



HEMMERA ENVIROCHEM INC.
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Date Received: 22-AUG-16
Report Date: 20-SEP-16 17:55 (MT)
Version: FINAL REV. 2

Client Phone: 867-456-4865

Certificate of Analysis

Lab Work Order #: L1816799
Project P.O. #: NOT SUBMITTED
Job Reference: 1343-005.19
C of C Numbers: 1, 2
Legal Site Desc:

Comments:

20-SEP-2016 This report replaces the previous version and contains additional analyses, as requested.

Brent Mack, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1816799-1 Water 18-AUG-16 15:10 E4	L1816799-2 Water 20-AUG-16 14:25 E4	L1816799-3 Water 18-AUG-16 13:15 E8	L1816799-4 Water 20-AUG-16 14:50 E8	L1816799-5 Water 18-AUG-16 13:55 R4
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (uS/cm)		561		192
	Hardness (as CaCO3) (mg/L)	307		81.5	207
	pH (pH)		7.88		7.78
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.0306		0.0146	0.0829
	Nitrate (as N) (mg/L)		0.116		0.0939
	Nitrite (as N) (mg/L)		<0.0010		<0.0010
	Phosphorus (P)-Total (mg/L)	0.0183		0.0181	0.538
	Sulfate (SO4) (mg/L)		176		36.4
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	17.7		22.2	18.4
	Total Organic Carbon (mg/L)				
Total Metals	Aluminum (Al)-Total (mg/L)	1.29		2.48	8.01
	Antimony (Sb)-Total (mg/L)	0.00062		0.00022	0.00162
	Arsenic (As)-Total (mg/L)	0.00227		0.00189	0.0119
	Barium (Ba)-Total (mg/L)	0.104		0.0801	0.385
	Beryllium (Be)-Total (mg/L)	0.000055		0.000092	0.000323
	Bismuth (Bi)-Total (mg/L)	<0.000050		<0.000050	0.000128
	Boron (B)-Total (mg/L)	0.025		<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000169		0.0000638	0.00143
	Calcium (Ca)-Total (mg/L)	61.4		22.7	63.0
	Chromium (Cr)-Total (mg/L)	0.00500		0.00461	0.0220
	Cobalt (Co)-Total (mg/L)	0.00175		0.00197	0.00881
	Copper (Cu)-Total (mg/L)	0.00654		0.00742	0.0382
	Iron (Fe)-Total (mg/L)	2.33		3.52	14.7
	Lead (Pb)-Total (mg/L)	0.00135		0.00134	0.0100
	Lithium (Li)-Total (mg/L)	0.0064		0.0040	0.0083
	Magnesium (Mg)-Total (mg/L)	36.2		7.64	23.2
	Manganese (Mn)-Total (mg/L)	0.212		0.132	0.729
	Mercury (Hg)-Total (mg/L)	0.0000183		<0.000025 ^{DLM}	0.000143
	Molybdenum (Mo)-Total (mg/L)	0.00173		0.000439	0.00338
	Nickel (Ni)-Total (mg/L)	0.0154		0.00670	0.0458
	Phosphorus (P)-Total (mg/L)	0.067		0.090	0.672
	Potassium (K)-Total (mg/L)	0.73		0.97	1.27
	Selenium (Se)-Total (mg/L)	0.00202		0.000327	0.00611
	Silicon (Si)-Total (mg/L)	6.81		10.1	17.9
	Silver (Ag)-Total (mg/L)	0.000056		0.000022	0.000825
	Sodium (Na)-Total (mg/L)	3.53		3.21	3.45

* 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	L1816799-6 Water 20-AUG-16 14:30 R4	L1816799-7 Water 18-AUG-16 18:10 R6	L1816799-8 Water 20-AUG-16 15:05 R6	L1816799-9 Water 18-AUG-16 16:50 GWCC-5	L1816799-10 Water 20-AUG-16 14:10 GWCC-5
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	399		183		950
	Hardness (as CaCO3) (mg/L)		78.8		601	
	pH (pH)	7.96		7.78		7.86
Anions and Nutrients	Ammonia, Total (as N) (mg/L)		0.0172		<0.0050	
	Nitrate (as N) (mg/L)	0.147		0.0920		<0.010 ^{DLDS}
	Nitrite (as N) (mg/L)	<0.0010		<0.0010		<0.0020 ^{DLDS}
	Phosphorus (P)-Total (mg/L)		0.0108		<0.0020	
	Sulfate (SO4) (mg/L)	98.8		33.2		333
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		22.1		8.27	
	Total Organic Carbon (mg/L)					
Total Metals	Aluminum (Al)-Total (mg/L)		1.94		<0.0030	
	Antimony (Sb)-Total (mg/L)		0.00018		0.00081	
	Arsenic (As)-Total (mg/L)		0.00160		0.00061	
	Barium (Ba)-Total (mg/L)		0.0687		0.0491	
	Beryllium (Be)-Total (mg/L)		0.000086		<0.000020	
	Bismuth (Bi)-Total (mg/L)		<0.000050		<0.000050	
	Boron (B)-Total (mg/L)		<0.010		0.058	
	Cadmium (Cd)-Total (mg/L)		0.0000407		0.000113	
	Calcium (Ca)-Total (mg/L)		21.6		130	
	Chromium (Cr)-Total (mg/L)		0.00365		0.00074	
	Cobalt (Co)-Total (mg/L)		0.00156		<0.00010	
	Copper (Cu)-Total (mg/L)		0.00628		0.00081	
	Iron (Fe)-Total (mg/L)		2.98		0.018	
	Lead (Pb)-Total (mg/L)		0.00108		<0.000050	
	Lithium (Li)-Total (mg/L)		0.0039		0.0102	
	Magnesium (Mg)-Total (mg/L)		6.88		60.1	
	Manganese (Mn)-Total (mg/L)		0.108		0.00130	
	Mercury (Hg)-Total (mg/L)		<0.000025 ^{DLM}		<0.000050	
	Molybdenum (Mo)-Total (mg/L)		0.000402		0.00210	
	Nickel (Ni)-Total (mg/L)		0.00549		0.0195	
	Phosphorus (P)-Total (mg/L)		0.067		<0.050	
	Potassium (K)-Total (mg/L)		0.95		0.88	
	Selenium (Se)-Total (mg/L)		0.000323		0.0122	
	Silicon (Si)-Total (mg/L)		9.52		4.46	
Silver (Ag)-Total (mg/L)		0.000020		<0.000010		
Sodium (Na)-Total (mg/L)		2.98		3.99		

