



HEMMERA ENVIROCHEM INC.  
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Date Received: 26-JUL-16  
Report Date: 17-AUG-16 15:54 (MT)  
Version: FINAL REV. 2

Client Phone: 867-456-4865

## Certificate of Analysis

Lab Work Order #: L1803696  
Project P.O. #: NOT SUBMITTED  
Job Reference: 1343-005.17  
C of C Numbers: 1, 2, 3  
Legal Site Desc:

Comments: 17-AUG-2016 This version of the report includes speciated chromium data for samples 1, 10, 12, 14, 16, 22, 23, 24, 25, and 26.

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Brent Mack, B.Sc.  
Account Manager

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ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1803696-1 Water 22-JUL-16 10:10 E1	L1803696-2 Water 24-JUL-16 11:50 E1	L1803696-3 Water 22-JUL-16 10:45 E1 (H)	L1803696-4 Water 24-JUL-16 11:10 E1 (H)	L1803696-5 Water TRAVEL BLANK
<b>Grouping</b>	<b>Analyte</b>				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (uS/cm)		549	546	<2.0
	Hardness (as CaCO3) (mg/L)	289		289	<0.50
	pH (pH)		8.16	7.93	5.42 <sup>RRV</sup>
<b>Anions and Nutrients</b>	Ammonia, Total (as N) (mg/L)	0.0179		0.0150	0.0150
	Nitrate (as N) (mg/L)		0.116	0.120	<0.0050
	Nitrite (as N) (mg/L)		0.0018	0.0041	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0031		0.0044	<0.0020
	Sulfate (SO4) (mg/L)		158	159	<0.30
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	14.4		14.5	
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0761		0.0530	<0.0030
	Antimony (Sb)-Total (mg/L)	0.00034		0.00031	<0.00010
	Arsenic (As)-Total (mg/L)	0.00094		0.00080	<0.00010
	Barium (Ba)-Total (mg/L)	0.0592		0.0587	<0.000050
	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)	0.0000450		0.0000437	<0.000050
	Calcium (Ca)-Total (mg/L)	63.7		64.6	<0.050
	Chromium (Cr)-Total (mg/L)	0.00117		0.00049	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00041		0.00043	<0.00010
	Copper (Cu)-Total (mg/L)	0.00295		0.00295	<0.00050
	Iron (Fe)-Total (mg/L)	0.255		0.228	<0.010
	Lead (Pb)-Total (mg/L)	0.000131		0.000118	<0.000050
	Lithium (Li)-Total (mg/L)	0.0028		0.0026	<0.0010
	Magnesium (Mg)-Total (mg/L)	30.5		30.6	<0.10
	Manganese (Mn)-Total (mg/L)	0.109		0.151	<0.00010
	Mercury (Hg)-Total (mg/L)	0.0000057		<0.0000050	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.00135		0.00133	<0.000050
	Nickel (Ni)-Total (mg/L)	0.00627		0.00407	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050		<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.62		0.60	<0.10
	Selenium (Se)-Total (mg/L)	0.00169		0.00170	<0.000050
	Silicon (Si)-Total (mg/L)	4.11		4.18	<0.050
	Silver (Ag)-Total (mg/L)	<0.000010		<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	2.83		2.73	<0.050
	Strontium (Sr)-Total (mg/L)	0.291		0.295	<0.00020

\* 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	L1803696-6 Water 21-JUL-16 17:15 E2	L1803696-7 Water 24-JUL-16 12:10 E2	L1803696-8 Water 21-JUL-16 15:15 E4	L1803696-9 Water 24-JUL-16 12:40 E4	L1803696-10 Water 22-JUL-16 15:15 E7
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (uS/cm)		604	630	
	Hardness (as CaCO3) (mg/L)	389		429	413
	pH (pH)		8.12	8.08	
<b>Anions and Nutrients</b>	Ammonia, Total (as N) (mg/L)	0.0159		0.0110	0.0336
	Nitrate (as N) (mg/L)		0.112	0.108	
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0038		0.0041	0.0564
	Sulfate (SO4) (mg/L)		184	193	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	13.4		12.5	13.7
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0313		0.0459	2.71
	Antimony (Sb)-Total (mg/L)	0.00042		0.00048	0.00057
	Arsenic (As)-Total (mg/L)	0.00119		0.00120	0.00442
	Barium (Ba)-Total (mg/L)	0.0541		0.0523	0.127
	Beryllium (Be)-Total (mg/L)	<0.000020		<0.000020	0.000096
	Bismuth (Bi)-Total (mg/L)	<0.000050		<0.000050	<0.000050
	Boron (B)-Total (mg/L)	0.031		0.045	0.034
	Cadmium (Cd)-Total (mg/L)	0.0000497		0.0000419	0.000178
	Calcium (Ca)-Total (mg/L)	77.5		78.0	74.5
	Chromium (Cr)-Total (mg/L)	0.00056		0.00066	0.00779
	Cobalt (Co)-Total (mg/L)	0.00054		0.00051	0.00315
	Copper (Cu)-Total (mg/L)	0.00360		0.00213	0.00960
	Iron (Fe)-Total (mg/L)	0.247		0.285	4.79
	Lead (Pb)-Total (mg/L)	0.000071		0.000085	0.00319
	Lithium (Li)-Total (mg/L)	0.0067		0.0094	0.0097
	Magnesium (Mg)-Total (mg/L)	47.8		54.0	51.4
	Manganese (Mn)-Total (mg/L)	0.0996		0.100	0.367
	Mercury (Hg)-Total (mg/L)	<0.0000050		<0.0000050	0.0000123
	Molybdenum (Mo)-Total (mg/L)	0.00170		0.00169	0.00164
	Nickel (Ni)-Total (mg/L)	0.0135		0.0146	0.0220
	Phosphorus (P)-Total (mg/L)	<0.050		<0.050	0.136
	Potassium (K)-Total (mg/L)	0.85		0.92	1.49
	Selenium (Se)-Total (mg/L)	0.00162		0.00134	0.00135
	Silicon (Si)-Total (mg/L)	4.46		4.54	8.67
	Silver (Ag)-Total (mg/L)	<0.000010		<0.000010	0.000065
	Sodium (Na)-Total (mg/L)	3.50		4.31	4.06
	Strontium (Sr)-Total (mg/L)	0.412		0.451	0.416

\* 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	L1803696-11 Water 24-JUL-16 13:10 E7	L1803696-12 Water 22-JUL-16 17:10 E8	L1803696-13 Water 24-JUL-16 13:00 E8	L1803696-14 Water 21-JUL-16 13:45 R4	L1803696-15 Water 24-JUL-16 12:45 R4
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (uS/cm)	624		162	535
	Hardness (as CaCO3) (mg/L)		80.0	395	
	pH (pH)	8.09		7.78	8.17
<b>Anions and Nutrients</b>	Ammonia, Total (as N) (mg/L)		0.0172	0.0229	
	Nitrate (as N) (mg/L)	0.139		0.0982	0.160
	Nitrite (as N) (mg/L)	<0.0010		<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		0.0379	0.0256	
	Sulfate (SO4) (mg/L)	187		26.4	137
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		15.3	11.8	
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)		2.58	1.55	
	Antimony (Sb)-Total (mg/L)		0.00022	0.00047	
	Arsenic (As)-Total (mg/L)		0.00203	0.00410	
	Barium (Ba)-Total (mg/L)		0.0804	0.116	
	Beryllium (Be)-Total (mg/L)		0.000097	0.000054	
	Bismuth (Bi)-Total (mg/L)		<0.000050	0.000053	
	Boron (B)-Total (mg/L)		<0.010	<0.010	
	Cadmium (Cd)-Total (mg/L)		0.0000814	0.000190	
	Calcium (Ca)-Total (mg/L)		21.4	83.2	
	Chromium (Cr)-Total (mg/L)		0.00495	0.00398	
	Cobalt (Co)-Total (mg/L)		0.00190	0.00204	
	Copper (Cu)-Total (mg/L)		0.0104	0.00625	
	Iron (Fe)-Total (mg/L)		3.47	2.64	
	Lead (Pb)-Total (mg/L)		0.00148	0.00135	
	Lithium (Li)-Total (mg/L)		0.0039	0.0047	
	Magnesium (Mg)-Total (mg/L)		7.42	41.1	
	Manganese (Mn)-Total (mg/L)		0.0989	0.228	
	Mercury (Hg)-Total (mg/L)		<0.000025 <sup>DLM</sup>	<0.000025 <sup>DLM</sup>	
	Molybdenum (Mo)-Total (mg/L)		0.000459	0.00147	
	Nickel (Ni)-Total (mg/L)		0.00679	0.0238	
	Phosphorus (P)-Total (mg/L)		0.069	0.068	
	Potassium (K)-Total (mg/L)		1.07	0.78	
	Selenium (Se)-Total (mg/L)		0.000231	0.00180	
	Silicon (Si)-Total (mg/L)		8.72	7.45	
	Silver (Ag)-Total (mg/L)		0.000031	0.000058	
	Sodium (Na)-Total (mg/L)		2.99	5.03	
	Strontium (Sr)-Total (mg/L)		0.115	0.451	

