HEMMERA ENVIROCHEM INC.
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Date Received: 19-AUG-16
Report Date: 20-SEP-16 17:51 (MT)
Version: FINAL REV. 2

Client Phone: 867-456-4865

Certificate of Analysis

Lab Work Order #: L1816106

Project P.O. #: NOT SUBMITTED
Job Reference: 1343-005.19
C of C Numbers:
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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1816106-1	L1816106-2	L1816106-3	L1816106-5	L1816106-6
Description	Water	Water	Water	Water	Water
Sampled Date	16-AUG-16	17-AUG-16	16-AUG-16	16-AUG-16	17-AUG-16
Sampled Time	17:10	14:20	16:10	14:10	09:40
Client ID	E1	E2	E3	R3	R7
Grouping / **Analyte**					
WATER					
Physical Tests Conductivity (uS/cm)	473	568	446	426	224
Hardness (as CaCO3) (mg/L)	238	301	231	207	109
pH (pH)	8.09	8.17	8.06	8.00	7.80
Anions and Nutrients Ammonia, Total (as N) (mg/L)	0.0183	0.0204	0.0705	0.0571	0.0931
Nitrate (as N) (mg/L)	0.122	0.129	0.0891	0.0473	0.0977
Nitrite (as N) (mg/L)	0.0017	0.0024	0.0024	<0.0010	<0.0010
Phosphorus (P)-Total (mg/L)	0.0042	0.0047	0.503	0.331	0.135
Sulfate (SO4) (mg/L)	130	171	128	122	51.2
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	18.5	17.2	19.3	20.2	32.6
Total Metals Aluminum (Al)-Total (mg/L)	0.170	0.128	6.99	5.77	3.45
Antimony (Sb)-Total (mg/L)	0.00038	0.00043	0.00098	0.00056	0.00037
Arsenic (As)-Total (mg/L)	0.00103	0.00114	0.00718	0.00473	0.00348
Barium (Ba)-Total (mg/L)	0.0678	0.0664	0.293	0.271	0.165
Beryllium (Be)-Total (mg/L)	0.000021	<0.000020	0.000266	0.000204	0.000121
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	0.000326	0.000058	<0.000050
Boron (B)-Total (mg/L)	<0.010	0.016	0.024	<0.010	<0.010
Cadmium (Cd)-Total (mg/L)	0.0000490	0.0000526	0.000796	0.000251	0.000120
Calcium (Ca)-Total (mg/L)	57.4	64.5	47.4	45.2	25.6
Chromium (Cr)-Total (mg/L)	0.00154	0.00117	0.0190	0.0108	0.00756
Cobalt (Co)-Total (mg/L)	0.00056	0.00060	0.00718	0.00448	0.00314
Copper (Cu)-Total (mg/L)	0.00324	0.00309	0.0252	0.0160	0.0111
Iron (Fe)-Total (mg/L)	0.545	0.481	13.1	10.2	5.75
Lead (Pb)-Total (mg/L)	0.000254	0.000211	0.00940	0.00487	0.00213
Lithium (Li)-Total (mg/L)	0.0025	0.0042	0.0072	0.0058	0.0025
Magnesium (Mg)-Total (mg/L)	25.0	33.4	32.1	28.8	13.4
Manganese (Mn)-Total (mg/L)	0.147	0.154	0.463	0.304	0.362
Mercury (Hg)-Total (mg/L)	<0.000025 DLM	<0.000025 DLM	0.000081	0.000042	<0.000050 DLM
Molybdenum (Mo)-Total (mg/L)	0.00119	0.00135	0.00349	0.00181	0.000888
Nickel (Ni)-Total (mg/L)	0.00599	0.00813	0.0303	0.0161	0.0103
Phosphorus (P)-Total (mg/L)	<0.050	<0.050	0.436	0.363	0.152
Potassium (K)-Total (mg/L)	0.49	0.57	1.24	1.07	0.45
Selenium (Se)-Total (mg/L)	0.00166	0.00185	0.00275	0.00148	0.000941
Silicon (Si)-Total (mg/L)	5.16	5.05	16.3	15.8	10.4
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	0.000295	0.000132	0.000044
Sodium (Na)-Total (mg/L)	2.36	2.75	3.54	2.94	2.13
Strontium (Sr)-Total (mg/L)	0.252	0.309	0.235	0.192	0.0894

