HEMMERA ENVIROCHEM INC.
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Date Received: 26-SEP-16
Report Date: 24-OCT-16 17:27 (MT)
Version: FINAL REV. 2

Client Phone: 867-456-4865

Certificate of Analysis

Lab Work Order #: L1834129

Project P.O. #: NOT SUBMITTED
Job Reference: 1343-005.20
C of C Numbers: 1, 2
Legal Site Desc:

Comments: 24-OCT-2016 This version of the report includes speciated chromium data for samples 1, 3, 7, 11, and 18.

Brent Mack, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1834129-1 Water 22-SEP-16 16:25 E4	L1834129-2 Water 24-SEP-16 11:40 E4	L1834129-3 Water 22-SEP-16 12:30 E7	L1834129-4 Water 24-SEP-16 12:10 E7	L1834129-5 Water 22-SEP-16 14:50 E8
WATER						
Physical Tests	Conductivity (uS/cm)		824		774	
	Hardness (as CaCO3) (mg/L)	425		406		129
	pH (pH)		8.17		8.22	
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.0105		0.0279		0.00721
	Nitrate (as N) (mg/L)		0.137		0.163	
	Nitrite (as N) (mg/L)		<0.0010		<0.0010	
	Phosphorus (P)-Total (mg/L)	0.0065		0.0061		0.0048
	Sulfate (SO4) (mg/L)		256		241	
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	14.2		13.5		13.6
	Total Organic Carbon (mg/L)					
Total Metals	Aluminum (Al)-Total (mg/L)	0.0990		0.193		0.180
	Antimony (Sb)-Total (mg/L)	0.00050		0.00044		0.00018
	Arsenic (As)-Total (mg/L)	0.00124		0.00134		0.00063
	Barium (Ba)-Total (mg/L)	0.0640		0.0713		0.0444
	Beryllium (Be)-Total (mg/L)	<0.000020		0.000020		0.000021
	Bismuth (Bi)-Total (mg/L)	<0.000050		<0.000050		<0.000050
	Boron (B)-Total (mg/L)	0.042		0.032		<0.010
	Cadmium (Cd)-Total (mg/L)	0.0000734		0.0000850		0.0000514
	Calcium (Ca)-Total (mg/L)	81.7		79.8		34.2
	Chromium (Cr)-Total (mg/L)	0.00117		0.00117		0.00059
	Cobalt (Co)-Total (mg/L)	0.00095		0.00151		0.00096
	Copper (Cu)-Total (mg/L)	0.00238		0.00283		0.00295
	Iron (Fe)-Total (mg/L)	0.554		0.792		0.546
	Lead (Pb)-Total (mg/L)	0.000209		0.000355		0.000075
	Lithium (Li)-Total (mg/L)	0.0105		0.0093		0.0039
	Magnesium (Mg)-Total (mg/L)	53.0		49.6		11.7
	Manganese (Mn)-Total (mg/L)	0.268		0.421		0.0791
	Mercury (Hg)-Total (mg/L)	<0.0000050		0.0000067		<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.00146		0.00149		0.000512
	Nickel (Ni)-Total (mg/L)	0.0143		0.0154		0.00526
	Phosphorus (P)-Total (mg/L)	<0.050		<0.050		<0.050
	Potassium (K)-Total (mg/L)	0.82		0.82		0.87
	Selenium (Se)-Total (mg/L)	0.00151		0.00160		0.000287
	Silicon (Si)-Total (mg/L)	5.22		5.35		5.70
	Silver (Ag)-Total (mg/L)	<0.000010		0.000016		<0.000010
	Sodium (Na)-Total (mg/L)	4.59		4.28		4.04