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1816799-11	L1816799-12	L1816799-13	L1816799-14	L1816799-15
		Description	Water	Water	Water	Water	Water
		Sampled Date	19-AUG-16	19-AUG-16	20-AUG-16	22-AUG-16	19-AUG-16
		Sampled Time	14:50	16:35	10:10		17:45
		Client ID	R1	R2	DUP-2	TRAVEL BLANK	R8
Grouping	Analyte						
WATER							
Physical Tests	Conductivity (uS/cm)		539	401	442	<2.0	235
	Hardness (as CaCO3) (mg/L)		315	231	250	<0.50 ^{HTC}	123
	pH (pH)		8.00	7.96	7.91	5.17	7.79
Anions and Nutrients	Ammonia, Total (as N) (mg/L)		0.0516	0.0162	0.0206	<0.0050	0.0056
	Nitrate (as N) (mg/L)		0.159	0.0477	0.113	<0.0050	<0.0050
	Nitrite (as N) (mg/L)		0.0025	<0.0010	0.0026	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		0.0188	0.0166	0.0051	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)		170	107	130	<0.30	60.1
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		16.7	20.5	18.8		14.6
	Total Organic Carbon (mg/L)					<0.50	
Total Metals	Aluminum (Al)-Total (mg/L)		1.79	1.16	0.119	<0.0030	0.0653
	Antimony (Sb)-Total (mg/L)		0.00040	0.00057	0.00035	<0.00010	0.00074
	Arsenic (As)-Total (mg/L)		0.00205	0.00208	0.00095	<0.00010	0.00041
	Barium (Ba)-Total (mg/L)		0.107	0.0761	0.0659	<0.000050	0.0440
	Beryllium (Be)-Total (mg/L)		0.000085	0.000055	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)		0.000220	0.0000585	0.0000429	<0.000050	0.0000218
	Calcium (Ca)-Total (mg/L)		72.3	41.3	57.1	<0.050	29.8
	Chromium (Cr)-Total (mg/L)		0.00490	0.00390	0.00088	<0.00010	0.00101
	Cobalt (Co)-Total (mg/L)		0.00202	0.00119	0.00050	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)		0.00740	0.00424	0.00327	<0.00050	0.00210
	Iron (Fe)-Total (mg/L)		3.00	2.23	0.439	<0.010	0.140
	Lead (Pb)-Total (mg/L)		0.00321	0.000915	0.000236	<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)		0.0035	0.0046	0.0026	<0.0010	0.0010
	Magnesium (Mg)-Total (mg/L)		26.9	26.4	24.3	<0.10	10.8
	Manganese (Mn)-Total (mg/L)		0.339	0.129	0.163	<0.00010	0.00903
	Mercury (Hg)-Total (mg/L)		<0.000025 ^{DLM}	<0.000025 ^{DLM}	<0.000025 ^{DLM}	<0.000050	<0.000025 ^{DLM}
	Molybdenum (Mo)-Total (mg/L)		0.00147	0.000601	0.00114	<0.000050	0.000858
	Nickel (Ni)-Total (mg/L)		0.00853	0.00778	0.00410	<0.00050	0.00308
	Phosphorus (P)-Total (mg/L)		0.067	0.058	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)		0.74	0.60	0.47	<0.10	0.10
	Selenium (Se)-Total (mg/L)		0.00246	0.000773	0.00177	<0.000050	0.00338
	Silicon (Si)-Total (mg/L)		6.98	7.56	5.03	<0.050	6.54
Silver (Ag)-Total (mg/L)		0.000078	0.000018	<0.000010	<0.000010	<0.000010	
Sodium (Na)-Total (mg/L)		2.82	2.30	2.34	<0.050	4.24	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1816799-16 Water 20-AUG-16 08:50 R9	L1816799-17 Water 20-AUG-16 13:05 SL	L1816799-18 Water 18-AUG-16 11:35 E7	L1816799-19 Water 20-AUG-16 14:45 E7	L1816799-20 Water 20-AUG-16 10:10 E1(H)	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	470	1110		509	434
	Hardness (as CaCO3) (mg/L)	267	711	296		246
	pH (pH)	7.79	8.13		7.94	7.91
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.118	<0.0050	0.0494		0.0215
	Nitrate (as N) (mg/L)	0.182	0.122		0.126	0.111
	Nitrite (as N) (mg/L)	<0.0010	<0.0020 ^{DLDS}		<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0285	<0.0020	0.0055 ^{RRV}		0.0041
	Sulfate (SO4) (mg/L)	154	502		154	130
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	25.8	11.3	17.3		16.9
	Total Organic Carbon (mg/L)					
Total Metals	Aluminum (Al)-Total (mg/L)	2.38	0.0319	2.76		0.122
	Antimony (Sb)-Total (mg/L)	0.00042	0.00293	0.00096		0.00040
	Arsenic (As)-Total (mg/L)	0.00274	0.0152	0.00472		0.00098
	Barium (Ba)-Total (mg/L)	0.163	0.0221	0.148		0.0681
	Beryllium (Be)-Total (mg/L)	0.000097	<0.000020	0.000121		0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050		<0.000050
	Boron (B)-Total (mg/L)	<0.010	0.036	0.024		<0.010
	Cadmium (Cd)-Total (mg/L)	0.000191	0.0000309	0.000251		0.0000421
	Calcium (Ca)-Total (mg/L)	62.1	168	61.9		57.2
	Chromium (Cr)-Total (mg/L)	0.00627	0.00123	0.0108		0.00090
	Cobalt (Co)-Total (mg/L)	0.00286	0.00016	0.00329		0.00051
	Copper (Cu)-Total (mg/L)	0.0108	0.00202	0.0113		0.00314
	Iron (Fe)-Total (mg/L)	4.55	0.074	5.40		0.436
	Lead (Pb)-Total (mg/L)	0.00175	<0.000050	0.00365		0.000248
	Lithium (Li)-Total (mg/L)	0.0027	0.0081	0.0085		0.0027
	Magnesium (Mg)-Total (mg/L)	26.1	67.5	34.9		24.3
	Manganese (Mn)-Total (mg/L)	0.611	0.0134	0.329		0.169
	Mercury (Hg)-Total (mg/L)	<0.000050 ^{DLM}	0.0000068	<0.000050 ^{DLM}		<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.00151	0.00192	0.00224		0.00130
	Nickel (Ni)-Total (mg/L)	0.00964	0.0157	0.0239		0.00411
	Phosphorus (P)-Total (mg/L)	0.106	<0.050	0.168		<0.050
	Potassium (K)-Total (mg/L)	0.72	1.17	1.01		0.50
	Selenium (Se)-Total (mg/L)	0.00248	0.0137	0.00231		0.00174
	Silicon (Si)-Total (mg/L)	8.80	5.07	9.95		5.10
Silver (Ag)-Total (mg/L)	0.000050	<0.000010	0.000125		<0.000010	
Sodium (Na)-Total (mg/L)	3.04	2.14	3.12		2.38	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1816799-1	L1816799-2	L1816799-3	L1816799-4	L1816799-5
		Description	Water	Water	Water	Water	Water
		Sampled Date	18-AUG-16	20-AUG-16	18-AUG-16	20-AUG-16	18-AUG-16
		Sampled Time	15:10	14:25	13:15	14:50	13:55
		Client ID	E4	E4	E8	E8	R4
Grouping	Analyte						
WATER							
Total Metals	Strontium (Sr)-Total (mg/L)		0.328		0.122		0.320
	Sulfur (S)-Total (mg/L)		58.0		10.6		31.2
	Thallium (Tl)-Total (mg/L)		0.000027		0.000022		0.000156
	Tin (Sn)-Total (mg/L)		<0.00010		<0.00010		0.00012
	Titanium (Ti)-Total (mg/L)		0.0322		0.0879		0.142
	Uranium (U)-Total (mg/L)		0.00183		0.000974		0.00285
	Vanadium (V)-Total (mg/L)		0.00454		0.00779		0.0245
	Zinc (Zn)-Total (mg/L)		0.0120		0.0126		0.0637
	Zirconium (Zr)-Total (mg/L)		0.00103		0.00115		0.00190
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD		FIELD		FIELD
	Dissolved Metals Filtration Location		FIELD		FIELD		FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0482		0.126		0.0513
	Antimony (Sb)-Dissolved (mg/L)		0.00045		0.00012		0.00039
	Arsenic (As)-Dissolved (mg/L)		0.00107		0.00072		0.00152
	Barium (Ba)-Dissolved (mg/L)		0.0692		0.0428		0.0844
	Beryllium (Be)-Dissolved (mg/L)		<0.000020		0.000028		<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050		<0.000050		<0.000050
	Boron (B)-Dissolved (mg/L)		0.024		<0.010		<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.0000297		0.0000094		0.0000411
	Calcium (Ca)-Dissolved (mg/L)		63.7		21.4		52.5
	Chromium (Cr)-Dissolved (mg/L)		0.00087		0.00066		0.00063
	Cobalt (Co)-Dissolved (mg/L)		0.00056		0.00045		0.00060
	Copper (Cu)-Dissolved (mg/L)		0.00273		0.00358		0.00282
	Iron (Fe)-Dissolved (mg/L)		0.286		0.400		0.249
	Lead (Pb)-Dissolved (mg/L)		0.000069		0.000067		0.000058
	Lithium (Li)-Dissolved (mg/L)		0.0057		0.0026		0.0015
	Magnesium (Mg)-Dissolved (mg/L)		35.9		6.84		18.5
	Manganese (Mn)-Dissolved (mg/L)		0.153		0.0462		0.172
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050		<0.0000050		0.0000053
	Molybdenum (Mo)-Dissolved (mg/L)		0.00131		0.000367		0.00116
	Nickel (Ni)-Dissolved (mg/L)		0.00907		0.00311		0.00637
	Phosphorus (P)-Dissolved (mg/L)		<0.050		<0.050		<0.050
	Potassium (K)-Dissolved (mg/L)		0.59		0.73		0.36
	Selenium (Se)-Dissolved (mg/L)		0.00196		0.000289		0.00414
	Silicon (Si)-Dissolved (mg/L)		5.20		6.46		5.44
	Silver (Ag)-Dissolved (mg/L)		<0.000010		<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)		3.43		2.98		2.85