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1816106-7	L1816106-8	L1816106-9	L1816106-10	L1816106-11
Description	Water	Water	Water	Water	Water
Sampled Date	16-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16
Sampled Time	12:30	13:30	13:10	12:50	12:25
Client ID	R11	GWCC-1	GWCC-2	GWCC-3	GWCC-4
Grouping / **Analyte**					
WATER					
Physical Tests Conductivity (uS/cm)	309	1300	1900	1610	1360
Hardness (as CaCO3) (mg/L)	142	758	1180	1000	810
pH (pH)	7.78	8.11	8.15	7.63	8.01
Anions and Nutrients Ammonia, Total (as N) (mg/L)	0.115	0.0073	<0.0050	<0.0050	<0.0050
Nitrate (as N) (mg/L)	0.0583	0.174 DLDS	0.351 DLDS	0.343 DLDS	0.242 DLDS
Nitrite (as N) (mg/L)	<0.0010	<0.0020	<0.0050	<0.0050	<0.0020
Phosphorus (P)-Total (mg/L)	0.583	0.0024	0.012	<0.0020	<0.0020
Sulfate (SO4) (mg/L)	84.9	549	916	760	562
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	20.5	9.83	7.92	7.86	8.43
Total Metals Aluminum (Al)-Total (mg/L)	7.66	0.107	0.0032	<0.0030	<0.0030
Antimony (Sb)-Total (mg/L)	0.00097	0.00281	0.00207	0.00116	0.00104
Arsenic (As)-Total (mg/L)	0.00670	0.00518	0.00331	0.00093	0.00108
Barium (Ba)-Total (mg/L)	0.270	0.0279	0.0250	0.0225	0.0281
Beryllium (Be)-Total (mg/L)	0.000282	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Total (mg/L)	0.000206	<0.000050	0.000088	<0.000050	<0.000050
Boron (B)-Total (mg/L)	<0.010	0.088	0.181	0.139	0.103
Cadmium (Cd)-Total (mg/L)	0.000450	0.0000585	0.000167	0.0000883	0.0000688
Calcium (Ca)-Total (mg/L)	37.7	157	188	136	118
Chromium (Cr)-Total (mg/L)	0.0173	0.00131	0.00188	0.00121	0.00080
Cobalt (Co)-Total (mg/L)	0.00657	0.00015	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total (mg/L)	0.0235	0.00183	0.00155	0.00093	0.00100
Iron (Fe)-Total (mg/L)	15.6	0.200	<0.010	<0.010	<0.010
Lead (Pb)-Total (mg/L)	0.0112	0.000090	<0.000050	<0.000050	<0.000050
Lithium (Li)-Total (mg/L)	0.0073	0.0244	0.0580	0.0230	0.0140
Magnesium (Mg)-Total (mg/L)	17.1	87.3	169	151	120
Manganese (Mn)-Total (mg/L)	0.407	0.00389	0.00027	0.00023	0.00036
Mercury (Hg)-Total (mg/L)	0.000164	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Total (mg/L)	0.00424	0.0155	0.00305	0.00287	0.00256
Nickel (Ni)-Total (mg/L)	0.0223	0.0308	0.0503	0.0376	0.0376
Phosphorus (P)-Total (mg/L)	0.335	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Total (mg/L)	1.49	1.55	2.27	1.68	1.45
Selenium (Se)-Total (mg/L)	0.00282	0.0113	0.0102	0.00297	0.00189
Silicon (Si)-Total (mg/L)	19.1	6.52	6.27	5.02	5.29
Silver (Ag)-Total (mg/L)	0.000384	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	3.02	3.77	11.5	5.37	4.43
Strontium (Sr)-Total (mg/L)	0.183	0.995	1.46	0.921	0.632

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1816106-12	L1816106-13	L1816106-14		
Description	Water	Water	Water		
Sampled Date	16-AUG-16	16-AUG-16			
Sampled Time	17:10	17:10			
Client ID	FB-1	DUP-1	TRAVEL BLANK		
Grouping / **Analyte**					
WATER					
Physical Tests Conductivity (uS/cm)	<2.0	475	<2.0		
Hardness (as CaCO3) (mg/L)	<0.50	238	<0.50 HTC		
pH (pH)	5.73	8.18	5.63		
Anions and Nutrients Ammonia, Total (as N) (mg/L)	<0.0050	0.0170	<0.0050		
Nitrate (as N) (mg/L)	<0.0050	0.118	<0.0050		
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010		
Phosphorus (P)-Total (mg/L)	<0.0020	0.0044	<0.0020		
Sulfate (SO4) (mg/L)	<0.30	130	<0.30		
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	<0.50	18.7			
Total Metals Aluminum (Al)-Total (mg/L)	<0.0030	0.145	<0.0030		
Antimony (Sb)-Total (mg/L)	<0.00010	0.00031	<0.00010		
Arsenic (As)-Total (mg/L)	<0.00010	0.00090	<0.00010		
Barium (Ba)-Total (mg/L)	<0.000050	0.0607	0.000051 RRV		
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020		
Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010		
Cadmium (Cd)-Total (mg/L)	<0.0000050	0.0000232	<0.0000050		
Calcium (Ca)-Total (mg/L)	<0.050	56.9	<0.050		
Chromium (Cr)-Total (mg/L)	<0.00010	0.00112	<0.00010		
Cobalt (Co)-Total (mg/L)	<0.00010	0.00051	<0.00010		
Copper (Cu)-Total (mg/L)	<0.00050	0.00297	<0.00050		
Iron (Fe)-Total (mg/L)	<0.010	0.524	<0.010		
Lead (Pb)-Total (mg/L)	<0.000050	0.000213	<0.000050		
Lithium (Li)-Total (mg/L)	<0.0010	0.0022	<0.0010		
Magnesium (Mg)-Total (mg/L)	<0.10	24.9	<0.10		
Manganese (Mn)-Total (mg/L)	<0.00010	0.128	<0.00010		
Mercury (Hg)-Total (mg/L)	<0.0000050	0.0000057	<0.0000050		
Molybdenum (Mo)-Total (mg/L)	<0.000050	0.00100	<0.000050		
Nickel (Ni)-Total (mg/L)	<0.00050	0.00469	<0.00050		
Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050		
Potassium (K)-Total (mg/L)	<0.10	0.48	<0.10		
Selenium (Se)-Total (mg/L)	<0.000050	0.00146	<0.000050		
Silicon (Si)-Total (mg/L)	<0.050	5.16	<0.050		
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
Sodium (Na)-Total (mg/L)	<0.050	1.95	<0.050		
Strontium (Sr)-Total (mg/L)	<0.00020	0.212	<0.00020		

