



ENVIRONMENTAL DYNAMICS INC.  
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Date Received: 12-MAR-14  
Report Date: 17-MAR-14 16:46 (MT)  
Version: FINAL

Client Phone: 867-393-4882

## Certificate of Analysis

**Lab Work Order #:** L1431528  
**Project P.O. #:** NOT SUBMITTED  
**Job Reference:** 13-Y-0452/14-Y-0270  
**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	L1431528-1 Grab 11-MAR-14 13:30 R3	L1431528-2 Grab 11-MAR-14 14:00 X14	L1431528-3 Grab 11-MAR-14 14:20 X10	L1431528-4 Grab 11-MAR-14 14:40 X3A	L1431528-5 Grab 11-MAR-14 14:55 X2
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	700	901	358	529	355
	Hardness (as CaCO3) (mg/L)	349	503	166	289	166
	pH (pH)	7.57	7.51	7.69	7.58	7.39
	Total Suspended Solids (mg/L)	<1.0	3.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	469	686	206	328	213
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	180	212	159	235	163
	Ammonia, Total (as N) (mg/L)	0.0464	0.123	<0.0050	0.0140	0.0090
	Chloride (Cl) (mg/L)	<0.50	<2.5 <sup>DLA</sup>	<0.50	0.58	<0.50
	Fluoride (F) (mg/L)	0.129	0.20	0.184	0.288	0.205
	Nitrate (as N) (mg/L)	0.259	0.240	0.313	0.519	0.328
	Nitrite (as N) (mg/L)	0.0012	<0.0050 <sup>DLA</sup>	<0.0010	0.0016	0.0011
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	<0.0020	0.0022	<0.0020
	Sulfate (SO4) (mg/L)	223	356	44.2	70.1	47.1
	Anion Sum (meq/L)	8.26	11.7	4.12	6.21	4.26
	Cation Sum (meq/L)	7.38	10.8	3.52	6.11	3.56
	Cation - Anion Balance (%)	-5.6	-4.0	-7.9	-0.8	-9.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.25	1.63	1.65	2.87	1.55
	Total Organic Carbon (mg/L)	1.46	1.70	1.49	2.88	1.56
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0058	0.0165	0.0055	0.0075	0.0180
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00011	<0.00010
	Arsenic (As)-Total (mg/L)	0.00022	0.00044	0.00025	0.00042	0.00044
	Barium (Ba)-Total (mg/L)	0.0869	0.0720	0.0791	0.120	0.0743
	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)	0.000113	0.000281	0.000305	0.000536	0.000637
	Calcium (Ca)-Total (mg/L)	110	148	49.9	78.9	48.3
	Chromium (Cr)-Total (mg/L)	0.00012	0.00013	<0.00010	0.00013	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00158	0.00484	0.00091	0.00367	0.00449
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	0.00080	<0.00050
	Iron (Fe)-Total (mg/L)	0.107	0.900	0.106	0.111	0.304
	Lead (Pb)-Total (mg/L)	0.000141	0.000172	0.000579	0.000168	0.000460
	Lithium (Li)-Total (mg/L)	0.00622	0.00976	0.00733	0.0112	0.00887
	Magnesium (Mg)-Total (mg/L)	22.9	32.6	12.7	19.5	12.6
	Manganese (Mn)-Total (mg/L)	2.19	6.48	0.0976	0.428	0.316
	Molybdenum (Mo)-Total (mg/L)	0.000489	0.000835	0.000673	0.00155	0.000887

