



EDI ENVIRONMENTAL DYNAMICS INC.  
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Whitehorse YT Y1A 3T8

Date Received: 03-AUG-16  
Report Date: 16-AUG-16 18:13 (MT)  
Version: FINAL

Client Phone: 867-393-4882

## Certificate of Analysis

Lab Work Order #: L1808128  
Project P.O. #: NOT SUBMITTED  
Job Reference: MOUNT NANSEN 16-Y-0089  
C of C Numbers: 1, 2, 3, 4  
Legal Site Desc:

Can Dang  
Senior Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1808128-1	L1808128-2	L1808128-3	L1808128-4	L1808128-5
		Description	Water	Water	Water	Water	Water
		Sampled Date	02-AUG-16	02-AUG-16	03-AUG-16	02-AUG-16	02-AUG-16
		Sampled Time	17:10	16:00		18:25	18:00
		Client ID	WQ-SEEP	WQ-PC-U	TRAVEL BLANK	WQ-DC-B	WQ-TP
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (uS/cm)		1460	543	<2.0	1180	1220
	Hardness (as CaCO3) (mg/L)		832	283	<0.50	747	712
	pH (pH)		7.18	7.59	5.05	7.93	8.06
	Total Suspended Solids (mg/L)		26.0	242	<3.0	59.3	<3.0
	Total Dissolved Solids (mg/L)		1100	357	<1.0	877	940
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		257	72.4	<1.0	186	72.7
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		257	72.4	<1.0	186	72.7
	Ammonia, Total (as N) (mg/L)		4.40	1.05	0.0285 <sup>RRV</sup>	0.172	0.0071
	Chloride (Cl) (mg/L)		1.5	0.73	<0.50	<1.0 <sup>DLDS</sup>	<1.0 <sup>DLDS</sup>
	Fluoride (F) (mg/L)		0.086	0.132	<0.020	0.093	0.214
	Nitrate (as N) (mg/L)		0.414	0.0353	<0.0050	0.063	<0.010
	Nitrite (as N) (mg/L)		0.0123	0.0030	<0.0010	<0.0020 <sup>DLDS</sup>	<0.0020 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)		600	200	<0.30	505	610
	Anion Sum (meq/L)		17.7	5.63	<0.10	14.2	14.2
	Cation Sum (meq/L)		18.6	6.08	<0.10	15.4	15.2
	Cation - Anion Balance (%)		2.4	3.8	0.0	3.8	3.6
	<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)		0.0099	<0.0050	<0.0050	<0.0050
Cyanide, Total (mg/L)			0.0235	<0.0050	<0.0050	<0.0050	<0.0050
Cyanate (mg/L)			<0.20	0.87	<0.20	<0.20	<0.20
Thiocyanate (SCN) (mg/L)			5.37	<0.50	<0.50	<0.50	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)		0.0269	7.99	<0.0030	0.990	0.0294
	Antimony (Sb)-Total (mg/L)		0.00045	0.00684	<0.00010	0.00246	0.0372
	Arsenic (As)-Total (mg/L)		0.0634	0.105	<0.00010	0.0196	0.0992
	Barium (Ba)-Total (mg/L)		0.0669	0.224	<0.000050	0.0825	0.0109
	Beryllium (Be)-Total (mg/L)		<0.000020	0.000399	<0.000020	0.000054	<0.000020
	Bismuth (Bi)-Total (mg/L)		<0.000050	0.000897	<0.000050	<0.000050	0.000110
	Boron (B)-Total (mg/L)		0.051	<0.010	<0.010	0.019	0.066
	Cadmium (Cd)-Total (mg/L)		0.000277	0.00128	<0.0000050	0.000160	0.000723
	Calcium (Ca)-Total (mg/L)		242	83.6	<0.050	163	217
	Chromium (Cr)-Total (mg/L)		0.00054	0.00484	<0.00010	0.00203	0.00012
	Cobalt (Co)-Total (mg/L)		0.00753	0.00351	<0.00010	0.00083	0.00034
	Copper (Cu)-Total (mg/L)		0.00363	0.0182	0.00078	0.00481	0.0241
	Iron (Fe)-Total (mg/L)		9.81	12.6	<0.010	4.02	0.221
	Lead (Pb)-Total (mg/L)		0.000094	0.0513	<0.000050	0.00172	0.00987
	Lithium (Li)-Total (mg/L)		<0.0010	0.0048	<0.0010	0.0045	0.0086