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1816799-6 Water 20-AUG-16 14:30 R4	L1816799-7 Water 18-AUG-16 18:10 R6	L1816799-8 Water 20-AUG-16 15:05 R6	L1816799-9 Water 18-AUG-16 16:50 GWCC-5	L1816799-10 Water 20-AUG-16 14:10 GWCC-5
Grouping	Analyte				
WATER					
Total Metals	Strontium (Sr)-Total (mg/L)		0.120		0.843
	Sulfur (S)-Total (mg/L)		9.49		112
	Thallium (Tl)-Total (mg/L)		0.000018		0.000014
	Tin (Sn)-Total (mg/L)		<0.00010		<0.00010
	Titanium (Ti)-Total (mg/L)		0.0682		<0.00030
	Uranium (U)-Total (mg/L)		0.000929		0.00322
	Vanadium (V)-Total (mg/L)		0.00621		<0.00050
	Zinc (Zn)-Total (mg/L)		0.0101		<0.0030
	Zirconium (Zr)-Total (mg/L)		0.00121		<0.00030
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD		FIELD
	Dissolved Metals Filtration Location		FIELD		FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.126		0.0014
	Antimony (Sb)-Dissolved (mg/L)		0.00013		0.00083
	Arsenic (As)-Dissolved (mg/L)		0.00072		0.00060
	Barium (Ba)-Dissolved (mg/L)		0.0405		0.0486
	Beryllium (Be)-Dissolved (mg/L)		0.000032		<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050		<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010		0.058
	Cadmium (Cd)-Dissolved (mg/L)		0.0000291		0.000107
	Calcium (Ca)-Dissolved (mg/L)		21.0		137
	Chromium (Cr)-Dissolved (mg/L)		0.00062		0.00065
	Cobalt (Co)-Dissolved (mg/L)		0.00045		<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00360		0.00073
	Iron (Fe)-Dissolved (mg/L)		0.420		0.017
	Lead (Pb)-Dissolved (mg/L)		0.000079		<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0028		0.0108
	Magnesium (Mg)-Dissolved (mg/L)		6.41		62.7
	Manganese (Mn)-Dissolved (mg/L)		0.0424		0.00133
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050		<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000352		0.00202
	Nickel (Ni)-Dissolved (mg/L)		0.00300		0.0195
	Phosphorus (P)-Dissolved (mg/L)		<0.050		<0.050
	Potassium (K)-Dissolved (mg/L)		0.76		0.95
	Selenium (Se)-Dissolved (mg/L)		0.000207		0.0117
	Silicon (Si)-Dissolved (mg/L)		6.57		4.69
	Silver (Ag)-Dissolved (mg/L)		<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)		2.94		3.99