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1834129-6 Water 24-SEP-16 12:05 E8	L1834129-7 Water 22-SEP-16 15:25 R4	L1834129-8 Water 24-SEP-16 11:45 R4	L1834129-9 Water 22-SEP-16 14:15 R6	L1834129-10 Water 24-SEP-16 12:15 R6
WATER						
Physical Tests	Conductivity (uS/cm)	290		648		313
	Hardness (as CaCO3) (mg/L)		295		132	
	pH (pH)	8.05		8.23		8.02
Anions and Nutrients	Ammonia, Total (as N) (mg/L)		0.0410		0.0116	
	Nitrate (as N) (mg/L)	0.126		0.205		0.0943
	Nitrite (as N) (mg/L)	<0.0010		<0.0010		<0.0010
	Phosphorus (P)-Total (mg/L)		0.0314		0.0058	
	Sulfate (SO4) (mg/L)	59.1		169		62.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)		12.3		14.5	
	Total Organic Carbon (mg/L)					
Total Metals	Aluminum (Al)-Total (mg/L)		0.834		0.168	
	Antimony (Sb)-Total (mg/L)		0.00046		0.00014	
	Arsenic (As)-Total (mg/L)		0.00293		0.00063	
	Barium (Ba)-Total (mg/L)		0.115		0.0461	
	Beryllium (Be)-Total (mg/L)		0.000042		0.000023	
	Bismuth (Bi)-Total (mg/L)		<0.000050		<0.000050	
	Boron (B)-Total (mg/L)		<0.010		<0.010	
	Cadmium (Cd)-Total (mg/L)		0.000155		0.0000495	
	Calcium (Ca)-Total (mg/L)		73.7		33.1	
	Chromium (Cr)-Total (mg/L)		0.00240		0.00055	
	Cobalt (Co)-Total (mg/L)		0.00205		0.00091	
	Copper (Cu)-Total (mg/L)		0.00500		0.00298	
	Iron (Fe)-Total (mg/L)		1.79		0.515	
	Lead (Pb)-Total (mg/L)		0.00106		0.000064	
	Lithium (Li)-Total (mg/L)		0.0028		0.0037	
	Magnesium (Mg)-Total (mg/L)		30.0		11.8	
	Manganese (Mn)-Total (mg/L)		0.341		0.0744	
	Mercury (Hg)-Total (mg/L)		0.0000125		<0.0000050	
	Molybdenum (Mo)-Total (mg/L)		0.00137		0.000467	
	Nickel (Ni)-Total (mg/L)		0.0167		0.00502	
	Phosphorus (P)-Total (mg/L)		0.066		<0.050	
	Potassium (K)-Total (mg/L)		0.57		0.94	
	Selenium (Se)-Total (mg/L)		0.00296		0.000256	
	Silicon (Si)-Total (mg/L)		7.13		5.73	
	Silver (Ag)-Total (mg/L)		0.000038		<0.000010	
	Sodium (Na)-Total (mg/L)		4.19		4.21	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1834129-11 Water 22-SEP-16 16:25 DUP 2	L1834129-12 Water 24-SEP-16 11:40 DUP 2	L1834129-13 Water 24-SEP-16 08:10 E1(H)	L1834129-14 Water 23-SEP-16 13:35 R1	L1834129-15 Water TRAVEL BLANK
WATER						
Physical Tests	Conductivity (uS/cm)	408	814	644	813	<2.0
	Hardness (as CaCO3) (mg/L)			302	416	<0.50 HTC
	pH (pH)		8.18	8.26	8.36	5.55
Anions and Nutrients	Ammonia, Total (as N) (mg/L)	0.0103		0.0235	0.0430	<0.010
	Nitrate (as N) (mg/L)		0.138	0.113	0.179	<0.0050
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0074		0.0036	0.0054	<0.0020
	Sulfate (SO4) (mg/L)		254	182	260	<0.30
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	13.0		15.0	12.2	
	Total Organic Carbon (mg/L)					<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.102		0.0383	0.0901	<0.0030
	Antimony (Sb)-Total (mg/L)	0.00043		0.00031	0.00022	<0.00010
	Arsenic (As)-Total (mg/L)	0.00124		0.00076	0.00074	<0.00010
	Barium (Ba)-Total (mg/L)	0.0658		0.0662	0.0641	<0.000050
	Beryllium (Be)-Total (mg/L)	<0.000020		<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050		<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	0.042		<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.0000721		0.0000572	0.000146	<0.0000050
	Calcium (Ca)-Total (mg/L)	83.5		73.6	99.1	<0.050
	Chromium (Cr)-Total (mg/L)	0.00118		0.00058	0.00050	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00101		0.00062	0.00107	<0.00010
	Copper (Cu)-Total (mg/L)	0.00237		0.00259	0.00218	<0.00050
	Iron (Fe)-Total (mg/L)	0.606		0.324	0.656	<0.010
	Lead (Pb)-Total (mg/L)	0.000199		0.000096	0.000187	<0.000050
	Lithium (Li)-Total (mg/L)	0.0106		0.0035	0.0031	<0.0010
	Magnesium (Mg)-Total (mg/L)	54.2		35.3	41.0	<0.10
	Manganese (Mn)-Total (mg/L)	0.282		0.357	0.475	<0.00010
	Mercury (Hg)-Total (mg/L)	0.0000060		<0.0000050	0.0000061	<0.0000050
	Molybdenum (Mo)-Total (mg/L)	0.00154		0.00130	0.00132	<0.000050
	Nickel (Ni)-Total (mg/L)	0.0148		0.00483	0.00577	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.050		<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	0.82		0.59	0.61	<0.10
	Selenium (Se)-Total (mg/L)	0.00167		0.00197	0.00281	<0.000050
	Silicon (Si)-Total (mg/L)	5.44		5.10	4.88	<0.050
	Silver (Ag)-Total (mg/L)	<0.000010		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	4.80		3.21	3.70	<0.050