\* 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	L1431528-6 Grab 11-MAR-14 15:10 NF2-A	L1431528-7 Grab 11-MAR-14 15:25 NF2-B	L1431528-8 Grab 11-MAR-14 15:40 NF2	L1431528-9 Grab 11-MAR-14 16:25 NF1	L1431528-10 Grab 11-MAR-14 17:00 R10
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1050	314	332	302	301
	Hardness (as CaCO3) (mg/L)	670	151	159	148	146
	pH (pH)	8.00	7.69	7.39	7.53	7.77
	Total Suspended Solids (mg/L)	2.0	<1.0	<1.0	<1.0	<1.0
	Total Dissolved Solids (mg/L)	755	175	190	169	166
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	541	139	141	139	137
	Ammonia, Total (as N) (mg/L)	0.0308	<0.0050	0.0092	0.0077	0.0053
	Chloride (Cl) (mg/L)	<5.0 <sup>DLA</sup>	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.69	0.187	0.210	0.184	0.182
	Nitrate (as N) (mg/L)	1.86	0.328	0.391	0.350	0.305
	Nitrite (as N) (mg/L)	<0.010 <sup>DLA</sup>	<0.0010	0.0011	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0103	0.0040	0.0041	0.0042	0.0047
	Sulfate (SO4) (mg/L)	154	29.0	39.7	25.0	24.1
	Anion Sum (meq/L)	14.2	3.42	3.68	3.33	3.28
	Cation Sum (meq/L)	14.3	3.21	3.40	3.13	3.09
	Cation - Anion Balance (%)	0.5	-3.1	-3.9	-3.1	-3.0
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	5.82	1.34	1.43	1.31	1.20
	Total Organic Carbon (mg/L)	5.91	1.42	1.53	1.36	1.35
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0342	0.0124	0.0185	0.0063	0.0093
	Antimony (Sb)-Total (mg/L)	0.00027	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00131	0.00045	0.00048	0.00048	0.00051
	Barium (Ba)-Total (mg/L)	0.237	0.0765	0.0779	0.0750	0.0774
	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)	0.000981	0.000175	0.000682	0.000016	0.000012
	Calcium (Ca)-Total (mg/L)	167	44.8	47.1	43.3	43.8
	Chromium (Cr)-Total (mg/L)	0.00056	<0.00010	0.00014	<0.00010	0.00011
	Cobalt (Co)-Total (mg/L)	0.00770	0.00124	0.00489	0.00019	<0.00010
	Copper (Cu)-Total (mg/L)	0.00205	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.208	0.155	0.279	0.121	0.121
	Lead (Pb)-Total (mg/L)	0.00113	0.000388	0.000471	0.000114	0.000069
	Lithium (Li)-Total (mg/L)	0.0328	0.00828	0.00892	0.00806	0.00802
	Magnesium (Mg)-Total (mg/L)	42.7	10.2	12.0	9.34	9.29
	Manganese (Mn)-Total (mg/L)	0.433	0.0819	0.291	0.0376	0.0239
	Molybdenum (Mo)-Total (mg/L)	0.00365	0.000857	0.000922	0.000882	0.000882