* 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	L1816799-11 Water 19-AUG-16 14:50 R1	L1816799-12 Water 19-AUG-16 16:35 R2	L1816799-13 Water 20-AUG-16 10:10 DUP-2	L1816799-14 Water 22-AUG-16 TRAVEL BLANK	L1816799-15 Water 19-AUG-16 17:45 R8
Grouping	Analyte					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	0.325	0.235	0.252	<0.00020	0.130
	Sulfur (S)-Total (mg/L)	57.7	34.6	45.3	<0.50	21.1
	Thallium (Tl)-Total (mg/L)	0.000037	0.000015	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00017
	Titanium (Ti)-Total (mg/L)	0.0374	0.0345	0.00290	<0.00030	0.00138
	Uranium (U)-Total (mg/L)	0.00200	0.00215	0.00148	<0.000010	0.000096
	Vanadium (V)-Total (mg/L)	0.00504	0.00419	0.00102	<0.00050	<0.00050
	Zinc (Zn)-Total (mg/L)	0.0154	0.0070	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total (mg/L)	0.00119	0.00106	0.00098	<0.00030	0.00067
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0485	0.112	0.0617		0.0346
	Antimony (Sb)-Dissolved (mg/L)	0.00023	0.00038	0.00032		0.00074
	Arsenic (As)-Dissolved (mg/L)	0.00064	0.00097	0.00081		0.00030
	Barium (Ba)-Dissolved (mg/L)	0.0594	0.0568	0.0694		0.0415
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020		<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010		<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000590	0.0000264	0.0000437		0.0000183
	Calcium (Ca)-Dissolved (mg/L)	77.2	44.2	59.2		30.9
	Chromium (Cr)-Dissolved (mg/L)	0.00041	0.00122	0.00071		0.00083
	Cobalt (Co)-Dissolved (mg/L)	0.00062	0.00044	0.00050		<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00254	0.00261	0.00318		0.00183
	Iron (Fe)-Dissolved (mg/L)	0.299	0.597	0.288		0.074
	Lead (Pb)-Dissolved (mg/L)	0.000116	0.000053	0.000107		<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0024	0.0038	0.0023		0.0011
	Magnesium (Mg)-Dissolved (mg/L)	29.7	29.2	24.7		11.0
	Manganese (Mn)-Dissolved (mg/L)	0.242	0.0993	0.170		0.00667
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050		<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00110	0.000492	0.000958		0.000803
	Nickel (Ni)-Dissolved (mg/L)	0.00363	0.00525	0.00418		0.00290
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050		<0.050
	Potassium (K)-Dissolved (mg/L)	0.48	0.52	0.46		<0.10
	Selenium (Se)-Dissolved (mg/L)	0.00238	0.000733	0.00170		0.00272
	Silicon (Si)-Dissolved (mg/L)	4.95	6.30	5.03		6.60
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.46	2.49	2.50		3.97

* 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	L1816799-16 Water 20-AUG-16 08:50 R9	L1816799-17 Water 20-AUG-16 13:05 SL	L1816799-18 Water 18-AUG-16 11:35 E7	L1816799-19 Water 20-AUG-16 14:45 E7	L1816799-20 Water 20-AUG-16 10:10 E1(H)
Grouping	Analyte					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	0.274	0.804	0.369		0.296
	Sulfur (S)-Total (mg/L)	52.7	174	53.6		45.8
	Thallium (Tl)-Total (mg/L)	0.000024	0.000017	0.000052		<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010		<0.00010
	Titanium (Ti)-Total (mg/L)	0.0769	0.00061	0.0755		0.00292
	Uranium (U)-Total (mg/L)	0.00148	0.00209	0.00224		0.00179
	Vanadium (V)-Total (mg/L)	0.00835	<0.00050	0.00874		0.00099
	Zinc (Zn)-Total (mg/L)	0.0165	0.0030	0.0227		<0.0030
	Zirconium (Zr)-Total (mg/L)	0.00125	<0.00030	0.00128		0.00114
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.100	0.0131	0.0479		0.0556
	Antimony (Sb)-Dissolved (mg/L)	0.00023	0.00272	0.00036		0.00040
	Arsenic (As)-Dissolved (mg/L)	0.00115	0.0133	0.00103		0.00083
	Barium (Ba)-Dissolved (mg/L)	0.102	0.0184	0.0746		0.0681
	Beryllium (Be)-Dissolved (mg/L)	0.000023	<0.000020	<0.000020		<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	0.033	0.016		<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000538	0.0000268	0.0000275		0.0000320
	Calcium (Ca)-Dissolved (mg/L)	64.1	172	62.2		58.2
	Chromium (Cr)-Dissolved (mg/L)	0.00115	0.00087	0.00082		0.00064
	Cobalt (Co)-Dissolved (mg/L)	0.00112	0.00012	0.00063		0.00046
	Copper (Cu)-Dissolved (mg/L)	0.00462	0.00182	0.00281		0.00299
	Iron (Fe)-Dissolved (mg/L)	1.06	0.037	0.320		0.277
	Lead (Pb)-Dissolved (mg/L)	0.000081	<0.000050	0.000086		0.000110
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0078	0.0046		0.0029
	Magnesium (Mg)-Dissolved (mg/L)	26.0	68.5	34.3		24.4
	Manganese (Mn)-Dissolved (mg/L)	0.506	0.0108	0.185		0.164
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050		<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00109	0.00175	0.00103		0.00128
	Nickel (Ni)-Dissolved (mg/L)	0.00461	0.0130	0.00856		0.00391
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050		<0.050
	Potassium (K)-Dissolved (mg/L)	0.51	1.13	0.61		0.47
	Selenium (Se)-Dissolved (mg/L)	0.00203	0.0127	0.00198		0.00166
	Silicon (Si)-Dissolved (mg/L)	5.34	5.03	5.28		4.98
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.82	1.82	3.04		2.42

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1816799-1	L1816799-2	L1816799-3	L1816799-4	L1816799-5
		Description	Water	Water	Water	Water	Water
		Sampled Date	18-AUG-16	20-AUG-16	18-AUG-16	20-AUG-16	18-AUG-16
		Sampled Time	15:10	14:25	13:15	14:50	13:55
		Client ID	E4	E4	E8	E8	R4
Grouping	Analyte						
WATER							
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)		0.329		0.115		0.229
	Sulfur (S)-Dissolved (mg/L)		55.9		9.85		29.2
	Thallium (Tl)-Dissolved (mg/L)		<0.000010		<0.000010		<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010		<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)		0.00114		0.00209		0.00146
	Uranium (U)-Dissolved (mg/L)		0.00164		0.000682		0.00164
	Vanadium (V)-Dissolved (mg/L)		0.00063		0.00124		0.00069
	Zinc (Zn)-Dissolved (mg/L)		0.0019		0.0015		0.0023
	Zirconium (Zr)-Dissolved (mg/L)		0.00100		0.00127		0.00086
Speciated Metals	Chromium (III)-Dissolved (mg/L)						
	Chromium (III)-Total (mg/L)		0.00500		0.00461		0.0220
	Hexavalent Chromium (mg/L)		<0.0010		<0.0010		<0.0010
	Hexavalent Chromium-Dissolved (mg/L)						

