DLM		
	Carbonate (CO ₃) (mg/L)		<5.0	<5.0	RRV		
	Chloride (Cl) (mg/L)		0.59	0.73			
	Conductivity (EC) (uS/cm)		536	497	RRV		
	Hardness (as CaCO ₃) (mg/L)		285	246			
	Hydroxide (OH) (mg/L)		<5.0	<5.0	RRV		
	Ion Balance (%)		95.8	98.0			
	Nitrate and Nitrite (as N) (mg/L)			0.268			
	Nitrate (as N) (mg/L)			0.268			
	Nitrite (as N) (mg/L)			<0.050			
	Total Kjeldahl Nitrogen (mg/L)			<0.20			
	Total Nitrogen (mg/L)			0.27			
	pH (pH)		7.93	7.48	RRV		
	Phosphorus (P)-Total (mg/L)			<0.020			
	TDS (Calculated) (mg/L)		287	327			
	Sulfate (SO ₄) (mg/L)		6.19	218	RRV		
Cyanides	Cyanide, Total (mg/L)			<0.0020			
Total Metals	Aluminum (Al)-Total (mg/L)		7.08	0.432			
	Antimony (Sb)-Total (mg/L)		<0.00080	<0.00080			
	Arsenic (As)-Total (mg/L)		0.0513	<0.00080			
	Barium (Ba)-Total (mg/L)		0.131	0.0136			
	Beryllium (Be)-Total (mg/L)		<0.0020	<0.0020			
	Boron (B)-Total (mg/L)		<0.050	<0.050			
	Cadmium (Cd)-Total (mg/L)		0.0017	<0.0010			
	Calcium (Ca)-Total (mg/L)		75.5	88.9			
	Chromium (Cr)-Total (mg/L)		0.0446	<0.0050			
	Cobalt (Co)-Total (mg/L)		0.0129	<0.0020			
	Copper (Cu)-Total (mg/L)		0.105	<0.0010			
	Iron (Fe)-Total (mg/L)		15.3	0.332			
	Lead (Pb)-Total (mg/L)		0.0056	0.0308			

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* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

26-APR-12 17:06 (MT)

Version: DRAFT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-1 GROUNDWATER 21-APR-12 08:20 HG-PP11-02	L1137672-2 GROUNDWATER 21-APR-12 08:50 HG-PP11-04	L1137672-3 GROUNDWATER 21-APR-12 09:10 HG-PP11-03	L1137672-4 GROUNDWATER 21-APR-12 09:40 GT-PP11-08	L1137672-5 SURFACEWATER 21-APR-12 10:20 SW2
Grouping	Analyte					
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	<0.010	<0.010	0.010	<0.010	<0.010
	Magnesium (Mg)-Total (mg/L)	68.9	76.6	44.1	66.3	10.8
	Manganese (Mn)-Total (mg/L)	0.114	0.0898	0.0687	0.0754	0.0330
	Molybdenum (Mo)-Total (mg/L)	0.0588	<0.0050	0.0854	0.0062	<0.0050
	Nickel (Ni)-Total (mg/L)	0.0051	0.0056	0.0025	0.0159	0.0034
	Potassium (K)-Total (mg/L)	1.94	2.42	5.05	3.06	2.28
	Selenium (Se)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Sodium (Na)-Total (mg/L)	7.0	32.4	39.3	4.8	<1.0
	Strontium (Sr)-Total (mg/L)	0.243	0.110	0.331	0.362	0.0452
	Thallium (Tl)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Total (mg/L)	0.0084	0.0520	0.0028	0.0031	0.126
	Uranium (U)-Total (mg/L)	0.0157	0.0104	0.00741	0.00462	0.00079
	Vanadium (V)-Total (mg/L)	<0.0010	0.0025	<0.0010	<0.0010	0.0052
	Zinc (Zn)-Total (mg/L)	0.0774	0.190	0.0106	5.16	0.197
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	0.216
	Antimony (Sb)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Dissolved (mg/L)	<0.00080	0.00389	0.00516	<0.00080	<0.00080
	Barium (Ba)-Dissolved (mg/L)	0.0487	0.0228	0.0243	0.0096	0.0334
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Boron (B)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Dissolved (mg/L)	176 ^{DLM}	130	149	326	27.1
	Chromium (Cr)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	1.5 ^{DLM}	0.986	1.48	0.372	0.152
	Lead (Pb)-Dissolved (mg/L)	0.0187	<0.0050	<0.0050	<0.0050	<0.0050
	Lithium (Li)-Dissolved (mg/L)	0.0041	<0.0030	0.0069	0.0076	<0.0030
	Magnesium (Mg)-Dissolved (mg/L)	71 ^{DLM}	53.0	41.9	67.6	8.45
	Manganese (Mn)-Dissolved (mg/L)	<0.20 ^{DLM}	0.0555	0.0587	0.0715	0.0060
	Molybdenum (Mo)-Dissolved (mg/L)	0.0589	<0.0050	0.0738	0.0061	<0.0050
	Nickel (Ni)-Dissolved (mg/L)	0.0046	0.0028	0.0031	0.0162	<0.0020
	Potassium (K)-Dissolved (mg/L)	<10 ^{DLM}	1.41	4.35	3.20	0.99
	Selenium (Se)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

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* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-6 SURFACEWATE 21-APR-12 10:40 SW3	L1137672-7 SURFACEWATE 21-APR-12 11:10 SW1	L1137672-8 GROUNDWATER 21-APR-12 11:40 DH-2010-05	L1137672-9 SURFACEWATE 21-APR-12 12:00 SW4	L1137672-10 GROUNDWATER 21-APR-12 12:25 HG-PP11-01
Grouping	Analyte					
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Magnesium (Mg)-Total (mg/L)	45.4	10.3	18.6	3.76	125
	Manganese (Mn)-Total (mg/L)	0.0126	0.0065	0.0081	0.0112	0.304
	Molybdenum (Mo)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0103
	Nickel (Ni)-Total (mg/L)	0.0130	<0.0020	0.0036	<0.0020	0.0409
	Potassium (K)-Total (mg/L)	1.17	0.96	0.83	0.35	5.68
	Selenium (Se)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Sodium (Na)-Total (mg/L)	2.3	1.5	1.3	<1.0	9.8
	Strontium (Sr)-Total (mg/L)	0.400	0.228	0.0552	0.0078	0.431
	Thallium (Tl)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Total (mg/L)	<0.0010	0.0111	0.0237	0.0155	0.160
	Uranium (U)-Total (mg/L)	0.00556	0.00088	0.00073	0.00012	0.0143
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	0.0010	<0.0010	0.0096
	Zinc (Zn)-Total (mg/L)	2.73	0.0810	0.0507	0.385	0.370
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	0.018	0.211	<0.010	0.339	<0.010
	Antimony (Sb)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	0.0181
	Barium (Ba)-Dissolved (mg/L)	0.0078	0.0110	0.0490	0.0127	0.0242
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Boron (B)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0019	<0.0010
	Calcium (Ca)-Dissolved (mg/L)	135	29.6	47.7	10.0	313
	Chromium (Cr)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	0.0016	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.137	<0.010	0.156	5.28
	Lead (Pb)-Dissolved (mg/L)	0.0107	0.0075	<0.0050	0.0427	<0.0050
	Lithium (Li)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	0.0043
	Magnesium (Mg)-Dissolved (mg/L)	43.4	10.6	16.0	3.31	96.5
	Manganese (Mn)-Dissolved (mg/L)	0.0109	0.0047	<0.0020	0.0077	0.207
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0078
	Nickel (Ni)-Dissolved (mg/L)	0.0128	<0.0020	<0.0020	<0.0020	0.0234
	Potassium (K)-Dissolved (mg/L)	1.10	1.10	0.53	<0.50	3.50
	Selenium (Se)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

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* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

26-APR-12 17:06 (MT)

Version: DRAFT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-11 GROUNDWATER 21-APR-12 12:35 HG-PP11-01A	L1137672-12 GROUNDWATER 21-APR-12 13:05 DH-2010-04	L1137672-13 SURFACEWATER 21-APR-12 13:40 SW5	L1137672-14 GROUNDWATER 21-APR-12 14:10 HG-PP11-05	L1137672-15 SURFACEWATER 21-APR-12 15:30 SW6
Grouping	Analyte					
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	0.018	0.043	<0.010	0.012	<0.010
	Magnesium (Mg)-Total (mg/L)	263	85.6	3.34	48.5	10.7
	Manganese (Mn)-Total (mg/L)	0.669	0.309	0.0192	0.228	0.0179
	Molybdenum (Mo)-Total (mg/L)	0.0144	0.0105	<0.0050	<0.0050	<0.0050
	Nickel (Ni)-Total (mg/L)	0.0706	0.0310	<0.0020	0.0062	<0.0020
	Potassium (K)-Total (mg/L)	8.76	6.19	1.64	2.45	0.51
	Selenium (Se)-Total (mg/L)	0.00086	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Sodium (Na)-Total (mg/L)	10.2	4.9	<1.0	38.6	<1.0
	Strontium (Sr)-Total (mg/L)	0.460	0.195	0.0142	0.270	0.0448
	Thallium (Tl)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Total (mg/L)	0.310	0.255	0.0527	0.0847	0.0167
	Uranium (U)-Total (mg/L)	0.0165	0.0159	0.00029	0.00845	0.00047
	Vanadium (V)-Total (mg/L)	0.0265	0.0155	0.0023	0.0049	<0.0010
	Zinc (Zn)-Total (mg/L)	1.16	0.231	0.0464	0.377	0.277
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	0.284	<0.010	0.338
	Antimony (Sb)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Dissolved (mg/L)	0.0165	0.00611	<0.00080	<0.00080	<0.00080
	Barium (Ba)-Dissolved (mg/L)	0.0245	0.0163	0.0128	0.0175	0.0136
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Boron (B)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Dissolved (mg/L)	300	114.6	16.4	154 ^{RRV}	88.7
	Chromium (Cr)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	5.29	0.794	0.198	1.79 ^{RRV}	0.251
	Lead (Pb)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0322
	Lithium (Li)-Dissolved (mg/L)	0.0041	0.0089	<0.0030	0.0082 ^{RRV}	<0.0030
	Magnesium (Mg)-Dissolved (mg/L)	93	45.7	1.86	38.8 ^{RRV}	9.95
	Manganese (Mn)-Dissolved (mg/L)	0.189	0.0147	0.0064	0.153 ^{RRV}	0.0145
	Molybdenum (Mo)-Dissolved (mg/L)	0.0079	0.0070	<0.0050	<0.0050	<0.0050
	Nickel (Ni)-Dissolved (mg/L)	0.0224	<0.0020	<0.0020	0.0037 ^{RRV}	<0.0020
	Potassium (K)-Dissolved (mg/L)	3.2	1.5	1.19	1.43 ^{RRV}	<0.50
	Selenium (Se)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

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* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L1137672-16 GROUNDWATER 21-APR-12 07:30 HG7	L1137672-17 SURFACEWATER 21-APR-12 18:30 SW6A			
Grouping	Analyte						
WATER							
Total Metals	Lithium (Li)-Total (mg/L)	0.012	<0.010				
	Magnesium (Mg)-Total (mg/L)	33.3	9.76				
	Manganese (Mn)-Total (mg/L)	0.611	0.0156				
	Molybdenum (Mo)-Total (mg/L)	0.0296	<0.0050				
	Nickel (Ni)-Total (mg/L)	0.0464	<0.0020				
	Potassium (K)-Total (mg/L)	4.95	0.58				
	Selenium (Se)-Total (mg/L)	<0.00080	<0.00080				
	Silver (Ag)-Total (mg/L)	0.0131	<0.0050				
	Sodium (Na)-Total (mg/L)	4.2	<1.0				
	Strontium (Sr)-Total (mg/L)	0.0915	0.0390				
	Thallium (Tl)-Total (mg/L)	<0.050	<0.050				
	Tin (Sn)-Total (mg/L)	<0.050	<0.050				
	Titanium (Ti)-Total (mg/L)	0.178	0.0140				
	Uranium (U)-Total (mg/L)	0.00284	0.00036				
	Vanadium (V)-Total (mg/L)	0.0116	<0.0010				
	Zinc (Zn)-Total (mg/L)	0.112	0.214				
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	0.034	0.219				
	Antimony (Sb)-Dissolved (mg/L)	<0.00080	<0.00080				
	Arsenic (As)-Dissolved (mg/L)	0.00798	<0.00080				
	Barium (Ba)-Dissolved (mg/L)	0.0679	0.0126				
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010				
	Boron (B)-Dissolved (mg/L)	<0.050	<0.050				
	Cadmium (Cd)-Dissolved (mg/L)	<0.0010	<0.0010				
	Calcium (Ca)-Dissolved (mg/L)	66.7	83.4				
	Chromium (Cr)-Dissolved (mg/L)	<0.0050	<0.0050				
	Cobalt (Co)-Dissolved (mg/L)	0.0022	<0.0020				
	Copper (Cu)-Dissolved (mg/L)	0.0035	<0.0010				
	Iron (Fe)-Dissolved (mg/L)	0.028	0.186				
	Lead (Pb)-Dissolved (mg/L)	<0.0050	0.0309				
	Lithium (Li)-Dissolved (mg/L)	0.0065	<0.0030				
	Magnesium (Mg)-Dissolved (mg/L)	28.7	9.28				
	Manganese (Mn)-Dissolved (mg/L)	0.323	0.0129				
	Molybdenum (Mo)-Dissolved (mg/L)	0.0253	<0.0050				
	Nickel (Ni)-Dissolved (mg/L)	0.0223	<0.0020				
	Potassium (K)-Dissolved (mg/L)	1.95	0.53				
	Selenium (Se)-Dissolved (mg/L)	<0.00080	<0.00080				
	Silver (Ag)-Dissolved (mg/L)	<0.0050	<0.0050				