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1816106-1	L1816106-2	L1816106-3	L1816106-5	L1816106-6
Description	Water	Water	Water	Water	Water
Sampled Date	16-AUG-16	17-AUG-16	16-AUG-16	16-AUG-16	17-AUG-16
Sampled Time	17:10	14:20	16:10	14:10	09:40
Client ID	E1	E2	E3	R3	R7
Grouping / **Analyte**					
WATER					
Total Metals Sulfur (S)-Total (mg/L)	46.5	61.0	44.4	42.2	17.9
Thallium (Tl)-Total (mg/L)	<0.000010	0.000016	0.000092	0.000068	0.000030
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	0.00012	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	0.00451	0.00357	0.111	0.155	0.100
Uranium (U)-Total (mg/L)	0.00153	0.00166	0.00258	0.00217	0.000476
Vanadium (V)-Total (mg/L)	0.00121	0.00098	0.0218	0.0176	0.0115
Zinc (Zn)-Total (mg/L)	0.0031	0.0035	0.0575	0.0343	0.0160
Zirconium (Zr)-Total (mg/L)	0.00101	0.00092	0.00227	0.00134	0.00132
Dissolved Metals Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0546	0.0469	0.0601	0.0639	0.168
Antimony (Sb)-Dissolved (mg/L)	0.00032	0.00040	0.00043	0.00021	0.00022
Arsenic (As)-Dissolved (mg/L)	0.00083	0.00099	0.00097	0.00076	0.00139
Barium (Ba)-Dissolved (mg/L)	0.0647	0.0641	0.0640	0.0642	0.0775
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	0.000035
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	0.016	0.023	<0.010	<0.010
Cadmium (Cd)-Dissolved (mg/L)	0.0000422	0.0000472	0.0000206	0.0000148	0.0000247
Calcium (Ca)-Dissolved (mg/L)	55.4	63.5	42.9	40.9	23.7
Chromium (Cr)-Dissolved (mg/L)	0.00066	0.00055	0.00107	0.00084	0.00137
Cobalt (Co)-Dissolved (mg/L)	0.00040	0.00045	0.00056	0.00044	0.00094
Copper (Cu)-Dissolved (mg/L)	0.00303	0.00287	0.00256	0.00257	0.00480
Iron (Fe)-Dissolved (mg/L)	0.243	0.254	0.350	0.361	1.15
Lead (Pb)-Dissolved (mg/L)	0.000078	0.000071	0.000124	0.000070	0.000089
Lithium (Li)-Dissolved (mg/L)	0.0024	0.0045	0.0015	0.0017	<0.0010
Magnesium (Mg)-Dissolved (mg/L)	24.1	34.5	30.1	25.5	12.1
Manganese (Mn)-Dissolved (mg/L)	0.135	0.137	0.147	0.131	0.269
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00104	0.00116	0.00122	0.000980	0.000692
Nickel (Ni)-Dissolved (mg/L)	0.00445	0.00758	0.00492	0.00394	0.00456
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	0.43	0.54	0.45	0.36	0.18
Selenium (Se)-Dissolved (mg/L)	0.00157	0.00194	0.00148	0.000958	0.000798
Silicon (Si)-Dissolved (mg/L)	4.88	4.91	5.96	6.04	5.35
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	2.41	2.74	3.30	2.97	1.82
Strontium (Sr)-Dissolved (mg/L)	0.251	0.312	0.203	0.190	0.0808

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1816106-7	L1816106-8	L1816106-9	L1816106-10	L1816106-11
Description	Water	Water	Water	Water	Water
Sampled Date	16-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16
Sampled Time	12:30	13:30	13:10	12:50	12:25
Client ID	R11	GWCC-1	GWCC-2	GWCC-3	GWCC-4
Grouping / **Analyte**					
WATER					
Total Metals Sulfur (S)-Total (mg/L)	28.4	191	319	252	194
Thallium (Tl)-Total (mg/L)	0.000140	0.000050	0.000076	0.000087	0.000069
Tin (Sn)-Total (mg/L)	0.00011	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	0.0925	0.00585	<0.00030	<0.00030	<0.00030
Uranium (U)-Total (mg/L)	0.00158	0.00264	0.00451	0.00287	0.00187
Vanadium (V)-Total (mg/L)	0.0217	0.00081	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total (mg/L)	0.0587	0.0033	0.0053	0.0034	<0.0030
Zirconium (Zr)-Total (mg/L)	0.00216	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved Metals Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
Aluminum (Al)-Dissolved (mg/L)	0.0728	0.0025	0.0023	0.0016	0.0017
Antimony (Sb)-Dissolved (mg/L)	0.00023	0.00269	0.00207	0.00115	0.00098
Arsenic (As)-Dissolved (mg/L)	0.00073	0.00472	0.00323	0.00106	0.00104
Barium (Ba)-Dissolved (mg/L)	0.0507	0.0178	0.0245	0.0256	0.0288
Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron (B)-Dissolved (mg/L)	<0.010	0.083	0.166	0.120	0.093
Cadmium (Cd)-Dissolved (mg/L)	0.0000216	0.0000398	0.000168	0.000131 DTC	0.0000807
Calcium (Ca)-Dissolved (mg/L)	34.6	152	186	136	118
Chromium (Cr)-Dissolved (mg/L)	0.00089	0.00070	0.00161	0.00130	0.00075
Cobalt (Co)-Dissolved (mg/L)	0.00063	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00252	0.00149	0.00151	0.00104	0.00097
Iron (Fe)-Dissolved (mg/L)	0.433	<0.010	<0.010	<0.010	<0.010
Lead (Pb)-Dissolved (mg/L)	0.000175	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0239	0.0551	0.0220	0.0140
Magnesium (Mg)-Dissolved (mg/L)	13.5	91.7	174	160	125
Manganese (Mn)-Dissolved (mg/L)	0.163	0.00052	0.00027	0.00019	0.00032
Mercury (Hg)-Dissolved (mg/L)	0.0000055	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum (Mo)-Dissolved (mg/L)	0.00132	0.00198	0.00223	0.00271	0.00224
Nickel (Ni)-Dissolved (mg/L)	0.00283	0.0281	0.0488	0.0438	0.0383
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium (K)-Dissolved (mg/L)	0.31	1.49	2.25	1.72	1.45
Selenium (Se)-Dissolved (mg/L)	0.00179	0.0114	0.0103	0.00349	0.00206
Silicon (Si)-Dissolved (mg/L)	5.82	6.26	6.29	5.12	5.29
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Dissolved (mg/L)	2.83	3.66	11.0	6.51	4.53
Strontium (Sr)-Dissolved (mg/L)	0.153	0.953	1.44	0.917	0.597