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1808128-6	L1808128-7	L1808128-8	L1808128-9	L1808128-10
		Description	Water	Water	Water	Water	Water
		Sampled Date	02-AUG-16	02-AUG-16	02-AUG-16	02-AUG-16	01-AUG-16
		Sampled Time	11:15	09:00	08:31	12:30	14:45
		Client ID	WQ-VC-DBC	WQ-VC-UMN-R	WQ-VC-UMN	WQ-VC-U	WQ-VC-R
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (uS/cm)		182	205	206	159	195
	Hardness (as CaCO3) (mg/L)		92.0	108	103	80.0	93.8
	pH (pH)		7.75	7.79	7.79	7.73	7.80
	Total Suspended Solids (mg/L)		4.7	6.7	7.3	<3.0	22.7
	Total Dissolved Solids (mg/L)		98.8	116	115	85.4	107
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		73.2	75.3	75.4	70.1	70.6
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		73.2	75.3	75.4	70.1	70.6
	Ammonia, Total (as N) (mg/L)		0.0106	0.0081	0.0087	<0.0050	0.0117
	Chloride (Cl) (mg/L)		<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)		0.062	0.062	0.062	0.056	0.065
	Nitrate (as N) (mg/L)		0.0549	0.0631	0.0649	0.0377	0.0628
	Nitrite (as N) (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Sulfate (SO4) (mg/L)		19.6	29.7	29.7	12.7	28.5
	Anion Sum (meq/L)		1.88	2.13	2.13	1.67	2.01
	Cation Sum (meq/L)		1.97	2.31	2.22	1.71	2.02
	Cation - Anion Balance (%)		2.3	4.0	2.0	1.3	0.2
	<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, Total (mg/L)			<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanate (mg/L)			<0.20	<0.20	<0.20	<0.20	<0.20
Thiocyanate (SCN) (mg/L)			<0.50	<0.50	<0.50	<0.50	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)		0.160	0.141	0.173	0.0366	0.986
	Antimony (Sb)-Total (mg/L)		0.00026	0.00029	0.00030	<0.00010	0.00049
	Arsenic (As)-Total (mg/L)		0.00198	0.00205	0.00216	0.00040	0.00578
	Barium (Ba)-Total (mg/L)		0.0647	0.0658	0.0652	0.0622	0.0738
	Beryllium (Be)-Total (mg/L)		<0.000020	<0.000020	<0.000020	<0.000020	0.000045
	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	0.000070
	Boron (B)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)		0.0000428	0.0000466	0.0000493	0.0000121	0.000147
	Calcium (Ca)-Total (mg/L)		24.1	29.4	29.0	20.8	24.8
	Chromium (Cr)-Total (mg/L)		0.00029	0.00032	0.00028	0.00014	0.00122
	Cobalt (Co)-Total (mg/L)		0.00016	0.00017	0.00018	<0.00010	0.00061
	Copper (Cu)-Total (mg/L)		0.00188	0.00182	0.00187	0.00153	0.00367
	Iron (Fe)-Total (mg/L)		0.316	0.289	0.326	0.086	1.52
	Lead (Pb)-Total (mg/L)		0.00109	0.00103	0.00108	<0.000050	0.00525
	Lithium (Li)-Total (mg/L)		<0.0010	<0.0010	0.0011	<0.0010	0.0015

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1808128-11	L1808128-12	L1808128-13	L1808128-14	L1808128-15
		Description	Water	Water	Water	Water	Water
		Sampled Date	01-AUG-16	01-AUG-16	03-AUG-16	03-AUG-16	03-AUG-16
		Sampled Time	16:40	18:05	11:35	10:10	09:00
		Client ID	WQ-DC-R	WQ-DC-U	WQ-CH-P-13-01	WQ-DC-D1B	FIELD BLANK
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (uS/cm)		869	1120	1340	1440	<2.0
	Hardness (as CaCO3) (mg/L)		502	680	852	930	<0.50
	pH (pH)		7.67	8.04	6.57	7.99	5.12
	Total Suspended Solids (mg/L)		4.0	26.7	<3.0	269	<3.0
	Total Dissolved Solids (mg/L)		607	832	1070	1110	<1.0
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		146	184	11.2	255	<1.0
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)		146	184	11.2	255	<1.0
	Ammonia, Total (as N) (mg/L)		0.0484	0.533	<0.0050	0.230	<0.0050
	Chloride (Cl) (mg/L)		<0.50	<1.0 <sup>DLDS</sup>	<1.0 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>	<0.50
	Fluoride (F) (mg/L)		0.099	0.096	0.050	0.14	<0.020
	Nitrate (as N) (mg/L)		0.449	0.335	0.045	0.077	<0.0050
	Nitrite (as N) (mg/L)		0.0116	0.0166	<0.0020 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0010
	Sulfate (SO4) (mg/L)		334	472	761	639	<0.30
	Anion Sum (meq/L)		9.89	13.5	16.1	18.4	<0.10
	Cation Sum (meq/L)		10.6	14.3	17.4	19.1	<0.10
	Cation - Anion Balance (%)		3.3	2.7	3.9	1.7	0.0
	<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, Total (mg/L)			<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanate (mg/L)			<0.20	<0.20	<0.20	0.37	<0.20
Thiocyanate (SCN) (mg/L)			<0.50	<0.50	<0.50	<0.50	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)		0.0517	0.411	0.161	3.69	<0.0030
	Antimony (Sb)-Total (mg/L)		0.00127	0.00149	0.00014	0.00803	<0.00010
	Arsenic (As)-Total (mg/L)		0.0141	0.0209	0.00067	0.0785	<0.00010
	Barium (Ba)-Total (mg/L)		0.0486	0.0662	0.0107	0.104	<0.000050
	Beryllium (Be)-Total (mg/L)		0.000122	0.000028	0.000031	0.000141	<0.000020
	Bismuth (Bi)-Total (mg/L)		<0.000050	<0.000050	<0.000050	0.000057	<0.000050
	Boron (B)-Total (mg/L)		0.018	0.024	<0.010	0.038	<0.010
	Cadmium (Cd)-Total (mg/L)		0.0000438	0.000101	0.00841	0.00147	<0.000050
	Calcium (Ca)-Total (mg/L)		121	161	214	210	<0.050
	Chromium (Cr)-Total (mg/L)		0.00030	0.00089	0.00013	0.00617	<0.00010
	Cobalt (Co)-Total (mg/L)		0.00090	0.00163	<0.00010	0.00255	<0.00010
	Copper (Cu)-Total (mg/L)		0.00799	0.00297	0.00109	0.0125	<0.00050
	Iron (Fe)-Total (mg/L)		1.28	2.47	0.037	9.54	<0.010
	Lead (Pb)-Total (mg/L)		0.000310	0.000678	0.000057	0.0111	<0.000050
	Lithium (Li)-Total (mg/L)		0.0021	0.0031	0.0019	0.0099	<0.0010