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-1 GROUNDWATER 21-APR-12 08:20 HG-PP11-02	L1137672-2 GROUNDWATER 21-APR-12 08:50 HG-PP11-04	L1137672-3 GROUNDWATER 21-APR-12 09:10 HG-PP11-03	L1137672-4 GROUNDWATER 21-APR-12 09:40 GT-PP11-08	L1137672-5 SURFACEWATER 21-APR-12 10:20 SW2
Grouping	Analyte					
WATER						
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	<50 ^{DLM}	7.4	35.3	4.7	<1.0
	Strontium (Sr)-Dissolved (mg/L)	0.236	0.0975	0.299	0.352	0.0353
	Thallium (Tl)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0064
	Uranium (U)-Dissolved (mg/L)	0.0162	0.00841	0.00623	0.00454	0.00064
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0268	0.0201	0.0020	5.37	0.0379

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-6 SURFACEWATE 21-APR-12 10:40 SW3	L1137672-7 SURFACEWATE 21-APR-12 11:10 SW1	L1137672-8 GROUNDWATER 21-APR-12 11:40 DH-2010-05	L1137672-9 SURFACEWATE 21-APR-12 12:00 SW4	L1137672-10 GROUNDWATER 21-APR-12 12:25 HG-PP11-01
Grouping	Analyte					
WATER						
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	2.4	1.4	1.1	<1.0	9.2
	Strontium (Sr)-Dissolved (mg/L)	0.373	0.211	0.0432	0.0067	0.376
	Thallium (Tl)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Dissolved (mg/L)	0.0011	0.0066	<0.0010	0.0070	<0.0010
	Uranium (U)-Dissolved (mg/L)	0.00479	0.00081	0.00063	0.00010	0.0125
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	3.12	0.0895	0.0164	0.412	0.0046

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-11 GROUNDWATER 21-APR-12 12:35 HG-PP11-01A	L1137672-12 GROUNDWATER 21-APR-12 13:05 DH-2010-04	L1137672-13 SURFACEWATE 21-APR-12 13:40 SW5	L1137672-14 GROUNDWATER 21-APR-12 14:10 HG-PP11-05	L1137672-15 SURFACEWATE 21-APR-12 15:30 SW6
Grouping	Analyte					
WATER						
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	8.6	4.3	<1.0	34.6 ^{RRV}	<1.0
	Strontium (Sr)-Dissolved (mg/L)	0.393	0.135	0.0109	0.241	0.0417
	Thallium (Tl)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Dissolved (mg/L)	<0.0010	<0.0010	0.0085	<0.0010	0.0144
	Uranium (U)-Dissolved (mg/L)	0.0122	0.00679	0.00024	0.00656	0.00043
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0040	0.0029	0.0212	0.0242	0.294

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L1137672-16 GROUNDWATER 21-APR-12 07:30 HG7	L1137672-17 SURFACEWATE 21-APR-12 18:30 SW6A			
Grouping	Analyte						
WATER							
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)		3.0	<1.0			
	Strontium (Sr)-Dissolved (mg/L)		0.0825	0.0377			
	Thallium (Tl)-Dissolved (mg/L)		<0.050	<0.050			
	Tin (Sn)-Dissolved (mg/L)		<0.050	<0.050			
	Titanium (Ti)-Dissolved (mg/L)		<0.0010	0.0109			
	Uranium (U)-Dissolved (mg/L)		0.00250	0.00035			
	Vanadium (V)-Dissolved (mg/L)		<0.0010	<0.0010			
	Zinc (Zn)-Dissolved (mg/L)		0.0042	0.252			

Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1137672-1	HG-PP11-02	SRUHL	Sample Received Unpreserved. Results may be biased either high or low for indicated parameter(s) - metals dissolved
		SFPL	Sample was Filtered and Preserved at the laboratory - metals dissolved
L1137672-13	SW5	SRUHL	Sample Received Unpreserved. Results may be biased either high or low for indicated parameter(s) - metals dissolved
		SFPL	Sample was Filtered and Preserved at the laboratory - metals dissolved
L1137672-16	HG7	SRUL	Sample Received Unpreserved. Results may be biased low for indicated parameter(s) - dissolved metals.
		SFPL	Sample was Filtered and Preserved at the laboratory - dissolved metals
		SPL	Sample was Preserved at the laboratory - total metals
L1137672-5	SW2	SRUHL	Sample Received Unpreserved. Results may be biased either high or low for indicated parameter(s) - metals dissolved
		SFPL	Sample was Filtered and Preserved at the laboratory - metals dissolved

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1137672-1, -10, -11, -12, -13, -14, -15, -16, -17, -2, -3, -4, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-ED	Water	Acidity (as CaCO ₃)	APHA 2310 B - Potentiometric Titration
BR-IC-ED	Water	Bromide by IC	APHA 4110 B-ION CHROMATOGRAPHY
CL-IC-ED	Water	Chloride by IC	APHA 4110 B-ION CHROMATOGRAPHY
CN-TOT-WT	Water	Cyanide, Total	APHA 4500CN C E-STRONG ACID DIST COLORIM
Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.			
When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference			
COL-TRU-ED	Water	Color, True	APHA 2120
The reported color applies to the pH of the sample as submitted unless otherwise noted on the report.			
IONBALANCE-ED	Water	Ion Balance Calculation	APHA 1030E
MET-D-L-ICP-ED	Water	Diss. Metals in Water by ICPOES (Low)	APHA 3120 B-ICP-OES
MET-D-MS-ED	Water	Dissolved Metals in Water by ICPMS	SW 846 - 6020-ICPMS
MET-T-L-ICP-ED	Water	Total Metals in Water by ICPOES (Low)	APHA 3120 B-ICP-OES
MET-T-MS-ED	Water	Total Metals in Water by ICPMS	SW 846 - 6020-ICPMS
N-T-CALC-ED	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-CFA-ED	Water	Ammonia in Water by Colour	APHA 4500 NH3-NITROGEN (AMMONIA)
This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.			
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-ED	Water	Nitrite as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
NO3-IC-ED	Water	Nitrate as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
P-T-COL-ED	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			

Reference Information

PH/EC/ALK-ED	Water	pH, Conductivity and Total Alkalinity	APHA 4500-H, 2510, 2320
All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)			
SO4-IC-ED	Water	Sulfate by IC	APHA 4110 B-ION CHROMATOGRAPHY
SOLIDS-TOTSUS-ED	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
TKN-CFA-ED	Water	TKN in Water by Colour	APHA 4500-NORG (TKN)
This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 celcius with analysis using an automated colourimetric finish.			
TURBIDITY-ED	Water	Turbidity	APHA 2130 B-Nephelometer

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

1 of 2 2 of 2

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

MEMORANDUM

To:	Mr. David Swisher, Mr. Mark Wiseman	Date:	May 3, 2012
Copy To:	Rick Hoos	File No.:	NB101-390/3-A.01
From:	Cara Stapley	Cont. No.:	NB12-00200
Re:	Thor Lake Project - Pine Point Site Groundwater and Surface Water Quality Test Results (Event 4)		

Thirteen (13) groundwater monitoring wells were previously installed near the proposed infrastructure for the Thor Lake Project Hydrometallurgical site, near the historic town of Pine Point, NWT. Six (6) monitoring wells were installed in 2010 and seven (7) monitoring wells were installed in 2011. The details of these installations were reported in KPL memos NB10-00656 and NB11-00529, respectively. All thirteen (13) groundwater monitoring wells were developed and sampled previously and the results are presented in previously issued KPL memos NB11-00232, NB11-00468, and NB11-00552. In late April 2012, a program was carried out by Knight Piésold to check and sample (where possible) all thirteen (13) wells and seven (7) surface water sites, for the purpose of collecting additional baseline water quality data, including Rare Earth Elements (REE) background data. Monitoring wells DH-2010-01, -02D, -02S and -03 and surface water sampling site SW-7 could not be accessed for sample collection. The water sampling equipment installed at monitoring well HG-PP11-06 failed while attempting to extract water from the well and a sample could not be obtained.

The eight (8) monitoring wells and six (6) surface water sampling sites remaining were sampled, including the collection of duplicate samples at HG-PP11-01 and SW-6 for quality control purposes. Figure 1 shows the locations of the monitoring wells and surface water sites.

A total of 16 water samples were sent to ALS Laboratory Group (ALS) in Yellowknife for completion of a complete suite of analytical tests, including:

- Physical tests
- Anions and nutrients
- Cyanide
- Total metals
- Dissolved metals (groundwater only)
- Rare Earth Elements (REE)

The samples for REE testing were sent from ALS in Yellowknife to the specialized ALS Laboratory in Kelso, Washington. The results from the general laboratory testing are summarized on Table 1, and from the REE testing are summarized on Table 2. The results for the two quality control samples taken at HG-PP11-01 and SW-6 (samples HG-PP11-01A and SW-6A), are shown on Table 3. The laboratory certificates of analysis are included in Appendix A.

It is recommended that water sampling events for all monitoring wells and surface water sites continue in 2012 (in July/August and October) to supplement the baseline water quality data. Should you have any questions, please do not hesitate to contact us.

Signed:



Cara Stapley, P.Eng.
Geological Engineer

Approved:



Kevin Hawton, P.Eng.
Senior Engineer

Attachments:

Table 1 Rev 0	Laboratory Results Summary
Table 2 Rev 0	Rare Earth Elements Laboratory Results Summary
Table 3 Rev 0	QA/QC Results Summary
Figure 1 Rev 0	Pine Point Site - Monitoring Wells and Surface Water Sampling Sites
Appendix A	Laboratory Certificates of Analysis

/cls

TABLE 1
AVALON RARE METALS INC.
THOR LAKE PROJECT
PINE POINT SITE GROUNDWATER AND SURFACE WATER QUALITY TEST RESULTS (EVENT 4)
LABORATORY RESULTS SUMMARY