\* 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	L1803696-16 Water 22-JUL-16 18:20 R6	L1803696-17 Water 24-JUL-16 13:30 R6	L1803696-18 Water 22-JUL-16 08:30 GWCC-5	L1803696-19 Water 24-JUL-16 12:00 GWCC-5	L1803696-20 Water 22-JUL-16 08:30 DUP2
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (uS/cm)		152	962	
	Hardness (as CaCO3) (mg/L)	74.7	562		556
	pH (pH)		7.74	7.98	
<b>Anions and Nutrients</b>	Ammonia, Total (as N) (mg/L)	0.0174	<0.0050		<0.0050
	Nitrate (as N) (mg/L)		0.0967	0.0053	
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0383	<0.0020		<0.0020
	Sulfate (SO4) (mg/L)		23.2	310	
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	15.1	7.16		7.10
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	2.54	0.0046		<0.0030
	Antimony (Sb)-Total (mg/L)	0.00018	0.00076		0.00076
	Arsenic (As)-Total (mg/L)	0.00201	0.00082		0.00076
	Barium (Ba)-Total (mg/L)	0.0774	0.0516		0.0533
	Beryllium (Be)-Total (mg/L)	0.000100	<0.000020		<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050		<0.000050
	Boron (B)-Total (mg/L)	<0.010	0.031		0.032
	Cadmium (Cd)-Total (mg/L)	0.0000799	0.000107		0.000110
	Calcium (Ca)-Total (mg/L)	20.9	126		127
	Chromium (Cr)-Total (mg/L)	0.00505	0.00068		0.00070
	Cobalt (Co)-Total (mg/L)	0.00196	<0.00010		<0.00010
	Copper (Cu)-Total (mg/L)	0.00748	0.00086		0.00088
	Iron (Fe)-Total (mg/L)	3.78	0.053		0.052
	Lead (Pb)-Total (mg/L)	0.00166	<0.000050		<0.000050
	Lithium (Li)-Total (mg/L)	0.0041	0.0097		0.0097
	Magnesium (Mg)-Total (mg/L)	6.97	58.0		58.3
	Manganese (Mn)-Total (mg/L)	0.101	0.00346		0.00341
	Mercury (Hg)-Total (mg/L)	<0.000025 <sup>DLM</sup>	<0.000050		<0.000050
	Molybdenum (Mo)-Total (mg/L)	0.000450	0.00192		0.00192
	Nickel (Ni)-Total (mg/L)	0.00649	0.0191		0.0195
	Phosphorus (P)-Total (mg/L)	0.088	<0.050		<0.050
	Potassium (K)-Total (mg/L)	1.04	0.77		0.77
	Selenium (Se)-Total (mg/L)	0.000253	0.00742		0.00738
	Silicon (Si)-Total (mg/L)	8.72	4.45		4.47
	Silver (Ag)-Total (mg/L)	0.000035	<0.000010		<0.000010
	Sodium (Na)-Total (mg/L)	2.77	3.94		3.99
	Strontium (Sr)-Total (mg/L)	0.114	0.717		0.703

\* 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		L1803696-21 Water 24-JUL-16 12:00 DUP2	L1803696-22 Water 23-JUL-16 14:05 R1	L1803696-23 Water 23-JUL-16 15:55 R2	L1803696-24 Water 23-JUL-16 17:15 R8	L1803696-25 Water 23-JUL-16 18:15 R9
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	963	422	416	280	240
	Hardness (as CaCO3) (mg/L)		219	225	134	125
	pH (pH)	7.99	7.87	7.99	7.74	7.52
<b>Anions and Nutrients</b>	Ammonia, Total (as N) (mg/L)		0.0610	0.0352	0.0072	0.114
	Nitrate (as N) (mg/L)	<0.0050	0.258	0.0475	<0.0050	0.212
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)		0.338	0.0730	0.0074	0.373
	Sulfate (SO4) (mg/L)	310	117	104	80.6	60.4
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)		18.3	18.9	18.8	34.3
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)		5.07	4.60	0.191	8.54
	Antimony (Sb)-Total (mg/L)		0.00069	0.00053	0.00109	0.00058
	Arsenic (As)-Total (mg/L)		0.00547	0.00415	0.00063	0.00662
	Barium (Ba)-Total (mg/L)		0.162	0.170	0.0582	0.283
	Beryllium (Be)-Total (mg/L)		0.000167	0.000152	<0.000020	0.000280
	Bismuth (Bi)-Total (mg/L)		0.000074	0.000051	<0.000050	0.000097
	Boron (B)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)		0.000403	0.000118	0.0000438	0.000342
	Calcium (Ca)-Total (mg/L)		56.0	40.2	32.3	37.6
	Chromium (Cr)-Total (mg/L)		0.0139	0.0110	0.00155	0.0194
	Cobalt (Co)-Total (mg/L)		0.00483	0.00339	0.00020	0.00735
	Copper (Cu)-Total (mg/L)		0.0161	0.00914	0.00365	0.0247
	Iron (Fe)-Total (mg/L)		9.02	7.13	0.334	14.1
	Lead (Pb)-Total (mg/L)		0.00657	0.00305	0.000151	0.00593
	Lithium (Li)-Total (mg/L)		0.0055	0.0069	<0.0010	0.0069
	Magnesium (Mg)-Total (mg/L)		21.7	29.7	12.2	14.8
	Manganese (Mn)-Total (mg/L)		0.363	0.235	0.0182	0.480
	Mercury (Hg)-Total (mg/L)		0.000155	<0.000025 <sup>DLM</sup>	0.0000078	<0.000050 <sup>DLM</sup>
	Molybdenum (Mo)-Total (mg/L)		0.00198	0.000670	0.00106	0.00126
	Nickel (Ni)-Total (mg/L)		0.0184	0.0109	0.00437	0.0216
	Phosphorus (P)-Total (mg/L)		0.232	0.165	<0.050	0.436
	Potassium (K)-Total (mg/L)		1.14	0.87	<0.10	0.92
	Selenium (Se)-Total (mg/L)		0.00204	0.000553	0.000800	0.00119
	Silicon (Si)-Total (mg/L)		11.6	12.4	5.89	17.8
Silver (Ag)-Total (mg/L)		0.000171	0.000045	0.000012	0.000129	
Sodium (Na)-Total (mg/L)		2.28	2.52	4.19	2.18	
Strontium (Sr)-Total (mg/L)		0.235	0.213	0.125	0.144	