\* 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		L1808128-16 Water 03-AUG-16 08:50 WQ-DC-DX-105-R	L1808128-17 Water 03-AUG-16 11:50 WQ-DESS-02	L1808128-18 Water 03-AUG-16 11:15 WQ-DESS-01	L1808128-19 Water 03-AUG-16 08:45 WQ-DC-DX-105	L1808128-20 Water 03-AUG-16 08:28 WQ-DC-DX
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1150	1800	973	1130	521
	Hardness (as CaCO3) (mg/L)	704	1180	574	703	289
	pH (pH)	7.36	7.82	6.47	7.40	7.47
	Total Suspended Solids (mg/L)	<3.0	9.3	14.7	<3.0	4.0
	Total Dissolved Solids (mg/L)	817	1540	732	814	341
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	273	135	8.2	266	91.8
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0
	Alkalinity, Total (as CaCO3) (mg/L)	273	135	8.2	266	91.8
	Ammonia, Total (as N) (mg/L)	0.0265	<0.0050	0.0111	0.0285	0.0066
	Chloride (Cl) (mg/L)	<1.0 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>	<1.0 <sup>DLDS</sup>	<1.0 <sup>DLDS</sup>	<0.50
	Fluoride (F) (mg/L)	0.185	<0.10 <sup>DLDS</sup>	0.040	0.187	0.066
	Nitrate (as N) (mg/L)	0.042	5.28	0.016	0.044	<0.0050
	Nitrite (as N) (mg/L)	<0.0020 <sup>DLDS</sup>	<0.0050 <sup>DLDS</sup>	<0.0020 <sup>DLDS</sup>	<0.0020 <sup>DLDS</sup>	<0.0010
	Sulfate (SO4) (mg/L)	400	992	523	399	174
	Anion Sum (meq/L)	13.8	23.7	11.1	13.6	5.45
	Cation Sum (meq/L)	14.4	24.0	11.7	14.4	6.12
	Cation - Anion Balance (%)	2.3	0.6	2.9	2.8	5.7
	<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050
Cyanide, Total (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cyanate (mg/L)		<0.20	<0.20	0.22	<0.20	<0.20
Thiocyanate (SCN) (mg/L)		<0.50	<0.50	<0.50	<0.50	<0.50
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0033	0.134	0.162	0.0107	0.804
	Antimony (Sb)-Total (mg/L)	0.00920	0.00027	0.00019	0.00953	0.00133
	Arsenic (As)-Total (mg/L)	0.0304	0.00412	0.00090	0.0343	0.0242
	Barium (Ba)-Total (mg/L)	0.0134	0.0248	0.0201	0.0138	0.0554
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000040 <sup>DLA</sup>	0.000031	<0.000020	0.000057
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050
	Boron (B)-Total (mg/L)	<0.010	<0.020 <sup>DLA</sup>	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.00186	0.000087	0.00389	0.00190	0.0000613
	Calcium (Ca)-Total (mg/L)	185	366	142	184	84.2
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	0.00024	<0.00010	0.00130
	Cobalt (Co)-Total (mg/L)	0.00076	<0.00020 <sup>DLA</sup>	0.00019	0.00073	0.00071
	Copper (Cu)-Total (mg/L)	<0.00050	0.0019	0.00229	<0.00050	0.00366
	Iron (Fe)-Total (mg/L)	0.318	0.143	0.159	0.324	3.56
	Lead (Pb)-Total (mg/L)	0.000067	0.00065	0.000105	0.000085	0.00195
	Lithium (Li)-Total (mg/L)	0.0090	<0.0020 <sup>DLA</sup>	0.0013	0.0079	<0.0010

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1808128-21	L1808128-22			
		Description	Water	Water			
		Sampled Date	03-AUG-16	03-AUG-16			
		Sampled Time	12:54	15:15			
		Client ID	WQ-PC-D	WQ-BC			
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (uS/cm)		621	382			
	Hardness (as CaCO3) (mg/L)		325	199			
	pH (pH)		7.82	8.06			
	Total Suspended Solids (mg/L)		165	76.0			
	Total Dissolved Solids (mg/L)		415	238			
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)		73.3	91.2			
	Alkalinity, Carbonate (as CaCO3) (mg/L)		<1.0	<1.0			
	Alkalinity, Hydroxide (as CaCO3) (mg/L)		<1.0	<1.0			
	Alkalinity, Total (as CaCO3) (mg/L)		73.3	91.2			
	Ammonia, Total (as N) (mg/L)		1.20	0.152			
	Chloride (Cl) (mg/L)		0.81	<0.50			
	Fluoride (F) (mg/L)		0.150	0.104			
	Nitrate (as N) (mg/L)		0.0422	0.0996			
	Nitrite (as N) (mg/L)		0.0040	0.0073			
	Sulfate (SO4) (mg/L)		241	105			
	Anion Sum (meq/L)		6.51	4.02			
	Cation Sum (meq/L)		6.95	4.23			
	Cation - Anion Balance (%)		3.3	2.7			
	<b>Cyanides</b>	Cyanide, Weak Acid Diss (mg/L)		<0.0050	<0.0050		
Cyanide, Total (mg/L)			<0.0050	<0.0050			
Cyanate (mg/L)			<0.20	<0.20			
Thiocyanate (SCN) (mg/L)			<0.50	<0.50			
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)		4.43	2.22			
	Antimony (Sb)-Total (mg/L)		0.00463	0.00184			
	Arsenic (As)-Total (mg/L)		0.0595	0.0207			
	Barium (Ba)-Total (mg/L)		0.179	0.0921			
	Beryllium (Be)-Total (mg/L)		0.000237	0.000102			
	Bismuth (Bi)-Total (mg/L)		0.000416	0.000192			
	Boron (B)-Total (mg/L)		<0.010	<0.010			
	Cadmium (Cd)-Total (mg/L)		0.000968	0.000335			
	Calcium (Ca)-Total (mg/L)		96.6	57.4			
	Chromium (Cr)-Total (mg/L)		0.00254	0.00202			
	Cobalt (Co)-Total (mg/L)		0.00225	0.00123			
	Copper (Cu)-Total (mg/L)		0.0101	0.00677			
	Iron (Fe)-Total (mg/L)		6.71	3.39			
	Lead (Pb)-Total (mg/L)		0.0302	0.0132			
	Lithium (Li)-Total (mg/L)		0.0039	0.0025			

