



ENVIRONMENTAL DYNAMICS INC.
ATTN: Meighan Kearns
2195 - 2nd Avenue
Whitehorse YT Y1A 3T8

Date Received: 09-JUL-14
Report Date: 21-JUL-14 18:06 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1483514
Project P.O. #: NOT SUBMITTED
Job Reference: 14-Y-0270
C of C Numbers: 1, 2, 3
Legal Site Desc:

Can Dang
Senior Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1483514-1 Grab 07-JUL-14 14:40 R3	L1483514-2 Grab 07-JUL-14 14:45 R3-R	L1483514-3 Grab 07-JUL-14 15:30 X14	L1483514-4 Grab 07-JUL-14 15:40 X10	L1483514-5 Grab 07-JUL-14 16:00 X3A
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	301	318	358	173	158
	Hardness (as CaCO3) (mg/L)	160	158	172	86.5	79.6
	pH (pH)	8.08	7.97	7.91	7.95	7.88
	Total Suspended Solids (mg/L)	1.4	1.4	1.4	1.4	1.4
	Total Dissolved Solids (mg/L)	203	202	226	104	91.9
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	93.3	92.7	98.1	87.5	73.4
	Ammonia, Total (as N) (mg/L)	0.0240	0.0239	0.0392	<0.0050	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.089	0.093	0.094	0.093	0.090
	Nitrate (as N) (mg/L)	0.0280	0.0267	0.0155	0.0117	0.0162
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0532	0.0047	0.0049
	Sulfate (SO4) (mg/L)	81.3	81.4	96.5	14.7	13.5
	Anion Sum (meq/L)	3.56	3.55	3.98	2.06	1.76
	Cation Sum (meq/L)	3.40	3.35	3.66	1.83	1.69
	Cation - Anion Balance (%)	-2.4	-2.9	-4.2	-5.9	-1.8
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.15	3.02	3.24	3.32	3.27
	Total Organic Carbon (mg/L)	3.03	3.45	3.17	3.32	3.22
Total Metals	Aluminum (Al)-Total (mg/L)	0.0259	0.0259	0.0320	0.0300	0.0410
	Antimony (Sb)-Total (mg/L)	0.00011	0.00011	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00044	0.00043	0.00047	0.00044	0.00050
	Barium (Ba)-Total (mg/L)	0.0387	0.0393	0.0402	0.0415	0.0397
	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)	0.000049	0.000048	0.000060	0.000062	0.000066
	Calcium (Ca)-Total (mg/L)	45.5	46.6	51.4	25.0	23.8
	Chromium (Cr)-Total (mg/L)	0.00014	0.00015	0.00022	0.00016	0.00018
	Cobalt (Co)-Total (mg/L)	0.00134	0.00133	0.00194	0.00030	0.00036
	Copper (Cu)-Total (mg/L)	0.00077	0.00076	0.00076	0.00085	0.00079
	Iron (Fe)-Total (mg/L)	0.264	0.271	0.352	0.309	0.188
	Lead (Pb)-Total (mg/L)	0.000330	0.000332	0.000428	0.000433	0.000507
	Lithium (Li)-Total (mg/L)	0.00295	0.00294	0.00277	0.00187	0.00230
	Magnesium (Mg)-Total (mg/L)	10.2	10.2	10.4	5.83	5.07
	Manganese (Mn)-Total (mg/L)	0.990	0.994	1.27	0.0357	0.0376
	Molybdenum (Mo)-Total (mg/L)	0.000407	0.000428	0.000446	0.000406	0.000353