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1834129-16	L1834129-17	L1834129-18		
Description	Water	Water	Water		
Sampled Date	23-SEP-16	23-SEP-16	23-SEP-16		
Sampled Time	15:20	16:35	17:40		
Client ID	R2	R8	R9		
Grouping / **Analyte**					
WATER					
Physical Tests Conductivity (uS/cm)	713	379	576		
Hardness (as CaCO3) (mg/L)	363	178	302		
pH (pH)	8.41	8.16	8.22		
Anions and Nutrients Ammonia, Total (as N) (mg/L)	0.0089	0.0052	0.105		
Nitrate (as N) (mg/L)	0.0515	<0.0050	0.242		
Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010		
Phosphorus (P)-Total (mg/L)	0.0058	0.0037	0.0060		
Sulfate (SO4) (mg/L)	202	104	178		
Organic / Inorganic Carbon Dissolved Organic Carbon (mg/L)	10.4	13.9	25.0		
Total Organic Carbon (mg/L)					
Total Metals Aluminum (Al)-Total (mg/L)	0.0740	0.0273	0.252		
Antimony (Sb)-Total (mg/L)	0.00041	0.00085	0.00025		
Arsenic (As)-Total (mg/L)	0.00099	0.00038	0.00124		
Barium (Ba)-Total (mg/L)	0.0530	0.0566	0.118		
Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	0.000029		
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)	0.0000315	0.0000188	0.0000717		
Calcium (Ca)-Total (mg/L)	64.9	41.9	71.1		
Chromium (Cr)-Total (mg/L)	0.00067	0.00069	0.00147		
Cobalt (Co)-Total (mg/L)	0.00035	0.00011	0.00145		
Copper (Cu)-Total (mg/L)	0.00152	0.00168	0.00494		
Iron (Fe)-Total (mg/L)	0.629	0.084	2.06		
Lead (Pb)-Total (mg/L)	0.000075	<0.000050	0.000190		
Lithium (Li)-Total (mg/L)	0.0056	<0.0010	0.0012		
Magnesium (Mg)-Total (mg/L)	50.3	17.6	31.2		
Manganese (Mn)-Total (mg/L)	0.141	0.0177	0.755		
Mercury (Hg)-Total (mg/L)	<0.0000050	<0.0000050	0.0000069		
Molybdenum (Mo)-Total (mg/L)	0.000627	0.000826	0.00130		
Nickel (Ni)-Total (mg/L)	0.00400	0.00326	0.00555		
Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050		
Potassium (K)-Total (mg/L)	0.74	<0.10	0.48		
Selenium (Se)-Total (mg/L)	0.000628	0.00220	0.00236		
Silicon (Si)-Total (mg/L)	5.95	6.03	5.97		
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	0.000011		
Sodium (Na)-Total (mg/L)	3.37	5.41	3.52		

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1834129-1	L1834129-2	L1834129-3	L1834129-4	L1834129-5
	Description	Water	Water	Water	Water	Water
	Sampled Date	22-SEP-16	24-SEP-16	22-SEP-16	24-SEP-16	22-SEP-16
	Sampled Time	16:25	11:40	12:30	12:10	14:50
	Client ID	E4	E4	E7	E7	E8
Grouping	**Analyte**					
WATER						
Total Metals	Strontium (Sr)-Total (mg/L)	0.492		0.468		0.189
	Sulfur (S)-Total (mg/L)	88.2		82.2		19.5
	Thallium (Tl)-Total (mg/L)	0.000013		0.000013		<0.000010
	Tin (Sn)-Total (mg/L)	<0.00010		<0.00010		<0.00010
	Titanium (Ti)-Total (mg/L)	0.00281		0.00603		0.00318
	Uranium (U)-Total (mg/L)	0.00283		0.00289		0.00142
	Vanadium (V)-Total (mg/L)	0.00084		0.00114		0.00102
	Zinc (Zn)-Total (mg/L)	0.0041		0.0077		0.0080
	Zirconium (Zr)-Total (mg/L)	0.00111		0.00123		0.00085
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD		FIELD		FIELD
	Dissolved Metals Filtration Location	FIELD		FIELD		FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0195		0.0208		0.0798
	Antimony (Sb)-Dissolved (mg/L)	0.00039		0.00033		0.00011
	Arsenic (As)-Dissolved (mg/L)	0.00098		0.00096		0.00050
	Barium (Ba)-Dissolved (mg/L)	0.0612		0.0673		0.0438
	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)	0.039		0.030		<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.0000492		0.0000635		0.0000469
	Calcium (Ca)-Dissolved (mg/L)	82.3		80.4		32.5
	Chromium (Cr)-Dissolved (mg/L)	0.00060		0.00055		0.00038
	Cobalt (Co)-Dissolved (mg/L)	0.00083		0.00126		0.00090
	Copper (Cu)-Dissolved (mg/L)	0.00182		0.00196		0.00261
	Iron (Fe)-Dissolved (mg/L)	0.258		0.310		0.324
	Lead (Pb)-Dissolved (mg/L)	0.000051		<0.000050		<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0107		0.0091		0.0037
	Magnesium (Mg)-Dissolved (mg/L)	53.3		49.9		11.7
	Manganese (Mn)-Dissolved (mg/L)	0.262		0.400		0.0752
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050		<0.0000050		<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00143		0.00140		0.000442
	Nickel (Ni)-Dissolved (mg/L)	0.0125		0.0136		0.00470
	Phosphorus (P)-Dissolved (mg/L)	<0.050		<0.050		<0.050
	Potassium (K)-Dissolved (mg/L)	0.80		0.81		0.90
	Selenium (Se)-Dissolved (mg/L)	0.00160		0.00154		0.000288
	Silicon (Si)-Dissolved (mg/L)	5.02		5.04		5.55
	Silver (Ag)-Dissolved (mg/L)	<0.000010		<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.67		4.30		4.09