\* 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	L1431528-11 Grab 11-MAR-14 17:15 R9	L1431528-12 Grab 11-MAR-14 17:30 R8	L1431528-13 Grab 11-MAR-14 18:35 FIELD BLANK	L1431528-14 Grab 12-MAR-14 12:45 TRAVEL BLANK	L1431528-15 Grab 11-MAR-14 14:00 X-14-R
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	296	272	<2.0	<2.0	924
	Hardness (as CaCO3) (mg/L)	146	130	<0.50	<0.50	505
	pH (pH)	7.87	7.79	5.94	5.67	7.50
	Total Suspended Solids (mg/L)	<1.0	<1.0	<1.0	<1.0	1.4
	Total Dissolved Solids (mg/L)	167	146	<1.0	<1.0	703
<b>Anions and Nutrients</b>	Alkalinity, Total (as CaCO3) (mg/L)	139	137	<2.0	<2.0	211
	Ammonia, Total (as N) (mg/L)	0.0050	0.0057	<0.0050	<0.010 <sup>RRV</sup>	0.138 <sup>DLA</sup>
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<2.5 <sup>DLA</sup>
	Fluoride (F) (mg/L)	0.182	0.179	<0.020	<0.020	0.21
	Nitrate (as N) (mg/L)	0.308	0.188	<0.0050	<0.0050	0.248 <sup>DLA</sup>
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050 <sup>DLA</sup>
	Phosphorus (P)-Total (mg/L)	0.0047	0.0053	<0.0020	<0.0020	<0.0020
	Sulfate (SO4) (mg/L)	23.7	10.4	<0.50	<0.50	373
	Anion Sum (meq/L)	3.30	2.97	<0.10	<0.10	12.0
	Cation Sum (meq/L)	3.08	2.76	<0.10	<0.10	10.8
	Cation - Anion Balance (%)	-3.3	-3.7	0.0	0.0	-5.1
<b>Organic / Inorganic Carbon</b>	Dissolved Organic Carbon (mg/L)	1.28	1.24	<0.50		1.35
	Total Organic Carbon (mg/L)	1.42	1.38	<0.50	<0.50	1.46
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0107	0.0064	<0.0030	<0.0030	0.0204
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00052	0.00057	<0.00010	<0.00010	0.00045
	Barium (Ba)-Total (mg/L)	0.0742	0.0758	<0.000050	<0.000050	0.0711
	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)	<0.000010	<0.000010	<0.000010	<0.000010	0.000272
	Calcium (Ca)-Total (mg/L)	44.2	39.5	<0.020	<0.020	153
	Chromium (Cr)-Total (mg/L)	0.00011	<0.00010	<0.00010	<0.00010	0.00011
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00478
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.117	0.132	<0.010	<0.010	0.914
	Lead (Pb)-Total (mg/L)	0.000151	<0.000050	<0.000050	<0.000050	0.000227
	Lithium (Li)-Total (mg/L)	0.00801	0.00750	<0.00050	<0.00050	0.00965
	Magnesium (Mg)-Total (mg/L)	9.05	7.35	<0.0050	<0.0050	32.8
	Manganese (Mn)-Total (mg/L)	0.0210	0.0199	<0.000050	<0.000050	6.63
	Molybdenum (Mo)-Total (mg/L)	0.000918	0.000905	<0.000050	<0.000050	0.000784

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1431528-1	L1431528-2	L1431528-3	L1431528-4	L1431528-5
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	11-MAR-14	11-MAR-14	11-MAR-14	11-MAR-14	11-MAR-14
		Sampled Time	13:30	14:00	14:20	14:40	14:55
		Client ID	R3	X14	X10	X3A	X2
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Nickel (Ni)-Total (mg/L)		0.00472	0.0123	0.00476	0.00735	0.00714
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		1.86	2.43	1.26	2.44	1.22
	Selenium (Se)-Total (mg/L)		0.00041	0.00042	0.00043	0.00065	0.00042
	Silicon (Si)-Total (mg/L)		5.90	6.62	5.90	8.78	6.06
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		6.30	9.40	3.28	5.47	3.67
	Strontium (Sr)-Total (mg/L)		0.344	0.440	0.223	0.368	0.211
	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)		0.00281	0.00374	0.00288	0.00463	0.00280
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		0.151	0.391	0.635	0.940	1.08
	Zirconium (Zr)-Total (mg/L)		<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		<0.0010	0.0011	0.0017	0.0013	0.0029
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00013	0.00031	0.00014	0.00032	0.00018
	Barium (Ba)-Dissolved (mg/L)		0.0878	0.0683	0.0803	0.127	0.0750
	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)		0.000117	0.000268	0.000288	0.000545	0.000639
	Calcium (Ca)-Dissolved (mg/L)		102	149	46.3	81.5	46.4
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00155	0.00464	0.00085	0.00378	0.00439
	Copper (Cu)-Dissolved (mg/L)		0.00034	0.00027	0.00031	0.00058	0.00025
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.732	0.012	<0.010	0.079
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.00610	0.00958	0.00703	0.0119	0.00913
	Magnesium (Mg)-Dissolved (mg/L)		23.0	31.5	12.4	20.6	12.2
	Manganese (Mn)-Dissolved (mg/L)		2.20	6.31	0.0942	0.448	0.301
	Molybdenum (Mo)-Dissolved (mg/L)		0.000444	0.000731	0.000599	0.00123	0.000783
	Nickel (Ni)-Dissolved (mg/L)		0.00470	0.0119	0.00461	0.00740	0.00691
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		1.88	2.36	1.25	2.48	1.18