* 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	L1483514-6 Grab 07-JUL-14 16:35 X2-1	L1483514-7 Grab 07-JUL-14 16:40 X2-2	L1483514-8 Grab 07-JUL-14 16:45 X2-3	L1483514-9 Grab 07-JUL-14 17:00 X2-4	L1483514-10 Grab 07-JUL-14 17:20 NF2-1
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	143	147	145	145	156
	Hardness (as CaCO3) (mg/L)	73.3	73.0	71.2	72.6	75.5
	pH (pH)	7.72	7.78	7.75	7.75	7.60
	Total Suspended Solids (mg/L)	2.8	2.8	2.8	3.0	2.8
	Total Dissolved Solids (mg/L)	85.7	85.2	82.2	85.1	92.2
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	68.9	68.4	64.2	68.6	71.3
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.086	0.085	0.087	0.085	0.090
	Nitrate (as N) (mg/L)	0.0221	0.0225	0.0223	0.0220	0.0283
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0066	0.0064	0.0070	0.0084	0.0073
	Sulfate (SO4) (mg/L)	12.5	12.5	12.5	12.5	16.6
	Anion Sum (meq/L)	1.64	1.63	1.55	1.64	1.78
	Cation Sum (meq/L)	1.56	1.56	1.52	1.55	1.63
	Cation - Anion Balance (%)	-2.5	-2.4	-0.9	-2.7	-4.2
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.13	3.09	3.04	3.12	3.17
	Total Organic Carbon (mg/L)	3.02	3.07	3.05	3.04	2.96
Total Metals	Aluminum (Al)-Total (mg/L)	0.0762	0.0754	0.0740	0.0804	0.0950
	Antimony (Sb)-Total (mg/L)	0.00011	0.00011	0.00010	0.00010	0.00011
	Arsenic (As)-Total (mg/L)	0.00065	0.00065	0.00067	0.00063	0.00065
	Barium (Ba)-Total (mg/L)	0.0409	0.0413	0.0427	0.0427	0.0418
	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)	0.000127	0.000125	0.000121	0.000126	0.000392
	Calcium (Ca)-Total (mg/L)	20.6	20.5	20.8	20.4	20.2
	Chromium (Cr)-Total (mg/L)	0.00024	0.00025	0.00024	0.00022	0.00024
	Cobalt (Co)-Total (mg/L)	0.00075	0.00074	0.00075	0.00075	0.00236
	Copper (Cu)-Total (mg/L)	0.00087	0.00086	0.00085	0.00087	0.00091
	Iron (Fe)-Total (mg/L)	0.262	0.258	0.258	0.268	0.334
	Lead (Pb)-Total (mg/L)	0.00133	0.00116	0.00120	0.00123	0.00140
	Lithium (Li)-Total (mg/L)	0.00265	0.00269	0.00264	0.00263	0.00271
	Magnesium (Mg)-Total (mg/L)	5.07	5.22	4.97	5.10	5.86
	Manganese (Mn)-Total (mg/L)	0.0575	0.0572	0.0577	0.0572	0.134
	Molybdenum (Mo)-Total (mg/L)	0.000418	0.000423	0.000438	0.000416	0.000430

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1483514-11	L1483514-12	L1483514-13	L1483514-14	L1483514-15
	Description	Grab	Grab	Grab	Grab	Grab
	Sampled Date	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14
	Sampled Time	17:35	17:45	17:55	18:30	18:45
	Client ID	NF2-2	NF2-3	NF2-4	NF2-A	NF2-B
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	137	139	141	155	143
	Hardness (as CaCO3) (mg/L)	68.2	70.2	67.4	73.0	66.7
	pH (pH)	7.64	7.68	7.70	7.77	7.75
	Total Suspended Solids (mg/L)	3.6	3.6	3.6	10.4	4.2
	Total Dissolved Solids (mg/L)	77.4	79.0	79.0	87.5	82.4
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	63.2	64.6	66.4	66.8	72.5
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.081	0.082	0.082	0.090	0.084
	Nitrate (as N) (mg/L)	0.0248	0.0254	0.0253	0.0286	0.0260
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0081	0.0076	0.0085	0.0165	0.0084
	Sulfate (SO4) (mg/L)	9.54	9.53	9.59	15.3	9.60
	Anion Sum (meq/L)	1.47	1.50	1.53	1.66	1.65
	Cation Sum (meq/L)	1.45	1.49	1.44	1.58	1.42
	Cation - Anion Balance (%)	-0.6	-0.1	-3.2	-2.5	-7.5
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	3.05	3.11	3.09	3.14	3.00
	Total Organic Carbon (mg/L)	2.96	3.01	3.06	3.21	3.06
Total Metals	Aluminum (Al)-Total (mg/L)	0.105	0.0958	0.101	0.252	0.0989
	Antimony (Sb)-Total (mg/L)	0.00011	0.00010	<0.00010	0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00073	0.00071	0.00072	0.00088	0.00071
	Barium (Ba)-Total (mg/L)	0.0438	0.0424	0.0423	0.0448	0.0429
	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)	0.000027	0.000015	0.000016	0.000355	0.000016
	Calcium (Ca)-Total (mg/L)	20.2	20.5	20.5	20.5	21.2
	Chromium (Cr)-Total (mg/L)	0.00028	0.00026	0.00030	0.00056	0.00029
	Cobalt (Co)-Total (mg/L)	0.00018	0.00011	0.00011	0.00219	0.00011
	Copper (Cu)-Total (mg/L)	0.00091	0.00085	0.00089	0.00125	0.00089
	Iron (Fe)-Total (mg/L)	0.291	0.259	0.274	0.607	0.274
	Lead (Pb)-Total (mg/L)	0.00205	0.00139	0.00150	0.00456	0.00144
	Lithium (Li)-Total (mg/L)	0.00260	0.00259	0.00261	0.00273	0.00277
	Magnesium (Mg)-Total (mg/L)	4.85	4.82	4.61	5.22	4.62
	Manganese (Mn)-Total (mg/L)	0.0490	0.0209	0.0228	0.127	0.0225
	Molybdenum (Mo)-Total (mg/L)	0.000420	0.000426	0.000424	0.000427	0.000428