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1834129-6	L1834129-7	L1834129-8	L1834129-9	L1834129-10
Description	Water	Water	Water	Water	Water
Sampled Date	24-SEP-16	22-SEP-16	24-SEP-16	22-SEP-16	24-SEP-16
Sampled Time	12:05	15:25	11:45	14:15	12:15
Client ID	E8	R4	R4	R6	R6
Grouping / **Analyte**					
WATER					
Total Metals Strontium (Sr)-Total (mg/L)		0.401		0.181	
Sulfur (S)-Total (mg/L)		54.1		19.0	
Thallium (Tl)-Total (mg/L)		0.000017		<0.000010	
Tin (Sn)-Total (mg/L)		<0.00010		<0.00010	
Titanium (Ti)-Total (mg/L)		0.0218		0.00230	
Uranium (U)-Total (mg/L)		0.00350		0.00132	
Vanadium (V)-Total (mg/L)		0.00311		0.00098	
Zinc (Zn)-Total (mg/L)		0.0093		0.0072	
Zirconium (Zr)-Total (mg/L)		0.00096		0.00084	
Dissolved Metals Dissolved Mercury Filtration Location		FIELD		FIELD	
Dissolved Metals Filtration Location		FIELD		FIELD	
Aluminum (Al)-Dissolved (mg/L)		0.0201		0.0804	
Antimony (Sb)-Dissolved (mg/L)		0.00032		0.00012	
Arsenic (As)-Dissolved (mg/L)		0.00179		0.00053	
Barium (Ba)-Dissolved (mg/L)		0.0848		0.0442	
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)		0.0000463		0.0000373	
Calcium (Ca)-Dissolved (mg/L)		71.1		33.5	
Chromium (Cr)-Dissolved (mg/L)		0.00038		0.00041	
Cobalt (Co)-Dissolved (mg/L)		0.00114		0.00083	
Copper (Cu)-Dissolved (mg/L)		0.00507		0.00267	
Iron (Fe)-Dissolved (mg/L)		0.220		0.323	
Lead (Pb)-Dissolved (mg/L)		<0.000050		<0.000050	
Lithium (Li)-Dissolved (mg/L)		0.0019		0.0037	
Magnesium (Mg)-Dissolved (mg/L)		28.5		11.6	
Manganese (Mn)-Dissolved (mg/L)		0.271		0.0705	
Mercury (Hg)-Dissolved (mg/L)		<0.0000050		<0.0000050	
Molybdenum (Mo)-Dissolved (mg/L)		0.00120		0.000444	
Nickel (Ni)-Dissolved (mg/L)		0.0113		0.00445	
Phosphorus (P)-Dissolved (mg/L)		<0.050		<0.050	
Potassium (K)-Dissolved (mg/L)		0.42		0.94	
Selenium (Se)-Dissolved (mg/L)		0.00268		0.000261	
Silicon (Si)-Dissolved (mg/L)		5.34		5.45	
Silver (Ag)-Dissolved (mg/L)		<0.000010		<0.000010	
Sodium (Na)-Dissolved (mg/L)		3.95		4.17	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1834129-11	L1834129-12	L1834129-13	L1834129-14	L1834129-15
Description	Water	Water	Water	Water	Water
Sampled Date	22-SEP-16	24-SEP-16	24-SEP-16	23-SEP-16	
Sampled Time	16:25	11:40	08:10	13:35	
Client ID	DUP 2	DUP 2	E1(H)	R1	TRAVEL BLANK
Grouping / **Analyte**					
WATER					
Total Metals Strontium (Sr)-Total (mg/L)	0.504		0.364	0.470	<0.00020
Sulfur (S)-Total (mg/L)	91.4		63.3	89.3	<0.50
Thallium (Tl)-Total (mg/L)	0.000015		<0.000010	<0.000010	<0.000010
Tin (Sn)-Total (mg/L)	<0.00010		<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	0.00275		0.00085	0.00261	<0.00030
Uranium (U)-Total (mg/L)	0.00294		0.00259	0.00308	<0.000010
Vanadium (V)-Total (mg/L)	0.00081		0.00065	0.00068	<0.00050
Zinc (Zn)-Total (mg/L)	0.0033		<0.0030	0.0055	<0.0030
Zirconium (Zr)-Total (mg/L)	0.00115		0.00091	0.00085	<0.00030
Dissolved Metals Dissolved Mercury Filtration Location	FIELD		FIELD	FIELD	
Dissolved Metals Filtration Location	FIELD		FIELD	FIELD	
Aluminum (Al)-Dissolved (mg/L)	0.0175		0.0255	0.0187	
Antimony (Sb)-Dissolved (mg/L)	0.00038		0.00026	0.00019	
Arsenic (As)-Dissolved (mg/L)	0.00094		0.00065	0.00051	
Barium (Ba)-Dissolved (mg/L)	0.0598		0.0628	0.0607	
Beryllium (Be)-Dissolved (mg/L)	<0.000020		<0.000020	0.000022	