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

16-AUG-16 18:13 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID		L1808128-1 Water 02-AUG-16 17:10 WQ-SEEP	L1808128-2 Water 02-AUG-16 16:00 WQ-PC-U	L1808128-3 Water 03-AUG-16 TRAVEL BLANK	L1808128-4 Water 02-AUG-16 18:25 WQ-DC-B	L1808128-5 Water 02-AUG-16 18:00 WQ-TP
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)	55.1	17.9	<0.10	75.5	43.0
	Manganese (Mn)-Total (mg/L)	5.04	1.28	<0.00010	0.598	0.0683
	Mercury (Hg)-Total (mg/L)	<0.0000050	0.0000477	<0.0000050	0.0000109	0.0000098
	Molybdenum (Mo)-Total (mg/L)	0.000893	0.000995	<0.000050	0.000421	0.00128
	Nickel (Ni)-Total (mg/L)	0.00262	0.00389	<0.00050	0.00195	0.00055
	Phosphorus (P)-Total (mg/L)	0.063	0.155	<0.050	0.053	<0.050
	Potassium (K)-Total (mg/L)	7.24	4.90	<0.10	3.39	15.7
	Selenium (Se)-Total (mg/L)	0.000226	0.000153	<0.000050	0.000130	0.000064
	Silicon (Si)-Total (mg/L)	7.52	28.9	<0.050	7.73	2.90
	Silver (Ag)-Total (mg/L)	0.000029	0.000946	<0.000010	0.000044	0.000260
	Sodium (Na)-Total (mg/L)	34.8	5.96	<0.050	7.36	14.0
	Strontium (Sr)-Total (mg/L)	0.702	0.380	<0.00020	0.533	0.543
	Sulfur (S)-Total (mg/L)	224	71.0	<0.50	179	228
	Thallium (Tl)-Total (mg/L)	0.000010	0.000136	<0.000010	0.000022	0.000221
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.00121	0.0926	<0.00030	0.0448	0.00032
	Uranium (U)-Total (mg/L)	0.00181	0.00172	<0.000010	0.00244	0.000917
	Vanadium (V)-Total (mg/L)	0.00219	0.0205	<0.00050	0.00562	<0.00050
	Zinc (Zn)-Total (mg/L)	0.0174	0.141	<0.0030	0.0203	0.0443
	Zirconium (Zr)-Total (mg/L)	0.00063	0.00069	<0.00030	<0.00030	<0.00030
<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)	0.0080	0.0070		0.0155	0.0124
	Antimony (Sb)-Dissolved (mg/L)	0.00036	0.00230		0.00205	0.0352
	Arsenic (As)-Dissolved (mg/L)	0.0271	0.0213		0.00530	0.0762
	Barium (Ba)-Dissolved (mg/L)	0.0437	0.0890		0.0659	0.0104
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020		<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050		<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	0.046	<0.010		0.018	0.061
	Cadmium (Cd)-Dissolved (mg/L)	0.0000970	0.000102		0.0000101	0.000550
	Calcium (Ca)-Dissolved (mg/L)	240	85.3		168	214
	Chromium (Cr)-Dissolved (mg/L)	0.00032	<0.00010		<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00503	0.00057		0.00038	0.00030
	Copper (Cu)-Dissolved (mg/L)	0.00177	0.00121		0.00065	0.0182
	Iron (Fe)-Dissolved (mg/L)	6.10	0.018		0.129	<0.010
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000121		<0.000050	0.000511
	Lithium (Li)-Dissolved (mg/L)	<0.0010	0.0021		0.0039	0.0081

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1808128-6	L1808128-7	L1808128-8	L1808128-9	L1808128-10
		Description	Water	Water	Water	Water	Water
		Sampled Date	02-AUG-16	02-AUG-16	02-AUG-16	02-AUG-16	01-AUG-16
		Sampled Time	11:15	09:00	08:31	12:30	14:45
		Client ID	WQ-VC-DBC	WQ-VC-UMN-R	WQ-VC-UMN	WQ-VC-U	WQ-VC-R
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)		7.93	9.31	9.17	7.22	8.36
	Manganese (Mn)-Total (mg/L)		0.0813	0.0784	0.0752	0.0246	0.115
	Mercury (Hg)-Total (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Total (mg/L)		0.000467	0.000454	0.000486	0.000354	0.000583
	Nickel (Ni)-Total (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	0.00115
	Phosphorus (P)-Total (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)		0.78	0.82	0.84	0.64	1.09
	Selenium (Se)-Total (mg/L)		0.000062	0.000061	0.000057	<0.000050	0.000081
	Silicon (Si)-Total (mg/L)		6.58	6.60	6.56	6.14	8.18
	Silver (Ag)-Total (mg/L)		0.000016	0.000014	0.000017	<0.000010	0.000088
	Sodium (Na)-Total (mg/L)		2.40	2.80	2.72	2.23	2.66
	Strontium (Sr)-Total (mg/L)		0.247	0.264	0.259	0.240	0.234
	Sulfur (S)-Total (mg/L)		7.15	11.0	10.9	4.69	10.0
	Thallium (Tl)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	0.000025
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		0.00500	0.00450	0.00516	0.00071	0.0314
	Uranium (U)-Total (mg/L)		0.000591	0.000620	0.000600	0.000363	0.000785
	Vanadium (V)-Total (mg/L)		0.00088	0.00079	0.00082	<0.00050	0.00288
	Zinc (Zn)-Total (mg/L)		0.0046	0.0046	0.0047	<0.0030	0.0129
	Zirconium (Zr)-Total (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030	0.00038
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0209	0.0195	0.0191	0.0244	0.0302
	Antimony (Sb)-Dissolved (mg/L)		0.00016	0.00021	0.00020	<0.00010	0.00022
	Arsenic (As)-Dissolved (mg/L)		0.00065	0.00095	0.00093	0.00033	0.00112
	Barium (Ba)-Dissolved (mg/L)		0.0603	0.0608	0.0610	0.0615	0.0583
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.0000177	0.0000214	0.0000201	0.0000133	0.0000256
	Calcium (Ca)-Dissolved (mg/L)		24.0	28.6	26.6	20.5	24.5
	Chromium (Cr)-Dissolved (mg/L)		0.00011	0.00011	0.00011	0.00012	0.00013
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	0.00013
	Copper (Cu)-Dissolved (mg/L)		0.00133	0.00134	0.00141	0.00132	0.00164
	Iron (Fe)-Dissolved (mg/L)		0.059	0.059	0.058	0.054	0.088
	Lead (Pb)-Dissolved (mg/L)		<0.000050	0.000054	0.000061	<0.000050	0.000170
	Lithium (Li)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010