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1483514-16	L1483514-17	L1483514-18	L1483514-19	L1483514-20
	Description	Grab	Water	Grab	Grab	Grab
	Sampled Date	07-JUL-14	10-JUN-14	07-JUL-14	07-JUL-14	07-JUL-14
	Sampled Time	22:40	12:00	19:30	19:20	19:35
	Client ID	FIELD BLANK	TRIP BLANK	R10	NF1	R10-R
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	<2.0	<2.0	139	143	147
	Hardness (as CaCO3) (mg/L)	<0.50	<0.50	67.5	74.1	67.6
	pH (pH)	5.97	5.94	7.72	7.67	7.85
	Total Suspended Solids (mg/L)	<1.0	<1.0	3.8	1.0	2.4
	Total Dissolved Solids (mg/L)	<1.0	<1.0	80.7	82.9	81.6
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<2.0	<2.0	69.8	66.5	70.9
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	<0.020	<0.020	0.084	0.082	0.085
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0234	0.0138	0.0233
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0068	0.0068	0.0063
	Sulfate (SO4) (mg/L)	<0.50	<0.50	9.36	10.6	9.39
	Anion Sum (meq/L)	<0.10	<0.10	1.60	1.56	1.62
	Cation Sum (meq/L)	<0.10	<0.10	1.44	1.58	1.44
	Cation - Anion Balance (%)	0.0	0.0	-5.1	0.7	-5.7
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50		3.02	3.27	3.06
	Total Organic Carbon (mg/L)	<0.50	<0.50	3.08	3.20	3.06
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	<0.0030	0.0659	0.0392	0.0661
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	<0.00010	<0.00010	0.00066	0.00068	0.00065
	Barium (Ba)-Total (mg/L)	<0.000050	<0.000050	0.0413	0.0421	0.0405
	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	0.000015	0.000016
	Calcium (Ca)-Total (mg/L)	<0.020	<0.020	19.8	20.8	19.3
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	0.00020	0.00017	0.00020
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	0.00017	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	0.00076	0.00082	0.00079
	Iron (Fe)-Total (mg/L)	<0.010	<0.010	0.214	0.219	0.216
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	0.000562	0.000736	0.000629
	Lithium (Li)-Total (mg/L)	<0.00050	<0.00050	0.00261	0.00232	0.00241
	Magnesium (Mg)-Total (mg/L)	<0.0050	<0.0050	4.77	4.65	4.57
	Manganese (Mn)-Total (mg/L)	<0.000050	<0.000050	0.0199	0.0613	0.0203
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	0.000409	0.000430	0.000421