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1431528-6	L1431528-7	L1431528-8	L1431528-9	L1431528-10
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	11-MAR-14	11-MAR-14	11-MAR-14	11-MAR-14	11-MAR-14
		Sampled Time	15:10	15:25	15:40	16:25	17:00
		Client ID	NF2-A	NF2-B	NF2	NF1	R10
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Nickel (Ni)-Total (mg/L)		0.0134	0.00211	0.00730	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		5.04	1.14	1.20	1.11	1.10
	Selenium (Se)-Total (mg/L)		0.00182	0.00043	0.00044	0.00046	0.00045
	Silicon (Si)-Total (mg/L)		21.9	6.15	6.14	5.94	5.98
	Silver (Ag)-Total (mg/L)		0.000024	<0.000010	0.000013	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		16.2	3.49	3.61	3.40	3.30
	Strontium (Sr)-Total (mg/L)		0.768	0.199	0.207	0.196	0.193
	Thallium (Tl)-Total (mg/L)		0.000022	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Total (mg/L)		0.00014	<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)		0.0108	0.00286	0.00292	0.00280	0.00278
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		1.49	0.284	1.14	0.0115	0.0051
	Zirconium (Zr)-Total (mg/L)		<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0016	0.0022	0.0042	0.0017	0.0015
	Antimony (Sb)-Dissolved (mg/L)		0.00026	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00110	0.00025	0.00032	0.00035	0.00038
	Barium (Ba)-Dissolved (mg/L)		0.254	0.0752	0.0787	0.0753	0.0759
	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)		0.00109	0.000175	0.000697	0.000015	0.000012
	Calcium (Ca)-Dissolved (mg/L)		188	44.5	44.5	43.7	43.2
	Chromium (Cr)-Dissolved (mg/L)		0.00013	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00845	0.00121	0.00465	0.00018	<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00144	0.00024	0.00026	0.00024	0.00022
	Iron (Fe)-Dissolved (mg/L)		<0.010	0.040	0.126	0.028	0.022
	Lead (Pb)-Dissolved (mg/L)		0.000119	<0.000050	0.000057	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.0341	0.00845	0.00891	0.00841	0.00834
	Magnesium (Mg)-Dissolved (mg/L)		48.7	9.71	11.5	9.44	9.22
	Manganese (Mn)-Dissolved (mg/L)		0.492	0.0785	0.278	0.0368	0.0216
	Molybdenum (Mo)-Dissolved (mg/L)		0.00350	0.000814	0.000806	0.000863	0.000851
	Nickel (Ni)-Dissolved (mg/L)		0.0148	0.00204	0.00699	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		5.44	1.11	1.14	1.11	1.08

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1431528-11	L1431528-12	L1431528-13	L1431528-14	L1431528-15
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	11-MAR-14	11-MAR-14	11-MAR-14	12-MAR-14	11-MAR-14
		Sampled Time	17:15	17:30	18:35	12:45	14:00
		Client ID	R9	R8	FIELD BLANK	TRAVEL BLANK	X-14-R
Grouping	Analyte						
<b>WATER</b>							
<b>Total Metals</b>	Nickel (Ni)-Total (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	0.0121
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		1.08	1.00	<0.050	<0.050	2.41
	Selenium (Se)-Total (mg/L)		0.00048	0.00042	<0.00010	<0.00010	0.00043
	Silicon (Si)-Total (mg/L)		5.89	5.94	<0.050	<0.050	6.41
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		3.26	3.18	<0.050	<0.050	9.51
	Strontium (Sr)-Total (mg/L)		0.193	0.180	<0.00020	<0.00020	0.445
	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)		0.00279	0.00255	<0.000010	<0.000010	0.00377
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		<0.0030	<0.0030	<0.0030	<0.0030	0.388
	Zirconium (Zr)-Total (mg/L)		<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0012	<0.0010	<0.0010		0.0010
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010		<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00036	0.00040	<0.00010		0.00029
	Barium (Ba)-Dissolved (mg/L)		0.0756	0.0749	<0.000050		0.0696
	Beryllium (Be)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010		<0.00010
	Bismuth (Bi)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050		<0.00050
	Boron (B)-Dissolved (mg/L)		<0.010	<0.010	<0.010		<0.010
	Cadmium (Cd)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010		0.000268
	Calcium (Ca)-Dissolved (mg/L)		43.4	39.7	<0.020		149
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010		<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010		0.00465
	Copper (Cu)-Dissolved (mg/L)		0.00021	<0.00020	<0.00020		0.00028
	Iron (Fe)-Dissolved (mg/L)		0.020	0.031	<0.010		0.732
	Lead (Pb)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050		<0.000050
	Lithium (Li)-Dissolved (mg/L)		0.00811	0.00788	<0.00050		0.00958
	Magnesium (Mg)-Dissolved (mg/L)		9.05	7.53	<0.0050		32.0
	Manganese (Mn)-Dissolved (mg/L)		0.0188	0.0187	<0.000050		6.44
	Molybdenum (Mo)-Dissolved (mg/L)		0.000839	0.000831	<0.000050		0.000728
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050		0.0119
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30		<0.30
	Potassium (K)-Dissolved (mg/L)		1.08	1.02	<0.050		2.39

