



ENVIRONMENTAL DYNAMICS INC.
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Date Received: 02-APR-14
Report Date: 07-APR-14 16:26 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1438967
Project P.O. #: NOT SUBMITTED
Job Reference: 13-Y-0452
C of C Numbers: 1, 2
Legal Site Desc:

Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1438967-1 Grab 01-APR-14 14:30 X14	L1438967-2 Grab 01-APR-14 15:45 NF2	L1438967-3 Grab 01-APR-14 14:45 X10	L1438967-4 Grab 01-APR-14 15:50 NF2-R	L1438967-5 Grab 01-APR-14 16:35 R10
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	822	327	336	327	297
	Hardness (as CaCO3) (mg/L)	447	167	176	163	150
	pH (pH)	7.62	7.48	7.68	7.53	7.76
	Total Suspended Solids (mg/L)	1.6	<1.0	2.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	592	191	201	189	168
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	196	143	151	143	139
	Ammonia, Total (as N) (mg/L)	0.108	<0.0050	<0.0050	<0.0050	<0.0050
	Chloride (Cl) (mg/L)	0.52	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.159	0.196	0.198	0.196	0.181
	Nitrate (as N) (mg/L)	0.224	0.294	0.294	0.294	0.295
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0030	0.0043	0.0027	0.0043
	Sulfate (SO4) (mg/L)	294	37.1	39.7	37.0	23.1
	Anion Sum (meq/L)	10.1	3.66	3.87	3.66	3.30
	Cation Sum (meq/L)	9.61	3.58	3.73	3.48	3.17
	Cation - Anion Balance (%)	-2.3	-1.1	-1.8	-2.4	-2.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.35	1.23	1.41	1.27	1.23
	Total Organic Carbon (mg/L)	1.36	1.22	1.41	1.29	1.24
Total Metals	Aluminum (Al)-Total (mg/L)	0.0081	0.0142	0.0097	0.0146	0.0075
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00038	0.00044	0.00023	0.00042	0.00053
	Barium (Ba)-Total (mg/L)	0.0722	0.0803	0.0761	0.0786	0.0782
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000290	0.000690	0.000298	0.000682	0.000016
	Calcium (Ca)-Total (mg/L)	129	46.5	47.9	45.8	45.1
	Chromium (Cr)-Total (mg/L)	0.00025	<0.00010	0.00013	<0.00010	0.00010
	Cobalt (Co)-Total (mg/L)	0.00451	0.00486	0.00108	0.00478	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	0.00073	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.762	0.188	0.113	0.186	0.106
	Lead (Pb)-Total (mg/L)	0.000160	0.000287	0.000371	0.000294	<0.000050
	Lithium (Li)-Total (mg/L)	0.00917	0.00889	0.00759	0.00883	0.00838
	Magnesium (Mg)-Total (mg/L)	30.2	12.2	12.2	11.9	9.58
	Manganese (Mn)-Total (mg/L)	5.84	0.296	0.110	0.288	0.0208
	Molybdenum (Mo)-Total (mg/L)	0.000732	0.000919	0.000772	0.000916	0.000929