* 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	L1816799-6	L1816799-7	L1816799-8	L1816799-9	L1816799-10
					Water	Water	Water	Water	Water
		20-AUG-16	14:30	R4	20-AUG-16	18-AUG-16	20-AUG-16	18-AUG-16	20-AUG-16
					14:30	18:10	15:05	16:50	14:10
					R4	R6	R6	GWCC-5	GWCC-5
Grouping	Analyte								
WATER									
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)					0.111		0.864	
	Sulfur (S)-Dissolved (mg/L)					9.19		110	
	Thallium (Tl)-Dissolved (mg/L)					<0.000010		0.000013	
	Tin (Sn)-Dissolved (mg/L)					<0.00010		<0.00010	
	Titanium (Ti)-Dissolved (mg/L)					0.00214		<0.00030	
	Uranium (U)-Dissolved (mg/L)					0.000672		0.00320	
	Vanadium (V)-Dissolved (mg/L)					0.00127		<0.00050	
	Zinc (Zn)-Dissolved (mg/L)					0.0018		<0.0010	
	Zirconium (Zr)-Dissolved (mg/L)					0.00127		<0.00030	
Speciated Metals	Chromium (III)-Dissolved (mg/L)								
	Chromium (III)-Total (mg/L)					0.00365			
	Hexavalent Chromium (mg/L)					<0.0010			
	Hexavalent Chromium-Dissolved (mg/L)								

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1816799-11	L1816799-12	L1816799-13	L1816799-14	L1816799-15
Description	Water	Water	Water	Water	Water	Water
Sampled Date	19-AUG-16	19-AUG-16	20-AUG-16	22-AUG-16	19-AUG-16	19-AUG-16
Sampled Time	14:50	16:35	10:10	DUP-2	17:45	17:45
Client ID	R1	R2		TRAVEL BLANK	R8	
Grouping	Analyte					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	0.333	0.217	0.238		0.137
	Sulfur (S)-Dissolved (mg/L)	57.3	35.6	43.4		20.1
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00090	0.00178	0.00134		0.00064
	Uranium (U)-Dissolved (mg/L)	0.00183	0.00186	0.00140		0.000089
	Vanadium (V)-Dissolved (mg/L)	<0.00050	0.00097	0.00063		<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0018	0.0042	0.0011		0.0012
	Zirconium (Zr)-Dissolved (mg/L)	0.00104	0.00101	0.00093		0.00072
Speciated Metals	Chromium (III)-Dissolved (mg/L)		0.00122			
	Chromium (III)-Total (mg/L)	0.00490	0.00390			0.00101
	Hexavalent Chromium (mg/L)	<0.0010	<0.0010			<0.0010
	Hexavalent Chromium-Dissolved (mg/L)		<0.0010			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1816799-16	L1816799-17	L1816799-18	L1816799-19	L1816799-20
Description	Water	Water	Water	Water	Water	Water
Sampled Date	20-AUG-16	20-AUG-16	18-AUG-16	20-AUG-16	20-AUG-16	20-AUG-16
Sampled Time	08:50	13:05	11:35	14:45	10:10	10:10
Client ID	R9	SL	E7	E7	E1(H)	E1(H)
Grouping	Analyte					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	0.235	0.747	0.266		0.314
	Sulfur (S)-Dissolved (mg/L)	51.3	166	51.4		43.2
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000015	<0.000010		<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00273	0.00032	0.00137		0.00123
	Uranium (U)-Dissolved (mg/L)	0.00115	0.00185	0.00134		0.00185
	Vanadium (V)-Dissolved (mg/L)	0.00119	<0.00050	0.00069		0.00059
	Zinc (Zn)-Dissolved (mg/L)	0.0014	<0.0010	0.0066		0.0011
	Zirconium (Zr)-Dissolved (mg/L)	0.00131	<0.00030	0.00096		0.00121
Speciated Metals	Chromium (III)-Dissolved (mg/L)	0.00115				
	Chromium (III)-Total (mg/L)	0.00627	0.00123	0.0108		
	Hexavalent Chromium (mg/L)	<0.0010	<0.0010	<0.0010		
	Hexavalent Chromium-Dissolved (mg/L)	<0.0010				

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dissolved Organic Carbon	MS-B	L1816799-1, -11, -12, -13, -3, -5, -7
Matrix Spike	Dissolved Organic Carbon	MS-B	L1816799-1, -11, -12, -13, -3, -5, -7
Matrix Spike	Dissolved Organic Carbon	MS-B	L1816799-15, -16, -18, -20
Matrix Spike	Antimony (Sb)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Copper (Cu)-Total	MS-B	L1816799-1, -11, -12, -13, -14, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L1816799-1, -11, -12, -13, -14, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Nitrate (as N)	MS-B	L1816799-10, -11, -12, -13, -14, -15, -16, -17, -19, -2, -20, -4, -6, -8
Matrix Spike	Phosphorus (P)-Total	MS-B	L1816799-1, -11, -3, -5, -7, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1816799-12, -13, -14, -15, -16, -17, -20
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1816799-1, -11, -12, -13, -15, -16, -17, -18, -20, -3, -5, -7, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1816799-10, -11, -12, -13, -14, -15, -16, -17, -19, -2, -20, -4, -6, -8

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
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**
BE-D-L-CCMS-VA	Water	Diss. Be (low) in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			

Reference Information

BE-T-L-CCMS-VA	Water	Total Be (Low) in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
CR-CR3-DIS-CALC-ED	Water	Dissolved Trivalent Chromium in Water	CALCULATION
Chromium (III)-Dissolved is calculated as the difference between the dissolved chromium and the dissolved hexavalent chromium (Cr(VI)) results.			
CR-CR3-TOT-CALC-ED	Water	Total Trivalent Chromium in Water	CALCULATION
Chromium (III)-Total is calculated as the difference between the total chromium and the hexavalent chromium (Cr(VI)) results.			
CR-CR6-ED	Water	Chromium, Hexavalent (Cr +6)	APHA 3500-Cr C (Ion Chromatography)
This analysis is carried out using procedures adapted from method 3500-Cr C in "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1636 published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.			
Results are based on an un-filtered, field-preserved sample.			
CR6-D-IC-ED	Water	Chromium, Dissolved Hexavalent (Cr +6)	APHA 3500-Cr C (Ion Chromatography)
This analysis is carried out using procedures adapted from method 3500-Cr C in "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1636 published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.			
Results are based on a field-filtered, field-preserved sample.			
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-DIS-LOW-ICP-VA	Water	Dissolved Metals in Water by ICPOES	EPA 3005A/6010B
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 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 filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-TOT-LOW-ICP-VA	Water	Total Metals in Water by ICPOES	EPA 3005A/6010B

Reference Information

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 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 hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-WR Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WR Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-PRES-COL-VA 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.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

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

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

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

It is recommended that this analysis be conducted in the field.