				GROUNDWATER												SURFACE WATER							
Date Sampled				-	-	-	-	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	-	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	-	
Lab ID				-	-	-	-	L1137672-12	L1137672-8	L1137672-4	L1137672-10	L1137672-1	L1137672-3	L1137672-2	L1137672-14	L1137672-7	L1137672-5	L1137672-6	L1137672-9	L1137672-13	L1137672-15	-	
Grouping	Analyte	Units	MDL	DH-2010-01	DH-2010-02D	DH-2010-02S	DH-2010-03	DH-2010-04	DH-2010-05	GT-PP11-08	HG-PP11-01	HG-PP11-02	HG-PP11-03	HG-PP11-04	HG-PP11-05	HG-PP11-06	SW1	SW2	SW3	SW4	SW5	SW6	SW7
Physical Tests	Colour, True	C.U.	2.0	-	-	-	-	6.0	5.0	9.0	7.0	19.0	8.0	9.0	11.0	-	13.0	7.0	9.0	8.0	9.0	4.0	-
	Conductivity	uS/cm	0.20	-	-	-	-	865	363	1730	1860	1230	1110	949	1180	-	256	204	899	92.6	99.3	560	-
	Hardness (as CaCO3)	mg/L	-	-	-	-	-	474	185	1090	1180	732	545	543	544	-	118	102	516	38.6	48.6	262	-
	pH	pH	0.10	-	-	-	-	7.72	8.02	7.58	7.23	7.69	7.68	7.54	7.47	-	7.59	8.09	7.59	7.22	7.95	7.51	-
	Total Suspended Solids	mg/L	3.0	-	-	-	-	1120	62.0	32.0	2460	344	12.0	194	350	-	<3.0	18	<3.0	<3.0	20.0	6.0	-
	Total Dissolved Solids (Calculated)	mg/L	-	-	-	-	-	555	191	1400	1440	831	760	595	782	-	148	122	610	47.4	52.3	368	-
Anions and Nutrients	Turbidity	NTU	0.10	-	-	-	-	671	49.8	9.36	1010	35.7	15.0	129	158	-	7.61	111	1.33	11.1	37.5	13.3	-
	Acidity (as CaCO3)	mg/L	5.0	-	-	-	-	<5.0	<5.0	<5.0	55.1	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-
	Alkalinity, Total (as CaCO3)	mg/L	5.0	-	-	-	-	279	190	168	394	355	238	408	316	-	30.7	70.3	209	11.7	44.0	24.9	-
	Ammonia-N, Total	mg/L	0.050	-	-	-	-	<0.050	<0.050	<0.050	1.96	0.457	<0.050	0.131	-	0.088	0.069	<0.050	0.092	0.072	0.072	-	
	Bicarbonate (HCO3)	mg/L	5.0	-	-	-	-	340	231	205	480	433	290	498	386	-	37.4	85.7	254	14.3	53.6	30.3	-
	Bromide (Br)	mg/L	1.0	-	-	-	-	<1.0	<0.10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<0.10	<0.10	<1.0	<0.10	<0.10	<1.0	-
	Carbonate (CO3)	mg/L	5.0	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-
	Chloride (Cl)	mg/L	0.50	-	-	-	-	0.83	<0.50	3.60	6.52	25.2	6.64	2.63	13.1	-	1.65	1.68	1.91	<0.50	<0.50	0.79	-
	Hydroxide (OH)	mg/L	5.0	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-
	Nitrate (as N)	mg/L	0.050	-	-	-	-	<0.050	0.185	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	1.01	0.382	0.154	0.403	0.178	0.294	-
	Nitrate and Nitrite as N	mg/L	0.071	-	-	-	-	<0.071	0.185	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-	1.01	0.382	0.154	0.403	0.178	0.294	-
	Nitrite (as N)	mg/L	0.050	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
	Total Kjeldahl Nitrogen	mg/L	0.20	-	-	-	-	0.29	<0.20	<0.20	0.38	23.7	0.63	<0.20	<0.20	-	0.36	0.25	<0.20	<0.20	0.21	<0.20	-
	Total Nitrogen	mg/L	0.21	-	-	-	-	0.29	<0.21	<0.21	0.38	23.7	0.63	<0.21	<0.21	-	1.37	0.64	<0.21	0.40	0.39	0.29	-
	Total Phosphate as P	mg/L	0.020	-	-	-	-	0.285	0.020	<0.020	0.298	<0.020	<0.020	0.227	0.052	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-
Sulfate (SO4)	mg/L	0.50	-	-	-	-	221	11.3	895	775	346	380	156	350	-	80.8	39.5	300	25.3	5.70	252	-	
Cyanide	Cyanide, Total	mg/L	0.20	-	-	-	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.2	<0.0020	<0.0020	<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-
Total Metals	Aluminum (Al)-Total	mg/L	0.010	-	-	-	-	9.94	0.516	0.190	5.80	0.369	0.179	1.39	5.26	-	0.390	3.55	0.020	0.541	1.52	0.535	-
	Antimony (Sb)-Total	mg/L	0.00080	-	-	-	-	0.00082	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	-	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	-
	Arsenic (As)-Total	mg/L	0.00080	-	-	-	-	0.0167	<0.00080	<0.00080	0.0189	0.00095	0.00483	0.00581	0.00159	-	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	-
	Barium (Ba)-Total	mg/L	0.0030	-	-	-	-	0.254	0.0621	0.0120	0.0719	0.0512	0.0258	0.0312	0.0504	-	0.0124	0.0685	0.0082	0.0136	0.0209	0.0153	-
	Beryllium (Be)-Total	mg/L	0.0020	-	-	-	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-
	Boron (B)-Total	mg/L	0.050	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-
	Cadmium (Cd)-Total	mg/L	0.0010	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	0.0019	<0.0010	<0.0010	-
	Calcium (Ca)-Total	mg/L	0.50	-	-	-	-	214	63.4	315	366	157	159	189	177	-	28.8	35.4	140	11.5	18.8	96.0	-
	Chromium (Cr)-Total	mg/L	0.0050	-	-	-	-	0.0228	<0.0050	<0.0050	0.0071	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
	Cobalt (Co)-Total	mg/L	0.0020	-	-	-	-	0.0117	<0.0020	<0.0020	0.0029	<0.0020	<0.0020	<0.0020	0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-
	Copper (Cu)-Total	mg/L	0.0010	-	-	-	-	0.0223	0.0026	<0.0010	0.0060	0.0024	<0.0010	0.0025	0.0059	-	<0.0010	0.0026	<0.0010	<0.0010	0.0013	<0.0010	-
	Iron (Fe)-Total	mg/L	0.010	-	-	-	-	16.9	0.534	0.815	9.19	3.23	1.70	2.15	5.66	-	0.229	2.40	0.021	0.442	1.05	0.444	-
	Lead (Pb)-Total	mg/L	0.0050	-	-	-	-	0.0457	<0.0050	0.0091	0.0134	0.0499	<0.0050	0.0113	0.0794	-	0.0072	0.0307	0.0109	0.0494	0.0178	0.0343	-
	Lithium (Li)-Total	mg/L	0.010	-	-	-	-	0.043	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	0.012	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	-
	Magnesium (Mg)-Total	mg/L	0.10	-	-	-	-	85.6	18.6	66.3	125	68.9	44.1	76.6	48.5	-	10.3	10.8	45.4	3.76	3.34	10.7	-
	Manganese (Mn)-Total	mg/L	0.0020	-	-	-	-	0.309	0.0081	0.0754	0.304	0.114	0.0687	0.0898	0.228	-	0.0065	0.0330	0.0126	0.0112	0.0192	0.0179	-
	Molybdenum (Mo)-Total	mg/L	0.0050	-	-	-	-	0.0105	<0.0050	0.0062	0.0103	0.0588	0.0854	<0.005	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
	Nickel (Ni)-Total	mg/L	0.0020	-	-	-	-	0.0310	0.0036	0.0159	0.0409	0.0051	0.0025	0.0056	0.0062	-	<0.0020	0.0034	0.0130	<0.0020	<0.0020	<0.0020	-
	Potassium (K)-Total	mg/L	0.10	-	-	-	-	6.19	0.83	3.06	5.68	1.94	5.05	2.42	2.45	-	0.96	2.28	1.17	0.35	1.64	0.51	-
	Selenium (Se)-Total	mg/L	0.00080	-	-	-	-	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	-	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	-
	Silver (Ag)-Total	mg/L	0.0050	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
	Sodium (Na)-Total	mg/L	1.0	-	-	-	-	4.9	1.3	4.8	9.8	7.0	39.3	32.4	38.6	-	1.5	<1.0	2.3	<1.0			

TABLE 2

AVALON RARE METALS INC.
THOR LAKE PROJECT

PINE POINT SITE GROUNDWATER AND SURFACE WATER QUALITY TEST RESULTS (EVENT 4)
RARE EARTH ELEMENTS LABORATORY RESULTS SUMMARY

Print May/04/12 12:34:21

Date Sampled				-	-	-	-	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	-	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12	-
Lab ID				-	-	-	-	K1203924-012	K1203924-008	K1203924-004	K1203924-010	K1203924-001	K1203924-003	K1203924-002	K1203924-014	-	K1203924-007	K1203924-005	K1203924-006	K1203924-009	K1203924-013	K1203924-015	-
Grouping	Analyte	Units	MRL	DH-2010-01	DH-2010-02D	DH-2010-02S	DH-2010-03	DH-2010-04	DH-2010-05	GT-PP11-08	HG-PP11-01	HG-PP11-02	HG-PP11-03	HG-PP11-04	HG-PP11-05	HG-PP11-06	SW1	SW2	SW3	SW4	SW5	SW6	SW7
Rare Earth Elements	Cerium	ug/L	0.1	-	-	-	-	14.6	10.1	1.2	47.0	5.3	0.4	6.7	24.1	-	0.5	5.0	<0.1	0.2	2.0	0.6	-
	Dysprosium	ug/L	0.1	-	-	-	-	1.0	0.6	<0.1	2.2	0.4	<0.1	0.2	0.8	-	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	-
	Erbium	ug/L	0.1	-	-	-	-	0.6	0.3	<0.1	1.2	0.2	<0.1	0.1	0.4	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Europium	ug/L	0.1	-	-	-	-	0.3	0.2	<0.1	0.6	0.1	<0.1	<0.1	0.2	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Gadolinium	ug/L	0.1	-	-	-	-	1.3	0.9	<0.1	3.3	0.5	<0.1	0.3	1.4	-	<0.1	0.3	<0.1	<0.1	0.1	<0.1	-
	Gallium	ug/L	0.1	-	-	-	-	2.2	1.1	0.1	4.1	0.2	<0.1	0.4	1.4	-	0.1	1.0	<0.1	0.1	0.3	0.1	-
	Holmium	ug/L	0.1	-	-	-	-	0.2	0.1	<0.1	0.4	<0.1	<0.1	<0.1	0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Lanthanum	ug/L	0.1	-	-	-	-	8.5	7.3	0.6	20.5	3.1	0.2	1.9	8.8	-	0.3	2.6	<0.1	0.1	1.0	0.4	-
	Lutetium	ug/L	0.1	-	-	-	-	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Niobium	ug/L	0.1	-	-	-	-	0.5	0.3	<0.1	0.6	<0.1	<0.1	0.2	0.5	-	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	-
	Neodymium	ug/L	0.1	-	-	-	-	6.7	5.5	0.5	18.2	2.5	0.2	1.7	8.2	-	0.2	2.1	<0.1	<0.1	0.9	0.3	-
	Praseodymium	ug/L	0.1	-	-	-	-	1.8	1.4	0.1	4.7	0.7	<0.1	0.4	2.2	-	<0.1	0.6	<0.1	<0.1	0.2	<0.1	-
	Samarium	ug/L	0.1	-	-	-	-	1.2	0.9	<0.1	3.3	0.5	<0.1	0.3	1.6	-	<0.1	0.3	<0.1	<0.1	0.1	<0.1	-
	Scandium	ug/L	0.1	-	-	-	-	3.1	2.1	0.5	5.6	0.6	0.5	0.9	2.3	-	0.1	1.3	0.2	0.1	0.4	0.2	-
	Tantalum	ug/L	0.1	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Terbium	ug/L	0.10	-	-	-	-	0.16	0.12	<0.10	0.42	<0.10	<0.10	<0.10	0.17	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-
	Thulium	ug/L	0.1	-	-	-	-	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Ytterbium	ug/L	0.1	-	-	-	-	0.5	0.2	<0.1	0.9	0.2	<0.1	<0.1	0.3	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
	Zirconium	ug/L	0.1	-	-	-	-	3.2	1.3	0.2	2.9	0.2	0.2	0.8	1.8	-	0.2	1.8	<0.1	0.1	0.4	0.2	-

I:\1\01100390\03\A\Correspondence\NB12-00200 - Pine Point Water Quality Event 4\Table 2.xlsx

NOTES:

1. MONITORING WELLS DH-2010-01, -02D, -02S OR -03 AND SURFACE WATER SITE SW-7 WERE INACCESSIBLE AND WATER SAMPLES WERE NOT COLLECTED FROM THESE LOCATIONS.
2. WATER SAMPLE WAS NOT COLLECTED FROM HG-PP11-06 DUE TO MALFUNCTIONING SAMPLING EQUIPMENT.