\* 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	L1431528-1 Grab 11-MAR-14 13:30 R3	L1431528-2 Grab 11-MAR-14 14:00 X14	L1431528-3 Grab 11-MAR-14 14:20 X10	L1431528-4 Grab 11-MAR-14 14:40 X3A	L1431528-5 Grab 11-MAR-14 14:55 X2
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Selenium (Se)-Dissolved (mg/L)	0.00049	0.00050	0.00049	0.00085	0.00049
	Silicon (Si)-Dissolved (mg/L)	5.88	6.36	5.76	8.53	6.11
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	6.37	9.01	3.25	5.43	3.56
	Strontium (Sr)-Dissolved (mg/L)	0.318	0.438	0.202	0.363	0.207
	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)	0.00269	0.00375	0.00260	0.00464	0.00271
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.157	0.392	0.654	1.01	1.11
	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	L1431528-6 Grab 11-MAR-14 15:10 NF2-A	L1431528-7 Grab 11-MAR-14 15:25 NF2-B	L1431528-8 Grab 11-MAR-14 15:40 NF2	L1431528-9 Grab 11-MAR-14 16:25 NF1	L1431528-10 Grab 11-MAR-14 17:00 R10
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Selenium (Se)-Dissolved (mg/L)	0.00212	0.00050	0.00053	0.00052	0.00052
	Silicon (Si)-Dissolved (mg/L)	24.2	6.14	6.09	6.02	5.79
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	16.6	3.40	3.32	3.28	3.25
	Strontium (Sr)-Dissolved (mg/L)	0.843	0.195	0.197	0.194	0.189
	Thallium (Tl)-Dissolved (mg/L)	0.000023	<0.000010	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	0.00020	<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)	0.0119	0.00272	0.00276	0.00279	0.00275
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	1.73	0.294	1.15	0.0118	0.0055
	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	L1431528-11	L1431528-12	L1431528-13	L1431528-14	L1431528-15
Description	Grab	Grab	Grab	Grab	Grab	Grab
Sampled Date	11-MAR-14	11-MAR-14	11-MAR-14	11-MAR-14	12-MAR-14	11-MAR-14
Sampled Time	17:15	17:30	17:30	18:35	12:45	14:00
Client ID	R9	R8	R8	FIELD BLANK	TRAVEL BLANK	X-14-R
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Selenium (Se)-Dissolved (mg/L)	0.00050	0.00048	<0.00010		0.00051
	Silicon (Si)-Dissolved (mg/L)	5.85	5.96	<0.050		6.26
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		<0.000010
	Sodium (Na)-Dissolved (mg/L)	3.27	3.16	<0.050		9.20
	Strontium (Sr)-Dissolved (mg/L)	0.190	0.175	<0.00020		0.446
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010		<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010		<0.010
	Uranium (U)-Dissolved (mg/L)	0.00276	0.00248	<0.000010		0.00367
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010		<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0011	<0.0010		0.395
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	<0.00080	<0.00080		<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	Calcium (Ca)-Dissolved	MS-B	L1431528-1, -10, -11, -12, -13, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1431528-1, -10, -11, -12, -13, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1431528-1, -10, -11, -12, -13, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1431528-1, -10, -11, -12, -13, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1431528-1, -10, -11, -12, -13, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1431528-1, -10, -11, -12, -13, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1431528-1, -10, -11, -12, -13, -15, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1431528-1, -10, -11, -12, -13, -15, -2, -3, -4, -5, -6, -7, -8, -9