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



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1808128-11	L1808128-12	L1808128-13	L1808128-14	L1808128-15
		Description	Water	Water	Water	Water	Water
		Sampled Date	01-AUG-16	01-AUG-16	03-AUG-16	03-AUG-16	03-AUG-16
		Sampled Time	16:40	18:05	11:35	10:10	09:00
		Client ID	WQ-DC-R	WQ-DC-U	WQ-CH-P-13-01	WQ-DC-D1B	FIELD BLANK
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)		45.1	61.8	76.3	96.0	<0.10
	Manganese (Mn)-Total (mg/L)		0.448	1.27	0.162	1.12	<0.00010
	Mercury (Hg)-Total (mg/L)		<0.0000050	<0.0000050	<0.0000050	0.0000092	<0.0000050
	Molybdenum (Mo)-Total (mg/L)		0.000356	0.000466	<0.000050	0.000427	<0.000050
	Nickel (Ni)-Total (mg/L)		0.00099	0.00155	0.00642	0.00454	<0.00050
	Phosphorus (P)-Total (mg/L)		<0.050	<0.050	<0.050	0.209	<0.050
	Potassium (K)-Total (mg/L)		2.61	3.56	0.44	4.40	<0.10
	Selenium (Se)-Total (mg/L)		0.000103	0.000122	<0.000050	0.000241	<0.000050
	Silicon (Si)-Total (mg/L)		6.09	6.70	8.15	11.9	<0.050
	Silver (Ag)-Total (mg/L)		<0.000010	0.000017	<0.000010	0.000208	<0.000010
	Sodium (Na)-Total (mg/L)		9.73	11.8	5.28	6.99	<0.050
	Strontium (Sr)-Total (mg/L)		0.423	0.532	0.479	0.555	<0.00020
	Sulfur (S)-Total (mg/L)		119	165	279	210	<0.50
	Thallium (Tl)-Total (mg/L)		<0.000010	0.000010	<0.000010	0.000103	<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		0.00105	0.0180	0.00037	0.170	<0.00030
	Uranium (U)-Total (mg/L)		0.00122	0.00180	0.000013	0.00400	<0.000010
	Vanadium (V)-Total (mg/L)		0.00069	0.00288	<0.00050	0.0154	<0.00050
	Zinc (Zn)-Total (mg/L)		0.0059	0.0105	3.09	0.280	<0.0030
	Zirconium (Zr)-Total (mg/L)		<0.00030	<0.00030	<0.00030	0.00038	<0.00030
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0149	0.0299	0.152	0.0066	<0.0010
	Antimony (Sb)-Dissolved (mg/L)		0.00116	0.00138	0.00011	0.00634	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00696	0.0118	0.00047	0.0165	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0492	0.0591	0.0104	0.0498	<0.000050
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	<0.000020	0.000032	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.017	0.022	<0.010	0.038	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.0000335	0.0000189	0.00827	0.0000875	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		123	165	213	211	<0.050
	Chromium (Cr)-Dissolved (mg/L)		0.00022	0.00015	0.00011	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00088	0.00134	<0.00010	0.00042	<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00132	0.00148	0.00096	0.00064	<0.00020
	Iron (Fe)-Dissolved (mg/L)		0.415	0.229	0.031	0.443	<0.010
	Lead (Pb)-Dissolved (mg/L)		<0.000050	0.000320	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0020	0.0027	0.0017	0.0077	<0.0010

\* 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		L1808128-16 Water 03-AUG-16 08:50 WQ-DC-DX-105-R	L1808128-17 Water 03-AUG-16 11:50 WQ-DESS-02	L1808128-18 Water 03-AUG-16 11:15 WQ-DESS-01	L1808128-19 Water 03-AUG-16 08:45 WQ-DC-DX-105	L1808128-20 Water 03-AUG-16 08:28 WQ-DC-DX
Grouping	Analyte					
<b>WATER</b>						
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)	59.7	62.0	46.6	59.7	21.6
	Manganese (Mn)-Total (mg/L)	1.13	0.0188	0.0462	1.12	0.283
	Mercury (Hg)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000070
	Molybdenum (Mo)-Total (mg/L)	0.000316	0.00015	0.000057	0.000326	0.000059
	Nickel (Ni)-Total (mg/L)	0.00118	<0.0010 <sup>DLA</sup>	0.00410	0.00119	0.00080
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Total (mg/L)	3.57	0.64	0.29	3.53	4.56
	Selenium (Se)-Total (mg/L)	<0.000050	0.00026	0.000067	<0.000050	0.000083
	Silicon (Si)-Total (mg/L)	6.91	6.30 <sup>DLA</sup>	7.92	6.85	6.23
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000020 <sup>DLA</sup>	0.000014	<0.000010	0.000048
	Sodium (Na)-Total (mg/L)	5.05	7.90	4.01	5.05	4.00
	Strontium (Sr)-Total (mg/L)	0.422	0.698	0.317	0.408	0.242
	Sulfur (S)-Total (mg/L)	138	327 <sup>DLA</sup>	168	137	64.1
	Thallium (Tl)-Total (mg/L)	0.000104	<0.000020 <sup>DLA</sup>	<0.000010	0.000104	0.000030
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	<0.00030	0.00339	0.00217	<0.00030	0.0364
	Uranium (U)-Total (mg/L)	0.00435	0.00168	0.000014	0.00419	0.000193
	Vanadium (V)-Total (mg/L)	<0.00050	<0.0010 <sup>DLA</sup>	0.00055	<0.00050	0.00340
	Zinc (Zn)-Total (mg/L)	0.604	<0.0060 <sup>DLA</sup>	1.79	0.617	0.0094
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	<0.00030
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010	0.0133	0.105	0.0012	0.0080
	Antimony (Sb)-Dissolved (mg/L)	0.00910	0.00023	0.00018	0.00935	0.00085
	Arsenic (As)-Dissolved (mg/L)	0.00785	0.00247	0.00066	0.00868	0.00941
	Barium (Ba)-Dissolved (mg/L)	0.0136	0.0243	0.0198	0.0138	0.0448
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000040 <sup>DLA</sup>	<0.000020	<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)	<0.010	<0.020 <sup>DLA</sup>	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000630	0.000066	0.00404	0.000642	0.0000200
	Calcium (Ca)-Dissolved (mg/L)	184	372 <sup>DLA</sup>	148	185	80.9
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	0.00014	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00073	<0.00020 <sup>DLA</sup>	0.00018	0.00072	0.00050
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00047	0.00152	<0.00020	0.00119
	Iron (Fe)-Dissolved (mg/L)	0.099	<0.010 <sup>DLA</sup>	0.092	0.098	0.898
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	0.000078
	Lithium (Li)-Dissolved (mg/L)	0.0084	<0.0020 <sup>DLA</sup>	0.0011	0.0076	<0.0010