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L1803696-26 Water 24-JUL-16 08:50 SL			
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (uS/cm)	1600			
	Hardness (as CaCO3) (mg/L)	1020			
	pH (pH)	8.37			
<b>Anions and Nutrients</b>	Ammonia, Total (as N) (mg/L)	<0.0050			
	Nitrate (as N) (mg/L)	<0.010 <sup>DLDS</sup>			
	Nitrite (as N) (mg/L)	<0.0020 <sup>DLDS</sup>			
	Phosphorus (P)-Total (mg/L)	0.0023			
	Sulfate (SO4) (mg/L)	735			
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	8.56			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0439			
	Antimony (Sb)-Total (mg/L)	0.00284			
	Arsenic (As)-Total (mg/L)	0.0151			
	Barium (Ba)-Total (mg/L)	0.0289			
	Beryllium (Be)-Total (mg/L)	<0.000020			
	Bismuth (Bi)-Total (mg/L)	<0.000050			
	Boron (B)-Total (mg/L)	0.044			
	Cadmium (Cd)-Total (mg/L)	0.0000270			
	Calcium (Ca)-Total (mg/L)	227			
	Chromium (Cr)-Total (mg/L)	0.00221			
	Cobalt (Co)-Total (mg/L)	0.00019			
	Copper (Cu)-Total (mg/L)	0.00120			
	Iron (Fe)-Total (mg/L)	0.084			
	Lead (Pb)-Total (mg/L)	0.000053			
	Lithium (Li)-Total (mg/L)	0.0104			
	Magnesium (Mg)-Total (mg/L)	108			
	Manganese (Mn)-Total (mg/L)	0.00465			
	Mercury (Hg)-Total (mg/L)	<0.0000050			
	Molybdenum (Mo)-Total (mg/L)	0.00202			
	Nickel (Ni)-Total (mg/L)	0.0195			
	Phosphorus (P)-Total (mg/L)	<0.050			
	Potassium (K)-Total (mg/L)	1.47			
	Selenium (Se)-Total (mg/L)	0.0160			
	Silicon (Si)-Total (mg/L)	3.72			
	Silver (Ag)-Total (mg/L)	<0.000010			
Sodium (Na)-Total (mg/L)	2.65				
Strontium (Sr)-Total (mg/L)	0.988				

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1803696-1	L1803696-2	L1803696-3	L1803696-4	L1803696-5
		Description	Water	Water	Water	Water	Water
		Sampled Date	22-JUL-16	24-JUL-16	22-JUL-16	24-JUL-16	
		Sampled Time	10:10	11:50	10:45	11:10	
		Client ID	E1	E1	E1 (H)	E1 (H)	TRAVEL BLANK
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Sulfur (S)-Total (mg/L)		53.9		54.6		<0.50
	Thallium (Tl)-Total (mg/L)		0.000013		<0.000010		<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010		<0.00010		<0.00010
	Titanium (Ti)-Total (mg/L)		0.00215		0.00160		<0.00030
	Uranium (U)-Total (mg/L)		0.00192		0.00198		<0.000010
	Vanadium (V)-Total (mg/L)		0.00074		0.00070		<0.00050
	Zinc (Zn)-Total (mg/L)		<0.0030		<0.0030		<0.0030
	Zirconium (Zr)-Total (mg/L)		0.00077		0.00079		<0.00030
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD		FIELD		
	Dissolved Metals Filtration Location		FIELD		FIELD		
	Aluminum (Al)-Dissolved (mg/L)		0.0319		0.0385		
	Antimony (Sb)-Dissolved (mg/L)		0.00028		0.00029		
	Arsenic (As)-Dissolved (mg/L)		0.00080		0.00075		
	Barium (Ba)-Dissolved (mg/L)		0.0586		0.0587		
	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)		0.0000319		0.0000322		
	Calcium (Ca)-Dissolved (mg/L)		63.4		64.0		
	Chromium (Cr)-Dissolved (mg/L)		0.00036		0.00035		
	Cobalt (Co)-Dissolved (mg/L)		0.00031		0.00040		
	Copper (Cu)-Dissolved (mg/L)		0.00265		0.00272		
	Iron (Fe)-Dissolved (mg/L)		0.137		0.169		
	Lead (Pb)-Dissolved (mg/L)		0.000051		0.000063		
	Lithium (Li)-Dissolved (mg/L)		0.0026		0.0029		
	Magnesium (Mg)-Dissolved (mg/L)		31.7		31.5		
	Manganese (Mn)-Dissolved (mg/L)		0.0904		0.149		
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050		<0.0000050		
	Molybdenum (Mo)-Dissolved (mg/L)		0.00110		0.00111		
	Nickel (Ni)-Dissolved (mg/L)		0.00472		0.00393		
	Phosphorus (P)-Dissolved (mg/L)		<0.050		<0.050		
	Potassium (K)-Dissolved (mg/L)		0.58		0.59		
	Selenium (Se)-Dissolved (mg/L)		0.00187		0.00176		
	Silicon (Si)-Dissolved (mg/L)		4.03		4.14		
	Silver (Ag)-Dissolved (mg/L)		<0.000010		<0.000010		
	Sodium (Na)-Dissolved (mg/L)		2.82		2.76		
	Strontium (Sr)-Dissolved (mg/L)		0.287		0.288		

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



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1803696-6	L1803696-7	L1803696-8	L1803696-9	L1803696-10
		Description	Water	Water	Water	Water	Water
		Sampled Date	21-JUL-16	24-JUL-16	21-JUL-16	24-JUL-16	22-JUL-16
		Sampled Time	17:15	12:10	15:15	12:40	15:15
		Client ID	E2	E2	E4	E4	E7
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Sulfur (S)-Total (mg/L)		81.0		85.3		77.8
	Thallium (Tl)-Total (mg/L)		0.000024		0.000018		0.000048
	Tin (Sn)-Total (mg/L)		<0.00010		<0.00010		<0.00010
	Titanium (Ti)-Total (mg/L)		0.00063		0.00147		0.0770
	Uranium (U)-Total (mg/L)		0.00211		0.00229		0.00246
	Vanadium (V)-Total (mg/L)		<0.00050		0.00051		0.00828
	Zinc (Zn)-Total (mg/L)		<0.0030		<0.0030		0.0322
	Zirconium (Zr)-Total (mg/L)		0.00063		0.00073		0.00088
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD		FIELD		FIELD
	Dissolved Metals Filtration Location		FIELD		FIELD		FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0248		0.0168		0.0268
	Antimony (Sb)-Dissolved (mg/L)		0.00038		0.00047		0.00038
	Arsenic (As)-Dissolved (mg/L)		0.00100		0.00110		0.00099
	Barium (Ba)-Dissolved (mg/L)		0.0538		0.0526		0.0638
	Beryllium (Be)-Dissolved (mg/L)		<0.000020		<0.000020		<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050		<0.000050		<0.000050
	Boron (B)-Dissolved (mg/L)		0.028		0.043		0.034
	Cadmium (Cd)-Dissolved (mg/L)		0.0000506		0.0000353		0.0000382
	Calcium (Ca)-Dissolved (mg/L)		75.7		78.7		76.1
	Chromium (Cr)-Dissolved (mg/L)		0.00040		0.00047		0.00049
	Cobalt (Co)-Dissolved (mg/L)		0.00052		0.00047		0.00063
	Copper (Cu)-Dissolved (mg/L)		0.00221		0.00193		0.00222
	Iron (Fe)-Dissolved (mg/L)		0.188		0.185		0.182
	Lead (Pb)-Dissolved (mg/L)		<0.000050		<0.000050		0.000079
	Lithium (Li)-Dissolved (mg/L)		0.0067		0.0094		0.0082
	Magnesium (Mg)-Dissolved (mg/L)		48.5		56.4		54.1
	Manganese (Mn)-Dissolved (mg/L)		0.0915		0.0942		0.203
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050		<0.0000050		<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.00143		0.00148		0.00132
	Nickel (Ni)-Dissolved (mg/L)		0.0124		0.0142		0.0104
	Phosphorus (P)-Dissolved (mg/L)		<0.050		<0.050		<0.050
	Potassium (K)-Dissolved (mg/L)		0.80		0.92		0.95
	Selenium (Se)-Dissolved (mg/L)		0.00157		0.00137		0.00114
	Silicon (Si)-Dissolved (mg/L)		4.32		4.53		4.62
	Silver (Ag)-Dissolved (mg/L)		<0.000010		<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)		3.52		4.29		3.93
	Strontium (Sr)-Dissolved (mg/L)		0.398		0.450		0.411