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1816106-12 Water 16-AUG-16 17:10 FB-1	L1816106-13 Water 16-AUG-16 17:10 DUP-1	L1816106-14 Water TRAVEL BLANK		
WATER						
Total Metals	Sulfur (S)-Total (mg/L)	<0.50	46.2	<0.50		
	Thallium (Tl)-Total (mg/L)	<0.000010	0.000013	<0.000010		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00341	<0.00030		
	Uranium (U)-Total (mg/L)	<0.000010	0.00127	<0.000010		
	Vanadium (V)-Total (mg/L)	<0.00050	0.00114	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00030	0.00084	<0.00030		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD			
	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0457			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00028			
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00065			
	Barium (Ba)-Dissolved (mg/L)	<0.000050	0.0544			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050			
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	0.0000187			
	Calcium (Ca)-Dissolved (mg/L)	<0.050	55.7			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00055			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00034			
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00248			
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.251			
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000068			
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0022			
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	24.1			
	Manganese (Mn)-Dissolved (mg/L)	<0.00010	0.110			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000858			
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00374			
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050			
	Potassium (K)-Dissolved (mg/L)	<0.10	0.44			
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00152			
	Silicon (Si)-Dissolved (mg/L)	<0.050	4.93			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	<0.050	1.90			
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.215			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1816106-1	L1816106-2	L1816106-3	L1816106-5	L1816106-6
Description	Water	Water	Water	Water	Water
Sampled Date	16-AUG-16	17-AUG-16	16-AUG-16	16-AUG-16	17-AUG-16
Sampled Time	17:10	14:20	16:10	14:10	09:40
Client ID	E1	E2	E3	R3	R7
Grouping / **Analyte**					
WATER					
Dissolved Metals Sulfur (S)-Dissolved (mg/L)	45.7	59.6	45.0	42.3	17.6
Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	0.00121	0.00099	0.00194	0.00124	0.00331
Uranium (U)-Dissolved (mg/L)	0.00148	0.00160	0.00142	0.00153	0.000239
Vanadium (V)-Dissolved (mg/L)	0.00058	0.00050	0.00088	0.00083	0.00141
Zinc (Zn)-Dissolved (mg/L)	0.0030	<0.0010	0.0011	0.0015	<0.0010
Zirconium (Zr)-Dissolved (mg/L)	0.00094	0.00087	0.00100	0.00083	0.00147
Speciated Metals Chromium (III)-Dissolved (mg/L)			0.00107		0.00137
Chromium (III)-Total (mg/L)	0.00154	0.00117	0.0180	0.0108	0.00756
Hexavalent Chromium (mg/L)	<0.0010	<0.0010	0.0010	<0.0010	<0.0010
Hexavalent Chromium-Dissolved (mg/L)			<0.0010		<0.0010