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1808128-21	L1808128-22			
		Description	Water	Water			
		Sampled Date	03-AUG-16	03-AUG-16			
		Sampled Time	12:54	15:15			
		Client ID	WQ-PC-D	WQ-BC			
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Magnesium (Mg)-Total (mg/L)		18.9	13.0			
	Manganese (Mn)-Total (mg/L)		1.24	0.583			
	Mercury (Hg)-Total (mg/L)		0.0000280	0.0000137			
	Molybdenum (Mo)-Total (mg/L)		0.00104	0.00126			
	Nickel (Ni)-Total (mg/L)		0.00231	0.00180			
	Phosphorus (P)-Total (mg/L)		0.150	0.059			
	Potassium (K)-Total (mg/L)		2.95	1.76			
	Selenium (Se)-Total (mg/L)		0.000132	0.000123			
	Silicon (Si)-Total (mg/L)		15.2	10.6			
	Silver (Ag)-Total (mg/L)		0.000570	0.000207			
	Sodium (Na)-Total (mg/L)		6.21	4.22			
	Strontium (Sr)-Total (mg/L)		0.439	0.331			
	Sulfur (S)-Total (mg/L)		80.5	34.3			
	Thallium (Tl)-Total (mg/L)		0.000077	0.000046			
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)		0.0595	0.0576			
	Uranium (U)-Total (mg/L)		0.00201	0.00203			
	Vanadium (V)-Total (mg/L)		0.0118	0.00614			
	Zinc (Zn)-Total (mg/L)		0.0835	0.0313			
	Zirconium (Zr)-Total (mg/L)		0.00097	0.00039			
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location		FIELD	FIELD			
	Dissolved Metals Filtration Location		FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)		0.0099	0.0251			
	Antimony (Sb)-Dissolved (mg/L)		0.00245	0.00095			
	Arsenic (As)-Dissolved (mg/L)		0.0187	0.00467			
	Barium (Ba)-Dissolved (mg/L)		0.0971	0.0653			
	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)		0.000163	0.0000629			
	Calcium (Ca)-Dissolved (mg/L)		99.1	58.2			
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	0.00012			
	Cobalt (Co)-Dissolved (mg/L)		0.00061	0.00034			
	Copper (Cu)-Dissolved (mg/L)		0.00196	0.00182			
	Iron (Fe)-Dissolved (mg/L)		0.012	0.033			
	Lead (Pb)-Dissolved (mg/L)		0.000147	0.000137			
	Lithium (Li)-Dissolved (mg/L)		0.0023	0.0016			

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1808128-1	L1808128-2	L1808128-3	L1808128-4	L1808128-5
		Description	Water	Water	Water	Water	Water
		Sampled Date	02-AUG-16	02-AUG-16	03-AUG-16	02-AUG-16	02-AUG-16
		Sampled Time	17:10	16:00		18:25	18:00
		Client ID	WQ-SEEP	WQ-PC-U	TRAVEL BLANK	WQ-DC-B	WQ-TP
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)		56.5	17.1		79.3	42.9
	Manganese (Mn)-Dissolved (mg/L)		3.39	1.11		0.571	0.0424
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050		<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000816	0.000754		0.000350	0.00124
	Nickel (Ni)-Dissolved (mg/L)		0.00159	<0.00050		0.00069	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050		<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		7.36	2.40		3.39	15.9
	Selenium (Se)-Dissolved (mg/L)		0.000152	0.000069		0.000083	<0.000050
	Silicon (Si)-Dissolved (mg/L)		7.28	6.53		6.27	2.83
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010		<0.000010	0.000057
	Sodium (Na)-Dissolved (mg/L)		23.4	5.54		7.34	13.4
	Strontium (Sr)-Dissolved (mg/L)		0.642	0.370		0.529	0.529
	Sulfur (S)-Dissolved (mg/L)		210	70.7		176	218
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010		<0.000010	0.000218
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010		<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		0.00051	<0.00030		<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00162	0.00140		0.00219	0.000866
	Vanadium (V)-Dissolved (mg/L)		0.00100	0.00057		<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0099	0.0042		0.0033	0.0256
	Zirconium (Zr)-Dissolved (mg/L)		0.00051	<0.00030		<0.00030	<0.00030