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1803696-11	L1803696-12	L1803696-13	L1803696-14	L1803696-15
		Description	Water	Water	Water	Water	Water
		Sampled Date	24-JUL-16	22-JUL-16	24-JUL-16	21-JUL-16	24-JUL-16
		Sampled Time	13:10	17:10	13:00	13:45	12:45
		Client ID	E7	E8	E8	R4	R4
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Sulfur (S)-Total (mg/L)			9.60		65.5	
	Thallium (Tl)-Total (mg/L)			0.000028		0.000030	
	Tin (Sn)-Total (mg/L)			<0.00010		<0.00010	
	Titanium (Ti)-Total (mg/L)			0.0890		0.0374	
	Uranium (U)-Total (mg/L)			0.000827		0.00466	
	Vanadium (V)-Total (mg/L)			0.00767		0.00508	
	Zinc (Zn)-Total (mg/L)			0.0186		0.0130	
	Zirconium (Zr)-Total (mg/L)			0.00071		0.00095	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location			FIELD		FIELD	
	Dissolved Metals Filtration Location			FIELD		FIELD	
	Aluminum (Al)-Dissolved (mg/L)			0.0995		0.0146	
	Antimony (Sb)-Dissolved (mg/L)			0.00011		0.00035	
	Arsenic (As)-Dissolved (mg/L)			0.00063		0.00234	
	Barium (Ba)-Dissolved (mg/L)			0.0369		0.0694	
	Beryllium (Be)-Dissolved (mg/L)			0.000021		<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)			0.0000083		0.0000511	
	Calcium (Ca)-Dissolved (mg/L)			20.9		85.3	
	Chromium (Cr)-Dissolved (mg/L)			0.00037		0.00030	
	Cobalt (Co)-Dissolved (mg/L)			0.00028		0.00089	
	Copper (Cu)-Dissolved (mg/L)			0.00274		0.00175	
	Iron (Fe)-Dissolved (mg/L)			0.279		0.162	
	Lead (Pb)-Dissolved (mg/L)			0.000063		<0.000050	
	Lithium (Li)-Dissolved (mg/L)			0.0023		0.0038	
	Magnesium (Mg)-Dissolved (mg/L)			6.77		44.1	
	Manganese (Mn)-Dissolved (mg/L)			0.0238		0.150	
	Mercury (Hg)-Dissolved (mg/L)			<0.0000050		<0.0000050	
	Molybdenum (Mo)-Dissolved (mg/L)			0.000342		0.00121	
	Nickel (Ni)-Dissolved (mg/L)			0.00225		0.0156	
	Phosphorus (P)-Dissolved (mg/L)			<0.050		<0.050	
	Potassium (K)-Dissolved (mg/L)			0.79		0.59	
	Selenium (Se)-Dissolved (mg/L)			0.000173		0.00185	
	Silicon (Si)-Dissolved (mg/L)			5.23		5.23	
	Silver (Ag)-Dissolved (mg/L)			<0.000010		<0.000010	
	Sodium (Na)-Dissolved (mg/L)			2.79		5.17	
	Strontium (Sr)-Dissolved (mg/L)			0.108		0.460	

\* 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		L1803696-16 Water 22-JUL-16 18:20 R6	L1803696-17 Water 24-JUL-16 13:30 R6	L1803696-18 Water 22-JUL-16 08:30 GWCC-5	L1803696-19 Water 24-JUL-16 12:00 GWCC-5	L1803696-20 Water 22-JUL-16 08:30 DUP2
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Sulfur (S)-Total (mg/L)	8.85		111		111
	Thallium (Tl)-Total (mg/L)	0.000028		0.000016		0.000015
	Tin (Sn)-Total (mg/L)	<0.00010		<0.00010		<0.00010
	Titanium (Ti)-Total (mg/L)	0.0870		<0.00030		<0.00030
	Uranium (U)-Total (mg/L)	0.000854		0.00247		0.00239
	Vanadium (V)-Total (mg/L)	0.00782		<0.00050		<0.00050
	Zinc (Zn)-Total (mg/L)	0.0153		<0.0030		<0.0030
	Zirconium (Zr)-Total (mg/L)	0.00073		<0.00030		<0.00030
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD		FIELD		FIELD
	Dissolved Metals Filtration Location	FIELD		FIELD		FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.112		0.0015		0.0019
	Antimony (Sb)-Dissolved (mg/L)	0.00011		0.00076		0.00074
	Arsenic (As)-Dissolved (mg/L)	0.00071		0.00069		0.00072
	Barium (Ba)-Dissolved (mg/L)	0.0389		0.0536		0.0561
	Beryllium (Be)-Dissolved (mg/L)	0.000024		<0.000020		<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050		<0.000050		<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010		0.030		0.030
	Cadmium (Cd)-Dissolved (mg/L)	0.0000170		0.000109		0.000115
	Calcium (Ca)-Dissolved (mg/L)	19.9		126		124
	Chromium (Cr)-Dissolved (mg/L)	0.00040		0.00062		0.00064
	Cobalt (Co)-Dissolved (mg/L)	0.00031		<0.00010		<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00305		0.00078		0.00079
	Iron (Fe)-Dissolved (mg/L)	0.271		0.038		0.039
	Lead (Pb)-Dissolved (mg/L)	0.000065		<0.000050		<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0023		0.0096		0.0098
	Magnesium (Mg)-Dissolved (mg/L)	6.11		59.9		59.7
	Manganese (Mn)-Dissolved (mg/L)	0.0248		0.00316		0.00312
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050		<0.0000050		<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000316		0.00167		0.00168
	Nickel (Ni)-Dissolved (mg/L)	0.00239		0.0193		0.0194
	Phosphorus (P)-Dissolved (mg/L)	<0.050		<0.050		<0.050
	Potassium (K)-Dissolved (mg/L)	0.77		0.79		0.75
	Selenium (Se)-Dissolved (mg/L)	0.000182		0.00769		0.00731
	Silicon (Si)-Dissolved (mg/L)	5.15		4.52		4.40
	Silver (Ag)-Dissolved (mg/L)	<0.000010		<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.97		4.02		4.05
	Strontium (Sr)-Dissolved (mg/L)	0.106		0.697		0.699

\* 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	L1803696-21 Water 24-JUL-16 12:00 DUP2	L1803696-22 Water 23-JUL-16 14:05 R1	L1803696-23 Water 23-JUL-16 15:55 R2	L1803696-24 Water 23-JUL-16 17:15 R8	L1803696-25 Water 23-JUL-16 18:15 R9
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Sulfur (S)-Total (mg/L)	39.5	35.1	26.8	20.9
	Thallium (Tl)-Total (mg/L)	0.000076	0.000044	<0.000010	0.000062
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00011
	Titanium (Ti)-Total (mg/L)	0.115	0.111	0.00454	0.244
	Uranium (U)-Total (mg/L)	0.00157	0.00243	0.000086	0.00104
	Vanadium (V)-Total (mg/L)	0.0145	0.0141	0.00103	0.0274
	Zinc (Zn)-Total (mg/L)	0.0413	0.0201	0.0041	0.0476
	Zirconium (Zr)-Total (mg/L)	0.00134	0.00099	0.00067	0.00209
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0749	0.0941	0.0456	0.198
	Antimony (Sb)-Dissolved (mg/L)	0.00026	0.00034	0.00105	0.00023
	Arsenic (As)-Dissolved (mg/L)	0.00067	0.00095	0.00043	0.00136
	Barium (Ba)-Dissolved (mg/L)	0.0509	0.0630	0.0499	0.0879
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	0.000020	<0.000020	0.000034
	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)	0.0000465	0.0000131	0.0000318	0.0000361
	Calcium (Ca)-Dissolved (mg/L)	55.1	39.9	33.1	32.2
	Chromium (Cr)-Dissolved (mg/L)	0.00053	0.00103	0.00107	0.00145
	Cobalt (Co)-Dissolved (mg/L)	0.00038	0.00036	<0.00010	0.00082
	Copper (Cu)-Dissolved (mg/L)	0.00322	0.00219	0.00236	0.00521
	Iron (Fe)-Dissolved (mg/L)	0.292	0.503	0.083	0.985
	Lead (Pb)-Dissolved (mg/L)	0.000100	0.000076	<0.000050	0.000132
	Lithium (Li)-Dissolved (mg/L)	0.0018	0.0035	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	19.8	30.4	12.4	10.8
	Manganese (Mn)-Dissolved (mg/L)	0.0984	0.0971	0.00821	0.209
	Mercury (Hg)-Dissolved (mg/L)	0.0000070	<0.0000050	<0.0000050	0.0000076
	Molybdenum (Mo)-Dissolved (mg/L)	0.000831	0.000436	0.000680	0.000676
	Nickel (Ni)-Dissolved (mg/L)	0.00328	0.00340	0.00354	0.00426
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.45	0.51	<0.10	0.29
	Selenium (Se)-Dissolved (mg/L)	0.00160	0.000378	0.000790	0.000811
	Silicon (Si)-Dissolved (mg/L)	4.50	5.78	5.93	5.05
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.98	2.30	3.79	1.70
	Strontium (Sr)-Dissolved (mg/L)	0.216	0.191	0.128	0.109