Bismuth (Bi)-Dissolved (mg/L)	<0.000050		<0.000050	<0.000050	
Boron (B)-Dissolved (mg/L)	0.039		<0.010	<0.010	
Cadmium (Cd)-Dissolved (mg/L)	0.0000486		0.0000527	0.000120	
Calcium (Ca)-Dissolved (mg/L)	80.3		68.1	100	
Chromium (Cr)-Dissolved (mg/L)	0.00057		0.00043	0.00026	
Cobalt (Co)-Dissolved (mg/L)	0.00080		0.00054	0.00094	
Copper (Cu)-Dissolved (mg/L)	0.00178		0.00217	0.00177	
Iron (Fe)-Dissolved (mg/L)	0.256		0.223	0.313	
Lead (Pb)-Dissolved (mg/L)	<0.000050		<0.000050	<0.000050	
Lithium (Li)-Dissolved (mg/L)	0.0101		0.0031	0.0028	
Magnesium (Mg)-Dissolved (mg/L)	50.5		31.9	40.2	
Manganese (Mn)-Dissolved (mg/L)	0.256		0.318	0.461	
Mercury (Hg)-Dissolved (mg/L)	0.0000052		<0.0000050	<0.0000050	
Molybdenum (Mo)-Dissolved (mg/L)	0.00146		0.00116	0.00127	
Nickel (Ni)-Dissolved (mg/L)	0.0123		0.00394	0.00503	
Phosphorus (P)-Dissolved (mg/L)	<0.050		<0.050	<0.050	
Potassium (K)-Dissolved (mg/L)	0.77		0.55	0.59	
Selenium (Se)-Dissolved (mg/L)	0.00152		0.00171	0.00287	
Silicon (Si)-Dissolved (mg/L)	5.00		4.58	4.69	
Silver (Ag)-Dissolved (mg/L)	<0.000010		<0.000010	<0.000010	
Sodium (Na)-Dissolved (mg/L)	4.48		2.93	3.61	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1834129-16	L1834129-17	L1834129-18		
Description	Water	Water	Water		
Sampled Date	23-SEP-16	23-SEP-16	23-SEP-16		
Sampled Time	15:20	16:35	17:40		
Client ID	R2	R8	R9		
Grouping / **Analyte**					
WATER					
Total Metals Strontium (Sr)-Total (mg/L)	0.362	0.174	0.289		
Sulfur (S)-Total (mg/L)	71.2	34.9	65.8		
Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
Titanium (Ti)-Total (mg/L)	0.00240	0.00069	0.00854		
Uranium (U)-Total (mg/L)	0.00440	0.000207	0.00125		
Vanadium (V)-Total (mg/L)	0.00083	<0.00050	0.00167		
Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030		
Zirconium (Zr)-Total (mg/L)	0.00054	0.00056	0.00126		
Dissolved Metals Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
Aluminum (Al)-Dissolved (mg/L)	0.0238	0.0229	0.0691		
Antimony (Sb)-Dissolved (mg/L)	0.00036	0.00082	0.00021		
Arsenic (As)-Dissolved (mg/L)	0.00086	0.00034	0.00100		
Barium (Ba)-Dissolved (mg/L)	0.0532	0.0563	0.116		
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)	<0.010	<0.010	<0.010		
Cadmium (Cd)-Dissolved (mg/L)	0.0000255	0.0000211	0.0000602		
Calcium (Ca)-Dissolved (mg/L)	64.1	42.5	69.2		
Chromium (Cr)-Dissolved (mg/L)	0.00050	0.00061	0.00097		
Cobalt (Co)-Dissolved (mg/L)	0.00030	<0.00010	0.00130		
Copper (Cu)-Dissolved (mg/L)	0.00135	0.00148	0.00419		
Iron (Fe)-Dissolved (mg/L)	0.424	0.070	1.54		
Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		
Lithium (Li)-Dissolved (mg/L)	0.0054	<0.0010	<0.0010		
Magnesium (Mg)-Dissolved (mg/L)	49.2	17.4	31.4		
Manganese (Mn)-Dissolved (mg/L)	0.136	0.0155	0.752		
Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	0.0000072		
Molybdenum (Mo)-Dissolved (mg/L)	0.000599	0.000767	0.00117		
Nickel (Ni)-Dissolved (mg/L)	0.00353	0.00278	0.00487		
Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050		
Potassium (K)-Dissolved (mg/L)	0.73	<0.10	0.49		
Selenium (Se)-Dissolved (mg/L)	0.000609	0.00220	0.00229		
Silicon (Si)-Dissolved (mg/L)	5.78	6.43	5.70		
Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
Sodium (Na)-Dissolved (mg/L)	3.33	5.29	3.50		

