ALS Environmental

CERTIFICATE OF ANALYSIS

Date: September 27, 2005

ALS File No. W4420

Report On: 40692 Water Analysis

Report To: **Gartner Lee Ltd.**
2251 2nd Ave
Whitehorse, YT
Y1A 5W1

Attention: **Mr. Martin Guilbeault**

Received: September 13, 2005

ALS ENVIRONMENTAL
per:

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REMARKS

The detection limits for some of the metals have been increased for the samples reported in the following data tables due to sample matrix interferences.

File No. W4420

RESULTS OF ANALYSIS - Water

Sample ID			P03-01 -01	P03-01 -02	P03-01 -03	P03-01 -04	P03-01 -05
Sample Date			05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time			10:40	10:48	11:01	11:08	11:18
ALS ID			*1*	*2*	*3*	*4*	*5*
Physical Tests							
Conductivity	(uS/cm)		444	432	354	543	434
Hardness	CaCO3		212	221	159	271	208
pH			7.46	7.73	7.38	6.75	7.02
Dissolved Anions							
Alkalinity-Total		CaCO3	224	191	137	57.0	79.8
Sulphate	SO4		18.3	46.3	53.5	215	134

Remarks regarding the analyses appear at the beginning of this report.
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File No. W4420

RESULTS OF ANALYSIS - Water

Sample ID		P03-01 -01	P03-01 -02	P03-01 -03	P03-01 -04	P03-01 -05
Sample Date		05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time		10:40	10:48	11:01	11:08	11:18
ALS ID		*1*	*2*	*3*	*4*	*5*
Dissolved Metals						
Aluminum	D-Al	<0.010	<0.010	<0.010	<0.010	0.013
Antimony	D-Sb	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic	D-As	0.0047	0.0021	<0.0010	<0.0010	<0.0010
Barium	D-Ba	0.098	0.125	0.073	0.083	0.046
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron	D-B	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium	D-Cd	<0.000050	<0.000050	<0.000050	0.000703	0.000113
Calcium	D-Ca	64.6	69.9	49.2	86.7	65.4
Chromium	D-Cr	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	D-Co	<0.00050	0.00638	<0.00050	<0.00050	0.00090
Copper	D-Cu	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Iron	D-Fe	4.12	0.432	<0.030	<0.030	0.166
Lead	D-Pb	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Lithium	D-Li	<0.050	<0.050	<0.050	<0.050	<0.050
Magnesium	D-Mg	12.2	11.3	8.68	13.3	10.9
Manganese	D-Mn	0.156	1.42	0.037	0.168	0.290
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	0.0032	0.0042	<0.0010	<0.0010	<0.0010
Nickel	D-Ni	<0.0050	<0.0050	<0.0050	0.0528	0.0080
Selenium	D-Se	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silver	D-Ag	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	D-Na	6.3	4.1	2.2	3.5	3.6
Thallium	D-Tl	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium	D-U	0.00027	0.00206	0.00430	<0.00020	<0.00020
Vanadium	D-V	<0.030	<0.030	<0.030	<0.030	<0.030
Zinc	D-Zn	<0.0050	<0.0050	<0.0050	0.190	0.0146

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RESULTS OF ANALYSIS - Water

Sample ID			P03-01 -06	P03-01 -07	P03-01 -08	P03-01 -09	P03-02- 01
Sample Date			05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time			11:26	11:30	11:36	11:49	13:39
ALS ID			*6*	*7*	*8*	*9*	*10*
Physical Tests							
Conductivity	(uS/cm)		750	6120	20400	23800	416
Hardness	CaCO3		169	783	3230	4390	222
pH			5.96	4.13	3.47	3.36	6.20
Dissolved Anions							
Alkalinity-Total		CaCO3	11.3	9.7	<2.0	<2.0	143
Sulphate	SO4		343	4820	25200	30600	62.8