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L1803696-26			
		Water			
		24-JUL-16			
		08:50			
		SL			
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Sulfur (S)-Total (mg/L)	256			
	Thallium (Tl)-Total (mg/L)	0.000016			
	Tin (Sn)-Total (mg/L)	<0.00010			
	Titanium (Ti)-Total (mg/L)	0.00103			
	Uranium (U)-Total (mg/L)	0.00339			
	Vanadium (V)-Total (mg/L)	<0.00050			
	Zinc (Zn)-Total (mg/L)	<0.0030			
	Zirconium (Zr)-Total (mg/L)	<0.00030			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD			
	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0018			
	Antimony (Sb)-Dissolved (mg/L)	0.00281			
	Arsenic (As)-Dissolved (mg/L)	0.0144			
	Barium (Ba)-Dissolved (mg/L)	0.0279			
	Beryllium (Be)-Dissolved (mg/L)	<0.000020			
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050			
	Boron (B)-Dissolved (mg/L)	0.041			
	Cadmium (Cd)-Dissolved (mg/L)	0.0000139			
	Calcium (Ca)-Dissolved (mg/L)	230			
	Chromium (Cr)-Dissolved (mg/L)	0.00104			
	Cobalt (Co)-Dissolved (mg/L)	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00095			
	Iron (Fe)-Dissolved (mg/L)	<0.010			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.0102			
	Magnesium (Mg)-Dissolved (mg/L)	109			
	Manganese (Mn)-Dissolved (mg/L)	0.00165			
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050			
	Molybdenum (Mo)-Dissolved (mg/L)	0.00170			
	Nickel (Ni)-Dissolved (mg/L)	0.0170			
	Phosphorus (P)-Dissolved (mg/L)	<0.050			
	Potassium (K)-Dissolved (mg/L)	1.44			
	Selenium (Se)-Dissolved (mg/L)	0.0156			
	Silicon (Si)-Dissolved (mg/L)	3.47			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.52			
	Strontium (Sr)-Dissolved (mg/L)	0.907			

\* 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	L1803696-1	L1803696-2	L1803696-3	L1803696-4	L1803696-5
					Water	Water	Water	Water	Water
		22-JUL-16	10:10	E1	22-JUL-16	24-JUL-16	22-JUL-16	24-JUL-16	
					10:10	11:50	10:45	11:10	
					E1	E1	E1 (H)	E1 (H)	TRAVEL BLANK
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Sulfur (S)-Dissolved (mg/L)		52.1				51.9		
	Thallium (Tl)-Dissolved (mg/L)		<0.00010				<0.00010		
	Tin (Sn)-Dissolved (mg/L)		<0.00010				<0.00010		
	Titanium (Ti)-Dissolved (mg/L)		0.00062				0.00084		
	Uranium (U)-Dissolved (mg/L)		0.00180				0.00185		
	Vanadium (V)-Dissolved (mg/L)		<0.00050				<0.00050		
	Zinc (Zn)-Dissolved (mg/L)		0.0018				0.0013		
	Zirconium (Zr)-Dissolved (mg/L)		0.00068				0.00071		
<b>Speciated Metals</b>	Chromium (III)-Dissolved (mg/L)								
	Chromium (III)-Total (mg/L)		0.00117						
	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	Description	Sampled Date	Sampled Time	Client ID	L1803696-6	L1803696-7	L1803696-8	L1803696-9	L1803696-10
					Water	Water	Water	Water	Water
		21-JUL-16	17:15	E2	21-JUL-16	24-JUL-16	21-JUL-16	24-JUL-16	22-JUL-16
					17:15	12:10	15:15	12:40	15:15
					E2	E2	E4	E4	E7
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Sulfur (S)-Dissolved (mg/L)				76.0		82.3		79.0
	Thallium (Tl)-Dissolved (mg/L)				0.000023		0.000020		<0.000010
	Tin (Sn)-Dissolved (mg/L)				<0.00010		<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)				0.00049		0.00045		0.00069
	Uranium (U)-Dissolved (mg/L)				0.00191		0.00215		0.00220
	Vanadium (V)-Dissolved (mg/L)				<0.00050		<0.00050		<0.00050
	Zinc (Zn)-Dissolved (mg/L)				0.0031		0.0030		0.0078
	Zirconium (Zr)-Dissolved (mg/L)				0.00059		0.00071		0.00085
<b>Speciated Metals</b>	Chromium (III)-Dissolved (mg/L)								
	Chromium (III)-Total (mg/L)								0.00779
	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	L1803696-11	L1803696-12	L1803696-13	L1803696-14	L1803696-15
Description	Water	Water	Water	Water	Water
Sampled Date	24-JUL-16	22-JUL-16	24-JUL-16	21-JUL-16	24-JUL-16
Sampled Time	13:10	17:10	13:00	13:45	12:45
Client ID	E7	E8	E8	R4	R4
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Sulfur (S)-Dissolved (mg/L)	9.61		64.9	
	Thallium (Tl)-Dissolved (mg/L)	<0.000010		<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010		<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	0.00147		0.00036	
	Uranium (U)-Dissolved (mg/L)	0.000611		0.00442	
	Vanadium (V)-Dissolved (mg/L)	0.00103		<0.00050	
	Zinc (Zn)-Dissolved (mg/L)	0.0016		0.0019	
	Zirconium (Zr)-Dissolved (mg/L)	0.00073		0.00087	
<b>Speciated Metals</b>	Chromium (III)-Dissolved (mg/L)				
	Chromium (III)-Total (mg/L)	0.00495		0.00398	
	Hexavalent Chromium (mg/L)	<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

	<b>Sample ID</b>	L1803696-16	L1803696-17	L1803696-18	L1803696-19	L1803696-20
<b>Description</b>	Water	Water	Water	Water	Water	Water
<b>Sampled Date</b>	22-JUL-16	24-JUL-16	22-JUL-16	24-JUL-16	22-JUL-16	22-JUL-16
<b>Sampled Time</b>	18:20	13:30	08:30	08:30	12:00	08:30
<b>Client ID</b>	R6	R6	GWCC-5	GWCC-5	GWCC-5	DUP2
<b>Grouping</b>	<b>Analyte</b>					
<b>WATER</b>						
<b>Dissolved Metals</b>	Sulfur (S)-Dissolved (mg/L)	8.67		105		104
	Thallium (Tl)-Dissolved (mg/L)	<0.00010		0.000016		0.000015
	Tin (Sn)-Dissolved (mg/L)	<0.00010		<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00148		<0.00030		<0.00030
	Uranium (U)-Dissolved (mg/L)	0.000574		0.00230		0.00228
	Vanadium (V)-Dissolved (mg/L)	0.00108		<0.00050		<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.0030		<0.0010		<0.0010
	Zirconium (Zr)-Dissolved (mg/L)	0.00076		<0.00030		<0.00030
<b>Speciated Metals</b>	Chromium (III)-Dissolved (mg/L)					
	Chromium (III)-Total (mg/L)	0.00505				
	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	L1803696-21	L1803696-22	L1803696-23	L1803696-24	L1803696-25
		Description	Water	Water	Water	Water	Water
		Sampled Date	24-JUL-16	23-JUL-16	23-JUL-16	23-JUL-16	23-JUL-16
		Sampled Time	12:00	14:05	15:55	17:15	18:15
		Client ID	DUP2	R1	R2	R8	R9
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Sulfur (S)-Dissolved (mg/L)			39.4	34.5	27.3	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)			0.00160	0.00198	0.00079	0.00395
	Uranium (U)-Dissolved (mg/L)			0.00109	0.00193	0.000061	0.000448
	Vanadium (V)-Dissolved (mg/L)			<0.00050	0.00117	<0.00050	0.00154
	Zinc (Zn)-Dissolved (mg/L)			0.0018	0.0015	0.0019	0.0022
	Zirconium (Zr)-Dissolved (mg/L)			0.00120	0.00098	0.00067	0.00162
<b>Speciated Metals</b>	Chromium (III)-Dissolved (mg/L)				<0.00042	0.00107	0.00045
	Chromium (III)-Total (mg/L)			0.0139	0.00993	0.00155	0.0183
	Hexavalent Chromium (mg/L)			<0.0010	0.0011	<0.0010	0.0011
	Hexavalent Chromium-Dissolved (mg/L)				0.0010	<0.0010	0.0010