0	03MAY12	ISSUED WITH MEMO NB12-00200	HK	CLS	KEH
REV	DATE	DESCRIPTION	PREPD	CHKD	APPD

TABLE 3

AVALON RARE METALS INC.
THOR LAKE PROJECT

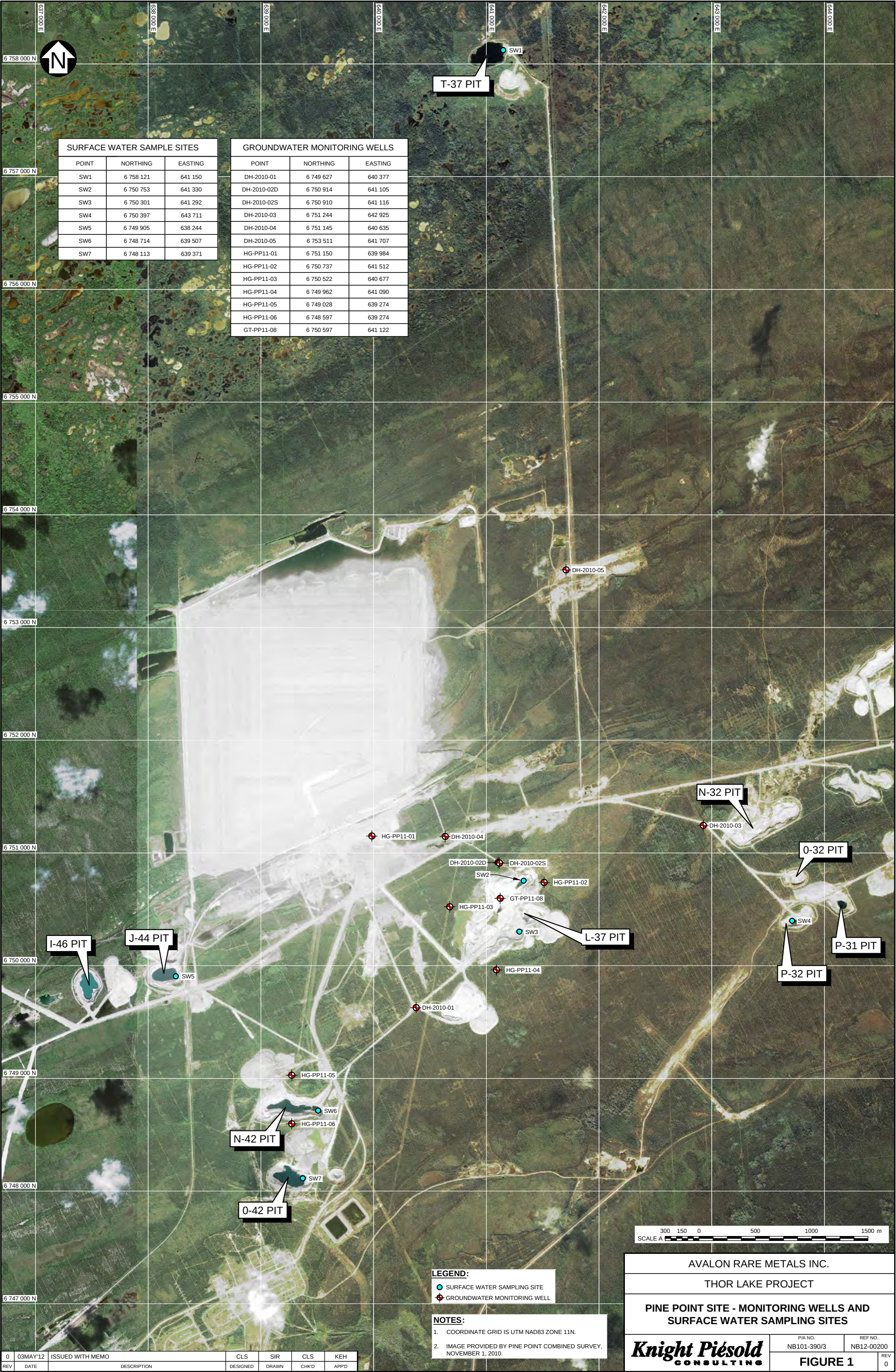
PINE POINT SITE GROUNDWATER AND SURFACE WATER QUALITY TEST RESULTS (EVENT 4)
QA/QC RESULTS SUMMARY

				GROUNDWATER		SURFACE WATER	
Date Sampled				21-Apr-12	21-APR12	21-APR-12	21-APR-12
Lab ID				L1137672-10	L1137672-11	L1137672-15	L1137672-17
Grouping	Analyte	Units	MDL	HG-PP11-01	HG-PP11-01A	SW6	SW6A
Physical Tests	Colour, True	C.U.	2.0	7.0	23.0	4.0	6.0
	Conductivity	uS/cm	0.20	1860	1850	560	497
	Hardness (as CaCO3)	mg/L	-	1180	1130	262	246
	pH	pH	0.10	7.23	7.22	7.51	7.48
	Total Suspended Solids	mg/L	3.0	2460	2480	6.0	14.0
	Total Dissolved Solids (Calculated)	mg/L	-	1440	1420	368	327
Anions and Nutrients	Turbidity	NTU	0.10	1010	1110	13.3	10.6
	Acidity (as CaCO3)	mg/L	5.0	55.1	19.4	<5.0	<5.0
	Alkalinity, Total (as CaCO3)	mg/L	5.0	394	390	24.9	23.4
	Ammonia-N, Total	mg/L	0.050	<0.050	<0.050	0.072	0.079
	Bicarbonate (HCO3)	mg/L	5.0	480	475	30.3	28.6
	Bromide (Br)	mg/L	0.10	<1.0	<1.0	<1.0	<1.0
	Carbonate (CO3)	mg/L	5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl)	mg/L	0.50	6.52	6.57	0.79	0.73
	Hydroxide (OH)	mg/L	5.0	<5.0	<5.0	<5.0	<5.0
	Nitrate (as N)	mg/L	0.050	<0.050	<0.050	0.294	0.268
	Nitrate and Nitrite as N	mg/L	0.071	<0.071	<0.071	0.294	0.268
	Nitrite (as N)	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
	Total Kjeldahl Nitrogen	mg/L	0.20	0.38	0.54	<0.20	<0.20
	Total Nitrogen	mg/L	0.21	0.38	0.54	0.29	0.27
	Total Phosphate as P	mg/L	0.020	0.298	0.412	<0.020	<0.020
Cyanide	Sulfate (SO4)	mg/L	0.50	775	777	252	218
	Cyanide, Total	mg/L	0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Total Metals	Aluminum (Al)-Total	mg/L	0.010	5.80	14.9	0.535	0.432
	Antimony (Sb)-Total	mg/L	0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Total	mg/L	0.00080	0.0189	0.0313	<0.00080	<0.00080
	Barium (Ba)-Total	mg/L	0.0030	0.0719	0.191	0.0153	0.0136
	Beryllium (Be)-Total	mg/L	0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total	mg/L	0.050	<0.050	0.051	<0.050	<0.050
	Cadmium (Cd)-Total	mg/L	0.0010	<0.0010	0.0023	<0.0010	<0.0010
	Calcium (Ca)-Total	mg/L	0.50	366	569	96.0	88.9
	Chromium (Cr)-Total	mg/L	0.0050	0.0071	0.0196	<0.0050	<0.0050
	Cobalt (Co)-Total	mg/L	0.0020	0.0029	0.0066	<0.0020	<0.0020
	Copper (Cu)-Total	mg/L	0.0010	0.0060	0.0174	<0.0010	<0.0010
	Iron (Fe)-Total	mg/L	0.010	9.19	20.3	0.444	0.332
	Lead (Pb)-Total	mg/L	0.0050	0.0134	0.0427	0.0343	0.0308
	Lithium (Li)-Total	mg/L	0.010	<0.010	0.018	<0.010	<0.010
	Magnesium (Mg)-Total	mg/L	0.10	125	263	10.7	9.76
	Manganese (Mn)-Total	mg/L	0.0020	0.304	0.669	0.0179	0.0156
	Molybdenum (Mo)-Total	mg/L	0.0050	0.0103	0.0144	<0.0050	<0.0050
	Nickel (Ni)-Total	mg/L	0.0020	0.0409	0.0706	<0.0020	<0.0020
	Potassium (K)-Total	mg/L	0.10	5.68	8.76	0.51	0.58
	Selenium (Se)-Total	mg/L	0.00080	<0.00080	0.00086	<0.00080	<0.00080
	Silver (Ag)-Total	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Sodium (Na)-Total	mg/L	1.0	9.8	10.2	<1.0	<1.0
	Strontium (Sr)-Total	mg/L	0.0020	0.431	0.460	0.0448	0.0390
	Thallium (Tl)-Total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Total	mg/L	0.0010	0.160	0.310	0.0167	0.0140
	Uranium (U)-Total	mg/L	0.00010	0.0143	0.0165	0.00047	0.00036
	Vanadium (V)-Total	mg/L	0.0010	0.0096	0.0265	<0.0010	<0.0010
	Zinc (Zn)-Total	mg/L	0.0040	0.370	1.16	0.277	0.214
Dissolved Metals	Aluminum (Al)-Dissolved	mg/L	0.010	<0.010	<0.010	0.338	0.219
	Antimony (Sb)-Dissolved	mg/L	0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Dissolved	mg/L	0.00080	0.0181	0.0165	<0.00080	<0.00080
	Barium (Ba)-Dissolved	mg/L	0.0030	0.0242	0.0245	0.0136	0.0126
	Beryllium (Be)-Dissolved	mg/L	0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Boron (B)-Dissolved	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Dissolved	mg/L	0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Dissolved	mg/L	0.50	313	300	88.7	83.4
	Chromium (Cr)-Dissolved	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Dissolved	mg/L	0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Dissolved	mg/L	0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved	mg/L	0.010	5.28	5.29	0.251	0.186
	Lead (Pb)-Dissolved	mg/L	0.0050	<0.0050	<0.0050	0.0322	0.0309
	Lithium (Li)-Dissolved	mg/L	0.0030	0.0043	0.0041	<0.0030	<0.0030
	Magnesium (Mg)-Dissolved	mg/L	0.10	96.5	93	9.95	9.28
	Manganese (Mn)-Dissolved	mg/L	0.0020	0.207	0.189	0.0145	0.0129
	Molybdenum (Mo)-Dissolved	mg/L	0.0050	0.0078	0.0079	<0.0050	<0.0050
	Nickel (Ni)-Dissolved	mg/L	0.0020	0.0234	0.0224	<0.0020	<0.0020
	Potassium (K)-Dissolved	mg/L	0.50	3.50	3.2	<0.50	0.53
	Selenium (Se)-Dissolved	mg/L	0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Dissolved	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Sodium (Na)-Dissolved	mg/L	1.0	9.2	8.6	<1.0	<1.0
	Strontium (Sr)-Dissolved	mg/L	0.0050	0.376	0.393	0.0417	0.0377
	Thallium (Tl)-Dissolved	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Dissolved	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Dissolved	mg/L	0.0010	<0.0010	<0.0010	0.0144	0.0109
	Uranium (U)-Dissolved	mg/L	0.00010	0.0125	0.0122	0.00043	0.00035
	Vanadium (V)-Dissolved	mg/L	0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved	mg/L	0.0020	0.0046	0.0040	0.294	0.252
Ion Balance		%	-	99.4	95.6	90.7	98.0
Date Sampled				GROUNDWATER		SURFACE WATER	
Lab ID				21-Apr-12	21-APR12	21-APR-12	21-APR-12
				K1203924-010	K1203924-011	K1203924-015	K1203924-016
Grouping	Analyte	Units	MRL	HG-PP11-01	HG-PP11-01A	SW6	SW6A
Rare Earth Elements	Cerium	ug/L	0.1	47.0	61.3	0.6	0.6
	Dysprosium	ug/L	0.1	2.2	2.9	<0.1	<0.1
	Erbium	ug/L	0.1	1.2	1.5	<0.1	<0.1
	Europium	ug/L	0.1	0.6	0.7	<0.1	<0.1
	Gadolinium	ug/L	0.1	3.3	4.2	<0.1	<0.1
	Gallium	ug/L	0.1	4.1	5.1	0.1	0.1
	Holmium	ug/L	0.1	0.4	0.5	<0.1	<0.1
	Lanthanum	ug/L	0.1	20.5	26.9	0.4	0.3
	Lutetium	ug/L	0.1	0.1	0.2	<0.1	<0.1
	Niobium	ug/L	0.1	0.6	0.7	<0.1	<0.1
	Neodymium	ug/L	0.1	18.2	24.0	0.3	0.2
	Praseodymium	ug/L	0.1	4.7	6.3	<0.1	<0.1
	Samarium	ug/L	0.1	3.3	4.4	<0.1	<0.1
	Scandium	ug/L	0.1	5.6	6.8	0.2	0.1
	Tantalum	ug/L	0.1	<0.1	<0.1	<0.1	<0.1
	Terbium	ug/L	0.10	0.42	0.54	<0.10	<0.10
	Thulium	ug/L	0.1	0.2	0.2	<0.1	<0.1
	Ytterbium	ug/L	0.1	0.9	1.2	<0.1	<0.1
	Zirconium	ug/L	0.1	2.9	3.9	0.2	0.3

I:\110100390\03\A\Correspondence\NB12-00200 - Pine Point Water Quality Event 4\Table 3.xlsx

- NOTES:**
1. DUPLICATE SAMPLE TAKEN AT HG-PP11-01, LABELLED HG-PP11-01A, IS A QUALITY CONTROL SAMPLE.
 2. DUPLICATE SAMPLE TAKEN AT SW6, LABELLED SW6A, IS A QUALITY CONTROL SAMPLE.

