



ENVIRONMENTAL DYNAMICS INC.
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Date Received: 15-NOV-13
Report Date: 03-DEC-13 15:50 (MT)
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Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1392260
Project P.O. #: NOT SUBMITTED
Job Reference: 13-Y-0452
C of C Numbers: 1
Legal Site Desc:

Comments: 26-NOV-2013 Revision 2: This revision replaces and supersedes previous revision of this report. This revision include revised sulfate and chloride data for the sample ALS identify as L1392260-9. 3-DEC-2013 This report replaces and supersedes previously sent report. This report includes the modified sample id for ALS identified sample L1392260-3.

Can Dang
Senior Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1392260-1 Groundwater 14-NOV-13 BH14A	L1392260-2 Groundwater 14-NOV-13 BH14B	L1392260-3 Groundwater 14-NOV-13 BH14B-R	L1392260-4 Groundwater 13-NOV-13 15:40 SRK08-PIZA	L1392260-5 Groundwater 13-NOV-13 14:07 BH2	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	2980	2560	2790	1110	701
	pH (pH)	7.02	7.25	7.31	6.17	6.02
	Total Suspended Solids (mg/L)	18.4	153	192	188	594
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	62.8	30.2	24.5	333	49.2
	Alkalinity, Total (as CaCO3) (mg/L)	476	467	472	534	120
	Chloride (Cl) (mg/L)	<10 ^{DLA}	10	10	<5.0 ^{DLA}	0.51
	Sulfate (SO4) (mg/L)	2610	2260	2280	151	266
Total Metals	Aluminum (Al)-Total (mg/L)	0.022 ^{DLA}	0.185 ^{DLA}	0.245 ^{DLA}	1.73	11.0
	Antimony (Sb)-Total (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	0.00064	0.00073
	Arsenic (As)-Total (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	0.00582	0.0111
	Barium (Ba)-Total (mg/L)	0.0155 ^{DLA}	0.0292 ^{DLA}	0.0330 ^{DLA}	0.0587	0.211
	Beryllium (Be)-Total (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	0.00095	0.00092
	Bismuth (Bi)-Total (mg/L)	<0.0025 ^{DLA}	<0.0025 ^{DLA}	<0.0025 ^{DLA}	<0.00050	0.0030
	Boron (B)-Total (mg/L)	<0.050 ^{DLA}	<0.050 ^{DLA}	<0.050 ^{DLA}	0.010	<0.020 ^{DLA}
	Cadmium (Cd)-Total (mg/L)	0.00219	0.000061	0.000065	0.000128	0.0546
	Calcium (Ca)-Total (mg/L)	652 ^{DLA}	715 ^{DLA}	748	175	99.0
	Chromium (Cr)-Total (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	0.00085 ^{DLA}	0.00632	0.0200
	Cobalt (Co)-Total (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	0.00997	0.0466
	Copper (Cu)-Total (mg/L)	<0.0025 ^{DLA}	<0.0025 ^{DLA}	<0.0025 ^{DLA}	0.00523	0.0383
	Iron (Fe)-Total (mg/L)	0.075	0.251	0.370	16.9	23.1
	Lead (Pb)-Total (mg/L)	0.0113	0.0123	0.0145	0.0213	0.306
	Lithium (Li)-Total (mg/L)	0.0962	0.0735	0.0687	0.104	0.0326
	Magnesium (Mg)-Total (mg/L)	428	328	310	49.0	31.9
	Manganese (Mn)-Total (mg/L)	0.0306	0.00683 ^{DLA}	0.00993	0.905	1.56
	Molybdenum (Mo)-Total (mg/L)	0.00037	<0.00025 ^{DLA}	0.00027 ^{DLA}	0.000312	0.00151
	Nickel (Ni)-Total (mg/L)	0.199 ^{DLA}	0.0031 ^{DLA}	<0.0025 ^{DLA}	0.0216	0.111 ^{DLA}
	Phosphorus (P)-Total (mg/L)	<1.5 ^{DLA}	<1.5 ^{DLA}	<1.5 ^{DLA}	<0.30	<0.60 ^{DLA}
	Potassium (K)-Total (mg/L)	4.36	4.56 ^{DLA}	4.38 ^{DLA}	3.81	4.29
	Selenium (Se)-Total (mg/L)	0.00093	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00010	0.00083
	Silicon (Si)-Total (mg/L)	12.2 ^{DLA}	10.8 ^{DLA}	11.4 ^{DLA}	14.1	18.2
	Silver (Ag)-Total (mg/L)	<0.000050	<0.000050	<0.000050	0.000048	0.000814
	Sodium (Na)-Total (mg/L)	20.0	17.8	16.7	24.0	6.19
	Strontium (Sr)-Total (mg/L)	3.60	3.63	3.63	1.09	0.507
	Thallium (Tl)-Total (mg/L)	<0.000050 ^{DLA}	<0.000050 ^{DLA}	<0.000050 ^{DLA}	0.000128	0.000613
Tin (Sn)-Total (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	0.00015	0.00074	
Titanium (Ti)-Total (mg/L)	<0.050 ^{DLA}	<0.050 ^{DLA}	<0.050 ^{DLA}	0.070	0.262	
Uranium (U)-Total (mg/L)	0.152	0.197	0.188	0.00525	0.00125	