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID</b> <b>Description</b> <b>Sampled Date</b> <b>Sampled Time</b> <b>Client ID</b>	L1803696-26	Water	24-JUL-16	08:50	SL
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Sulfur (S)-Dissolved (mg/L)	245				
	Thallium (Tl)-Dissolved (mg/L)	0.000015				
	Tin (Sn)-Dissolved (mg/L)	<0.00010				
	Titanium (Ti)-Dissolved (mg/L)	<0.00030				
	Uranium (U)-Dissolved (mg/L)	0.00313				
	Vanadium (V)-Dissolved (mg/L)	<0.00050				
	Zinc (Zn)-Dissolved (mg/L)	<0.0010				
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030				
<b>Speciated Metals</b>	Chromium (III)-Dissolved (mg/L)	<0.00042				
	Chromium (III)-Total (mg/L)	<0.00076				
	Hexavalent Chromium (mg/L)	0.0018				
	Hexavalent Chromium-Dissolved (mg/L)	0.0016				

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

## Reference Information

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Dissolved Organic Carbon	MS-B	L1803696-1, -10, -14, -18, -20, -26, -3, -6, -8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Calcium (Ca)-Total	MS-B	L1803696-1, -10, -12, -14, -16, -24, -25, -26, -3, -5, -6, -8
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1803696-1, -10, -12, -14, -16, -24, -25, -26, -3, -5, -6, -8
Matrix Spike	Silicon (Si)-Total	MS-B	L1803696-1, -10, -12, -14, -16, -24, -25, -26, -3, -5, -6, -8
Matrix Spike	Sulfur (S)-Total	MS-B	L1803696-1, -10, -12, -14, -16, -24, -25, -26, -3, -5, -6, -8
Matrix Spike	Dissolved Organic Carbon	MS-B	L1803696-12, -16, -22, -23, -24, -25
Matrix Spike	Antimony (Sb)-Total	MS-B	L1803696-18, -20, -22, -23
Matrix Spike	Arsenic (As)-Total	MS-B	L1803696-18, -20, -22, -23
Matrix Spike	Boron (B)-Total	MS-B	L1803696-18, -20, -22, -23
Matrix Spike	Sodium (Na)-Total	MS-B	L1803696-18, -20, -22, -23
Matrix Spike	Strontium (Sr)-Total	MS-B	L1803696-18, -20, -22, -23
Matrix Spike	Uranium (U)-Total	MS-B	L1803696-18, -20, -22, -23
Matrix Spike	Antimony (Sb)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Boron (B)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1803696-1, -10, -12, -14, -16, -18, -20, -22, -23, -24, -25, -26, -3, -6, -8
Matrix Spike	Barium (Ba)-Total	MS-B	L1803696-1, -10, -12, -14, -16, -24, -25, -26, -3, -5, -6, -8
Matrix Spike	Manganese (Mn)-Total	MS-B	L1803696-1, -10, -12, -14, -16, -24, -25, -26, -3, -5, -6, -8
Matrix Spike	Sodium (Na)-Total	MS-B	L1803696-1, -10, -12, -14, -16, -24, -25, -26, -3, -5, -6, -8
Matrix Spike	Strontium (Sr)-Total	MS-B	L1803696-1, -10, -12, -14, -16, -24, -25, -26, -3, -5, -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).
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**
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## Reference Information

<b>BE-D-L-CCMS-VA</b>	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.			
<b>BE-T-L-CCMS-VA</b>	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.			
<b>CARBONS-DOC-VA</b>	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.			
<b>CR-CR3-DIS-CALC-ED</b>	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.			
<b>CR-CR3-TOT-CALC-ED</b>	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.			
<b>CR-CR6-ED</b>	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.			
<b>CR6-D-IC-ED</b>	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.			
<b>EC-PCT-VA</b>	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.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B
Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.			
<b>HG-D-CVAA-VA</b>	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.			
<b>HG-T-CVAA-VA</b>	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.			
<b>MET-D-CCMS-VA</b>	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.			
<b>MET-DIS-LOW-ICP-VA</b>	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).			
<b>MET-T-CCMS-VA</b>	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.			

## Reference Information

<b>MET-TOT-LOW-ICP-VA</b>	Water	Total Metals in Water by ICPOES	EPA 3005A/6010B
<p>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).</p>			
<b>NH3-F-VA</b>	Water	Ammonia in Water by Fluorescence	APHA 4500 NH3-NITROGEN (AMMONIA)
<p>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.</p>			
<b>NH3-F-VA</b>	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
<p>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.</p>			
<b>NO2-L-IC-N-WR</b>	Water	Nitrite in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>NO3-L-IC-N-WR</b>	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
<b>P-T-PRES-COL-VA</b>	Water	Total P in Water by Colour	APHA 4500-P Phosphorus
<p>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.</p>			
<b>PH-PCT-VA</b>	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"
<p>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</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
<b>PH-PCT-VA</b>	Water	pH by Meter (Automated)	APHA 4500-H pH Value
<p>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</p>			
<p>It is recommended that this analysis be conducted in the field.</p>			
<b>S-DIS-ICP-VA</b>	Water	Dissolved Sulfur in Water by ICPOES	EPA SW-846 3005A/6010B
<p>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).</p>			
<p>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.</p>			
<b>S-TOT-ICP-VA</b>	Water	Total Sulfur in Water by ICPOES	EPA SW-846 3005A/6010B
<p>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).</p>			
<p>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.</p>			
<b>SO4-IC-N-WR</b>	Water	Sulfate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			

\*\* 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
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ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

## Reference Information

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

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### Chain of Custody Numbers:

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1 2 3

### 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.



04-Aug-2016

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

Tel: (604) 253-4188  
Fax:

Re: L1803696

Work Order: **1607863**

Dear Brent,

ALS Environmental received 16 samples on 28-Jul-2016 11:40 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 

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RIGHT SOLUTIONS RIGHT PARTNER



Client: ALS Environmental  
 Project: L1803696  
 Work Order: 1607863

**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>
1607863-01	L1803696-1 E1	Water		7/22/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-02	L1803696-3 E1 (H)	Water		7/22/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-03	L1803696-5 TRAVEL BANK	Water		7/25/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-04	L1803696-6 E2	Water		7/21/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-05	L1803696-8 E4	Water		7/21/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-06	L1803696-10 E7	Water		7/22/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-07	L1803696-12 E8	Water		7/22/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-08	L1803696-14 R4	Water		7/21/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-09	L1803696-16 R6	Water		7/22/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-10	L1803696-18 GWCC-5	Water		7/22/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-11	L1803696-20 DUP2	Water		7/22/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-12	L1803696-22 R1	Water		7/23/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-13	L1803696-23 R2	Water		7/23/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-14	L1803696-24 R8	Water		7/23/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-15	L1803696-25 R9	Water		7/23/2016	7/28/2016 11:40	<input type="checkbox"/>
1607863-16	L1803696-26 SL	Water		7/24/2016	7/28/2016 11:40	<input type="checkbox"/>

---

**Client:** ALS Environmental

**Project:** L1803696

**Work Order:** 1607863

**Case Narrative**

---

The analytical data provided relates directly to the samples received by ALS Laboratory Group 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 Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

# ALS Environmental

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-1 E1

Lab ID: 1607863-01

Collection Date: 7/22/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	2.6		2.5	mg/L	1	7/29/2016

Note:

**ALS Environmental**

Date: 04-Aug-16

**Client:** ALS Environmental  
**Project:** L1803696  
**Sample ID:** L1803696-3 E1 (H)  
**Collection Date:** 7/22/2016

**Work Order:** 1607863  
**Lab ID:** 1607863-02  
**Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	ND		2.5	mg/L	1	7/29/2016