* 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	L1438967-6 Grab 01-APR-14 16:50 NF1	L1438967-7 Grab 01-APR-14 18:00 FIELD BLANK	L1438967-8 Grab 01-APR-14 15:05 X3A	L1438967-9 Grab 01-APR-14 14:05 R3	L1438967-10 Grab 01-APR-14 15:20 X2
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	311	<2.0	343	663	346
	Hardness (as CaCO3) (mg/L)	160	<0.50	176	358	172
	pH (pH)	7.65	5.90	7.55	7.68	7.64
	Total Suspended Solids (mg/L)	1.2	<1.0	<1.0	1.0	1.0
	Total Dissolved Solids (mg/L)	178	<1.0	199	457	199
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	146	<2.0	147	178	144
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	0.0066	0.0495	0.0060
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.194	<0.020	0.191	0.133	0.196
	Nitrate (as N) (mg/L)	0.337	<0.0050	0.304	0.251	0.289
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010 ^{RRV}	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0056	<0.0020	0.0037	<0.0020	0.0027
	Sulfate (SO4) (mg/L)	25.1	<0.50	39.8	208	43.2
	Anion Sum (meq/L)	3.48	<0.10	3.79	7.92	3.81
	Cation Sum (meq/L)	3.39	<0.10	3.73	7.59	3.68
	Cation - Anion Balance (%)	-1.4	0.0	-0.9	-2.2	-1.8
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.35	<0.50	1.39	1.23	1.19
	Total Organic Carbon (mg/L)	1.37	<0.50	1.36	1.19	1.22
Total Metals	Aluminum (Al)-Total (mg/L)	0.0128	<0.0030	0.0111	0.0044	0.0151
	Antimony (Sb)-Total (mg/L)	0.00011	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00053	<0.00010	0.00032	0.00023	0.00040
	Barium (Ba)-Total (mg/L)	0.0809	<0.000050	0.0798	0.0830	0.0780
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000023	<0.000010	0.000450	0.000139	0.000638
	Calcium (Ca)-Total (mg/L)	46.4	<0.020	49.8	108	47.2
	Chromium (Cr)-Total (mg/L)	0.00030	<0.00010	0.00014	0.00012	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00026	<0.00010	0.00292	0.00191	0.00454
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.125	<0.010	0.139	0.158	0.264
	Lead (Pb)-Total (mg/L)	0.000354	<0.000050	0.000267	0.000113	0.000316
	Lithium (Li)-Total (mg/L)	0.00890	<0.00050	0.00792	0.00639	0.00875
	Magnesium (Mg)-Total (mg/L)	10.2	<0.0050	13.0	24.4	13.1
	Manganese (Mn)-Total (mg/L)	0.0401	<0.000050	0.241	2.63	0.321
	Molybdenum (Mo)-Total (mg/L)	0.000981	<0.000050	0.000828	0.000561	0.000891

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1438967-11 Grab 01-APR-14 15:35 NF2-B	L1438967-12 Grab 02-APR-14 12:50 TRAVEL BLANK		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (uS/cm)	296	<2.0		
	Hardness (as CaCO3) (mg/L)	156	<0.50		
	pH (pH)	7.66	5.89		
	Total Suspended Solids (mg/L)	<1.0	<1.0		
	Total Dissolved Solids (mg/L)	175	<1.0		
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	141	<2.0		
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050		
	Chloride (Cl) (mg/L)	<0.50	<0.50		
	Fluoride (F) (mg/L)	0.184	<0.020		
	Nitrate (as N) (mg/L)	0.295	<0.0050		
	Nitrite (as N) (mg/L)	<0.0010	<0.0010		
	Phosphorus (P)-Total (mg/L)	0.0035	<0.0020		
	Sulfate (SO4) (mg/L)	26.5	<0.50		
	Anion Sum (meq/L)	3.40	<0.10		
	Cation Sum (meq/L)	3.31	<0.10		
	Cation - Anion Balance (%)	-1.3	0.0		
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.19			
	Total Organic Carbon (mg/L)	1.31	<0.50		
Total Metals	Aluminum (Al)-Total (mg/L)	0.0080	<0.0030		
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010		
	Arsenic (As)-Total (mg/L)	0.00041	<0.00010		
	Barium (Ba)-Total (mg/L)	0.0791	<0.000050		
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010		
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050		
	Boron (B)-Total (mg/L)	<0.010	<0.010		
	Cadmium (Cd)-Total (mg/L)	0.000146	<0.000010		
	Calcium (Ca)-Total (mg/L)	45.8	<0.020		
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010		
	Cobalt (Co)-Total (mg/L)	0.00103	<0.00010		
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050		
	Iron (Fe)-Total (mg/L)	0.112	<0.010		
	Lead (Pb)-Total (mg/L)	0.000211	<0.000050		
	Lithium (Li)-Total (mg/L)	0.00828	<0.00050		
	Magnesium (Mg)-Total (mg/L)	10.5	<0.0050		
	Manganese (Mn)-Total (mg/L)	0.0762	<0.000050		
	Molybdenum (Mo)-Total (mg/L)	0.000896	<0.000050		