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1483514-1	L1483514-2	L1483514-3	L1483514-4	L1483514-5
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14
		Sampled Time	14:40	14:45	15:30	15:40	16:00
		Client ID	R3	R3-R	X14	X10	X3A
Grouping	Analyte						
WATER							
Total Metals	Nickel (Ni)-Total (mg/L)		0.00196	0.00193	0.00265	0.00104	0.00099
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		0.937	0.933	0.936	0.588	0.591
	Selenium (Se)-Total (mg/L)		0.00020	0.00023	0.00023	0.00021	0.00019
	Silicon (Si)-Total (mg/L)		4.64	4.70	4.16	4.41	4.13
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		2.82	2.89	3.06	1.66	1.67
	Strontium (Sr)-Total (mg/L)		0.160	0.173	0.184	0.113	0.112
	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)		0.00115	0.00118	0.00129	0.00104	0.000998
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		0.0587	0.0584	0.0769	0.0855	0.0904
	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)		0.0093	0.0094	0.0097	0.0111	0.0117
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00037	0.00036	0.00042	0.00040	0.00045
	Barium (Ba)-Dissolved (mg/L)		0.0397	0.0408	0.0411	0.0422	0.0410
	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)		0.000047	0.000048	0.000062	0.000051	0.000064
	Calcium (Ca)-Dissolved (mg/L)		47.3	46.2	50.3	24.6	23.1
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00128	0.00128	0.00187	0.00026	0.00033
	Copper (Cu)-Dissolved (mg/L)		0.00078	0.00069	0.00065	0.00069	0.00066
	Iron (Fe)-Dissolved (mg/L)		0.180	0.180	0.247	0.226	0.122
	Lead (Pb)-Dissolved (mg/L)		0.000138	0.000141	0.000172	0.000181	0.000180
	Lithium (Li)-Dissolved (mg/L)		0.00297	0.00281	0.00305	0.00211	0.00204
	Magnesium (Mg)-Dissolved (mg/L)		10.2	10.3	11.2	6.11	5.35
	Manganese (Mn)-Dissolved (mg/L)		0.971	0.975	1.27	0.0329	0.0355
	Molybdenum (Mo)-Dissolved (mg/L)		0.000408	0.000388	0.000431	0.000392	0.000334
	Nickel (Ni)-Dissolved (mg/L)		0.00188	0.00188	0.00243	0.00089	0.00091
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		0.940	0.960	0.970	0.590	0.608

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1483514-6	L1483514-7	L1483514-8	L1483514-9	L1483514-10
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14
		Sampled Time	16:35	16:40	16:45	17:00	17:20
		Client ID	X2-1	X2-2	X2-3	X2-4	NF2-1
Grouping	Analyte						
WATER							
Total Metals	Nickel (Ni)-Total (mg/L)		0.00157	0.00163	0.00156	0.00158	0.00401
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		0.543	0.531	0.517	0.537	0.537
	Selenium (Se)-Total (mg/L)		0.00020	0.00021	0.00022	0.00021	0.00022
	Silicon (Si)-Total (mg/L)		4.74	4.84	4.79	4.91	4.84
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		1.69	1.74	1.69	1.68	1.71
	Strontium (Sr)-Total (mg/L)		0.0882	0.0915	0.0928	0.0902	0.0938
	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)		0.000852	0.000821	0.000826	0.000843	0.000870
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		0.171	0.173	0.173	0.172	0.577
	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)		0.0125	0.0129	0.0125	0.0131	0.0192
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00053	0.00053	0.00048	0.00052	0.00053
	Barium (Ba)-Dissolved (mg/L)		0.0384	0.0397	0.0386	0.0409	0.0402
	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)		0.000118	0.000113	0.000112	0.000111	0.000391
	Calcium (Ca)-Dissolved (mg/L)		21.1	21.0	20.9	20.6	20.7
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00065	0.00065	0.00063	0.00065	0.00230
	Copper (Cu)-Dissolved (mg/L)		0.00084	0.00067	0.00066	0.00065	0.00070
	Iron (Fe)-Dissolved (mg/L)		0.122	0.111	0.106	0.112	0.156
	Lead (Pb)-Dissolved (mg/L)		0.000299	0.000284	0.000279	0.000291	0.000483
	Lithium (Li)-Dissolved (mg/L)		0.00240	0.00247	0.00252	0.00245	0.00248
	Magnesium (Mg)-Dissolved (mg/L)		4.98	4.98	4.63	5.17	5.76
	Manganese (Mn)-Dissolved (mg/L)		0.0468	0.0469	0.0462	0.0470	0.125
	Molybdenum (Mo)-Dissolved (mg/L)		0.000407	0.000416	0.000405	0.000407	0.000419
	Nickel (Ni)-Dissolved (mg/L)		0.00135	0.00139	0.00135	0.00132	0.00364
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		0.503	0.498	0.493	0.521	0.520