S-DIS-ICP-VA Water Dissolved Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 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 hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA Water Total Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 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 hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

SO4-IC-N-WR Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

** 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

Reference Information

WR ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
VA ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

1 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.



Contact: Brent Mack
Company: ALS Environmental
Address: 8081 Lougheed HWY, Suite 100
Burnaby, BC V5A1W9

REFERENCE DATA

Project / Location: L1816799

PO Number: L1816799

ALS Work Order: 1608846

TEM Water Narrative: Analysis performed on FEI Tecnai TEM with integrated EDXA capabilities. Morphology, EDXA, and SAED measurements used to determine fiber species. Representative EDXA spectra of each asbestos type detected included. Compliance samples must be received and filtered within 48 hours of collection. Collection is performed outside ALS and is the responsibility of the client. Samples disposed after 60 days. TEM grids archived 3 years. Results apply only to portions analyzed.

TEM Water Methods: "EPA 100.2" refers to drinking water samples filtered on 47mm, 0.22µm pore MCE filters. "EPA 100.1" refers to drinking water samples filtered on 47mm, 0.1µm pore Polycarbonate filters. No standard method for asbestos in nonpotable water exists. All TEM waters (potable and nonpotable) analyzed at >10,000x magnification for asbestos fibers >10µm long. Whenever possible, sufficient volume is analyzed to yield an AS of <0.20 MFL based on the detection of 1 confirmed asbestos fiber in the total area analyzed. However, the volume analyzed is dependent upon a filter loading of <25% particulate. Samples containing excessive suspended solids may not reach the recommended AS of <0.20 MFL. In any case, a minimum of 4 and a maximum of 10 openings are analyzed regardless of the AS reached or asbestos concentration detected. ALS will report results directly to state of origin only when;

- a) the Chain of Custody clearly states "drinking water for state compliance",
- b) the appropriate state drinking water form is submitted with the samples,
- c) the state form is completely filled out by the client prior to submittal, and
- d) the address to which the form is to be sent is provided.

NOTES: NA=Not Applicable, ND=None Detected, AS=Analytical Sensitivity, MFL=Millions of Fibers per Liter. [†] Act-Tremolite concentrations include Actinolite as well as the Libby Amphiboles; Tremolite, Winchite, & Richterite.

OH Lab ID: #4077, Ohio Analysts; P. Johnson #2268, A. Sohn #3431

PA Lab ID: #68-01320, Cert. #003

NELAC accredited through New York ELAP, LAB #11371

TEM ANALYSIS DATA

EDXA Resolution (eV): <175

Accelerating Voltage (keV): 100

Prep Start Date: 8/25/2016

Calibration Constant (µm/cm): 0.74

Camera Constant (mm-Å): 129.25

Analysis Start Date: 8/26/2016

Pamela Johnson

Pamela Johnson
ALS TEM Analyst

Shawn Smythe

Shawn Smythe
ALS Project Manager

This report shall not be reproduced except in full without written approval of ALS.

IDENTIFICATION

L1816799-11
Client Sample ID: R1
ALS Sample ID: 1608846-06
Method: EPA 100.2
Date of Collection: 8/19/2016
Time of Collection: Not Provided

FILTRATION & ANALYSIS

Date of Filtration: 8/24/2016
Time of Filtration: 16:35
Volume Filtered (L): 0.003
Openings Analyzed: 10
Avg. Opening Area (mm²): 0.0108
AS (MFL): 3.32

ASBESTOS COUNT

Chrysotile: 0
Amosite: 0
Crocidolite: 0
Act-Tremolite[†]: 0
Anthophyllite: 0
Total Asbestos: 0

ASBESTOS CONCENTRATION (MFL)

Chrysotile: <AS
Amosite: <AS
Crocidolite: <AS
Act-Tremolite[†]: <AS
Anthophyllite: <AS
Total Asbestos: <AS

NOTES

Sample L1816799-11 R1 contained excessive suspended solids prohibiting filtration of sufficient sample volume required to reach the recommended method AS of <0.20 MFL. Analysis terminated upon completion of the maximum 10 openings analyzed.

EDXA SPECTRA

NOTE: Spurious peaks may originate from low background sample holder, column pole pieces, TEM grids, prep solutions or matrix materials.

NONE: No asbestos detected.

PHOTOMICROGRAPHS

Collected using Gatan Digital Micrograph.

NONE: No asbestos detected.



31-Aug-2016

Brent Mack
ALS Environmental
8081 Lougheed HWY
Suite 100
Burnaby, BC V5A1W9

Tel: (604) 253-4188
Fax:

Re: L1816799

Work Order: **1608846**

Dear Brent,

ALS Environmental received 14 samples on 24-Aug-2016 10:01 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 21.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Shawn Smythe

Electronically approved by: Shawn Smythe

Shawn Smythe
Project Manager

ADDRESS 4388 Glendale Milford Rd Cincinnati, Ohio 45242- | PHONE (513) 733-5336 | FAX (513) 733-5347

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Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: ALS Environmental
Project: L1816799
Work Order: 1608846

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1608846-01	L1816799-1	Water		8/18/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-02	L1816799-3	Water		8/18/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-03	L1816799-5	Water		8/18/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-04	L1816799-7	Water		8/18/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-05	L1816799-9	Water		8/18/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-06	L1816799-11	Water		8/19/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-07	L1816799-12	Water		8/19/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-08	L1816799-13	Water		8/20/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-09	L1816799-14	Water		8/22/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-10	L1816799-15	Water		8/19/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-11	L1816799-16	Water		8/20/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-12	L1816799-17	Water		8/20/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-13	L1816799-18	Water		8/18/2016	8/24/2016 10:01	<input type="checkbox"/>
1608846-14	L1816799-20	Water		8/20/2016	8/24/2016 10:01	<input type="checkbox"/>