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1834129-1	L1834129-2	L1834129-3	L1834129-4	L1834129-5
	Description	Water	Water	Water	Water	Water
	Sampled Date	22-SEP-16	24-SEP-16	22-SEP-16	24-SEP-16	22-SEP-16
	Sampled Time	16:25	11:40	12:30	12:10	14:50
	Client ID	E4	E4	E7	E7	E8
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	0.477		0.462		0.174
	Sulfur (S)-Dissolved (mg/L)	86.0		82.0		18.9
	Thallium (Tl)-Dissolved (mg/L)	0.000012		<0.000010		<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010		<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)	0.00043		0.00047		0.00093
	Uranium (U)-Dissolved (mg/L)	0.00276		0.00275		0.00124
	Vanadium (V)-Dissolved (mg/L)	<0.00050		<0.00050		0.00061
	Zinc (Zn)-Dissolved (mg/L)	0.0027		0.0066		0.0063
	Zirconium (Zr)-Dissolved (mg/L)	0.00105		0.00122		0.00080
Speciated Metals	Chromium (III)-Total (mg/L)	0.00117		0.00117		
	Hexavalent Chromium (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	L1834129-6	L1834129-7	L1834129-8	L1834129-9	L1834129-10
Description	Water	Water	Water	Water	Water
Sampled Date	24-SEP-16	22-SEP-16	24-SEP-16	22-SEP-16	24-SEP-16
Sampled Time	12:05	15:25	11:45	14:15	12:15
Client ID	E8	R4	R4	R6	R6
Grouping / **Analyte**					
WATER					
Dissolved Metals Strontium (Sr)-Dissolved (mg/L)		0.376		0.181	
Sulfur (S)-Dissolved (mg/L)		50.4		18.5	
Thallium (Tl)-Dissolved (mg/L)		<0.000010		<0.000010	
Tin (Sn)-Dissolved (mg/L)		<0.00010		<0.00010	
Titanium (Ti)-Dissolved (mg/L)		0.00054		0.00112	
Uranium (U)-Dissolved (mg/L)		0.00319		0.00129	
Vanadium (V)-Dissolved (mg/L)		<0.00050		0.00063	
Zinc (Zn)-Dissolved (mg/L)		0.0042		0.0062	
Zirconium (Zr)-Dissolved (mg/L)		0.00083		0.00085	
Speciated Metals Chromium (III)-Total (mg/L)		0.00240			
Hexavalent Chromium (mg/L)		<0.0010			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1834129-11	L1834129-12	L1834129-13	L1834129-14	L1834129-15
Description	Water	Water	Water	Water	Water
Sampled Date	22-SEP-16	24-SEP-16	24-SEP-16	23-SEP-16	
Sampled Time	16:25	11:40	08:10	13:35	
Client ID	DUP 2	DUP 2	E1(H)	R1	TRAVEL BLANK
Grouping / **Analyte**					
WATER					
Dissolved Metals Strontium (Sr)-Dissolved (mg/L)	0.481		0.329	0.464	
Sulfur (S)-Dissolved (mg/L)	86.2		57.3	88.7	
Thallium (Tl)-Dissolved (mg/L)	0.000011		<0.000010	<0.000010	
Tin (Sn)-Dissolved (mg/L)	<0.00010		<0.00010	<0.00010	
Titanium (Ti)-Dissolved (mg/L)	0.00039		0.00050	0.00036	
Uranium (U)-Dissolved (mg/L)	0.00275		0.00228	0.00298	
Vanadium (V)-Dissolved (mg/L)	<0.00050		<0.00050	<0.00050	
Zinc (Zn)-Dissolved (mg/L)	0.0026		0.0017	0.0088	
Zirconium (Zr)-Dissolved (mg/L)	0.00105		0.00082	0.00080	
Speciated Metals Chromium (III)-Total (mg/L)	0.00118				
Hexavalent Chromium (mg/L)	<0.0010				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1834129-16	L1834129-17	L1834129-18		
	Description	Water	Water	Water		
	Sampled Date	23-SEP-16	23-SEP-16	23-SEP-16		
	Sampled Time	15:20	16:35	17:40		
	Client ID	R2	R8	R9		
Grouping	**Analyte**					
WATER						
Dissolved Metals	Strontium (Sr)-Dissolved (mg/L)	0.353	0.177	0.279		
	Sulfur (S)-Dissolved (mg/L)	69.5	37.7	64.8		
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	0.00055	0.00057	0.00202		
	Uranium (U)-Dissolved (mg/L)	0.00427	0.000183	0.00119		
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	0.00083		
	Zinc (Zn)-Dissolved (mg/L)	0.0022	0.0020	0.0055		
	Zirconium (Zr)-Dissolved (mg/L)	0.00055	0.00055	0.00128		
Speciated Metals	Chromium (III)-Total (mg/L)			0.00147		
	Hexavalent Chromium (mg/L)			<0.0010		