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
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-COL-VA</b>	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.			
<b>ANIONS-CL-IC-WR</b>	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.			
<b>ANIONS-F-IC-WR</b>	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.			
<b>ANIONS-NO2-IC-WR</b>	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.			
<b>ANIONS-NO3-IC-WR</b>	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.			
<b>ANIONS-SO4-IC-WR</b>	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.			
<b>CARBONS-DOC-VA</b>	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.			
<b>CARBONS-TOC-VA</b>	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)".			
<b>EC-MAN-WR</b>	Water	Conductivity by Meter	APHA 2510 (B)
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using an electrode.			
<b>HARDNESS-CALC-VA</b>	Water	Hardness	APHA 2340B



## 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.*

**Chain of Custody (COC) / Analytical Request Form**



**ALS Environmental**

Canada Toll Free: 1 800 668 9878

L1431528-COFC

COC Number: 14 -

Page 1 of 1

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<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 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	<b>Analysis Request</b>	

<b>Invoice To</b>		<b>Invoice Distribution</b>		<b>Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below</b>																			
Same as Report To	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Select Invoice Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	ALK-COL-VA-P-T-COL-VA-IONBALANCE-V	ANIONS-ALL-IC-WR, TDS-CALC-VA	EC-MAN-WR, PH-MAN-WR	TSS-LOW-WR	CARBONS-TOC-VA, NH3-F-VA	CARBONS-DOC-VA	MET-T-CCMS-VA, ZR-T-MS-VA	MET-D-CCMS-VA, ZR-D-MS-VA	HARDNESS-CALC-VA											Number of Containers
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:																					
Contact:	S Jenner	<b>Oil and Gas Required Fields (client use)</b>																					
<b>Project Information</b>		Approver ID:	Cost Center:																				
ALS Quote #:	Q38556	GL Account:	Routing Code:																				
Job #:	13-Y-0452 / 14-Y-0270	Activity Code:																					
PO / AFE:		Location:																					
LSD:		ALS Contact:	Sampler:																				

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	ALK-COL-VA-P-T-COL-VA-IONBALANCE-V	ANIONS-ALL-IC-WR, TDS-CALC-VA	EC-MAN-WR, PH-MAN-WR	TSS-LOW-WR	CARBONS-TOC-VA, NH3-F-VA	CARBONS-DOC-VA	MET-T-CCMS-VA, ZR-T-MS-VA	MET-D-CCMS-VA, ZR-D-MS-VA	HARDNESS-CALC-VA											Number of Containers
	R3	11-MAR-14	13:30	GRAB	P	P	P	P	P	P	P	P	P											5
	X14	"	1400																					
	X10	"	1420																					
	X3A	"	1440																					
	X2	"	1455																					
	NF2-A	"	1510																					
	NF2-B	"	1525																					
	NF2	"	1540																					

<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report (client Use)</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																						
Are samples taken from a Regulated DW System?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Use CH2M_EQUIS for EDD.		Frozen	<input type="checkbox"/> Yes <input type="checkbox"/> No	GIF Observations	<input type="checkbox"/> Yes <input type="checkbox"/> No	Capable	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody seal intact	<input type="checkbox"/> Yes <input type="checkbox"/> No	Cooling Initiated	<input type="checkbox"/> Yes <input type="checkbox"/> No													
Are samples for human drinking water use?	<input type="checkbox"/> Yes <input type="checkbox"/> No			INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C																		
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)																						
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