0	03MAY12	ISSUED WITH MEMO NB12-00200	ML/HK	CLS	KEH
REV	DATE	DESCRIPTION	PREPD	CHK'D	APP'D



APPENDIX A

LABORATORY CERTIFICATES OF ANALYSIS

(Pages A-1 to A-46)



KNIGHT PIESOLD LTD.
ATTN: RYAN WEIR / CARA STAPLEY /
KEVIN HAWTON
1650 Main Street West
North Bay ON P1B 8G5

Date Received: 23-APR-12
Report Date: 03-MAY-12 10:32 (MT)
Version: FINAL

Client Phone: 705-476-2165

Certificate of Analysis

Lab Work Order #: L1137672
Project P.O. #: SET UP WITH AVALON
Job Reference: AVALON KNI225
C of C Numbers: 1 of 2, 2 of 2
Legal Site Desc:

Jessica Spira
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-1 GROUNDWATER 21-APR-12 08:20 HG-PP11-02	L1137672-2 GROUNDWATER 21-APR-12 08:50 HG-PP11-04	L1137672-3 GROUNDWATER 21-APR-12 09:10 HG-PP11-03	L1137672-4 GROUNDWATER 21-APR-12 09:40 GT-PP11-08	L1137672-5 SURFACEWATER 21-APR-12 10:20 SW2
Grouping	Analyte					
WATER						
Physical Tests	Color, True (C.U.)	19.0	9.0	8.0	9.0	7.0
	Total Suspended Solids (mg/L)	344	194	12.0	32.0	18.0
	Turbidity (NTU)	35.7	129	15.0	9.36	111
Anions and Nutrients	Acidity (as CaCO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Alkalinity, Total (as CaCO ₃) (mg/L)	355	408	238	168	70.3
	Ammonia, Total (as N) (mg/L)	1.96	<0.050	0.457	<0.050	0.069
	Bicarbonate (HCO ₃) (mg/L)	433	498	290	205	85.7
	Bromide (Br) (mg/L)	<1.0 ^{DLM}	<0.10	<1.0 ^{DLM}	<1.0 ^{DLM}	<0.10
	Carbonate (CO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	25.2 ^{RRV}	2.63	6.64	3.60	1.68
	Conductivity (EC) (uS/cm)	1230	949	1110	1730	204
	Hardness (as CaCO ₃) (mg/L)	732	543	545	1090	102
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	98.4	97.6	97.8	100	90.3
	Nitrate and Nitrite (as N) (mg/L)	<0.071	<0.071	<0.071	<0.071	0.382
	Nitrate (as N) (mg/L)	<0.050	<0.050	<0.050	<0.050	0.382
	Nitrite (as N) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Kjeldahl Nitrogen (mg/L)	23.7	<0.20	0.63	<0.20	0.25
	Total Nitrogen (mg/L)	23.7	<0.21	0.63	<0.21	0.64
	pH (pH)	7.69	7.54	7.68	7.58	8.09
	Phosphorus (P)-Total (mg/L)	<0.020	0.227	<0.020	<0.020	<0.020
	TDS (Calculated) (mg/L)	831	595	760	1400	122
	Sulfate (SO ₄) (mg/L)	346 ^{RRV}	156	380 ^{RRV}	895 ^{RRV}	39.5 ^{RRV}
Cyanides	Cyanide, Total (mg/L)	<0.2 ^{DLM}	<0.0020	<0.0020	<0.0020	<0.0020
Total Metals	Aluminum (Al)-Total (mg/L)	0.369	1.39	0.179	0.190	3.55
	Antimony (Sb)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Total (mg/L)	0.00095	0.00581	0.00483	<0.00080	<0.00080
	Barium (Ba)-Total (mg/L)	0.0512	0.0312	0.0258	0.0120	0.0685
	Beryllium (Be)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/L)	157	189	159	315	35.4
	Chromium (Cr)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.0024	0.0025	<0.0010	<0.0010	0.0026
	Iron (Fe)-Total (mg/L)	3.23	2.15	1.70	0.815	2.40
	Lead (Pb)-Total (mg/L)	0.0499	0.0113	<0.0050	0.0091	0.0307

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-6 SURFACEWATE 21-APR-12 10:40 SW3	L1137672-7 SURFACEWATE 21-APR-12 11:10 SW1	L1137672-8 GROUNDWATER 21-APR-12 11:40 DH-2010-05	L1137672-9 SURFACEWATE 21-APR-12 12:00 SW4	L1137672-10 GROUNDWATER 21-APR-12 12:25 HG-PP11-01
Grouping	Analyte					
WATER						
Physical Tests	Color, True (C.U.)	9.0	13.0	5.0	8.0	7.0
	Total Suspended Solids (mg/L)	<3.0	<3.0	62.0	<3.0	2460
	Turbidity (NTU)	1.33	7.61	49.8	11.1	1010
Anions and Nutrients	Acidity (as CaCO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0	55.1
	Alkalinity, Total (as CaCO ₃) (mg/L)	209	30.7	190	11.7	394
	Ammonia, Total (as N) (mg/L)	<0.050	0.088	<0.050	0.092	<0.050
	Bicarbonate (HCO ₃) (mg/L)	254	37.4	231	14.3	480
	Bromide (Br) (mg/L)	<1.0 ^{DLM}	<0.10	<0.10	<0.10	<1.0 ^{DLM}
	Carbonate (CO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloride (Cl) (mg/L)	1.91	1.65	<0.50	<0.50	6.52
	Conductivity (EC) (uS/cm)	899	256	363	92.6	1860
	Hardness (as CaCO ₃) (mg/L)	516	118	185	38.6	1180
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	99.7	101	93.2	Low EC	99.4
	Nitrate and Nitrite (as N) (mg/L)	0.154	1.01	0.185	0.403	<0.071
	Nitrate (as N) (mg/L)	0.154	1.01	0.185	0.403	<0.050
	Nitrite (as N) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Kjeldahl Nitrogen (mg/L)	<0.20	0.36	<0.20	<0.20	0.38
	Total Nitrogen (mg/L)	<0.21	1.37	<0.21	0.40	0.38
	pH (pH)	7.59	7.59	8.02	7.22	7.23
	Phosphorus (P)-Total (mg/L)	<0.020	<0.020	0.020	<0.020	0.298
	TDS (Calculated) (mg/L)	610	148	191	47.4	1440
	Sulfate (SO ₄) (mg/L)	300 ^{RRV}	80.8	11.3	25.3	775 ^{RRV}
Cyanides	Cyanide, Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Total Metals	Aluminum (Al)-Total (mg/L)	0.020	0.390	0.516	0.541	5.80
	Antimony (Sb)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	0.0189
	Barium (Ba)-Total (mg/L)	0.0082	0.0124	0.0621	0.0136	0.0719
	Beryllium (Be)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Total (mg/L)	<0.0010	<0.0010	<0.0010	0.0019	<0.0010
	Calcium (Ca)-Total (mg/L)	140	28.8	63.4	11.5	366
	Chromium (Cr)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0071
	Cobalt (Co)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	0.0029
	Copper (Cu)-Total (mg/L)	<0.0010	<0.0010	0.0026	<0.0010	0.0060
	Iron (Fe)-Total (mg/L)	0.021	0.229	0.534	0.442	9.19
	Lead (Pb)-Total (mg/L)	0.0109	0.0072	<0.0050	0.0494	0.0134

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-11 GROUNDWATER 21-APR-12 12:35 HG-PP11-01A	L1137672-12 GROUNDWATER 21-APR-12 13:05 DH-2010-04	L1137672-13 SURFACEWATE 21-APR-12 13:40 SW5	L1137672-14 GROUNDWATER 21-APR-12 14:10 HG-PP11-05	L1137672-15 SURFACEWATE 21-APR-12 15:30 SW6
Grouping	Analyte					
WATER						
Physical Tests	Color, True (C.U.)	23.0	6.0	9.0	11.0	4.0
	Total Suspended Solids (mg/L)	2480	1120	20.0	350	6.0
	Turbidity (NTU)	1110	671	37.5	158	13.3
Anions and Nutrients	Acidity (as CaCO ₃) (mg/L)	19.4	<5.0	<5.0	<5.0	<5.0
	Alkalinity, Total (as CaCO ₃) (mg/L)	390	279	44.0	316	24.9
	Ammonia, Total (as N) (mg/L)	<0.050	<0.050	0.072	0.131	0.072
	Bicarbonate (HCO ₃) (mg/L)	475	340	53.6	386	30.3
	Bromide (Br) (mg/L)	<1.0 ^{DLM}	<1.0 ^{DLM}	<0.10	<1.0 ^{DLM}	<1.0 ^{DLM}
	Carbonate (CO ₃) (mg/L)	<5.0	<5.0	<5.0	<5.0 ^{RRV}	<5.0
	Chloride (Cl) (mg/L)	6.57	0.83	<0.50	13.1	0.79
	Conductivity (EC) (uS/cm)	1850	865	99.3	1180	560
	Hardness (as CaCO ₃) (mg/L)	1130	474	48.6	544	262
	Hydroxide (OH) (mg/L)	<5.0	<5.0	<5.0	<5.0	<5.0
	Ion Balance (%)	95.6	95.2	Low EC	88.9 ^{BL:INT}	90.7
	Nitrate and Nitrite (as N) (mg/L)	<0.071	<0.071	0.178	<0.071	0.294
	Nitrate (as N) (mg/L)	<0.050	<0.050	0.178	<0.050	0.294
	Nitrite (as N) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Total Kjeldahl Nitrogen (mg/L)	0.54	0.29	0.21	<0.20	<0.20
	Total Nitrogen (mg/L)	0.54	0.29	0.39	<0.21	0.29
	pH (pH)	7.22	7.72	7.95	7.47	7.51
	Phosphorus (P)-Total (mg/L)	0.412	0.285	<0.020	0.052	<0.020
	TDS (Calculated) (mg/L)	1420	555	52.3	782	368
	Sulfate (SO ₄) (mg/L)	777 ^{RRV}	221 ^{RRV}	5.70	350 ^{RRV}	252 ^{RRV}
Cyanides	Cyanide, Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Total Metals	Aluminum (Al)-Total (mg/L)	14.9	9.94	1.52	5.26	0.535
	Antimony (Sb)-Total (mg/L)	<0.00080	0.00082	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Total (mg/L)	0.0313	0.0167	<0.00080	0.00159	<0.00080
	Barium (Ba)-Total (mg/L)	0.191	0.254	0.0209	0.0504	0.0153
	Beryllium (Be)-Total (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Boron (B)-Total (mg/L)	0.051	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Total (mg/L)	0.0023	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Total (mg/L)	569	214	18.8	177	96.0
	Chromium (Cr)-Total (mg/L)	0.0196	0.0228	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Total (mg/L)	0.0066	0.0117	<0.0020	0.0020	<0.0020
	Copper (Cu)-Total (mg/L)	0.0174	0.0223	0.0013	0.0059	<0.0010
	Iron (Fe)-Total (mg/L)	20.3	16.9	1.05	5.66	0.444
	Lead (Pb)-Total (mg/L)	0.0427	0.0457	0.0178	0.0794	0.0343

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L1137672-16 GROUNDWATER 21-APR-12 07:30 HG7	L1137672-17 SURFACEWATER 21-APR-12 18:30 SW6A			
Grouping	Analyte						
WATER							
Physical Tests	Color, True (C.U.)		10.0	6.0			
	Total Suspended Solids (mg/L)		322	14.0			
	Turbidity (NTU)		238	10.6			
Anions and Nutrients	Acidity (as CaCO3) (mg/L)		<5.0	<5.0			
	Alkalinity, Total (as CaCO3) (mg/L)		299	23.4	RRV		
	Ammonia, Total (as N) (mg/L)			0.079			
	Bicarbonate (HCO3) (mg/L)		365	28.6	RRV		
	Bromide (Br) (mg/L)		<0.10	<1.0	DLM		
	Carbonate (CO3) (mg/L)		<5.0	<5.0	RRV		
	Chloride (Cl) (mg/L)		0.59	0.73			
	Conductivity (EC) (uS/cm)		536	497	RRV		
	Hardness (as CaCO3) (mg/L)		285	246			
	Hydroxide (OH) (mg/L)		<5.0	<5.0	RRV		
	Ion Balance (%)		95.8	98.0			
	Nitrate and Nitrite (as N) (mg/L)			0.268			
	Nitrate (as N) (mg/L)			0.268			
	Nitrite (as N) (mg/L)			<0.050			
	Total Kjeldahl Nitrogen (mg/L)			<0.20			
	Total Nitrogen (mg/L)			0.27			
	pH (pH)		7.93	7.48	RRV		
	Phosphorus (P)-Total (mg/L)			<0.020			
	TDS (Calculated) (mg/L)		287	327			
	Sulfate (SO4) (mg/L)		6.19	218	RRV		
Cyanides	Cyanide, Total (mg/L)			<0.0020			
Total Metals	Aluminum (Al)-Total (mg/L)		7.08	0.432			
	Antimony (Sb)-Total (mg/L)		<0.00080	<0.00080			
	Arsenic (As)-Total (mg/L)		0.0513	<0.00080			
	Barium (Ba)-Total (mg/L)		0.131	0.0136			
	Beryllium (Be)-Total (mg/L)		<0.0020	<0.0020			
	Boron (B)-Total (mg/L)		<0.050	<0.050			
	Cadmium (Cd)-Total (mg/L)		0.0017	<0.0010			
	Calcium (Ca)-Total (mg/L)		75.5	88.9			
	Chromium (Cr)-Total (mg/L)		0.0446	<0.0050			
	Cobalt (Co)-Total (mg/L)		0.0129	<0.0020			
	Copper (Cu)-Total (mg/L)		0.105	<0.0010			
	Iron (Fe)-Total (mg/L)		15.3	0.332			
	Lead (Pb)-Total (mg/L)		0.0056	0.0308			