---

**Note:**

# ALS Environmental

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-5 TRAVEL BANK

Lab ID: 1607863-03

Collection Date: 7/25/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	ND		2.5	mg/L	1	7/29/2016

Note:

**ALS Environmental**

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-6 E2

Lab ID: 1607863-04

Collection Date: 7/21/2016

Matrix: WATER

---

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	ND		2.5	mg/L	1	7/29/2016

---

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**Note:**

**ALS Environmental**

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-8 E4

Lab ID: 1607863-05

Collection Date: 7/21/2016

Matrix: WATER

---

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	2.8		2.5	mg/L	1	7/29/2016

---

Note:

**ALS Environmental**

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-10 E7

Lab ID: 1607863-06

Collection Date: 7/22/2016

Matrix: WATER

---

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	92		2.5	mg/L	1	7/29/2016

---

Note:



# ALS Environmental

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-12 E8

Lab ID: 1607863-07

Collection Date: 7/22/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	96		2.5	mg/L	1	7/29/2016

Note:

**ALS Environmental**

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-14 R4

Lab ID: 1607863-08

Collection Date: 7/21/2016

Matrix: WATER

---

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	67		2.5	mg/L	1	7/29/2016

---

Note:

**ALS Environmental**

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-16 R6

Lab ID: 1607863-09

Collection Date: 7/22/2016

Matrix: WATER

---

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	100		2.5	mg/L	1	7/29/2016

---

Note:

# ALS Environmental

Date: 04-Aug-16

**Client:** ALS Environmental  
**Project:** L1803696  
**Sample ID:** L1803696-18 GWCC-5  
**Collection Date:** 7/22/2016

**Work Order:** 1607863  
**Lab ID:** 1607863-10  
**Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	ND		2.5	mg/L	1	7/29/2016

Note:

# ALS Environmental

Date: 04-Aug-16

**Client:** ALS Environmental  
**Project:** L1803696  
**Sample ID:** L1803696-20 DUP2  
**Collection Date:** 7/22/2016

**Work Order:** 1607863  
**Lab ID:** 1607863-11  
**Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	ND		2.5	mg/L	1	7/29/2016

Note:

# ALS Environmental

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-22 R1

Lab ID: 1607863-12

Collection Date: 7/23/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: <b>rmb</b>
Total suspended solids	280		2.5	mg/L	1	7/29/2016

Note:

**ALS Environmental**

**Date:** 04-Aug-16

**Client:** ALS Environmental

**Project:** L1803696

**Work Order:** 1607863

**Sample ID:** L1803696-23 R2

**Lab ID:** 1607863-13

**Collection Date:** 7/23/2016

**Matrix:** WATER

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<b>Analyses</b>	<b>Result</b>	<b>Qual</b>	<b>Report Limit</b>	<b>Units</b>	<b>Dilution Factor</b>	<b>Date Analyzed</b>
<hr/>						
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			<b>Analyst: rmb</b>
Total suspended solids	150		2.5	mg/L	1	7/29/2016

---

**Note:**

**ALS Environmental**

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Sample ID: L1803696-24 R8

Collection Date: 7/23/2016

Work Order: 1607863

Lab ID: 1607863-14

Matrix: WATER

---

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	6.3		2.5	mg/L	1	7/29/2016

---

Note:



# ALS Environmental

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-25 R9

Lab ID: 1607863-15

Collection Date: 7/23/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: <b>rmb</b>
Total suspended solids	400		2.5	mg/L	1	7/29/2016

Note:

# ALS Environmental

Date: 04-Aug-16

Client: ALS Environmental

Project: L1803696

Work Order: 1607863

Sample ID: L1803696-26 SL

Lab ID: 1607863-16

Collection Date: 7/24/2016

Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TOTAL SUSPENDED SOLIDS BY SM2540 D</b>			<b>SM2540 D</b>			Analyst: rmb
Total suspended solids	6.4		2.5	mg/L	1	7/29/2016

Note:

**Client:** ALS Environmental  
**Project:** L1803696  
**WorkOrder:** 1607863

**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: **28-Jul-16 11:40**

Work Order: **1607863**

Received by: **RDN**

Checklist completed by: Leanna Fischer 28-Jul-16  
eSignature Date

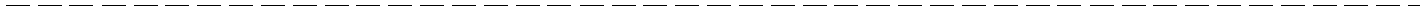
Reviewed by: Shawn Smythe 01-Aug-16  
eSignature Date

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):
- 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: L1803696

PO Number: L1803696

ALS Work Order: 1607863

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. <sup>†</sup> 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: 7/29/2016

Calibration Constant (µm/cm): 0.74

Camera Constant (mm-Å): 129.25

Analysis Start Date: 8/1/2016

*Pamela Johnson*

*Shawn Smythe*

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Pamela Johnson  
ALS TEM Analyst

---

Shawn Smythe  
ALS Project Manager

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

**IDENTIFICATION**

Client Sample ID:	L1803696-6 E2	L1803696-22
ALS Sample ID:	1607863-04	1607863-12
Method:	EPA 100.2	EPA 100.2
Date of Collection:	7/21/2016	7/23/2016
Time of Collection:	11:40	11:40

**FILTRATION & ANALYSIS**

Date of Filtration:	7/29/2016	7/29/2016
Time of Filtration:	10:00	10:00
Volume Filtered (L):	0.02	0.001
Openings Analyzed:	10	10
Avg. Opening Area (mm <sup>2</sup> ):	0.0108	0.0108
AS (MFL):	0.50	9.95

**ASBESTOS COUNT**

Chrysotile:	2	0
Amosite:	0	0
Crocidolite:	0	0
Act-Tremolite <sup>†</sup> :	0	0
Anthophyllite:	0	0
Total Asbestos:	2	0

**ASBESTOS CONCENTRATION (MFL)**

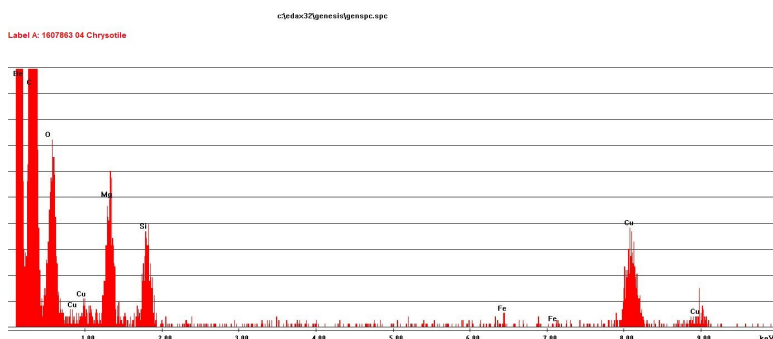
Chrysotile:	1.00	<AS
Amosite:	<AS	<AS
Crocidolite:	<AS	<AS
Act-Tremolite <sup>†</sup> :	<AS	<AS
Anthophyllite:	<AS	<AS
<b>Total Asbestos:</b>	<b>1.00</b>	<b>&lt;AS</b>

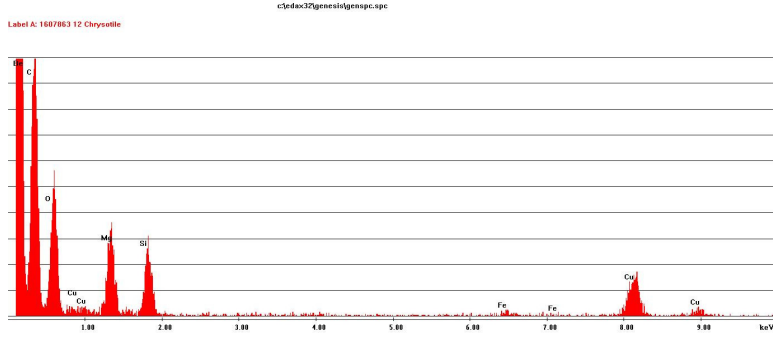
**NOTES**

Both samples contained an extremely high concentration of suspended solids, primarily organic material, which prohibited filtration of sufficient volume to reach the method recommended AS of <0.20 MFL. In addition, both samples contained chrysotile asbestos fibers that were too short to be counted by this method.