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1483514-11	L1483514-12	L1483514-13	L1483514-14	L1483514-15
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14
		Sampled Time	17:35	17:45	17:55	18:30	18:45
		Client ID	NF2-2	NF2-3	NF2-4	NF2-A	NF2-B
Grouping	Analyte						
WATER							
Total Metals	Nickel (Ni)-Total (mg/L)		0.00070	0.00058	0.00063	0.00378	0.00064
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		0.520	0.527	0.517	0.532	0.525
	Selenium (Se)-Total (mg/L)		0.00022	0.00022	0.00023	0.00023	0.00023
	Silicon (Si)-Total (mg/L)		4.95	4.95	4.78	4.87	4.82
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	0.000012	<0.000010
	Sodium (Na)-Total (mg/L)		1.68	1.64	1.67	1.67	1.71
	Strontium (Sr)-Total (mg/L)		0.0904	0.0901	0.0898	0.0881	0.0902
	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)		0.000837	0.000831	0.000820	0.000832	0.000834
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		0.0096	0.0071	0.0070	0.516	0.0078
	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)		0.0119	0.0127	0.0121	0.0155	0.0119
	Antimony (Sb)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00049	0.00053	0.00053	0.00049	0.00054
	Barium (Ba)-Dissolved (mg/L)		0.0387	0.0410	0.0409	0.0401	0.0408
	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)		0.000012	0.000014	0.000011	0.000376	<0.000010
	Calcium (Ca)-Dissolved (mg/L)		20.4	20.9	19.6	19.8	19.2
	Chromium (Cr)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	0.00214	<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00077	0.00065	0.00065	0.00070	0.00066
	Iron (Fe)-Dissolved (mg/L)		0.084	0.088	0.088	0.151	0.088
	Lead (Pb)-Dissolved (mg/L)		0.000280	0.000294	0.000275	0.000388	0.000271
	Lithium (Li)-Dissolved (mg/L)		0.00240	0.00229	0.00224	0.00250	0.00231
	Magnesium (Mg)-Dissolved (mg/L)		4.22	4.37	4.47	5.70	4.55
	Manganese (Mn)-Dissolved (mg/L)		0.00731	0.00744	0.00708	0.118	0.00762
	Molybdenum (Mo)-Dissolved (mg/L)		0.000387	0.000417	0.000399	0.000393	0.000393
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	0.00354	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		0.491	0.498	0.500	0.504	0.512