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Case Narrative

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Results relate only to the items tested and are not blank corrected unless indicated.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-1

Lab ID: 1608846-01

Collection Date: 8/18/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	51		2.0	mg/L	1	8/24/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-3

Lab ID: 1608846-02

Collection Date: 8/18/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	77		2.0	mg/L	1	8/24/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-5

Lab ID: 1608846-03

Collection Date: 8/18/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	550		2.0	mg/L	1	8/24/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-7

Lab ID: 1608846-04

Collection Date: 8/18/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	56		2.0	mg/L	1	8/24/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-9

Lab ID: 1608846-05

Collection Date: 8/18/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	ND		2.0	mg/L	1	8/24/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-11

Lab ID: 1608846-06

Collection Date: 8/19/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	88		2.0	mg/L	1	8/25/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-12

Lab ID: 1608846-07

Collection Date: 8/19/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	21		2.0	mg/L	1	8/25/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-13

Lab ID: 1608846-08

Collection Date: 8/20/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	ND		2.0	mg/L	1	8/25/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-14

Lab ID: 1608846-09

Collection Date: 8/22/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	ND		2.0	mg/L	1	8/25/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-15

Lab ID: 1608846-10

Collection Date: 8/19/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	2.3		2.0	mg/L	1	8/25/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-16

Lab ID: 1608846-11

Collection Date: 8/20/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	93		2.0	mg/L	1	8/25/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-17

Lab ID: 1608846-12

Collection Date: 8/20/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	4.9		2.0	mg/L	1	8/25/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-18

Lab ID: 1608846-13

Collection Date: 8/18/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	120		2.0	mg/L	1	8/24/2016

Note:

ALS Environmental

Date: 31-Aug-16

Client: ALS Environmental

Project: L1816799

Work Order: 1608846

Sample ID: L1816799-20

Lab ID: 1608846-14

Collection Date: 8/20/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			E160.2			Analyst: rmb
Total suspended solids	2.9		2.0	mg/L	1	8/25/2016

Note:

Client: ALS Environmental
Work Order: 1608846
Project: L1816799

QC BATCH REPORT

Batch ID: **R132323** Instrument ID: **WETCHEM** Method: **E160.2**

MBLK	Sample ID: MB-R132323-R132323		Units: mg/L		Analysis Date: 8/24/2016					
Client ID:	Run ID: WETCHEM_160824D		SeqNo: 1344804		Prep Date: DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total suspended solids ND 2.0

LCS	Sample ID: LCS-R132323-R132323		Units: mg/L		Analysis Date: 8/24/2016					
Client ID:	Run ID: WETCHEM_160824D		SeqNo: 1344805		Prep Date: DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total suspended solids 913.7 2.0 1000 0 91.4 70-130 0

DUP	Sample ID: 1608846-05A Dup		Units: mg/L		Analysis Date: 8/24/2016					
Client ID: L1816799-9	Run ID: WETCHEM_160824D		SeqNo: 1344815		Prep Date: DF: 1					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total suspended solids ND 2.0 0 0 0 1.17 0

The following samples were analyzed in this batch:

1608846-01A	1608846-02A	1608846-03A
1608846-04A	1608846-05A	1608846-13A

Client: ALS Environmental

Work Order: 1608846

Project: L1816799

QC BATCH REPORT

Batch ID: R132325

Instrument ID: WETCHEM

Method: E160.2

MBLK	Sample ID: MB-R132325-R132325		Units: mg/L		Analysis Date: 8/25/2016					
Client ID:	Run ID: WETCHEM_160825B		SeqNo: 1344826		Prep Date:	DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total suspended solids ND 2.0

LCS	Sample ID: LCS-R132325-R132325		Units: mg/L		Analysis Date: 8/25/2016					
Client ID:	Run ID: WETCHEM_160825B		SeqNo: 1344827		Prep Date:	DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total suspended solids 860.8 2.0 1000 0 86.1 70-130 0

DUP	Sample ID: 1608846-14A Dup		Units: mg/L		Analysis Date: 8/25/2016					
Client ID: L1816799-20	Run ID: WETCHEM_160825B		SeqNo: 1344836		Prep Date:	DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total suspended solids 3.3 2.0 0 0 0 2.87 13.9

The following samples were analyzed in this batch:

1608846-06A	1608846-07A	1608846-08A
1608846-09A	1608846-10A	1608846-11A
1608846-12A	1608846-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ALS Environmental
Project: L1816799
WorkOrder: 1608846

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
E	EPA Method
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SDL	Sample Detection Limit
SW	SW-846 Method

<u>Units Reported</u>	<u>Description</u>
%	
mg/L	

Sample Receipt Checklist

Client Name: ALS-VANCOUVER

Date/Time Received: 24-Aug-16 10:01

Work Order: 1608846

Received by: SNH

Checklist completed by: Stephanie Harrington 24-Aug-16
eSignature Date

Reviewed by: Shawn Smythe 25-Aug-16
eSignature Date

Matrices:

Carrier name: FedEx

Shipping container/cooler in good condition? Yes No Not Present

Custody seals intact on shipping container/cooler? Yes No Not Present

Custody seals intact on sample bottles? Yes No Not Present

Chain of custody present? Yes No

Chain of custody signed when relinquished and received? Yes No

Chain of custody agrees with sample labels? Yes No

Samples in proper container/bottle? Yes No

Sample containers intact? Yes No

Sufficient sample volume for indicated test? Yes No

All samples received within holding time? Yes No

Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s): 2.7

Cooler(s)/Kit(s):

Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by: -

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

[Empty text box for comments]

CorrectiveAction:

[Empty text box for corrective action]



L1816799-COFC

Report To		Report Format / Distribution				Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)																																																				
Company: Hemmera Environchem Inc.		Select Report Format:				R P E E2																																																				
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																																																								
Address: 230 - 2237 2nd Avenue Whitehorse, YT		Select Distribution:																																																								
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1	E4	18-Aug-16	15:10	Water	R	R			R	R							R	9																																								
2	E4	20-Aug-16	14:25	Water							R	R	R	R	R			1																																								
3	E8	18-Aug-16	13:15	Water	R	R			R	R							R	9																																								
4	E8	20-Aug-16	14:50	Water							R	R	R	R	R			1																																								
5	R4	18-Aug-16	13:55	Water	R	R			R	R							R	9																																								
6	R4	20-Aug-16	14:30	Water							R	R	R	R	R			1																																								
7	R6	18-Aug-16	18:10	Water	R	R			R	R							R	9																																								
8	R6	20-Aug-16	15:05	Water							R	R	R	R	R			1																																								
9	GWCC-5	18-Aug-16	16:50	Water	R	R			R	R							R	9																																								
10	GWCC-5	20-Aug-16	14:10	Water							R	R	R	R	R			1																																								
11	R1	19-Aug-16	14:50	Water	R	R			R	R	R	R	R	R	R	R	R	11																																								
12	R2	19-Aug-16	16:35	Water	R	R			R	R	R	R	R	R	R	R	R	10																																								
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						JC		AUG 23 2016		12:15																																																