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1816106-7	L1816106-8	L1816106-9	L1816106-10	L1816106-11
Description	Water	Water	Water	Water	Water
Sampled Date	16-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16	17-AUG-16
Sampled Time	12:30	13:30	13:10	12:50	12:25
Client ID	R11	GWCC-1	GWCC-2	GWCC-3	GWCC-4
Grouping / **Analyte**					
WATER					
Dissolved Metals Sulfur (S)-Dissolved (mg/L)	29.2	186	302	249	190
Thallium (Tl)-Dissolved (mg/L)	<0.000010	0.000047	0.000075	0.000080	0.000061
Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Dissolved (mg/L)	0.00247	<0.00030	<0.00030	<0.00030	<0.00030
Uranium (U)-Dissolved (mg/L)	0.000581	0.00250	0.00432	0.00275	0.00172
Vanadium (V)-Dissolved (mg/L)	0.00067	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Dissolved (mg/L)	0.0011	0.0025	0.0043	0.0036	0.0035
Zirconium (Zr)-Dissolved (mg/L)	0.00139	<0.00030	<0.00030	<0.00030	<0.00030
Speciated Metals Chromium (III)-Dissolved (mg/L)			<0.00043	<0.00042	
Chromium (III)-Total (mg/L)	0.0159	<0.00073	<0.00075	<0.00072	
Hexavalent Chromium (mg/L)	0.0014	0.0013	0.0022	0.0017	
Hexavalent Chromium-Dissolved (mg/L)			0.0020	0.0020	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1816106-12 Water 16-AUG-16 17:10 FB-1	L1816106-13 Water 16-AUG-16 17:10 DUP-1	L1816106-14 Water TRAVEL BLANK		
WATER						
Dissolved Metals	Sulfur (S)-Dissolved (mg/L)	<0.50	44.7			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00101			
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.00128			
	Vanadium (V)-Dissolved (mg/L)	<0.00050	0.00052			
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	<0.0010			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	0.00081			
Speciated Metals	Chromium (III)-Dissolved (mg/L)					
	Chromium (III)-Total (mg/L)		0.00112			
	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.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Molybdenum (Mo)-Total	MB-LOR	L1816106-1, -2, -3, -5, -6, -7, -8
Matrix Spike	Dissolved Organic Carbon	MS-B	L1816106-1, -13, -2, -3, -5, -6, -7
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Total	MS-B	L1816106-1, -2, -3, -5, -6, -7, -8
Matrix Spike	Sodium (Na)-Total	MS-B	L1816106-1, -2, -3, -5, -6, -7, -8
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1816106-1, -10, -11, -12, -13, -2, -3, -5, -6, -7, -8, -9

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).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
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.

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.

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.

Reference Information

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 CaCO3 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

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)

Reference Information

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

Chain of Custody Numbers:

Reference Information

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: L1816106
PO Number: L1816106
ALS Work Order: 1608964

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: 8/29/2016
Calibration Constant (µm/cm): 0.74
Camera Constant (mm-Å): 129.25
Analysis Start Date: 8/31/2016

Pamela Johnson
Pamela Johnson
ALS TEM Analyst

Shawn Smythe
Shawn Smythe
ALS Project Manager

IDENTIFICATION

Client Sample ID:	L1816106-2 E2	L1816106-5 R3
ALS Sample ID:	1608964-02	1608964-04
Method:	EPA 100.2	EPA 100.2
Date of Collection:	8/17/2016	8/16/2016
Time of Collection:	14:20	14:10

FILTRATION & ANALYSIS

Date of Filtration:	8/29/2016	8/29/2016
Time of Filtration:	1:05	1:05
Volume Filtered (L):	0.015	0.002
Openings Analyzed:	4	10
Avg. Opening Area (mm^2):	0.0108	0.0108
AS (MFL):	1.66	4.98

ASBESTOS COUNT

Chrysotile:	14	0
Amosite:	0	0
Crocidolite:	0	0
Act-Tremolite†:	0	0
Anthophyllite:	0	0
Total Asbestos:	14	0

ASBESTOS CONCENTRATION (MFL)

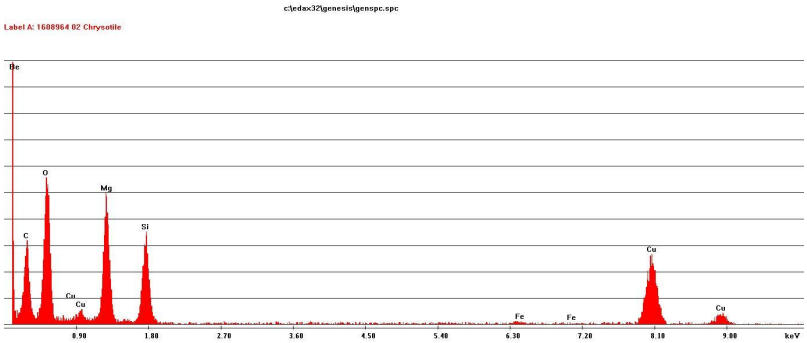
Chrysotile:	23.23	<AS
Amosite:	<AS	<AS
Crocidolite:	<AS	<AS
Act-Tremolite†:	<AS	<AS
Anthophyllite:	<AS	<AS
Total Asbestos:	**23.23**	**<AS**

NOTES

Samples L1816106-2 E2 and L1816106-5 R3; Excessive suspended solids prevented filtration of sufficient volume required to attain the recommended method AS of <0.20 MFL.

EDXA SPECTRA

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



01-Sep-2016

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

Tel: (604) 253-4188
Fax:

Re: L1816106 Work Order: **1608964**

Dear Brent,

ALS Environmental received 13 samples on 26-Aug-2016 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 19.