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Strontium (Sr)-Total	MB-LOR	L1834129-1, -11, -13, -14, -15, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Dissolved Organic Carbon	MS-B	L1834129-13, -14, -16, -17
Matrix Spike	Dissolved Organic Carbon	MS-B	L1834129-11, -3, -5, -7
Matrix Spike	Dissolved Organic Carbon	MS-B	L1834129-1, -9
Matrix Spike	Dissolved Organic Carbon	MS-B	L1834129-18
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Lead (Pb)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9

Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1834129-1, -11, -13, -14, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1834129-1, -11, -13, -14, -15, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L1834129-1, -11, -13, -14, -15, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1834129-1, -11, -13, -14, -15, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L1834129-1, -11, -13, -14, -15, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L1834129-1, -11, -13, -14, -15, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1834129-1, -11, -13, -14, -15, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Sulfur (S)-Total	MS-B	L1834129-1, -11, -13, -14, -15, -16, -17, -18, -3, -5, -7, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1834129-1, -11, -13, -14, -15, -16, -17, -18, -3, -5, -7, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
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.

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.

ALS Test Code	Matrix	Test Description	Method Reference**
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.

ALS Test Code	Matrix	Test Description	Method Reference**
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.

ALS Test Code	Matrix	Test Description	Method Reference**
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

ALS Test Code	Matrix	Test Description	Method Reference**
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.

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-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.

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

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

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

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

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

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

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

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

P-T-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus

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

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

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

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

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

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

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

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.

Reference Information

** 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:

1 2

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

07-Oct-2016

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

Tel: (604) 253-4188
Fax:

Re: L1834129 Work Order: **1609874**

Dear Brent,

ALS Environmental received 12 samples on 29-Sep-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 17.

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: 07-Oct-16

Client: ALS Environmental
Project: L1834129
Work Order: **1609874**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1609874-01	L1834129-1	Water		9/22/2016	9/29/2016	☐
1609874-02	L1834129-3	Water		9/22/2016	9/29/2016	☐
1609874-03	L1834129-5	Water		9/22/2016	9/29/2016	☐
1609874-04	L1834129-7	Water		9/22/2016	9/29/2016	☐
1609874-05	L1834129-9	Water		9/22/2016	9/29/2016	☐
1609874-06	L1834129-11	Water		9/22/2016	9/29/2016	☐
1609874-07	L1834129-13	Water		9/24/2016	9/29/2016	☐
1609874-08	L1834129-14	Water		9/23/2016	9/29/2016	☐
1609874-09	L1834129-15	Water		9/23/2016	9/29/2016	☐
1609874-10	L1834129-16	Water		9/23/2016	9/29/2016	☐
1609874-11	L1834129-17	Water		9/23/2016	9/29/2016	☐
1609874-12	L1834129-18	Water		9/23/2016	9/29/2016	☐

ALS Environmental

Date: 07-Oct-16

Client: ALS Environmental
Project: L1834129
Work Order: 1609874

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: *07-Oct-16*

Client: ALS Environmental
Project: L1834129
Sample ID: L1834129-1
Collection Date: 9/22/2016

Work Order: 1609874
Lab ID: 1609874-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**7.3**		**2.0**	**mg/L**	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129
Sample ID: L1834129-3
Collection Date: 9/22/2016

Work Order: 1609874
Lab ID: 1609874-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**13**		**2.0**	**mg/L**	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129 **Work Order:** 1609874
Sample ID: L1834129-5 **Lab ID:** 1609874-03
Collection Date: 9/22/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	ND		2.0	mg/L	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129
Sample ID: L1834129-7
Collection Date: 9/22/2016

Work Order: 1609874
Lab ID: 1609874-04
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**61**		**2.0**	**mg/L**	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129 **Work Order:** 1609874
Sample ID: L1834129-9 **Lab ID:** 1609874-05
Collection Date: 9/22/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**27**		**2.0**	**mg/L**	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129 **Work Order:** 1609874
Sample ID: L1834129-11 **Lab ID:** 1609874-06
Collection Date: 9/22/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**6.0**		**2.0**	**mg/L**	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129 **Work Order:** 1609874
Sample ID: L1834129-13 **Lab ID:** 1609874-07
Collection Date: 9/24/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**4.0**		**2.0**	**mg/L**	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129 **Work Order:** 1609874
Sample ID: L1834129-14 **Lab ID:** 1609874-08
Collection Date: 9/23/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**7.4**		**2.0**	**mg/L**	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129
Sample ID: L1834129-15
Collection Date: 9/23/2016