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA Form 00276-009 Form004 January 2014

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 specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



Report To		Report Format / Distribution				Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)																				
Company: Hemmera Environchem Inc.		Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)				R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)																				
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Phone: 867-456-4885		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge																				
		Email 1 or Fax nsandys@hemmera.com				Specify Date Required for E2, E or P:																				
		Email 2 chris@elr.ca				Analysis Request																				
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13	Dup-2		20-Aug-16	10:10	Water	R	R			R	R	R	R	R	R	R	R	R	R	R	R	R	R	10		
14	Travel Blank				Water		R			R	R	R	R	R	R	R	R	R	R	R	R	R	R	6		
15	R8		19-Aug-16	17:45	Water	R	R			R	R	R	R	R	R	R	R	R	R	R	R	R	R	10		
16	R9		20-Aug-16	8:50	Water	R	R			R	R	R	R	R	R	R	R	R	R	R	R	R	R	10		
17	SL		20-Aug-16	13:05	Water	R	R			R	R	R	R	R	R	R	R	R	R	R	R	R	R	10		
18	E7		18-Aug-16	11:35	Water	R	R			R	R													9		
19	E7		20-Aug-16	14:45	Water							R	R	R	R	R	R	R						1		
20	E1(H)		20-Aug-16	10:10	Water	R	R			R	R	R	R	R	R	R	R	R	R	R	R	R	R	10		
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Released by: <i>[Signature]</i>		Date: Aug 22 2016		Time: 10:17		Received by: <i>[Signature]</i>		Date: 22-Aug-16		Time: 10:15		Received by: JC		Date: AUG 23 2016		Time: 12:15										



L1816799-COFC

Report To					Report Format / Distribution					Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)																																																																																																																																																																																																																																																																																																								
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18	E7				18-Aug-16	11:35	Water																																																																																																																																																																																																																																																																																																											
19	E7				20-Aug-16	14:45	Water																																																																																																																																																																																																																																																																																																											
20	E1(H)				20-Aug-16	10:10	Water																																																																																																																																																																																																																																																																																																											
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Released by: <i>[Signature]</i> Date: Aug 22 2016 Time: 10:17					Received by: <i>[Signature]</i> Date: 22-Aug-16 Time: 10:15					Received by: JC Date: AUG 23 2016 Time: 12:15																																																																																																																																																																																																																																																																																																								



Report To		Report Format / Distribution			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)																																																		
Company: Hemmera Environchem Inc.		Select Report Format:			R P E E2																																																		
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																																																					
Address: 230 - 2237 2nd Avenue Whitehorse, YT		Select Distribution:																																																					
Phone: 867-456-4865		Email 1 or Fax nsandys@hemmera.com Email 2 chris@elr.ca																																																					
Invoice To		Invoice Distribution			Analysis Request																																																		
Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Select Invoice Distribution:			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																		
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Email 1 or Fax nsandys@hemmera.com			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>F/P</td><td>P</td><td>P</td><td>F/P</td><td>P</td><td>F/P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>Low Level Diss. Met (incl. Hg) and Hardness</td> <td>Low Level Tot. Met (incl. Hg) and Hardness</td> <td>Chromium Speciation (III/VI) - Total</td> <td>Chromium Speciation (III/VI) - Dissolved</td> <td>Ammonia - N</td> <td>Dissolved Organic Carbon (DOC)</td> <td>Nitrate-N</td> <td>Nitrite - N</td> <td>Total Phosphorus</td> <td>Sulphate</td> <td>pH, Conductivity</td> <td>Asbestos-TEM-AD</td> <td>Total Suspended Solids</td> <td colspan="7">Number of Containers</td> </tr> </table>										F/P	P	P	F/P	P	F/P																Low Level Diss. Met (incl. Hg) and Hardness	Low Level Tot. Met (incl. Hg) and Hardness	Chromium Speciation (III/VI) - Total	Chromium Speciation (III/VI) - Dissolved	Ammonia - N	Dissolved Organic Carbon (DOC)	Nitrate-N	Nitrite - N	Total Phosphorus	Sulphate	pH, Conductivity	Asbestos-TEM-AD	Total Suspended Solids	Number of Containers						
F/P	P	P	F/P	P	F/P																																																		
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Company: Hemmera Environchem Inc.		Email 2 chris@elr.ca																																																					
Contact: Natasha Sandys		Email 1 or Fax nsandys@hemmera.com																																																					
Project Information		Oil and Gas Required Fields (client use)																																																					
ALS Quote #: Q58044		Approver ID:		Cost Center:																																																			
Job #: 1343-005.19		GL Account:		Routing Code:																																																			
PO / AFE:		Activity Code:		Location:																																																			
LSD:		ALS Contact:		Sampler: GR / NB																																																			
ALS Lab Work Order # (lab use only)																																																							
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																																																	
1	E4			18-Aug-16	15:10	Water	R	R				R	R							R	9																																		
2	E4			20-Aug-16	14:25	Water							R	R	R	R	R					1																																	
3	E8			18-Aug-16	13:15	Water	R	R				R	R								R	9																																	
4	E8			20-Aug-16	14:50	Water							R	R	R	R	R					1																																	
5	R4			18-Aug-16	13:55	Water	R	R				R	R								R	9																																	
6	R4			20-Aug-16	14:30	Water							R	R	R	R	R					1																																	
7	R8			18-Aug-16	18:10	Water	R	R				R	R								R	9																																	
8	R6			20-Aug-16	15:05	Water							R	R	R	R	R					1																																	
9	GWCC-5			18-Aug-16	16:50	Water	R	R				R	R								R	9																																	
10	GWCC-5			20-Aug-16	14:10	Water							R	R	R	R	R					1																																	
11	R1			19-Aug-16	14:50	Water	R	R				R	R	R	R	R	R	R	R	R	R	11																																	
12	R2			19-Aug-16	16:35	Water	R	R				R	R	R	R	R	R	R			R	10																																	
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						<i>[Signature]</i>		22-Aug-16		10:15		JC		AUG 23 2016		12:15																																							