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

ALS Environmental

Date: 01-Sep-16

Client: ALS Environmental
Project: L1816106
Work Order: **1608964**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1608964-01	L1816106-1	Water		8/16/2016	8/26/2016	☐
1608964-02	L1816106-2	Water		8/17/2016	8/26/2016	☐
1608964-03	L1816106-3	Water		8/16/2016	8/26/2016	☐
1608964-04	L1816106-5	Water		8/17/2016	8/26/2016	☐
1608964-05	L1816106-6	Water		8/16/2016	8/26/2016	☐
1608964-06	L1816106-7	Water		8/17/2016	8/26/2016	☐
1608964-07	L1816106-8	Water		8/16/2016	8/26/2016	☐
1608964-08	L1816106-9	Water		8/17/2016	8/26/2016	☐
1608964-09	L1816106-10	Water		8/17/2016	8/26/2016	☐
1608964-10	L1816106-11	Water		8/17/2016	8/26/2016	☐
1608964-11	L1816106-12	Water		8/16/2016	8/26/2016	☐
1608964-12	L1816106-13	Water		8/16/2016	8/26/2016	☐
1608964-13	L1816106-14	Water		8/16/2016	8/26/2016	☐

ALS Environmental

Date: 01-Sep-16

Client: ALS Environmental
Project: L1816106
Work Order: 1608964

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: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-1 **Lab ID:** 1608964-01
Collection Date: 8/16/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**4.9**	H	**2.0**	**mg/L**	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-2 **Lab ID:** 1608964-02
Collection Date: 8/17/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**4.1**	H	**2.0**	**mg/L**	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-3 **Lab ID:** 1608964-03
Collection Date: 8/16/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**600**	H	**2.0**	**mg/L**	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-5 **Lab ID:** 1608964-04
Collection Date: 8/17/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**440**	H	**2.0**	**mg/L**	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-6 **Lab ID:** 1608964-05
Collection Date: 8/16/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**230**	H	**2.0**	**mg/L**	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-7 **Lab ID:** 1608964-06
Collection Date: 8/17/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**1,100**	H	**2.0**	**mg/L**	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-8 **Lab ID:** 1608964-07
Collection Date: 8/16/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**4.8**	H	**2.0**	**mg/L**	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-9 **Lab ID:** 1608964-08
Collection Date: 8/17/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	ND	H	2.0	mg/L	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-10 **Lab ID:** 1608964-09
Collection Date: 8/17/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	ND	H	2.0	mg/L	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-11 **Lab ID:** 1608964-10
Collection Date: 8/17/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	ND	H	2.0	mg/L	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-12 **Lab ID:** 1608964-11
Collection Date: 8/16/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	ND	H	2.0	mg/L	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-13 **Lab ID:** 1608964-12
Collection Date: 8/16/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	ND	H	2.0	mg/L	1	8/30/2016

Note:

ALS Environmental

Date: *01-Sep-16*

Client: ALS Environmental
Project: L1816106 **Work Order:** 1608964
Sample ID: L1816106-14 **Lab ID:** 1608964-13
Collection Date: 8/16/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	ND	H	2.0	mg/L	1	8/30/2016

Note:

Client: ALS Environmental

Work Order: 1608964

Project: L1816106

QC BATCH REPORT

Batch ID: **R132428** Instrument ID: **WETCHEM** Method: **E160.2**

MBLK Sample ID: **MB-R132428-R132428** Units: **mg/L** Analysis Date: **8/30/2016**

Client ID: Run ID: **WETCHEM_160830C** SeqNo: **1346893** 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-R132428-R132428** Units: **mg/L** Analysis Date: **8/30/2016**

Client ID: Run ID: **WETCHEM_160830C** SeqNo: **1346894** 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	905.2	2.0	1000	0	90.5	70-130	0			

DUP Sample ID: **1608964-10A Dup** Units: **mg/L** Analysis Date: **8/30/2016**

Client ID: **L1816106-11** Run ID: **WETCHEM_160830C** SeqNo: **1346906** 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		0.93	0		H

DUP Sample ID: **1608964-13A Dup** Units: **mg/L** Analysis Date: **8/30/2016**

Client ID: **L1816106-14** Run ID: **WETCHEM_160830C** SeqNo: **1346910** 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		1.12	0		H

The following samples were analyzed in this batch:

1608964-01A	1608964-02A	1608964-03A
1608964-04A	1608964-05A	1608964-06A
1608964-07A	1608964-08A	1608964-09A
1608964-10A	1608964-11A	1608964-12A
1608964-13A		

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

ALS Environmental

Date: 01-Sep-16

Client: ALS Environmental
Project: L1816106
WorkOrder: **1608964**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	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

Acronym	Description
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 Quantitaion Limit
SDL	Sample Detection Limit
SW	SW-846 Method

Units Reported	Description
%	
mg/L	

ALS Environmental

Sample Receipt Checklist

Client Name: **ALS-VANCOUVER** Date/Time Received: **26-Aug-16 00:00**

Work Order: **1608964** Received by: **RDN**

Checklist completed by: Chris Gibson 29-Aug-16 Reviewed by: Shawn Smythe 29-Aug-16

eSignature | Date | 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):	5.8		
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:

CorrectiveAction:

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

REFERENCE DATA

Project / Location: L1816106
PO Number: L1816106
ALS Work Order: 1608811

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: 8/24/2016
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