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RESULTS OF ANALYSIS - Water

Sample ID		P03-01 -06	P03-01 -07	P03-01 -08	P03-01 -09	P03-02- 01
Sample Date		05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time		11:26	11:30	11:36	11:49	13:39
ALS ID		*6*	*7*	*8*	*9*	*10*
Dissolved Metals						
Aluminum	D-Al	0.027	<0.50	<1.0	<5.0	<0.010
Antimony	D-Sb	<0.0010	<0.025	<0.050	<0.25	<0.00050
Arsenic	D-As	0.0096	<0.050	<0.10	<0.50	<0.0010
Barium	D-Ba	0.070	<0.10	<0.40	<0.40	0.097
Beryllium	D-Be	<0.0050	<0.025	<0.10	<0.10	<0.0050
Boron	D-B	<0.10	<0.50	<2.0	2.4	<0.10
Cadmium	D-Cd	<0.00010	<0.0025	<0.0050	<0.025	<0.000050
Calcium	D-Ca	46.3	109	409	475	70.2
Chromium	D-Cr	<0.0010	<0.025	<0.050	<0.25	<0.00050
Cobalt	D-Co	0.0636	<0.025	<0.050	<0.25	0.00051
Copper	D-Cu	<0.0020	<0.050	<0.10	<0.50	<0.0010
Iron	D-Fe	114	3220	14300	17600	0.152
Lead	D-Pb	0.0047	<0.050	<0.10	4.19	<0.0010
Lithium	D-Li	<0.050	<0.25	<1.0	<1.0	<0.050
Magnesium	D-Mg	13.1	124	536	777	11.3
Manganese	D-Mn	6.02	22.0	88.7	109	0.573
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.0020	0.149	<0.10	<0.50	0.0018
Nickel	D-Ni	0.054	<0.25	<0.50	<2.5	<0.0050
Selenium	D-Se	<0.0020	<0.050	<0.10	<0.50	<0.0010
Silver	D-Ag	<0.00010	<0.0025	<0.0050	<0.025	<0.000050
Sodium	D-Na	18.4	415	603	766	2.9
Thallium	D-Tl	<0.00040	<0.010	<0.020	<0.10	<0.00020
Titanium	D-Ti	<0.050	<0.25	<1.0	<1.0	<0.050
Uranium	D-U	<0.00040	<0.010	<0.020	<0.10	0.00157
Vanadium	D-V	0.059	<0.15	<7.0	<10	<0.030
Zinc	D-Zn	4.71	315	1420	1950	<0.0050

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RESULTS OF ANALYSIS - Water

Sample ID			P03-02-02	P03-02-03	P03-02-04	P03-02-04-R	P03-02-05
Sample Date			05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time			13:43	13:56	14:04	14:04	14:14
ALS ID			*11*	*12*	*13*	*14*	*15*
Physical Tests							
Conductivity	(uS/cm)		336	317	542	558	6290
Hardness	CaCO3		158	144	250	263	2160
pH			6.81	6.98	6.76	6.74	4.97
Dissolved Anions							
Alkalinity-Total		CaCO3	101	91.0	57.3	51.7	42.4
Sulphate	SO4		66.3	67.9	212	230	4730