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1438967-1	L1438967-2	L1438967-3	L1438967-4	L1438967-5
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	01-APR-14	01-APR-14	01-APR-14	01-APR-14	01-APR-14
		Sampled Time	14:30	15:45	14:45	15:50	16:35
		Client ID	X14	NF2	X10	NF2-R	R10
Grouping	Analyte						
WATER							
Total Metals	Nickel (Ni)-Total (mg/L)		0.0114	0.00695	0.00458	0.00694	<0.00050
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		2.28	1.21	1.26	1.17	1.19
	Selenium (Se)-Total (mg/L)		0.00044	0.00045	0.00039	0.00044	0.00044
	Silicon (Si)-Total (mg/L)		6.61	6.26	5.82	6.26	6.12
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		8.28	3.68	3.34	3.50	3.40
	Strontium (Sr)-Total (mg/L)		0.391	0.214	0.220	0.207	0.209
	Thallium (Tl)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)		0.00356	0.00296	0.00284	0.00291	0.00287
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		0.432	1.14	0.614	1.12	0.0094
	Zirconium (Zr)-Total (mg/L)		<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
Dissolved Metals	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0013	0.0040	0.0015	0.0039	0.0015
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00026	0.00029	0.00017	0.00028	0.00039
	Barium (Ba)-Dissolved (mg/L)		0.0713	0.0781	0.0782	0.0790	0.0769
	Beryllium (Be)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.000285	0.000674	0.000311	0.000689	0.000014
	Calcium (Ca)-Dissolved (mg/L)		130	46.7	49.0	45.6	44.1
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00458	0.00474	0.00105	0.00471	<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00026	0.00024	0.00062	0.00025	0.00021
	Iron (Fe)-Dissolved (mg/L)		0.599	0.095	0.011	0.095	0.022
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.00925	0.00911	0.00803	0.00914	0.00836
	Magnesium (Mg)-Dissolved (mg/L)		29.8	12.3	13.1	11.9	9.64
	Manganese (Mn)-Dissolved (mg/L)		5.72	0.286	0.109	0.282	0.0195
	Molybdenum (Mo)-Dissolved (mg/L)		0.000767	0.000852	0.000680	0.000849	0.000854
	Nickel (Ni)-Dissolved (mg/L)		0.0115	0.00678	0.00445	0.00660	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		2.24	1.18	1.34	1.17	1.12

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1438967-6	L1438967-7	L1438967-8	L1438967-9	L1438967-10
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	01-APR-14	01-APR-14	01-APR-14	01-APR-14	01-APR-14
		Sampled Time	16:50	18:00	15:05	14:05	15:20
		Client ID	NF1	FIELD BLANK	X3A	R3	X2
Grouping	Analyte						
WATER							
Total Metals	Nickel (Ni)-Total (mg/L)		0.00058	<0.00050	0.00538	0.00572	0.00705
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		1.23	<0.050	1.34	1.91	1.21
	Selenium (Se)-Total (mg/L)		0.00049	<0.00010	0.00042	0.00044	0.00042
	Silicon (Si)-Total (mg/L)		6.42	<0.050	5.99	5.96	6.10
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		3.62	<0.050	3.50	6.45	3.64
	Strontium (Sr)-Total (mg/L)		0.213	<0.00020	0.225	0.346	0.223
	Thallium (Tl)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)		0.00290	<0.000010	0.00295	0.00313	0.00283
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		0.0279	<0.0030	0.830	0.208	1.08
	Zirconium (Zr)-Total (mg/L)		<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
Dissolved Metals	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0014	<0.0010	0.0026	<0.0010	0.0029
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00037	<0.00010	0.00018	0.00014	0.00019
	Barium (Ba)-Dissolved (mg/L)		0.0813	<0.000050	0.0791	0.0826	0.0774
	Beryllium (Be)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.000021	<0.000010	0.000432	0.000127	0.000620
	Calcium (Ca)-Dissolved (mg/L)		46.9	0.029 ^{RRV}	49.2	104	47.7
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00026	<0.00010	0.00281	0.00191	0.00438
	Copper (Cu)-Dissolved (mg/L)		0.00028	<0.00020	0.00030	0.00032	0.00024
	Iron (Fe)-Dissolved (mg/L)		0.030	<0.010	0.018	<0.010	0.070
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.00896	<0.00050	0.00795	0.00625	0.00898
	Magnesium (Mg)-Dissolved (mg/L)		10.4	<0.0050	12.8	23.9	12.9
	Manganese (Mn)-Dissolved (mg/L)		0.0388	<0.000050	0.233	2.56	0.314
	Molybdenum (Mo)-Dissolved (mg/L)		0.000905	<0.000050	0.000726	0.000509	0.000831
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	0.00522	0.00550	0.00681
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		1.22	<0.050	1.30	1.88	1.22