**EDXA SPECTRA**

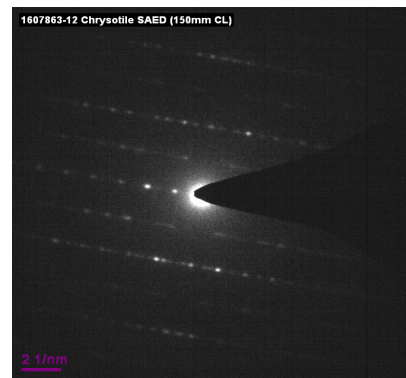
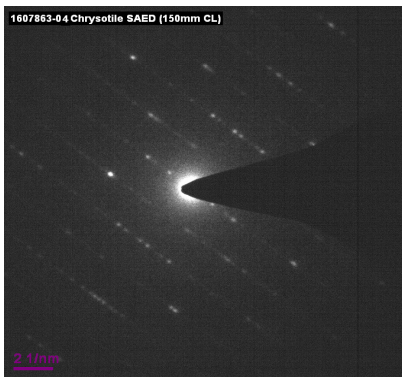
*NOTE: Spurious peaks may originate from low background sample holder, column pole pieces, TEM grids, prep solutions or matrix materials.*





## PHOTOMICROGRAPHS

Collected using Gatan Digital Micrograph.





L1803696-COFC

COC Number: 1

Page 1 of 3

Report To					Report Format / D					sh Turnaround Time (TAT) is not available for all tests)											
Company: Hemmera Environchem Inc.					Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)					R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)											
Contact: Natasha Sandys					Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT											
Address: 230 - 2237 2nd Avenue Whitehorse, YT					<input type="checkbox"/> Criteria on Report - provide details below if box checked					E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT											
Phone: 867-456-4865					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					Email 2 chris@elr.ca					Specify Date Required for E2, E or P:											
Invoice To Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					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					Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX																
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 #: 1343-005.17					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	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
E1					22-Jul-16	10:10	Water	R	R			R	R							R	9
E1					24-Jul-16	11:50	Water							R	R	R	R	R			1
E1(H)					22-Jul-16	10:45	Water	R	R			R	R							R	9
E1(H)					24-Jul-16	11:10	Water							R	R	R	R	R			1
Travel Blank							Water		R			R	R	R	R	R	R	R		R	7
E2					21-Jul-16	17:15	Water	R	R			R	R						R	R	10
E2					24-Jul-16	12:10	Water							R	R	R	R	R			1
E4					21-Jul-16	15:15	Water	R	R			R	R							R	9
E4					24-Jul-16	12:40	Water							R	R	R	R	R			1
E7					22-Jul-16	15:15	Water	R	R			R	R							R	9
E7					24-Jul-16	13:10	Water							R	R	R	R	R			1
E8					22-Jul-16	17:10	Water	R	R			R	R							R	9
Drinking Water (DW) Samples <sup>1</sup> (client use)					Special Instructions / Specify Criteria to add on report (client Use)					SAMPLE CONDITION AS RECEIVED (lab use only)											
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Please hold samples for total and dissolved Chromium III/VI pending regular metals analysis results. Please supply ELR EQWIN EDD file with results.					Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>											
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>											
										Cooling Initiated <input checked="" type="checkbox"/>											
										INITIAL COOLER TEMPERATURES °C						FINAL COOLER TEMPERATURES °C					
										1.0 1.0 3.0											
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:					
						Sarah		July 27		11:35											

Short Holding Time  
Rush Processing





Report To					Report Format	(Rush Turnaround Time (TAT) is not available for all tests)																									
Company: Hemmera Environchem Inc.					Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)	R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)																									
Contact: Natasha Sandys					Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT																									
Address: 230 - 2237 2nd Avenue					<input type="checkbox"/> Criteria on Report - provide details below if box checked	E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT																									
Whitehorse, YT					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																									
Phone: 867-456-4865					Email 1 or Fax: nsandys@hemmera.com	Specify Date Required for E2,E or P:																									
Email 2: chris@elr.ca					<b>Analysis Request</b>																										
Invoice To: Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					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					Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX																										
Company: Hemmera Environchem Inc.					Email 1 or Fax: nsandys@hemmera.com					F/P	P	P	F/P	P	F/P																
Contact: Natasha Sandys					Email 2: chris@elr.ca					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, Total Susp. Solids	Asbestos-TEM-AD	Total Suspended Solids (TSS)	Number of Containers								
<b>Project Information</b>					<b>Oil and Gas Required Fields (client use)</b>																										
ALS Quote #: Q56044					Approver ID: Cost Center:																										
Job #: 1343-005.18					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-mm-yy)	Time (hh:mm)	Sample Type																								
E8					24-Jul-16	13:00	Water																								
R4					21-Jul-16	13:45	Water	R	R					R	R													R	9		
R4					24-Jul-16	12:45	Water								R	R	R	R	R										1		
R6					22-Jul-16	18:20	Water	R	R					R	R														R	9	
R6					24-Jul-16	13:30	Water								R	R	R	R	R											1	
GWCC-5					22-Jul-16	8:30	Water	R	R					R	R														R	9	
GWCC-5					24-Jul-16	12:00	Water								R	R	R	R	R											1	
Dup 2					22-Jul-16	8:30	Water	R	R					R	R															R	9
Dup 2					24-Jul-16	12:00	Water								R	R	R	R	R												1
R1					23-Jul-16	14:05	Water	R	R					R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	11	
R2					23-Jul-16	15:55	Water	R	R					R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	10	
R8					23-Jul-16	17:15	Water	R	R					R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	10	
Drinking Water (DW) Samples <sup>1</sup> (client use)					Special Instructions / Specify Criteria to add on report (client Use)					SAMPLE CONDITION AS RECEIVED (lab use only)																					
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Please hold samples for total and dissolved Chromium III/VI pending regular metals analysis results. Please supply ELR EQWIN EDD file with results.					Frozen <input checked="" type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																					
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																					
										Cooling initiated <input type="checkbox"/>																					
										INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C																					
SHIPMENT RELEASE (client use)					INITIAL SHIPMENT RECEPTION (lab use only)					FINAL SHIPMENT RECEPTION (lab use only)																					
Released by:			Date:		Time:		Received by: Sorah			Date:		Time:		Received by:			Date:		Time: 11:35												

Short Holding Time

Rush Processing

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0126a-009 FORM 04 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.

80/40C



L1803696-COFC

Rush Turnaround Time (TAT) is not available for all tests

<b>Report To</b>		<b>Report Format /</b>			<small>Rush Turnaround Time (TAT) is not available for all tests</small>																
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			K <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)																
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT																
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT																
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			<b>Analysis Request</b>																
Invoice To Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Invoice Distribution</b>			<small>Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below</small>																
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX			F/P	P	P	F/P	P	F/P											
Company: Hemmera Environchem Inc.		Email 1 or Fax nsandys@hemmera.com			<small>Low Level Diss. Met (incl. Hg) and Hardness</small>	<small>Low Level Tot. Met (incl. Hg) and Hardness</small>	<small>Chromium Speciation (III/VI) - Total</small>	<small>Chromium Speciation (III/VI) - Dissolved</small>	<small>Ammonia - N</small>	<small>Dissolved Organic Carbon (DOC)</small>	<small>Nitrate-N</small>	<small>Nitrite - N</small>	<small>Total Phosphorus</small>	<small>Sulphate</small>	<small>pH, Conductivity, Total Susp Solids</small>	<small>Asbestos-TEM-AD</small>	<small>Total Suspended Solids (TSS)</small>	<small>Number of Containers</small>			
Contact: Natasha Sandys		Email 2 chris@elr.ca																			
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																			
ALS Quote #: Q56044		Approver ID:																			
Job #: 1343-005.18		GL Account:																			
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																	
R9		23-Jul-16	18:15	Water	R	R			R	R	R	R	R	R	R	R	R	R	R	R	10
SL		24-Jul-16	8:50	Water	R	R			R	R	R	R	R	R	R	R	R	R	R	R	10
				Water																	
				Water																	
				Water																	
				Water																	
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				Water																	
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				Water																	
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report (client Use)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Please hold samples for total and dissolved Chromium III/VI pending regular metals analysis results. Please supply ELR EQWIN EDD file with results.			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Ice packs Yes <input type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C											
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:
			Sarah	July 27	11:35																

 Short Holding Time  
Rush Processing

8/4°C