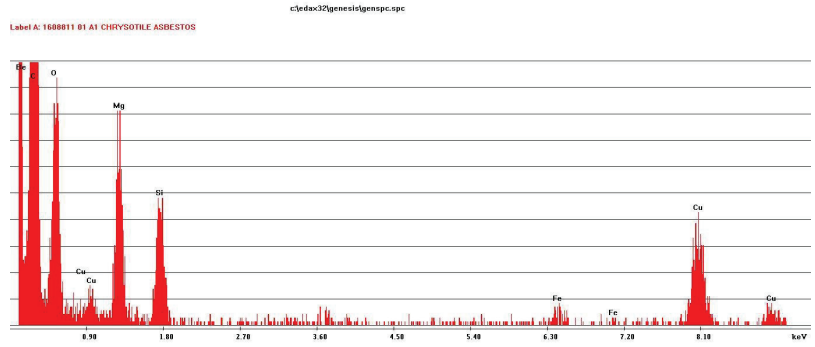
IDENTIFICATION			
Client Sample ID:	L1816106-2 E2	L1816106-4 E3	L1816106-5 R3
ALS Sample ID:	1608811-01	1608811-02	1608811-03
Method:	EPA 100.2	EPA 100.2	EPA 100.2
Date of Collection:	8/17/2016	8/17/2016	8/16/2016
Time of Collection:	Not Provided	Not Provided	Not Provided
FILTRATION & ANALYSIS			
Date of Filtration:	8/23/2016	8/23/2016	8/23/2016
Time of Filtration:	16:35	16:35	16:35
Volume Filtered (L):	0.015	0.001	0.001
Openings Analyzed:	4	4	10
Avg. Opening Area (mm^2):	0.0108	0.0108	0.0108
AS (MFL):	1.66	24.88	9.95
ASBESTOS COUNT			
Chrysotile:	49	15	0
Amosite:	0	0	0
Crocidolite:	0	0	0
Act-Tremolite†:	0	0	0
Anthophyllite:	0	0	0
Total Asbestos:	49	15	0
ASBESTOS CONCENTRATION (MFL)			
Chrysotile:	81.29	373.26	<AS
Amosite:	<AS	<AS	<AS
Crocidolite:	<AS	<AS	<AS
Act-Tremolite†:	<AS	<AS	<AS
Anthophyllite:	<AS	<AS	<AS
Total Asbestos:	**81.29**	**373.26**	**<AS**

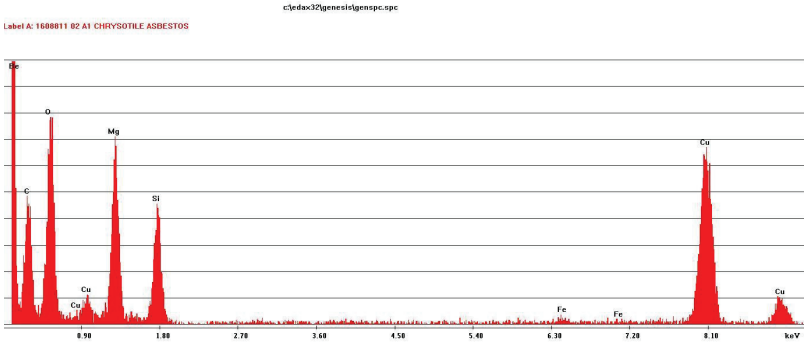
NOTES

All samples contained excessive suspended solids prohibiting filtration of sufficient sample to reach the recommended method AS of <0.20 MFL.
Analysis of samples L1816106-2 E2 and L1816106-4 E2 was terminated with the completion of the minimum 4 openings due to heavy concentrations of asbestos.
Analysis of sample L1816106-5 R3 was terminated with the completion of the maximum 10 openings.

EDXA SPECTRA

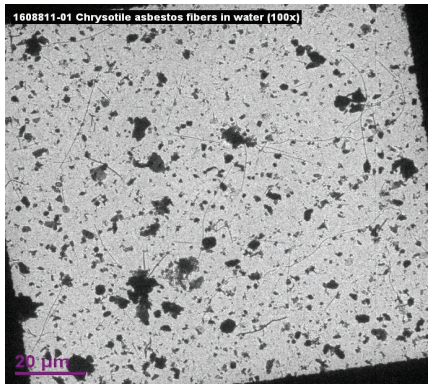
NOTE: Spurious peaks may originate from low background sample holder, column pole pieces, TEM grids, prep solutions or matrix materials.

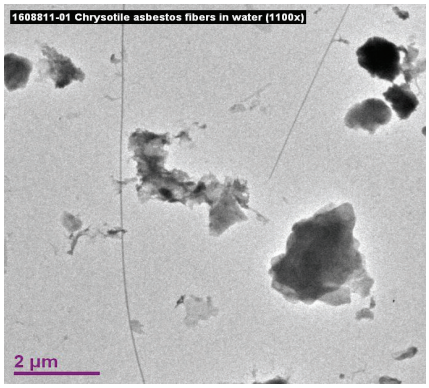


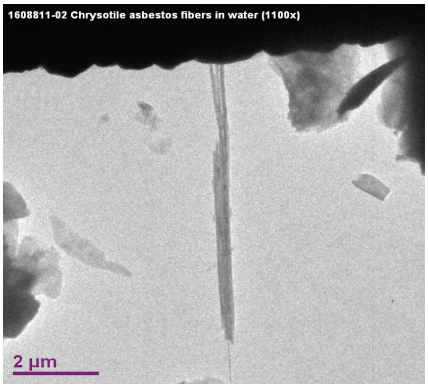


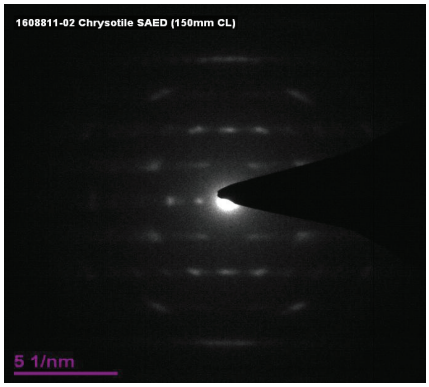
PHOTOMICROGRAPHS

Collected using Gatan Digital Micrograph.