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RESULTS OF ANALYSIS - Water

Sample ID		P03-02-02	P03-02-03	P03-02-04	P03-02-04-R	P03-02-05
Sample Date		05-09-08	05-09-08	05-09-08	05-09-08	05-09-08
Sample Time		13:43	13:56	14:04	14:04	14:14
ALS ID		*11*	*12*	*13*	*14*	*15*
Dissolved Metals						
Aluminum	D-Al	<0.010	<0.010	<0.050	<0.050	<0.10
Antimony	D-Sb	<0.00050	<0.00050	<0.0025	<0.0025	<0.0050
Arsenic	D-As	<0.0010	<0.0010	<0.0050	<0.0050	<0.010
Barium	D-Ba	0.098	0.097	0.049	0.050	<0.040
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Boron	D-B	<0.10	<0.10	<0.10	<0.10	<0.20
Cadmium	D-Cd	<0.000050	<0.000050	<0.00025	<0.00025	<0.00050
Calcium	D-Ca	48.5	44.1	79.2	83.8	356
Chromium	D-Cr	<0.00050	<0.00050	<0.0025	<0.0025	<0.0050
Cobalt	D-Co	<0.00050	<0.00050	0.0038	0.0039	<0.0050
Copper	D-Cu	<0.0010	<0.0010	<0.0050	<0.0050	<0.010
Iron	D-Fe	0.040	0.129	0.574	0.578	1220
Lead	D-Pb	<0.0010	<0.0010	<0.0050	<0.0050	<0.010
Lithium	D-Li	<0.050	<0.050	0.064	0.063	0.18
Magnesium	D-Mg	8.93	8.08	12.7	13.1	309
Manganese	D-Mn	<0.010	0.014	9.10	9.57	21.3
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.0010	<0.0010	<0.0050	<0.0050	0.011
Nickel	D-Ni	<0.0050	<0.0050	0.091	0.097	<0.050
Selenium	D-Se	<0.0010	<0.0010	<0.0050	<0.0050	<0.010
Silver	D-Ag	<0.000050	<0.000050	<0.00025	<0.00025	<0.00050
Sodium	D-Na	2.3	2.3	7.2	7.3	353
Thallium	D-Tl	<0.00020	<0.00020	<0.0010	<0.0010	<0.0020
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.050	<0.10
Uranium	D-U	0.00092	0.00044	<0.0010	<0.0010	0.0041
Vanadium	D-V	<0.030	<0.030	<0.030	<0.030	0.668
Zinc	D-Zn	0.0066	0.0074	0.246	0.272	<0.010

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RESULTS OF ANALYSIS - Water

Sample ID			P03-02-06	P03-02-07	P03-02-08	P03-02-09
Sample Date			05-09-08	05-09-08	05-09-08	05-09-08
Sample Time			14:22	14:28	14:40	14:44
ALS ID			*16*	*17*	*18*	*19*
Physical Tests						
Conductivity	(uS/cm)		7890	9310	15000	18500
Hardness	CaCO3		2310	2860	2770	2120
pH			3.88	3.63	3.81	3.50
Dissolved Anions						
Alkalinity-Total		CaCO3	3.4	<2.0	55.6	46.2
Sulphate	SO4		6760	8570	16600	21900

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RESULTS OF ANALYSIS - Water

Sample ID		P03-02-06	P03-02-07	P03-02-08	P03-02-09
Sample Date		05-09-08	05-09-08	05-09-08	05-09-08
Sample Time		14:22	14:28	14:40	14:44
ALS ID		*16*	*17*	*18*	*19*
Dissolved Metals					
Aluminum	D-Al	<0.20	<0.50	<1.0	<1.0
Antimony	D-Sb	<0.010	<0.025	<0.050	<0.050
Arsenic	D-As	<0.020	<0.050	<0.10	<0.10
Barium	D-Ba	<0.040	<0.10	<0.20	<0.40
Beryllium	D-Be	<0.010	<0.025	<0.050	<0.10
Boron	D-B	<0.20	<0.50	<1.0	<2.0
Cadmium	D-Cd	<0.0010	<0.0025	<0.0050	<0.0050
Calcium	D-Ca	338	407	389	410
Chromium	D-Cr	<0.010	<0.025	<0.050	<0.050
Cobalt	D-Co	<0.010	<0.025	<0.050	<0.050
Copper	D-Cu	<0.020	<0.050	<0.10	<0.10
Iron	D-Fe	1900	2710	8350	12400
Lead	D-Pb	<0.020	<0.050	1.53	1.14
Lithium	D-Li	0.27	0.32	<0.50	<1.0
Magnesium	D-Mg	357	447	437	266
Manganese	D-Mn	18.6	23.7	49.9	69.9
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.020	<0.050	<0.10	<0.10
Nickel	D-Ni	<0.10	<0.25	<0.50	<0.50
Selenium	D-Se	<0.020	<0.050	<0.10	<0.10
Silver	D-Ag	<0.0010	<0.0025	<0.0050	<0.0050
Sodium	D-Na	346	340	220	<40
Thallium	D-Tl	<0.0040	<0.010	<0.020	<0.020
Titanium	D-Ti	<0.10	<0.25	<0.50	<1.0
Uranium	D-U	<0.0040	<0.010	<0.020	<0.020
Vanadium	D-V	1.11	1.36	3.98	5.91
Zinc	D-Zn	<0.010	<0.025	21.7	477