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1483514-16	L1483514-17	L1483514-18	L1483514-19	L1483514-20
		Description	Grab	Water	Grab	Grab	Grab
		Sampled Date	07-JUL-14	10-JUN-14	07-JUL-14	07-JUL-14	07-JUL-14
		Sampled Time	22:40	12:00	19:30	19:20	19:35
		Client ID	FIELD BLANK	TRIP BLANK	R10	NF1	R10-R
Grouping	Analyte						
WATER							
Total Metals	Nickel (Ni)-Total (mg/L)		<0.00050	<0.00050	<0.00050	0.00061	<0.00050
	Phosphorus (P)-Total (mg/L)		<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)		<0.050	<0.050	0.500	0.508	0.484
	Selenium (Se)-Total (mg/L)		<0.00010	<0.00010	0.00023	0.00023	0.00024
	Silicon (Si)-Total (mg/L)		<0.050	<0.050	4.85	4.66	4.75
	Silver (Ag)-Total (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)		<0.050	<0.050	1.59	1.63	1.73
	Strontium (Sr)-Total (mg/L)		<0.00020	<0.00020	0.0855	0.0905	0.0845
	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)		<0.000010	<0.000010	0.000838	0.000864	0.000835
	Vanadium (V)-Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)		<0.0030	<0.0030	0.0047	0.0107	0.0057
	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
	Aluminum (Al)-Dissolved (mg/L)		<0.0010		0.0148	0.0145	0.0174
	Antimony (Sb)-Dissolved (mg/L)		<0.00010		<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		<0.00010		0.00055	0.00059	0.00057
	Barium (Ba)-Dissolved (mg/L)		<0.000050		0.0399	0.0415	0.0402
	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	0.000015	<0.000010
	Calcium (Ca)-Dissolved (mg/L)		<0.020		19.2	22.1	19.5
	Chromium (Cr)-Dissolved (mg/L)		<0.00010		<0.00010	<0.00010	0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010		<0.00010	0.00014	<0.00010
	Copper (Cu)-Dissolved (mg/L)		<0.00020		0.00063	0.00069	0.00064
	Iron (Fe)-Dissolved (mg/L)		<0.010		0.102	0.142	0.106
	Lead (Pb)-Dissolved (mg/L)		<0.000050		0.000210	0.000315	0.000237
	Lithium (Li)-Dissolved (mg/L)		<0.00050		0.00225	0.00225	0.00227
	Magnesium (Mg)-Dissolved (mg/L)		<0.0050		4.75	4.61	4.56
	Manganese (Mn)-Dissolved (mg/L)		<0.000050		0.0149	0.0612	0.0153
	Molybdenum (Mo)-Dissolved (mg/L)		<0.000050		0.000387	0.000395	0.000389
	Nickel (Ni)-Dissolved (mg/L)		<0.00050		<0.00050	0.00054	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.30		<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)		<0.050		0.484	0.508	0.486