\* 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	L1808128-6 Water 02-AUG-16 11:15 WQ-VC-DBC	L1808128-7 Water 02-AUG-16 09:00 WQ-VC-UMN-R	L1808128-8 Water 02-AUG-16 08:31 WQ-VC-UMN	L1808128-9 Water 02-AUG-16 12:30 WQ-VC-U	L1808128-10 Water 01-AUG-16 14:45 WQ-VC-R
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)	7.79	8.94	8.82	7.00	7.93
	Manganese (Mn)-Dissolved (mg/L)	0.0706	0.0659	0.0664	0.0215	0.0772
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000456	0.000446	0.000449	0.000345	0.000530
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	0.71	0.75	0.74	0.60	0.73
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.000054	0.000058	<0.000050	0.000053
	Silicon (Si)-Dissolved (mg/L)	6.33	6.23	6.21	6.08	6.28
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.34	2.64	3.22	2.18	2.65
	Strontium (Sr)-Dissolved (mg/L)	0.243	0.252	0.253	0.238	0.234
	Sulfur (S)-Dissolved (mg/L)	7.03	10.5	10.6	4.48	9.69
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	0.00032
	Uranium (U)-Dissolved (mg/L)	0.000562	0.000572	0.000573	0.000344	0.000691
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0017	0.0017	0.0013	0.0012
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1808128-11	L1808128-12	L1808128-13	L1808128-14	L1808128-15
		Description	Water	Water	Water	Water	Water
		Sampled Date	01-AUG-16	01-AUG-16	03-AUG-16	03-AUG-16	03-AUG-16
		Sampled Time	16:40	18:05	11:35	10:10	09:00
		Client ID	WQ-DC-R	WQ-DC-U	WQ-CH-P-13-01	WQ-DC-D1B	FIELD BLANK
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)		47.3	65.0	77.7	97.7	<0.10
	Manganese (Mn)-Dissolved (mg/L)		0.437	1.22	0.147	0.947	0.00013
	Mercury (Hg)-Dissolved (mg/L)		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000327	0.000450	<0.000050	0.000286	<0.000050
	Nickel (Ni)-Dissolved (mg/L)		0.00078	0.00084	0.00591	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		2.56	3.57	0.45	4.14	<0.10
	Selenium (Se)-Dissolved (mg/L)		0.000080	0.000086	0.000055	0.000051	<0.000050
	Silicon (Si)-Dissolved (mg/L)		6.20	6.20	8.23	6.06	<0.050
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		9.86	11.7	5.17	6.75	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.410	0.527	0.467	0.556	<0.00020
	Sulfur (S)-Dissolved (mg/L)		116	161	269	207	<0.50
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	0.000013	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		0.00040	0.00034	<0.00030	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.00117	0.00171	<0.000010	0.00319	<0.000010
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0033	0.0023	3.08	0.0946	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

\* 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	L1808128-16 Water 03-AUG-16 08:50 WQ-DC-DX-105-R	L1808128-17 Water 03-AUG-16 11:50 WQ-DESS-02	L1808128-18 Water 03-AUG-16 11:15 WQ-DESS-01	L1808128-19 Water 03-AUG-16 08:45 WQ-DC-DX-105	L1808128-20 Water 03-AUG-16 08:28 WQ-DC-DX
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)	59.6	61.6	49.5	58.6	21.0
	Manganese (Mn)-Dissolved (mg/L)	1.10	0.00363	0.0467	1.12	0.404 <sup>DTC</sup>
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000289	0.00015	<0.000050	0.000304	0.000057
	Nickel (Ni)-Dissolved (mg/L)	0.00116	<0.0010 <sup>DLA</sup>	0.00394	0.00119	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	3.49	0.65	0.31	3.47	4.51
	Selenium (Se)-Dissolved (mg/L)	<0.000050	0.00026	0.000052	<0.000050	0.000054
	Silicon (Si)-Dissolved (mg/L)	6.81	6.21	8.31	6.81	5.13
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020 <sup>DLA</sup>	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.95	7.92	4.07	5.04	3.85
	Strontium (Sr)-Dissolved (mg/L)	0.407	0.695	0.332	0.401	0.244
	Sulfur (S)-Dissolved (mg/L)	133	321	174	131	61.1
	Thallium (Tl)-Dissolved (mg/L)	0.000093	<0.000020 <sup>DLA</sup>	<0.000010	0.000093	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00020 <sup>DLA</sup>	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	<0.00060 <sup>DLA</sup>	0.00070	<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)	0.00420	0.00168	0.000011	0.00406	0.000132
	Vanadium (V)-Dissolved (mg/L)	<0.00050	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)	0.598	0.0023	1.86	0.606	0.0027
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00060 <sup>DLA</sup>	<0.00030	<0.00030	<0.00030

\* 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>	L1808128-21 Water 03-AUG-16 12:54 WQ-PC-D	L1808128-22 Water 03-AUG-16 15:15 WQ-BC		
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Magnesium (Mg)-Dissolved (mg/L)	18.8	13.0		
	Manganese (Mn)-Dissolved (mg/L)	1.14	0.538		
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000917	0.00122		
	Nickel (Ni)-Dissolved (mg/L)	0.00077	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050		
	Potassium (K)-Dissolved (mg/L)	2.27	1.30		
	Selenium (Se)-Dissolved (mg/L)	0.000093	0.000081		
	Silicon (Si)-Dissolved (mg/L)	6.17	6.41		
	Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000011		
	Sodium (Na)-Dissolved (mg/L)	6.31	4.39		
	Strontium (Sr)-Dissolved (mg/L)	0.431	0.345		
	Sulfur (S)-Dissolved (mg/L)	83.3	35.1		
	Thallium (Tl)-Dissolved (mg/L)	0.000012	0.000011		
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.00030	0.00036		
	Uranium (U)-Dissolved (mg/L)	0.00179	0.00197		
	Vanadium (V)-Dissolved (mg/L)	0.00061	0.00081		
	Zinc (Zn)-Dissolved (mg/L)	0.0151	0.0015		
	Zirconium (Zr)-Dissolved (mg/L)	<0.00030	<0.00030		