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-1 GROUNDWATER 21-APR-12 08:20 HG-PP11-02	L1137672-2 GROUNDWATER 21-APR-12 08:50 HG-PP11-04	L1137672-3 GROUNDWATER 21-APR-12 09:10 HG-PP11-03	L1137672-4 GROUNDWATER 21-APR-12 09:40 GT-PP11-08	L1137672-5 SURFACEWATE 21-APR-12 10:20 SW2
Grouping	Analyte					
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	<0.010	<0.010	0.010	<0.010	<0.010
	Magnesium (Mg)-Total (mg/L)	68.9	76.6	44.1	66.3	10.8
	Manganese (Mn)-Total (mg/L)	0.114	0.0898	0.0687	0.0754	0.0330
	Molybdenum (Mo)-Total (mg/L)	0.0588	<0.0050	0.0854	0.0062	<0.0050
	Nickel (Ni)-Total (mg/L)	0.0051	0.0056	0.0025	0.0159	0.0034
	Potassium (K)-Total (mg/L)	1.94	2.42	5.05	3.06	2.28
	Selenium (Se)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Sodium (Na)-Total (mg/L)	7.0	32.4	39.3	4.8	<1.0
	Strontium (Sr)-Total (mg/L)	0.243	0.110	0.331	0.362	0.0452
	Thallium (Tl)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Total (mg/L)	0.0084	0.0520	0.0028	0.0031	0.126
	Uranium (U)-Total (mg/L)	0.0157	0.0104	0.00741	0.00462	0.00079
	Vanadium (V)-Total (mg/L)	<0.0010	0.0025	<0.0010	<0.0010	0.0052
	Zinc (Zn)-Total (mg/L)	0.0774	0.190	0.0106	5.16	0.197
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	0.216
	Antimony (Sb)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Dissolved (mg/L)	<0.00080	0.00389	0.00516	<0.00080	<0.00080
	Barium (Ba)-Dissolved (mg/L)	0.0487	0.0228	0.0243	0.0096	0.0334
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Boron (B)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Dissolved (mg/L)	176 ^{DLM}	130	149	326	27.1
	Chromium (Cr)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	1.5 ^{DLM}	0.986	1.48	0.372	0.152
	Lead (Pb)-Dissolved (mg/L)	0.0187	<0.0050	<0.0050	<0.0050	<0.0050
	Lithium (Li)-Dissolved (mg/L)	0.0041 ^{DLM}	<0.0030	0.0069	0.0076	<0.0030
	Magnesium (Mg)-Dissolved (mg/L)	71 ^{DLM}	53.0	41.9	67.6	8.45
	Manganese (Mn)-Dissolved (mg/L)	<0.20 ^{DLM}	0.0555	0.0587	0.0715	0.0060
	Molybdenum (Mo)-Dissolved (mg/L)	0.0589	<0.0050	0.0738	0.0061	<0.0050
	Nickel (Ni)-Dissolved (mg/L)	0.0046 ^{DLM}	0.0028	0.0031	0.0162	<0.0020
	Potassium (K)-Dissolved (mg/L)	<10 ^{DLM}	1.41	4.35	3.20	0.99
	Selenium (Se)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-6 SURFACEWATE 21-APR-12 10:40 SW3	L1137672-7 SURFACEWATE 21-APR-12 11:10 SW1	L1137672-8 GROUNDWATER 21-APR-12 11:40 DH-2010-05	L1137672-9 SURFACEWATE 21-APR-12 12:00 SW4	L1137672-10 GROUNDWATER 21-APR-12 12:25 HG-PP11-01
Grouping	Analyte					
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Magnesium (Mg)-Total (mg/L)	45.4	10.3	18.6	3.76	125
	Manganese (Mn)-Total (mg/L)	0.0126	0.0065	0.0081	0.0112	0.304
	Molybdenum (Mo)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0103
	Nickel (Ni)-Total (mg/L)	0.0130	<0.0020	0.0036	<0.0020	0.0409
	Potassium (K)-Total (mg/L)	1.17	0.96	0.83	0.35	5.68
	Selenium (Se)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Sodium (Na)-Total (mg/L)	2.3	1.5	1.3	<1.0	9.8
	Strontium (Sr)-Total (mg/L)	0.400	0.228	0.0552	0.0078	0.431
	Thallium (Tl)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Total (mg/L)	<0.0010	0.0111	0.0237	0.0155	0.160
	Uranium (U)-Total (mg/L)	0.00556	0.00088	0.00073	0.00012	0.0143
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	0.0010	<0.0010	0.0096
	Zinc (Zn)-Total (mg/L)	2.73	0.0810	0.0507	0.385	0.370
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	0.018	0.211	<0.010	0.339	<0.010
	Antimony (Sb)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	0.0181
	Barium (Ba)-Dissolved (mg/L)	0.0078	0.0110	0.0490	0.0127	0.0242
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Boron (B)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0019	<0.0010
	Calcium (Ca)-Dissolved (mg/L)	135	29.6	47.7	10.0	313
	Chromium (Cr)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	0.0016	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.137	<0.010	0.156	5.28
	Lead (Pb)-Dissolved (mg/L)	0.0107	0.0075	<0.0050	0.0427	<0.0050
	Lithium (Li)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	0.0043
	Magnesium (Mg)-Dissolved (mg/L)	43.4	10.6	16.0	3.31	96.5
	Manganese (Mn)-Dissolved (mg/L)	0.0109	0.0047	<0.0020	0.0077	0.207
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0078
	Nickel (Ni)-Dissolved (mg/L)	0.0128	<0.0020	<0.0020	<0.0020	0.0234
	Potassium (K)-Dissolved (mg/L)	1.10	1.10	0.53	<0.50	3.50
	Selenium (Se)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-11 GROUNDWATER 21-APR-12 12:35 HG-PP11-01A	L1137672-12 GROUNDWATER 21-APR-12 13:05 DH-2010-04	L1137672-13 SURFACEWATE 21-APR-12 13:40 SW5	L1137672-14 GROUNDWATER 21-APR-12 14:10 HG-PP11-05	L1137672-15 SURFACEWATE 21-APR-12 15:30 SW6
Grouping	Analyte					
WATER						
Total Metals	Lithium (Li)-Total (mg/L)	0.018	0.043	<0.010	0.012	<0.010
	Magnesium (Mg)-Total (mg/L)	263	85.6	3.34	48.5	10.7
	Manganese (Mn)-Total (mg/L)	0.669	0.309	0.0192	0.228	0.0179
	Molybdenum (Mo)-Total (mg/L)	0.0144	0.0105	<0.0050	<0.0050	<0.0050
	Nickel (Ni)-Total (mg/L)	0.0706	0.0310	<0.0020	0.0062	<0.0020
	Potassium (K)-Total (mg/L)	8.76	6.19	1.64	2.45	0.51
	Selenium (Se)-Total (mg/L)	0.00086	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Sodium (Na)-Total (mg/L)	10.2	4.9	<1.0	38.6	<1.0
	Strontium (Sr)-Total (mg/L)	0.460	0.195	0.0142	0.270	0.0448
	Thallium (Tl)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Total (mg/L)	0.310	0.255	0.0527	0.0847	0.0167
	Uranium (U)-Total (mg/L)	0.0165	0.0159	0.00029	0.00845	0.00047
	Vanadium (V)-Total (mg/L)	0.0265	0.0155	0.0023	0.0049	<0.0010
	Zinc (Zn)-Total (mg/L)	1.16	0.231	0.0464	0.377	0.277
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	0.284	<0.010	0.338
	Antimony (Sb)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Arsenic (As)-Dissolved (mg/L)	0.0165	0.00611	<0.00080	<0.00080	<0.00080
	Barium (Ba)-Dissolved (mg/L)	0.0245	0.0163	0.0128	0.0175	0.0136
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Boron (B)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Cadmium (Cd)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Calcium (Ca)-Dissolved (mg/L)	300	114.6	16.4	154 ^{RRV}	88.7
	Chromium (Cr)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cobalt (Co)-Dissolved (mg/L)	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	5.29	0.794	0.198	1.79 ^{RRV}	0.251
	Lead (Pb)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	0.0322
	Lithium (Li)-Dissolved (mg/L)	0.0041	0.0089	<0.0030	0.0082 ^{RRV}	<0.0030
	Magnesium (Mg)-Dissolved (mg/L)	93	45.7	1.86	38.8 ^{RRV}	9.95
	Manganese (Mn)-Dissolved (mg/L)	0.189	0.0147	0.0064	0.153 ^{RRV}	0.0145
	Molybdenum (Mo)-Dissolved (mg/L)	0.0079	0.0070	<0.0050	<0.0050	<0.0050
	Nickel (Ni)-Dissolved (mg/L)	0.0224	<0.0020	<0.0020	0.0037 ^{RRV}	<0.0020
	Potassium (K)-Dissolved (mg/L)	3.2	1.5	1.19	1.43 ^{RRV}	<0.50
	Selenium (Se)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
	Silver (Ag)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L1137672-16 GROUNDWATER 21-APR-12 07:30 HG7	L1137672-17 SURFACEWATER 21-APR-12 18:30 SW6A			
Grouping	Analyte						
WATER							
Total Metals	Lithium (Li)-Total (mg/L)	0.012	<0.010				
	Magnesium (Mg)-Total (mg/L)	33.3	9.76				
	Manganese (Mn)-Total (mg/L)	0.611	0.0156				
	Molybdenum (Mo)-Total (mg/L)	0.0296	<0.0050				
	Nickel (Ni)-Total (mg/L)	0.0464	<0.0020				
	Potassium (K)-Total (mg/L)	4.95	0.58				
	Selenium (Se)-Total (mg/L)	<0.00080	<0.00080				
	Silver (Ag)-Total (mg/L)	0.0131	<0.0050				
	Sodium (Na)-Total (mg/L)	4.2	<1.0				
	Strontium (Sr)-Total (mg/L)	0.0915	0.0390				
	Thallium (Tl)-Total (mg/L)	<0.050	<0.050				
	Tin (Sn)-Total (mg/L)	<0.050	<0.050				
	Titanium (Ti)-Total (mg/L)	0.178	0.0140				
	Uranium (U)-Total (mg/L)	0.00284	0.00036				
	Vanadium (V)-Total (mg/L)	0.0116	<0.0010				
	Zinc (Zn)-Total (mg/L)	0.112	0.214				
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	0.034	0.219				
	Antimony (Sb)-Dissolved (mg/L)	<0.00080	<0.00080				
	Arsenic (As)-Dissolved (mg/L)	0.00798	<0.00080				
	Barium (Ba)-Dissolved (mg/L)	0.0679	0.0126				
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.0010				
	Boron (B)-Dissolved (mg/L)	<0.050	<0.050				
	Cadmium (Cd)-Dissolved (mg/L)	<0.0010	<0.0010				
	Calcium (Ca)-Dissolved (mg/L)	66.7	83.4				
	Chromium (Cr)-Dissolved (mg/L)	<0.0050	<0.0050				
	Cobalt (Co)-Dissolved (mg/L)	0.0022	<0.0020				
	Copper (Cu)-Dissolved (mg/L)	0.0035	<0.0010				
	Iron (Fe)-Dissolved (mg/L)	0.028	0.186				
	Lead (Pb)-Dissolved (mg/L)	<0.0050	0.0309				
	Lithium (Li)-Dissolved (mg/L)	0.0065	<0.0030				
	Magnesium (Mg)-Dissolved (mg/L)	28.7	9.28				
	Manganese (Mn)-Dissolved (mg/L)	0.323	0.0129				
	Molybdenum (Mo)-Dissolved (mg/L)	0.0253	<0.0050				
	Nickel (Ni)-Dissolved (mg/L)	0.0223	<0.0020				
	Potassium (K)-Dissolved (mg/L)	1.95	0.53				
	Selenium (Se)-Dissolved (mg/L)	<0.00080	<0.00080				
	Silver (Ag)-Dissolved (mg/L)	<0.0050	<0.0050				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-1 GROUNDWATER 21-APR-12 08:20 HG-PP11-02	L1137672-2 GROUNDWATER 21-APR-12 08:50 HG-PP11-04	L1137672-3 GROUNDWATER 21-APR-12 09:10 HG-PP11-03	L1137672-4 GROUNDWATER 21-APR-12 09:40 GT-PP11-08	L1137672-5 SURFACEWATER 21-APR-12 10:20 SW2
Grouping	Analyte					
WATER						
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	<50 ^{DLM}	7.4	35.3	4.7	<1.0
	Strontium (Sr)-Dissolved (mg/L)	0.236	0.0975	0.299	0.352	0.0353
	Thallium (Tl)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0064
	Uranium (U)-Dissolved (mg/L)	0.0162	0.00841	0.00623	0.00454	0.00064
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0268	0.0201	0.0020	5.37	0.0379