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1483514-1	L1483514-2	L1483514-3	L1483514-4	L1483514-5
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14
		Sampled Time	14:40	14:45	15:30	15:40	16:00
		Client ID	R3	R3-R	X14	X10	X3A
Grouping	Analyte						
WATER							
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)		0.00022	0.00021	0.00023	0.00020	0.00017
	Silicon (Si)-Dissolved (mg/L)		4.67	4.59	4.46	4.42	4.56
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		2.86	2.82	3.07	1.62	1.68
	Strontium (Sr)-Dissolved (mg/L)		0.168	0.164	0.181	0.111	0.110
	Thallium (Tl)-Dissolved (mg/L)		<0.000010	<0.000010	0.000013	<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)		0.00114	0.00112	0.00125	0.00101	0.000970
	Vanadium (V)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)		0.0566	0.0561	0.0739	0.0793	0.0874
	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	L1483514-6	L1483514-7	L1483514-8	L1483514-9	L1483514-10
		Description	Grab	Grab	Grab	Grab	Grab
		Sampled Date	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14
		Sampled Time	16:35	16:40	16:45	17:00	17:20
		Client ID	X2-1	X2-2	X2-3	X2-4	NF2-1
Grouping	Analyte						
WATER							
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00022	0.00021	0.00022	0.00021	0.00021	
	Silicon (Si)-Dissolved (mg/L)	4.83	4.70	4.37	4.65	4.88	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	1.63	1.63	1.64	1.68	1.79	
	Strontium (Sr)-Dissolved (mg/L)	0.0893	0.0912	0.0881	0.0925	0.0883	
	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)	0.000810	0.000780	0.000760	0.000783	0.000810	
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
	Zinc (Zn)-Dissolved (mg/L)	0.172	0.169	0.170	0.170	0.588	
	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	L1483514-11	L1483514-12	L1483514-13	L1483514-14	L1483514-15
	Description	Grab	Grab	Grab	Grab	Grab
	Sampled Date	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14	07-JUL-14
	Sampled Time	17:35	17:45	17:55	18:30	18:45
	Client ID	NF2-2	NF2-3	NF2-4	NF2-A	NF2-B
Grouping	Analyte					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00022	0.00023	0.00021	0.00021	0.00023
	Silicon (Si)-Dissolved (mg/L)	4.35	4.67	4.68	4.67	4.89
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.60	1.59	1.63	1.75	1.64
	Strontium (Sr)-Dissolved (mg/L)	0.0846	0.0898	0.0860	0.0868	0.0887
	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)	0.000764	0.000813	0.000807	0.000830	0.000797
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0059	0.0046	0.0048	0.567	0.0054
	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	L1483514-16	L1483514-17	L1483514-18	L1483514-19	L1483514-20
		Description	Grab	Water	Grab	Grab	Grab
		Sampled Date	07-JUL-14	10-JUN-14	07-JUL-14	07-JUL-14	07-JUL-14
		Sampled Time	22:40	12:00	19:30	19:20	19:35
		Client ID	FIELD BLANK	TRIP BLANK	R10	NF1	R10-R
Grouping	Analyte						
WATER							
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	<0.00010			0.00021	0.00021	0.00023
	Silicon (Si)-Dissolved (mg/L)	<0.050			4.63	4.67	4.82
	Silver (Ag)-Dissolved (mg/L)	<0.000010			<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	<0.050			1.66	1.63	1.66
	Strontium (Sr)-Dissolved (mg/L)	<0.00020			0.0866	0.0896	0.0825
	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)	<0.000010			0.000799	0.000809	0.000841
	Vanadium (V)-Dissolved (mg/L)	<0.0010			<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0010			0.0035	0.0090	0.0041
	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)
Duplicate	Beryllium (Be)-Total	DLA	L1483514-1, -2, -3, -4, -5, -6
Duplicate	Bismuth (Bi)-Total	DLA	L1483514-1, -2, -3, -4, -5, -6
Duplicate	Phosphorus (P)-Total	DLA	L1483514-1, -2, -3, -4, -5, -6
Duplicate	Tin (Sn)-Total	DLA	L1483514-1, -2, -3, -4, -5, -6
Duplicate	Titanium (Ti)-Total	DLA	L1483514-1, -2, -3, -4, -5, -6
Duplicate	Vanadium (V)-Total	DLA	L1483514-1, -2, -3, -4, -5, -6
Matrix Spike	Sulfate (SO4)	MS-B	L1483514-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L1483514-10, -11, -12, -13, -14, -15, -18, -19, -20, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1483514-10, -11, -12, -13, -14, -15, -18, -19, -20, -7, -8, -9
Matrix Spike	Silicon (Si)-Total	MS-B	L1483514-10, -11, -12, -13, -14, -15, -18, -19, -20, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L1483514-10, -11, -12, -13, -14, -15, -18, -19, -20, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1483514-10, -11, -12, -13, -14, -15, -18, -19, -20, -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.

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

Reference Information

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 CaCO ₃ 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:			
Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+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-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.			
PH-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

Chain of Custody Numbers:

Reference Information

1

2

3

GLOSSARY OF REPORT TERMS

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

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

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

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

mg/L - milligrams per litre.

< - Less than.

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

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

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

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

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



www.alsglobal.com

Report To		Report Format / District			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 checked="" 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 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		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																
Same as Report To <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX																			
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																					
Project Information				Oil and Gas Required Fields (client use)																	
ALS Quote #: Q38556				Approver ID:		Cost Center:															
Job #: 14-0452-14-Y-0270				GL Account:		Routing Code:															
PO / AFE:				Activity Code:																	
LSD:				Location:																	
ALS Lab Work Order # (lab use only)				ALS Contact:		Sampler: BSM, LG															
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											Number of Containers				
	R3:			07 JULY 2014	14:40	GRAB	R	R	R	R	R	R	R	R	R	R	R	R	R	R	5
	R3-F			07 JULY 2014	14:45	GRAB	R														
	X14			07 JULY 2014	15:30	GRAB	R														
	X10			07 JULY 2014	15:40	GRAB	R														
	X3A			07 JULY 2014	16:00	GRAB	R														
	X2-1			07 JULY 2014	16:35	GRAB	R														
	X2-2			07 JULY 2014	16:40	GRAB	R														
	X2-3			07 JULY 2014	16:45	GRAB	R														
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"/> SIF Observations 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 type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>													
								Cooling Initiated <input type="checkbox"/>													
								INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C								
								8.5, 9.8, 9.6					8.0, 7.0, 5.0, 6.0								
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)													
Released by: <i>R. Smith</i>		Date: 08 JULY 14	Time:	Received by: <i>[Signature]</i>		Date: 9-3-14	Time: 9:30	Received by: <i>[Signature]</i>		Date: July 10	Time: 9:50										