\* 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)
Duplicate	Bismuth (Bi)-Total	DLA	L1808128-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -22, -8, -9
Duplicate	Lead (Pb)-Total	DLA	L1808128-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -22, -8, -9
Duplicate	Tin (Sn)-Total	DLA	L1808128-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -22, -8, -9
Duplicate	Titanium (Ti)-Total	DLA	L1808128-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -22, -8, -9
Duplicate	Zinc (Zn)-Total	DLA	L1808128-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -22, -8, -9
Duplicate	Zirconium (Zr)-Total	DLA	L1808128-10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -20, -21, -22, -8, -9
Duplicate	Cadmium (Cd)-Total	DLM	L1808128-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sulfate (SO4)	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9

## Reference Information

	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	-2, -20, -21, -22, -4, -5, -6, -7, -8, -9 L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1808128-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -4, -5, -6, -7, -8, -9

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
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**
<b>ALK-TITR-VA</b>	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
<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>CL-IC-N-WR</b>	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<b>CN-CNO-WT</b>	Water	Cyanate	APHA 4500-CN-L
This analysis is carried out using procedures adapted from APHA method 4500-CN "Cyanide". Cyanate is determined by the Cyanate hydrolysis method using an ammonia selective electrode			
<b>CN-SCN-VA</b>	Water	Thiocyanate by Colour	APHA 4500-CN CYANIDE
This analysis is carried out using procedures adapted from APHA Method 4500-CN- M "Thiocyanate" Thiocyanate is determined by the ferric nitrate colourimetric method.			
<b>CN-T-CFA-VA</b>	Water	Total Cyanide in water by CFA	ISO 14403:2002
This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.			
<b>CN-WAD-CFA-VA</b>	Water	Weak Acid Diss. Cyanide in water by CFA	APHA 4500-CN CYANIDE
This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.			

## Reference Information

<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>F-IC-N-WR</b>	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
<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>IONBALANCE-VA</b>	Water	Ion Balance Calculation	APHA 1030E
Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.			
Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]			
<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.			
<b>MET-TOT-LOW-ICP-VA</b>	Water	Total Metals in Water by ICPOES	EPA 3005A/6010B
This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).			
<b>NH3-F-VA</b>	Water	Ammonia in Water by Fluorescence	APHA 4500 NH <sub>3</sub> -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.			
<b>NH3-F-VA</b>	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.			
<b>NO2-L-IC-N-WR</b>	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.			
<b>NO3-L-IC-N-WR</b>	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.			
<b>PH-PCT-VA</b>	Water	pH by Meter (Automated)	APHA 4500-H "pH Value"

## Reference Information

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

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

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

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

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

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

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

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

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

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

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

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

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

**TDS-CALC-VA**                      Water              TDS (Calculated)                                              APHA 1030E (20TH EDITION)

This analysis is carried out using procedures adapted from APHA 1030E "Checking Correctness of Analyses".

**TSS-MAN-WR**                      Water              Total Suspended Solids by Gravimetric                                              APHA 2540 D

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids are determined by filtering a sample through a glass fibre filter and drying the filter at 104 degrees celsius.

\*\* 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
WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

### Chain of Custody Numbers:

1	2	3	4
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## Reference Information

### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*











ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800.668.9878



L1808128-COFC

DC Number: 14 -

Page 2 of 2

<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)</b>
Company: EDI	Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)	R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)
Contact: Lyndsay Doetzel	Quality Control (QC) Report with Report <input 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: 2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	<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: 867-393-4882	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: ldoetzel@edynamics.com	Specify Date Required for E2,E or P:
	Email 2: Emille.Hamm@gov.yk.ca	
	Email 3: erik.pit@gov.yk.ca	

<b>Invoice To</b>	<b>Invoice Distribution</b>	<b>Analysis Request</b>																				
Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																				
Copy of Invoice with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Email 1 or Fax: sjenner@edynamics.com																					
Company: EDI	Email 2: ldoetzel@edynamics.com																					
Contact: S Jenner	<b>Oil and Gas Required Fields (client use)</b>																					
ALS Quote #: Q55559	Approver ID:	Cost Center:																				
Job #: MOUNT NANSEN 16-Y-0089	GL Account:	Routing Code:																				
PO / AFE:	Activity Code:																					
LSD:	Location:																					

ALS Lab Work Order # (lab use only)		ALS Contact: Sean Slugget	Sampler:																					
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	ALX-PCT-VA-EC-PCT-VA-PH-PCT-VA	ANIONS-ALL-IC-WR-TSS-MAN-WR	CN-WAD-CFA-VA-CN-T-CFA-VA	CA-CNO-WT	CN-SON-VA	NH3-F-VA	MET-T-BCMDG-VA	MET-P-BCMDG-VA	IONBALANC-VA_TDS-CALC-VA											Number of Containers
92	WA-BC	03-Aug-16	15:15	Water	R	R	R	R	R	R	R	R	R											9
		-Aug-16		Water	R	R	R	R	R	R	R	R	R											9
		-Aug-16		Water	R	R	R	R	R	R	R	R	R											9
		-Aug-16		Water	R	R	R	R	R	R	R	R	R											9
		-Aug-16		Water	R	R	R	R	R	R	R	R	R											9
		-Aug-16		Water	R	R	R	R	R	R	R	R	R											9
		-Aug-16		Water	R	R	R	R	R	R	R	R	R											9

<b>Drinking Water (DW) Samples (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 type="checkbox"/> No		Frozen <input type="checkbox"/> SIF Observations <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>
Are samples for human drinking water use? <input type="checkbox"/> Yes <input 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: 8.0 FINAL COOLER TEMPERATURES °C: 10.0

<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:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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