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1438967-11 Grab 01-APR-14 15:35 NF2-B	L1438967-12 Grab 02-APR-14 12:50 TRAVEL BLANK		
Grouping	Analyte				
WATER					
Total Metals	Nickel (Ni)-Total (mg/L)	0.00174	<0.00050		
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30		
	Potassium (K)-Total (mg/L)	1.16	<0.050		
	Selenium (Se)-Total (mg/L)	0.00042	<0.00010		
	Silicon (Si)-Total (mg/L)	6.18	<0.050		
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010		
	Sodium (Na)-Total (mg/L)	3.47	<0.050		
	Strontium (Sr)-Total (mg/L)	0.209	<0.00020		
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010		
	Uranium (U)-Total (mg/L)	0.00283	<0.000010		
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010		
	Zinc (Zn)-Total (mg/L)	0.231	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080		
Dissolved Metals	Dissolved Metals Filtration Location	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0018			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00029			
	Barium (Ba)-Dissolved (mg/L)	0.0777			
	Beryllium (Be)-Dissolved (mg/L)	<0.00010			
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050			
	Boron (B)-Dissolved (mg/L)	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	0.000145			
	Calcium (Ca)-Dissolved (mg/L)	45.3			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010			
	Cobalt (Co)-Dissolved (mg/L)	0.00101			
	Copper (Cu)-Dissolved (mg/L)	0.00021			
	Iron (Fe)-Dissolved (mg/L)	0.032			
	Lead (Pb)-Dissolved (mg/L)	<0.000050			
	Lithium (Li)-Dissolved (mg/L)	0.00843			
	Magnesium (Mg)-Dissolved (mg/L)	10.5			
	Manganese (Mn)-Dissolved (mg/L)	0.0735			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000846			
	Nickel (Ni)-Dissolved (mg/L)	0.00165			
	Phosphorus (P)-Dissolved (mg/L)	<0.30			
	Potassium (K)-Dissolved (mg/L)	1.17			

* 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	L1438967-1 Grab 01-APR-14 14:30 X14	L1438967-2 Grab 01-APR-14 15:45 NF2	L1438967-3 Grab 01-APR-14 14:45 X10	L1438967-4 Grab 01-APR-14 15:50 NF2-R	L1438967-5 Grab 01-APR-14 16:35 R10
Grouping	Analyte					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00040	0.00047	0.00047	0.00049	0.00049
	Silicon (Si)-Dissolved (mg/L)	6.27	6.24	6.08	6.41	6.20
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	8.36	3.53	3.42	3.41	3.39
	Strontium (Sr)-Dissolved (mg/L)	0.404	0.208	0.221	0.211	0.195
	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)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00351	0.00277	0.00287	0.00281	0.00281
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.441	1.14	0.643	1.14	0.0100
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080

* 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	L1438967-6 Grab 01-APR-14 16:50 NF1	L1438967-7 Grab 01-APR-14 18:00 FIELD BLANK	L1438967-8 Grab 01-APR-14 15:05 X3A	L1438967-9 Grab 01-APR-14 14:05 R3	L1438967-10 Grab 01-APR-14 15:20 X2
Grouping	Analyte					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00051	<0.00010	0.00047	0.00045	0.00048
	Silicon (Si)-Dissolved (mg/L)	6.34	<0.050	5.94	6.05	6.38
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.66	<0.050	3.40	6.32	3.64
	Strontium (Sr)-Dissolved (mg/L)	0.209	<0.00020	0.223	0.334	0.220
	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)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00281	<0.000010	0.00283	0.00285	0.00286
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0249	<0.0010	0.834	0.209	1.10
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1438967-11	L1438967-12		
Description	Grab	Grab			
Sampled Date	01-APR-14	02-APR-14			
Sampled Time	15:35	12:50			
Client ID	NF2-B	TRAVEL BLANK			
Grouping	Analyte				
WATER					
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00048			
	Silicon (Si)-Dissolved (mg/L)	6.26			
	Silver (Ag)-Dissolved (mg/L)	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	3.48			
	Strontium (Sr)-Dissolved (mg/L)	0.206			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00271			
	Vanadium (V)-Dissolved (mg/L)	<0.0010			
	Zinc (Zn)-Dissolved (mg/L)	0.234			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080			