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com



L1483514-COFC

COC Number: 14 -

Page 2 of 3

Report To	Report Format /	<small>(Rush Turnaround Time (TAT) is not available for all tests)</small>
Company: EDI	Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> XLS	<small>received by 3 pm - business days</small>
Contact: Meighan Kearns	Quality Control (QC) Report with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Address: 2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	<input type="checkbox"/> Criteria on Report - provide details below if box checked	P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Phone: 867-393-4882	Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT
	Email 1 or Fax: mkearns@edynamics.com	E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge
	Email 2: adrienne.turcolte@gov.yk.ca	Specify Date Required for E2,E or P:

Invoice To Same as Report To <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Invoice Distribution	Analysis Request																																										
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	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																										
Company: EDI	Email 1 or Fax: sjenner@edynamics.com	<table border="1" style="width:100%; text-align: center; font-size: small;"> <tr> <td>ALK-COL-VA, P, T, COL-VA, IONBALANCE-V</td> <td>ANIONS-AL-LI-CR, TDS-CALC-VA</td> <td>EC-MAN-WR, PH-MAN-WR</td> <td>TSS-LOW-WR</td> <td>CARBONS-TOC-VA, NH3-F-VA</td> <td>CARBONS-DOC-VA</td> <td>MET-T-CCMS-VA, ZR, F-MS-VA</td> <td>MET-D-CCMS-VA, ZR, D-MS-VA</td> <td>HARDNESS-CALC-VA</td> <td rowspan="5" style="writing-mode: vertical-rl; transform: rotate(180deg);">Number of Containers</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	ALK-COL-VA, P, T, COL-VA, IONBALANCE-V	ANIONS-AL-LI-CR, 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, F-MS-VA	MET-D-CCMS-VA, ZR, D-MS-VA	HARDNESS-CALC-VA	Number of Containers																																
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Contact: S Jenner	Email 2																																											
Project Information		Oil and Gas Required Fields (client use)																																										
ALS Quote #: Q38556	Approver ID:	Cost Center:																																										
Job #: 13-Y-0492 14-Y-0270	GL Account:	Routing Code:																																										
PO / AFE:	Activity Code:	Location:																																										
LSD:	ALS Contact:	Sampler: <u>BSm, LG</u>																																										

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	ALK-COL-VA, P, T, COL-VA, IONBALANCE-V	ANIONS-AL-LI-CR, 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, F-MS-VA	MET-D-CCMS-VA, ZR, D-MS-VA	HARDNESS-CALC-VA	Number of Containers
	XZ-4	17 JULY 2014	17:00	GRAB	P	P	P	R	R	P	P	P	P	5
	NFZ-1	17 JULY 2014	17:20	GRAB	R									
	NFZ-2	07 JULY 2014	17:35	GRAB	R									
	NFZ-3	07 JULY 2014	17:45	GRAB	R									
	NFZ-4	07 JULY 2014	17:55	GRAB	R									
	NFZ-A	07 JULY 2014	18:30	GRAB	R									
	NFZ-B	07 JULY 2014	18:45	GRAB	R									

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"/> SIF Observations 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 type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>
		Cooling Initiated <input type="checkbox"/>
		INITIAL COOLER TEMPERATURES °C
		FINAL COOLER TEMPERATURES °C
		8.0, 7.0, 5.0, 6.0 °C
SHIPMENT RELEASE (client use)		FINAL SHIPMENT RECEPTION (lab use only)
Released by: <u>B. Smirz</u>	Date: <u>15 JULY 14</u>	Time: _____
Received by: _____	Date: _____	Time: _____
Received by: <u>B. Smirz</u>	Date: <u>15 JULY 14</u>	Time: <u>9:50</u>