Remarks regarding the analyses appear at the beginning of this report.
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File No. W4420

Appendix 1 - QUALITY CONTROL - Replicates

Water			P03-01 -03 05-09-08 11:01	P03-01 -03 QC # 463818	P03-02- 03 05-09-08 13:56	P03-02- 03 QC # 463819
Physical Tests						
Conductivity	(uS/cm)		354	354	317	315
Hardness	CaCO3		159	158	144	162
pH			7.38	7.47	6.98	7.10
Dissolved Anions						
Alkalinity-Total		CaCO3	137	135	91.0	91.6
Sulphate	SO4		53.5	54.0	67.9	69.6

Remarks regarding the analyses appear at the beginning of this report.
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File No. W4420

Appendix 1 - QUALITY CONTROL - Replicates

Water		P03-01 -03 05-09-08 11:01	P03-01 -03 QC # 463818	P03-02-03 05-09-08 13:56	P03-02-03 QC # 463819
Dissolved Metals					
Aluminum	D-Al	<0.010	<0.010	<0.010	<0.010
Antimony	D-Sb	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic	D-As	<0.0010	<0.0010	<0.0010	<0.0010
Barium	D-Ba	0.073	0.074	0.097	0.109
Beryllium	D-Be	<0.0050	<0.0050	<0.0050	<0.0050
Boron	D-B	<0.10	<0.10	<0.10	<0.10
Cadmium	D-Cd	<0.000050	<0.000050	<0.000050	<0.000050
Calcium	D-Ca	49.2	48.9	44.1	49.5
Chromium	D-Cr	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	D-Co	<0.00050	<0.00050	<0.00050	<0.00050
Copper	D-Cu	<0.0010	<0.0010	<0.0010	<0.0010
Iron	D-Fe	<0.030	<0.030	0.129	0.144
Lead	D-Pb	<0.0010	<0.0010	<0.0010	<0.0010
Lithium	D-Li	<0.050	<0.050	<0.050	<0.050
Magnesium	D-Mg	8.68	8.69	8.08	9.18
Manganese	D-Mn	0.037	0.038	0.014	0.016
Mercury	D-Hg	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	D-Mo	<0.0010	<0.0010	<0.0010	<0.0010
Nickel	D-Ni	<0.0050	<0.0050	<0.0050	<0.0050
Selenium	D-Se	<0.0010	<0.0010	<0.0010	<0.0010
Silver	D-Ag	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	D-Na	2.2	2.3	2.3	2.6
Thallium	D-Tl	<0.00020	<0.00020	<0.00020	<0.00020
Titanium	D-Ti	<0.050	<0.050	<0.050	<0.050
Uranium	D-U	0.00430	0.00427	0.00044	0.00045
Vanadium	D-V	<0.030	<0.030	<0.030	<0.030
Zinc	D-Zn	<0.0050	0.0099	0.0074	0.0071

Remarks regarding the analyses appear at the beginning of this report.
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Appendix 2 - METHODOLOGY

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Conductivity in Water

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

Recommended Holding Time:
Sample: 28 days
Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

pH in Water

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

Recommended Holding Time:
Sample: 2 hours
Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

Alkalinity in Water by Colourimetry

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

Recommended Holding Time:
Sample: 14 days
Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

Sulphate in Water

This analysis is carried out using procedures adapted from APHA Method 4500-SO4 "Sulphate". Sulphate is determined using the turbidimetric method.

Recommended Holding Time:
Sample: 28 days
Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

Appendix 2 - METHODOLOGY - Continued

Metals in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by atomic absorption/emission spectrophotometry (EPA Method 7000 series), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

Recommended Holding Time:
Sample: 6 months
Reference: EPA

Laboratory Location: ALS Environmental, Vancouver

Mercury in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

Recommended Holding Time:
Sample: 28 days
Reference: EPA

Laboratory Location: ALS Environmental, Vancouver

Results contained within this certificate relate only to the samples as submitted.

End of Report