Work Order: 1609874
Lab ID: 1609874-09
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	ND		2.0	mg/L	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129 **Work Order:** 1609874
Sample ID: L1834129-16 **Lab ID:** 1609874-10
Collection Date: 9/23/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**4.9**		**2.0**	**mg/L**	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129 **Work Order:** 1609874
Sample ID: L1834129-17 **Lab ID:** 1609874-11
Collection Date: 9/23/2016 **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	ND		2.0	mg/L	1	9/30/2016

Note:

ALS Environmental

Date: *07-Oct-16*

Client: ALS Environmental
Project: L1834129
Sample ID: L1834129-18
Collection Date: 9/23/2016

Work Order: 1609874
Lab ID: 1609874-12
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL SUSPENDED SOLIDS			**E160.2**			Analyst: **rmb**
Total suspended solids	**16**		**2.0**	**mg/L**	1	9/30/2016

Note:

ALS Environmental

Date: 07-Oct-16

Client: ALS Environmental
Project: L1834129
WorkOrder: **1609874**

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: **29-Sep-16 00:00**

Work Order: **1609874** Received by: **RDN**

Checklist completed by: Chris Gibson 29-Sep-16 Reviewed by: Shawn Smythe 30-Sep-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):			
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: L1834129
PO Number: L1834129
ALS Work Order: 1609874

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

TEM ANALYSIS DATA

EDXA Resolution (eV): <175
Accelerating Voltage (keV): 100
Prep Start Date: 9/30/2016
Calibration Constant (µm/cm): 0.74
Camera Constant (mm-Å): 129.25
Analysis Start Date: 10/3/2016

Pamela Johnson
Pamela Johnson
ALS TEM Analyst

Shawn Smythe
Shawn Smythe
ALS Project Manager

IDENTIFICATION

	L1834129-14
Client Sample ID:	R1
ALS Sample ID:	1609874-08B
Method:	EPA 100.2
Date of Collection:	9/23/2016
Time of Collection:	Not Provided

FILTRATION & ANALYSIS

Date of Filtration:	9/30/2016
Time of Filtration:	10:30
Volume Filtered (L):	0.05
Openings Analyzed:	10
Avg. Opening Area (mm^2):	0.0108
AS (MFL):	0.20

ASBESTOS COUNT

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

ASBESTOS CONCENTRATION (MFL)

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

NOTES

NONE.

EDXA SPECTRA

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

NONE.

PHOTOMICROGRAPHS

Collected using Gatan Digital Micrograph.

NONE.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1834129-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	Same as Report To ☑ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☑ No	Select Invoice Distribution:	
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 #:	1343-005.20	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler: GR/NB

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
	E4	22-Sep-16	16:25	Water	R	R			R	R							R	9
	E4	24-Sep-16	11:40	Water							R	R	R	R	R			1
	E7	22-Sep-16	12:30	Water	R	R			R	R							R	9
	E7	24-Sep-16	12:10	Water							R	R	R	R	R			1
	E8	22-Sep-16	14:50	Water	R	R			R	R							R	9
	E8	24-Sep-16	12:05	Water							R	R	R	R	R			1
	R4	22-Sep-16	15:25	Water	R	R			R	R							R	9
	R4	24-Sep-16	11:45	Water							R	R	R	R	R			1
	R6	22-Sep-16	14:15	Water	R	R			R	R							R	9
	R6	24-Sep-16	12:15	Water							R	R	R	R	R			1
	Dup 2	22-Sep-16	16:25	Water	R	R			R	R							R	9
	Dup 2	24-Sep-16	11:40	Water							R	R	R	R	R			1

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☑ No

Are samples for human drinking water use? ☐ Yes ☑ No

Special Instructions / Specify Criteria to add on report (client Use)

Please hold samples for total and dissolved Chromium III/VI pending regular metals analysis results. Please supply ELR EQWIN EDD file with results.

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		
3.3	1.5				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: G. RUDMAN GRM	Date: SEPT 26 '16	Time: 920	Received by:	Date: 26-SEP-16	Time: 9:20	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1834129-COFC

COC Number: 2

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		Invoice Distribution	Analysis Request
	Same as Report To ☑ Yes ☐ No	Select Invoice Distribution: ☑EMAIL ☑MAIL ☐FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	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 #:	1343-005.20	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler: ~~ANICH~~ GRINB

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(H)	24-Sep-16	8:10	Water	R	R			R	R	R	R	R	R	R		R	10
	R1	23-Sep-16	13:35	Water	R	R			R	R	R	R	R	R	R	R	R	11
	TRAVEL BLANK			Water		R			R	R	R	R	R	R	R		R	7
	R2	23-Sep-16	15:20	Water	R	R			R	R	R	R	R	R	R		R	10
	R8	23-Sep-16	16:35	Water	R	R			R	R	R	R	R	R	R		R	10
	R9	23-Sep-16	17:40	Water	R	R			R	R	R	R	R	R	R		R	10

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 Are samples for human drinking water use? ☐ 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.

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			
3.3	1.5				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: G. RUDMAN	Date: SEPT 26 '16	Time: 720	Received by:	Date: 26-SEP-16	Time: 9:20	Received by:	Date:	Time:

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