ALS Environmental

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1816106-COFC

COC Number: 1

Page 1 of 2

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
Contact:	Natasha Sandys	Quality Control (QC) Report with Report	☑ Yes ☐ No	P
Address:	230 - 2237 2nd Avenue Whitehorse, YT	Select Distribution:		E
				E2
Phone:	867-456-4865	Email 1 or Fax	nsandys@hemmera.com	Specify Date Required for E2,E or P:
		Email 2	chris@elr.ca	

Invoice To		Invoice Distribution	
	Same as Report To ☑ Yes ☐ No	Select Invoice Distribution:	
	Copy of Invoice with Report ☐ Yes ☑ No	Email 1 or Fax	nsandys@hemmera.com
Company:	Hemmera Environchem Inc.	Email 2	chris@elr.ca
Contact:	Natasha Sandys		

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q56044	Approver ID:	Cost Center:
Job #:	1343-005.19	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler: AN/CH

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

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	F/P Low Level Diss. Met (incl. Hg) and Hardness	P Low Level Tot. Met (incl. Hg) and Hardness	P Chromium Speciation (III/VI) - Total	F/P Chromium Speciation (III/VI) - Dissolved	P Ammonia - N	F/P Dissolved Organic Carbon (DOC)	Nitrate-N	Nitrite - N	Total Phosphorus	Sulphate	pH, Conductivity	Asbestos-TEM-AD	Total Suspended Solids	Number of Containers
	E1	16-Aug-16	17:10	Water	R	R			R	R	R	R	R	R	R		R	10
	E2	17-Aug-16	14:20	Water	R	R			R	R	R	R	R	R	R	R	R	11
	E3	16-Aug-16	16:10	Water	R	R			R	R	R	R	R	R	R		R	10
	E3	17-Aug-16	8:10	Water												R		1
	R3	16-Aug-16	14:10	Water	R	R			R	R	R	R	R	R	R	R	R	11
	R7	17-Aug-16	9:40	Water	R	R			R	R	R	R	R	R	R		R	10
	R11	16-Aug-16	12:30	Water	R	R			R	R	R	R	R	R	R		R	10
	GWCC-1	17-Aug-16	13:30	Water	R	R			R	R	R	R	R	R	R		R	10
	GWCC-2	17-Aug-16	13:10	Water	R	R			R	R	R	R	R	R	R		R	10
	GWCC-3	17-Aug-16	12:50	Water	R	R			R	R	R	R	R	R	R		R	10
	GWCC-4	17-Aug-16	12:25	Water	R	R			R	R	R	R	R	R	R		R	10
	FB-1	16-Aug-16	17:10	Water	R	R			R	R	R	R	R	R	R		R	10

Short Holding Time

Rush Processing

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No	Please hold samples for total and dissolved Chromium III/VI pending regular metals analysis results. Please supply ELR EQWIN EDD file with results.
Are samples for human drinking water use? ☐ Yes ☑ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			1°C	1.8°C	0.5°C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: Aug 19, 2016	Time: 09:45	Received by: Shayan	Date: Aug-19	Time: 940	Received by: Shayan	Date: Aug. 20	Time: 1150

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

8,7,6,6,5

ALS Environmental

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1816106-COFC

COC Number: 1

Page 2 of 2

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: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3 pm - business days)
Contact:	Natasha Sandys	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address:	230 - 2237 2nd Avenue Whitehorse, YT	☐ Criteria on Report - provide details below if box checked Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 ☐ Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone:	867-456-4865	Email 1 or Fax nsandys@hemmera.com	Specify Date Required for E2,E or P:
		Email 2 chris@elr.ca	

Invoice To	Same as Report To ☑ Yes ☐ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☐ Yes ☑ No	Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	Hemmera Environchem Inc.	Email 1 or Fax nsandys@hemmera.com	
Contact:	Natasha Sandys	Email 2 chris@elr.ca	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q56044	Approver ID:	Cost Center:
Job #:	1343-005.19	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): | **ALS Contact:** | **Sampler:** AN/CH

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	F/P: Low Level Diss. Met (incl. Hg) and Hardness	P: Low Level Tot. Met (incl. Hg) and Hardness	P: Chromium Speciation (III/VI) - Total	F/P: Chromium Speciation (III/VI) - Dissolved	P: Ammonia - N	F/P: Dissolved Organic Carbon (DOC)	Nitrate-N	Nitrite - N	Total Phosphorus	Sulphate	pH, Conductivity	Asbestos-TEM-AD	Total Suspended Solids	Number of Containers
	Dup-1	16-Aug-16	17:10	Water	R	R			R	R	R	R	R	R	R		R	10
	Travel Blank			Water		R			R	R	R	R	R	R	R		R	7

Short Holding Time

• Rush Processing

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☑ No	Please hold samples for total and dissolved Chromium III/VI pending regular metals analysis results. Please supply ELR EQWIN EDD file with results.
Are samples for human drinking water use? ☐ Yes ☑ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ | Custody seal Intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			1°C	1.8°C	0.5°C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	Aug 19, 2016	09:45	Shayan	Aug. 19	940	Shayan	Aug. 20	1150

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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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**.

8, 7, 6, 6, 5