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1438967-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
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**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	EPA 310.2
This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.			
ANIONS-CL-IC-WR	Water	Chloride by Ion Chromatography	EPA 300.1
This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003.			
ANIONS-F-IC-WR	Water	Fluoride by Ion Chromatography	EPA 300.1
This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003.			
ANIONS-NO2-IC-WR	Water	Nitrite Nitrogen by Ion Chromatography	EPA 300.1
This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003. Nitrate is detected by UV absorbance.			
ANIONS-NO3-IC-WR	Water	Nitrate Nitrogen by Ion Chromatography	EPA 300.1
This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003. Nitrate is detected by UV absorbance.			
ANIONS-SO4-IC-WR	Water	Sulphate by Ion Chromatography	EPA 300.1
This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003.			
CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
EC-MAN-WR	Water	Conductivity by Meter	APHA 2510 (B)

Reference Information

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using an 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.

IONBALANCE-VA 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:

$$\text{Ion Balance (\%)} = \frac{[\text{Cation Sum} - \text{Anion Sum}]}{[\text{Cation Sum} + \text{Anion Sum}]}$$

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

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 hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS APHA 3030 B&E / EPA SW-846 6020A

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 hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

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.

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

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

PH-MAN-WR Water pH by Meter APHA 4500-H (B)

"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."

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-LOW-WR Water Total Suspended Solids by Grav. (1 mg/L) 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.

ZR-D-MS-VA Water Dissolved Zr in Water by ICPMS EPA SW-846 3005A/6020A

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 - mass spectrometry (EPA Method 6020A).

ZR-T-MS-VA Water Total Zr in Water by ICPMS EPA SW-846 3005A/6020A

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 - mass spectrometry (EPA Method 6020A).

** 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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Reference Information

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.



Report To		Report Format / Distribution			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)													
Company: EDI		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			R <input type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)													
Contact: Meighan Kearns		Quality Control (QC) Report with Report <input type="checkbox"/> Yes <input type="checkbox"/> No			P <input checked="" 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 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 mkearns@edynamics.com			Specify Date Required for E2, E or P:													
		Email 2 adrienne.turcotte@gov.yk.ca			Analysis Request													
Invoice To Same as Report To <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Invoice Distribution			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		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																
Company: EDI		Email 1 or Fax sjenner@edynamics.com																
Contact: S Jenner		Email 2																
Project Information		Oil and Gas Required Fields (client use)																
ALS Quote #: Q38556		Approver ID:		Cost Center:														
Job #: 13-Y-0452		GL Account:		Routing Code:														
PO / AFE:		Activity Code:																
LSD:		Location:																
ALS Lab Work Order # (lab use only)		ALS Contact:		Sampler: JM/BSM														
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												
	X14			01 APR 14	14:30	GRAB	P	P	P	P	P	P	P	P	P	P		5
	NF2			01 APR 14	15:45	GRAB	P											5
	X10			01 APR 14	14:45	GRAB	P											5
	NF2-r			01 APR 14	15:50	GRAB	P											5
	R10			01 APR 14	16:35	GRAB	P											5
	NF1			01 APR 14	16:50	GRAB	P											5
	Field Blank			01 APR 14	18:00		P											5
Drinking Water (DW) Samples¹ (client use)		Special Instructions / Specify Criteria to add on report (client Use)			SAMPLE CONDITION AS RECEIVED (lab use only)													
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input type="checkbox"/> No		Use CH2M_EQUIS for EDD.			Frozen <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Observations: Yes <input type="checkbox"/> No <input type="checkbox"/>													
Are samples for human drinking water use? <input type="checkbox"/> Yes <input type="checkbox"/> No					Capped on Yes <input type="checkbox"/> No <input type="checkbox"/> Custody seal intact: Yes <input type="checkbox"/> No <input type="checkbox"/>													
					Cooling method: <input type="checkbox"/>													
					INITIAL COOLER TEMPERATURES: <input type="checkbox"/> FINAL COOLER TEMPERATURES: <input type="checkbox"/>													
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)													
Released by: _____ Date: _____ Time: _____		Received by: _____ Date: _____ Time: _____			Received by: _____ Date: _____ Time: _____													