* Please refer to the Reference Information section for an explanation of any qualifiers detected.
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1137672-6 SURFACEWATE 21-APR-12 10:40 SW3	L1137672-7 SURFACEWATE 21-APR-12 11:10 SW1	L1137672-8 GROUNDWATER 21-APR-12 11:40 DH-2010-05	L1137672-9 SURFACEWATE 21-APR-12 12:00 SW4	L1137672-10 GROUNDWATER 21-APR-12 12:25 HG-PP11-01
Grouping	Analyte					
WATER						
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	2.4	1.4	1.1	<1.0	9.2
	Strontium (Sr)-Dissolved (mg/L)	0.373	0.211	0.0432	0.0067	0.376
	Thallium (Tl)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Tin (Sn)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Titanium (Ti)-Dissolved (mg/L)	0.0011	0.0066	<0.0010	0.0070	<0.0010
	Uranium (U)-Dissolved (mg/L)	0.00479	0.00081	0.00063	0.00010	0.0125
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	3.12	0.0895	0.0164	0.412	0.0046

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1137672-11	L1137672-12	L1137672-13	L1137672-14	L1137672-15
		Description	GROUNDWATER	GROUNDWATER	SURFACEWATE	GROUNDWATER	SURFACEWATE
		Sampled Date	21-APR-12	21-APR-12	21-APR-12	21-APR-12	21-APR-12
		Sampled Time	12:35	13:05	13:40	14:10	15:30
		Client ID	HG-PP11-01A	DH-2010-04	SW5	HG-PP11-05	SW6
Grouping	Analyte						
WATER							
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)	8.6	4.3	<1.0	34.6 ^{RRV}	<1.0	
	Strontium (Sr)-Dissolved (mg/L)	0.393	0.135	0.0109	0.241	0.0417	
	Thallium (Tl)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050	
	Tin (Sn)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050	
	Titanium (Ti)-Dissolved (mg/L)	<0.0010	<0.0010	0.0085	<0.0010	0.0144	
	Uranium (U)-Dissolved (mg/L)	0.0122	0.00679	0.00024	0.00656	0.00043	
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Dissolved (mg/L)	0.0040	0.0029	0.0212	0.0242	0.294	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.
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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1137672-16	L1137672-17			
		Description	GROUNDWATER	SURFACEWATE			
		Sampled Date	21-APR-12	21-APR-12			
		Sampled Time	07:30	18:30			
		Client ID	HG7	SW6A			
Grouping	Analyte						
WATER							
Dissolved Metals	Sodium (Na)-Dissolved (mg/L)		3.0	<1.0			
	Strontium (Sr)-Dissolved (mg/L)		0.0825	0.0377			
	Thallium (Tl)-Dissolved (mg/L)		<0.050	<0.050			
	Tin (Sn)-Dissolved (mg/L)		<0.050	<0.050			
	Titanium (Ti)-Dissolved (mg/L)		<0.0010	0.0109			
	Uranium (U)-Dissolved (mg/L)		0.00250	0.00035			
	Vanadium (V)-Dissolved (mg/L)		<0.0010	<0.0010			
	Zinc (Zn)-Dissolved (mg/L)		0.0042	0.252			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.
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Reference Information

Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1137672-1	HG-PP11-02	SRUHL	Sample Received Unpreserved. Results may be biased either high or low for indicated parameter(s) - metals dissolved
L1137672-13	SW5	SFPL	Sample was Filtered and Preserved at the laboratory - metals dissolved
L1137672-16	HG7	SRUHL	Sample Received Unpreserved. Results may be biased either high or low for indicated parameter(s) - metals dissolved
L1137672-16	HG7	SFPL	Sample was Filtered and Preserved at the laboratory - metals dissolved
L1137672-5	SW2	SRUL	Sample Received Unpreserved. Results may be biased low for indicated parameter(s) - dissolved metals.
L1137672-5	SW2	SFPL	Sample was Filtered and Preserved at the laboratory - dissolved metals
L1137672-5	SW2	SPL	Sample was Preserved at the laboratory - total metals
L1137672-5	SW2	SRUHL	Sample Received Unpreserved. Results may be biased either high or low for indicated parameter(s) - metals dissolved
L1137672-5	SW2	SFPL	Sample was Filtered and Preserved at the laboratory - metals dissolved

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1137672-1, -10, -11, -12, -13, -14, -15, -16, -17, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1137672-1, -10, -11, -12, -13, -14, -15, -16, -17, -2, -3, -4, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
BL:INT	Balance Reviewed: Interference Or Non-Measured Component
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACIDITY-ED	Water	Acidity (as CaCO3)	APHA 2310 B - Potentiometric Titration
BR-IC-ED	Water	Bromide by IC	APHA 4110 B-ION CHROMATOGRAPHY
CL-IC-ED	Water	Chloride by IC	APHA 4110 B-ION CHROMATOGRAPHY
CN-TOT-WT	Water	Cyanide, Total	APHA 4500CN C E-STRONG ACID DIST COLORIM
Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.			
When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference			
COL-TRU-ED	Water	Color, True	APHA 2120
The reported color applies to the pH of the sample as submitted unless otherwise noted on the report.			
IONBALANCE-ED	Water	Ion Balance Calculation	APHA 1030E
MET-D-L-ICP-ED	Water	Diss. Metals in Water by ICPOES (Low)	APHA 3120 B-ICP-OES
MET-D-MS-ED	Water	Dissolved Metals in Water by ICPMS	SW 846 - 6020-ICPMS
MET-T-L-ICP-ED	Water	Total Metals in Water by ICPOES (Low)	APHA 3120 B-ICP-OES
MET-T-MS-ED	Water	Total Metals in Water by ICPMS	SW 846 - 6020-ICPMS
N-T-CALC-ED	Water	Total Nitrogen (Calculation)	APHA 4500 N-Calculated
Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]			
NH3-CFA-ED	Water	Ammonia in Water by Colour	APHA 4500 NH3-NITROGEN (AMMONIA)
This analysis is carried out using procedures adapted from APHA Method 4500 NH3 "NITROGEN (AMMONIA)". Ammonia is determined using the automated phenate colourimetric method.			
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-ED	Water	Nitrite as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
NO3-IC-ED	Water	Nitrate as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
P-T-COL-ED	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS

Reference Information

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH/EC/ALK-ED	Water	pH, Conductivity and Total Alkalinity	APHA 4500-H, 2510, 2320
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All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed)

SO4-IC-ED	Water	Sulfate by IC	APHA 4110 B-ION CHROMATOGRAPHY
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SOLIDS-TOTSUS-ED	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
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TKN-CFA-ED	Water	TKN in Water by Colour	APHA 4500-NORG (TKN)
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This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 celcius with analysis using an automated colourimetric finish.

TURBIDITY-ED	Water	Turbidity	APHA 2130 B-Nephelometer
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** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

1 of 2	2 of 2
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GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg ww - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

May 02, 2012

Analytical Report for Service Request No: K1203924

Jessica Spira
ALS Environmental
9936 67 Avenue
Edmonton, AB T6E 0P5

CANADA

RE: Knight Piesold Ltd./NB101-390/3

Dear Jessica:

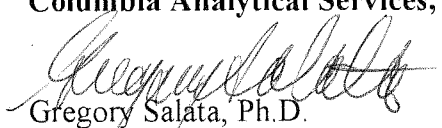
Enclosed are the results of the rush samples submitted to our laboratory on April 26, 2012. For your reference, these analyses have been assigned our service request number K1203924.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3376. You may also contact me via Email at Gregory.Salata@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Gregory Salata, Ph.D.
Project Chemist

GS/ln

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.

COLUMBIA ANALYTICAL SERVICES, INC.

Client: ALS Environmental
Project: Knight Piesold Ltd./NB101-390/3
Sample Matrix: Water

Service Request No.: K1203924
Date Received: 04/26/12

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), and Laboratory Control Sample (LCS).

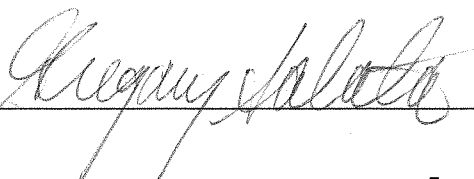
Sample Receipt

Sixteen water samples were received for analysis at Columbia Analytical Services on 04/26/12. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Total Metals

No anomalies associated with the analysis of these samples were observed.

Approved by



Date

05/02/12



Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)	
Company: Knight Piesold Ltd.		☒ Standard	☐ Other	☐ Regular (Standard Turnaround Times - Business Days)	
Contact: Ryan Weir / Cara Stapley / Kevin Hawton		☒ PDF	☒ Excel	☐ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
Address: 1650 Main Street West		Email 1: rweir@knightpiesold.com		☐ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
Phone: (705) 476-22165 Fax: (705) 474-8085		Email 2: cstapley@knightpiesold.com		☒ Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
Invoice To: Same as Report? ☐ Yes ☒ No		Email 3: khawton@knightpiesold.com		Analysis Request	
Hardcopy of Invoice with Report? ☐ Yes ☒ No		Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)	
Company: Avalon Rare Metals Inc.		Job #: NB101-390/3		F/P	
Contact: Set up with Avalon		PO / AFE: Set up with Avalon			
Address: Set up with Avalon		LSD: Set up with Avalon			
Phone: Set up with		Note #: Q33947, Q33948			
Lab Work Order (lab use only)		LS contact: Jessica Spira		Sampler: Ryan Weir	
Sample #	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	Number of Containers	
HG-PP11-02	21-Apr-12	8:20	Groundwater	X	6
HG-PP11-04	21-Apr-12	8:50	Groundwater	X	6
HG-PP11-03	21-Apr-12	9:10	Groundwater	X	6
GT-PP11-08	21-Apr-12	9:40	Groundwater	X	6
SW2	21-Apr-12	10:20	Surface Water	X	6
SW3	21-Apr-12	10:40	Surface Water	X	6
SW1	21-Apr-12	11:10	Surface Water	X	6
DH-2010-05	21-Apr-12	11:40	Groundwater	X	6
SW4	21-Apr-12	12:00	Surface Water	X	6
HG-PP11-01	21-Apr-12	12:25	Groundwater	X	6
HG-PP11-01A	21-Apr-12	12:35	Groundwater	X	6
DH-2010-04	21-Apr-12	13:05	Groundwater	X	6
Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details					
Sample HG-PP11-02 is high in polymer-based drilling additives. All groundwater dissolved metals field-filtered into 250 mL plastic bottle and preserved with 1 vial of nitric acid. All total metals preserved with 2 vials of nitric acid in 500 mL plastic bottles. Ignore loose bottles not bagged used as ice packs. Ignore bagged empty bottles, labeled or unlabeled, used as packing material.					
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.					
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.					
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.					
SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)		SHIPMENT VERIFICATION (lab use only)	
Released by:	Date (dd-mm-yy)	Received by:	Date:	Verified by:	Time:
Ryan Weir	22-Apr-12	DR000	22-Apr-12 11:00		
		Temperature: 6.3-7.6°C		Observations: Yes / No ?	
				If Yes add SIF	



Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)	
Company: Knight Piesold Ltd.		☒ Standard ☐ Other		☐ Regular (Standard Turnaround Times - Business Days)	
Contact: Ryan Weir / Cara Stapley / Kevin Hawton		☒ PDF ☒ Excel ☐ Digital ☒ Fax		☐ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
Address: 1650 Main Street West		Email 1: rweir@knightpiesold.com		☐ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
North Bay ON P1B 8G5		Email 2: cstapley@knightpiesold.com		☒ Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
Phone: (705) 476-22165 Fax: (705) 474-8095		Email 3: khawton@knightpiesold.com		Analysis Request	
Invoice To Same as Report? ☐ Yes ☒ No		Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)	
Hardcopy of Invoice with Report? ☐ Yes ☒ No		Job #: NB101-390/3		F/P P	
Company: Avalon Rare Metals Inc.		PO / AFE: Set up with Avalon			
Contact: Set up with Avalon		LSD: Set up with Avalon			
Address: Set up		Quote #: Q33947, Q33948			
Phone: Set up		ALS Contact: Jessica Spira			
Lab Work Ord (lab use onl)		Sampler: Ryan Weir			
Sample #	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	Number of Containers	
SW5	21-Apr-12	13:40	Surface Water	GW+REE (Q33947)	6
HG-PP11-05	21-Apr-12	14:10	Groundwater	SW+REE (Q33948)	6
SW6	21-Apr-12	15:30	Surface Water		6
HG7	21-Apr-12	7:30	Groundwater		1
Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details					
All groundwater dissolved metals field-filtered into 250 mL plastic bottle and preserved with 1 vial of nitric acid. All total metals preserved with 2 vials of nitric acid in 500 mL plastic bottles. Ignore loose bottles not bagged used as ice packs. Ignore bagged empty bottles, labeled or unlabeled, used as packing material. Only 1 500 mL bottle for HG7 (not preserved, not filtered).					
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.					
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.					
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.					
SHIPMENT RELEASE (client use)		SHIPMENT RECEPTION (lab use only)		SHIPMENT VERIFICATION (lab use only)	
Released by:	Date (dd-mm-yy)	Received by:	Date	Temperature:	Verified by:
Ryan Weir	22-Apr-12	SS	4/26/12	0900 °C	Time: 0900
				Observations: Yes / No ?	
				If Yes add SIF	

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC greg

Client / Project: ALS Service Request K12 2924
 Received: 4/26/12 Opened: 4/26/12 By: UU Unloaded: 4/26/12 By: UU

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
<u>13.3</u>	<u>09</u> <u>UU 4/26/12</u>	<u>311</u>	<u>NA</u>	<u>7983 2652 2667</u>		

7. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
 8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 9. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA Y N
 10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
 11. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
 12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 13. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
 14. Were VOA vials received without headspace? Indicate in the table below. NA Y N
 15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:
<u>SW6A</u>	<u>HGT7</u>	

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

RUSH

Notes, Discrepancies, & Resolutions: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

- Cover Page -**INORGANIC ANALYSIS DATA PACKAGE**

Client: ALS Environmental
Project Name: Knight Piesold Ltd.
Project No.: NB101-390/3

Service Request: K1203924

Sample Name:

HG-PP11-02

HG-PP11-04

HG-PP11-03

GT-PP11-08

SW2

SW3

SW1

DH-2010-05

SW4

SW4D

SW4S

HG-PP11-01

HG-PP11-01A

DH-2010-04

SW5

HG-PP11-05

SW6

SW6A

Method Blank

Lab Code:

K1203924-001

K1203924-002

K1203924-003

K1203924-004

K1203924-005

K1203924-006

K1203924-007

K1203924-008

K1203924-009

K1203924-009D

K1203924-009S

K1203924-010

K1203924-011

K1203924-012

K1203924-013

K1203924-014

K1203924-015

K1203924-016

K1203924-MB

Comments:

Approved By:

3C

Date:

5/2/12

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: HG-PP11-02

Lab Code: K1203924-001

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	5.3		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.4		
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	3.1		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	2.5		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.7		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.6		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.2		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: HG-PP11-04

Lab Code: K1203924-002

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	6.7		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.4		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	1.9		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	1.7		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.4		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.9		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.8		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: HG-PP11-03

Lab Code: K1203924-003

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	0.4		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.2		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: GT-PP11-08

Lab Code: K1203924-004

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	1.2		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	0.6		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.2		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: SW2

Lab Code: K1203924-005

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	5.0		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Gallium	6020	0.1	1.0	04/30/12	05/01/12	1.0		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	2.6		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	2.1		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.6		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Scandium	6020	0.1	1.0	04/30/12	05/01/12	1.3		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	1.8		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: SW3

Lab Code: K1203924-006

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental
Project No.: NB101-390/3
Project Name: Knight Piesold Ltd.
Matrix: WATER

Service Request: K1203924
Date Collected: 04/21/12
Date Received: 04/26/12
Units: ug/L
Basis: NA

Sample Name: SW1

Lab Code: K1203924-007

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.2		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental
Project No.: NB101-390/3
Project Name: Knight Piesold Ltd.
Matrix: WATER

Service Request: K1203924
Date Collected: 04/21/12
Date Received: 04/26/12
Units: ug/L
Basis: NA

Sample Name: DH-2010-05

Lab Code: K1203924-008

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	10.1		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.6		
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.9		
Gallium	6020	0.1	1.0	04/30/12	05/01/12	1.1		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	7.3		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	5.5		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	1.4		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.9		
Scandium	6020	0.1	1.0	04/30/12	05/01/12	2.1		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.12		
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	1.3		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: SW4

Lab Code: K1203924-009

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.1		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: HG-PP11-01

Lab Code: K1203924-010

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	47.0		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	2.2		
Erbium	6020	0.1	1.0	04/30/12	05/01/12	1.2		
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.6		
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	3.3		
Gallium	6020	0.1	1.0	04/30/12	05/01/12	4.1		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.4		
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	20.5		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.6		
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	18.2		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	4.7		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	3.3		
Scandium	6020	0.1	1.0	04/30/12	05/01/12	5.6		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.42		
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.9		
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	2.9		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental
Project No.: NB101-390/3
Project Name: Knight Piesold Ltd.
Matrix: WATER

Service Request: K1203924
Date Collected: 04/21/12
Date Received: 04/26/12
Units: ug/L
Basis: NA

Sample Name: HG-PP11-01A

Lab Code: K1203924-011

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	61.3		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	2.9		
Erbium	6020	0.1	1.0	04/30/12	05/01/12	1.5		
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.7		
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	4.2		
Gallium	6020	0.1	1.0	04/30/12	05/01/12	5.1		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	26.9		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.7		
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	24.0		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	6.3		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	4.4		
Scandium	6020	0.1	1.0	04/30/12	05/01/12	6.8		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.54		
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	1.2		
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	3.9		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: DH-2010-04

Lab Code: K1203924-012

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	14.6		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	1.0		
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.6		
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	1.3		
Gallium	6020	0.1	1.0	04/30/12	05/01/12	2.2		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	8.5		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	6.7		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	1.8		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	1.2		
Scandium	6020	0.1	1.0	04/30/12	05/01/12	3.1		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.16		
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	3.2		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: SW5

Lab Code: K1203924-013

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	2.0		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	1.0		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	0.9		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.4		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.4		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: HG-PP11-05

Lab Code: K1203924-014

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	24.1		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.8		
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.4		
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	1.4		
Gallium	6020	0.1	1.0	04/30/12	05/01/12	1.4		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	8.8		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.5		
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	8.2		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	2.2		
Samarium	6020	0.1	1.0	04/30/12	05/01/12	1.6		
Scandium	6020	0.1	1.0	04/30/12	05/01/12	2.3		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.17		
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	1.8		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: SW6

Lab Code: K1203924-015

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	0.6		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	0.4		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.2		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected: 04/21/12

Project Name: Knight Piesold Ltd.

Date Received: 04/26/12

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: SW6A

Lab Code: K1203924-016

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	0.6		
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	0.3		
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	0.2		
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.1		
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.3		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Date Collected:

Project Name: Knight Piesold Ltd.

Date Received:

Matrix: WATER

Units: ug/L

Basis: NA

Sample Name: Method Blank

Lab Code: K1203924-MB

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Cerium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Dysprosium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Erbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Europium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gadolinium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Gallium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Holmium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lanthanum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Lutetium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Niobium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Neodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Praseodymium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Samarium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Scandium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Tantalum	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Terbium	6020	0.10	1.0	04/30/12	05/01/12	0.10	U	
Thulium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Ytterbium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	
Zirconium	6020	0.1	1.0	04/30/12	05/01/12	0.1	U	

Comments:

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Units: UG/L

Project Name: Knight Piesold Ltd.

Basis: NA

Matrix: WATER

Sample Name: SW4S

Lab Code: K1203924-009S

Analyte	Control Limit %R	Spike Result C	Sample Result C	Spike Added	%R	Q	Method
Cerium	75 - 125	21.6	0.2	20.00	107.0		6020
Dysprosium	75 - 125	21.1	0.1 U	20.00	105.5		6020
Erbium	75 - 125	21.0	0.1 U	20.00	105.0		6020
Europium	75 - 125	21.2	0.1 U	20.00	106.0		6020
Gadolinium	75 - 125	21.2	0.1 U	20.00	106.0		6020
Gallium	75 - 125	19.7	0.1	20.00	98.0		6020
Holmium	75 - 125	21.0	0.1 U	20.00	105.0		6020
Lanthanum	75 - 125	21.4	0.1	20.00	106.5		6020
Lutetium	75 - 125	21.1	0.1 U	20.00	105.5		6020
Niobium	75 - 125	20.2	0.1 U	20.00	101.0		6020
Neodymium	75 - 125	21.5	0.1 U	20.00	107.0		6020
Praseodymium	75 - 125	21.2	0.1 U	20.00	106.0		6020
Samarium	75 - 125	21.2	0.1 U	20.00	106.0		6020
Scandium	75 - 125	20.1	0.1	20.00	100.0		6020
Tantalum	75 - 125	19.6	0.1 U	20.00	98.0		6020
Terbium	75 - 125	21.1	0.10 U	20.00	105.5		6020
Thulium	75 - 125	21.0	0.1 U	20.00	105.0		6020
Ytterbium	75 - 125	21.1	0.1 U	20.00	105.5		6020
Zirconium	75 - 125	19.5	0.1	20.00	97.0		6020

An empty field in the Control Limit column indicates the control limit is not applicable

COLUMBIA ANALYTICAL SERVICES, INC.

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Metals

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DUPLICATES

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Units: UG/L

Project Name: Knight Piesold Ltd.

Basis: NA

Matrix: WATER

Sample Name: SW4D

Lab Code: K1203924-009D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Cerium		0.2		0.2		0.0		6020
Dysprosium		0.1	U	0.1	U			6020
Erbium		0.1	U	0.1	U			6020
Europium		0.1	U	0.1	U			6020
Gadolinium		0.1	U	0.1	U			6020
Gallium		0.1		0.2		66.7		6020
Holmium		0.1	U	0.1	U			6020
Lanthanum		0.1		0.1		0.0		6020
Lutetium		0.1	U	0.1	U			6020
Niobium		0.1	U	0.1	U			6020
Neodymium		0.1	U	0.1	U			6020
Praseodymium		0.1	U	0.1	U			6020
Samarium		0.1	U	0.1	U			6020
Scandium		0.1		0.1		0.0		6020
Tantalum		0.1	U	0.1	U			6020
Terbium		0.1	U	0.1	U			6020
Thulium		0.1	U	0.1	U			6020
Ytterbium		0.1	U	0.1	U			6020
Zirconium		0.1		0.2		66.7		6020

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

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LABORATORY CONTROL SAMPLE

Client: ALS Environmental

Service Request: K1203924

Project No.: NB101-390/3

Project Name: Knight Piesold Ltd.

Aqueous LCS Source: CAS MIXED

Solid LCS Source:

Analyte	Aqueous (ug/L)			Solid (mg/kg)					
	True	Found	%R	True	Found	C	Limits	%R	
Cerium	20	20.9	104.5						
Dysprosium	20	20.9	104.5						
Erbium	20	20.6	103.0						
Europium	20	20.8	104.0						
Gadolinium	20	20.9	104.5						
Gallium	20	20.0	100.0						
Holmium	20	20.6	103.0						
Lanthanum	20	21.0	105.0						
Lutetium	20	20.5	102.5						
Niobium	20	20.0	100.0						
Neodymium	20	21.0	105.0						
Praseodymium	20	21.0	105.0						
Samarium	20	21.0	105.0						
Scandium	20	20.2	101.0						
Tantalum	20	20.0	100.0						
Terbium	20	20.7	103.5						
Thulium	20	20.5	102.5						
Ytterbium	20	20.5	102.5						
Zirconium	20	19.3	96.5						