* 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	L1392260-6 Groundwater 13-NOV-13 11:45 P96-6	L1392260-7 Groundwater 13-NOV-13 16:11 SRK08-P12B	L1392260-8 Groundwater 13-NOV-13 12:53 BH5	L1392260-9 Groundwater 13-NOV-13 13:13 BH4	L1392260-10 Groundwater 13-NOV-13 14:47 BH-7S
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	2090	695	532	1020	990
	pH (pH)	7.07	6.17	6.13	4.61	6.75
	Total Suspended Solids (mg/L)	2.6	28.0	27.2	446	1340
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	17.1	143	47.8	97.8	23.2
	Alkalinity, Total (as CaCO3) (mg/L)	264	320	123	4.1	188
	Chloride (Cl) (mg/L)	<10 ^{DLA}	<0.50	<0.50	<5.0 ^{DLA}	<0.50
	Sulfate (SO4) (mg/L)	1240	85.8	150	601	109
Total Metals	Aluminum (Al)-Total (mg/L)	0.0137 ^{DLA}	0.369	0.509	27.4	30.7
	Antimony (Sb)-Total (mg/L)	<0.00020	<0.00010	<0.00010	0.00069	0.00165
	Arsenic (As)-Total (mg/L)	0.00041	0.00048	0.00140	0.0117	0.0483
	Barium (Ba)-Total (mg/L)	0.0178	0.0942	0.0336	0.119	0.239
	Beryllium (Be)-Total (mg/L)	<0.00020 ^{DLA}	0.00042	0.00026	0.00720	0.00386
	Bismuth (Bi)-Total (mg/L)	<0.0010 ^{DLA}	<0.00050	<0.00050	0.00059	0.00677
	Boron (B)-Total (mg/L)	<0.020 ^{DLA}	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000280	0.000054	0.000778	0.0443	0.00952
	Calcium (Ca)-Total (mg/L)	351	96.1	57.0	154	84.4
	Chromium (Cr)-Total (mg/L)	<0.00020 ^{DLA}	0.00109	0.00160	0.0206	0.0562
	Cobalt (Co)-Total (mg/L)	<0.00020 ^{DLA}	0.00264	0.0138	0.115	0.0676
	Copper (Cu)-Total (mg/L)	<0.0010 ^{DLA}	0.00117	0.00216	0.364	0.135
	Iron (Fe)-Total (mg/L)	0.071	4.36	14.4	16.5	111
	Lead (Pb)-Total (mg/L)	0.00028	0.00256	0.00785	0.190	0.715
	Lithium (Li)-Total (mg/L)	0.0348	0.0802	0.0257	0.100	0.0710
	Magnesium (Mg)-Total (mg/L)	155	25.2	19.7	31.2	29.1
	Manganese (Mn)-Total (mg/L)	0.00188	0.447	1.62	1.50	1.75
	Molybdenum (Mo)-Total (mg/L)	<0.00010 ^{DLA}	0.000085	0.000189	0.000884	0.00309
	Nickel (Ni)-Total (mg/L)	0.0125	0.00565	0.0164	0.172	0.0433
	Phosphorus (P)-Total (mg/L)	<0.60 ^{DLA}	<0.30	<0.30	0.60	1.19
	Potassium (K)-Total (mg/L)	4.56	3.18	2.77	3.10	7.02
	Selenium (Se)-Total (mg/L)	0.00344	<0.00010	<0.00010	0.00045	0.00147
	Silicon (Si)-Total (mg/L)	9.33	10.2	9.94	25.7	43.1
	Silver (Ag)-Total (mg/L)	<0.000020 ^{DLA}	0.000016	0.000024	0.000493	0.00229
Sodium (Na)-Total (mg/L)	6.10	12.9	7.05	6.27	6.65	
Strontium (Sr)-Total (mg/L)	0.838	0.655	0.263	0.606	0.453	
Thallium (Tl)-Total (mg/L)	<0.000020 ^{DLA}	0.000047	0.000068	0.000350	0.00143	
Tin (Sn)-Total (mg/L)	<0.00020 ^{DLA}	<0.00010	0.00011	0.00056	0.00217	
Titanium (Ti)-Total (mg/L)	<0.020 ^{DLA}	0.014	0.020	0.261	1.07	
Uranium (U)-Total (mg/L)	0.0586	0.000877	0.000250	0.00510	0.00572	

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1392260-11 Groundwater 13-NOV-13 15:40 PO5-04	L1392260-12 Groundwater 14-NOV-13 09:48 BH10B	L1392260-13 Groundwater 14-NOV-13 09:00 BH10A		
Grouping	Analyte				
WATER					
Physical Tests	Conductivity (uS/cm)	659	1180	704	
	pH (pH)	6.24	6.17	6.22	
	Total Suspended Solids (mg/L)	434	10.4	2.8	
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	47.8	425	190	
	Alkalinity, Total (as CaCO3) (mg/L)	161	448	249	
	Chloride (Cl) (mg/L)	<0.50	<5.0 ^{DLA}	0.52	
	Sulfate (SO4) (mg/L)	168	231	209	
Total Metals	Aluminum (Al)-Total (mg/L)	13.8	0.102	0.0521	
	Antimony (Sb)-Total (mg/L)	0.00096	<0.00010	<0.00010	
	Arsenic (As)-Total (mg/L)	0.0192	0.0312	0.00582	
	Barium (Ba)-Total (mg/L)	0.209	0.0149	0.0129	
	Beryllium (Be)-Total (mg/L)	0.00208	0.00160	0.00075	
	Bismuth (Bi)-Total (mg/L)	0.00154	<0.00050	<0.00050	
	Boron (B)-Total (mg/L)	<0.010	0.014	0.010	
	Cadmium (Cd)-Total (mg/L)	0.00605	0.000041	0.000035	
	Calcium (Ca)-Total (mg/L)	87.2	147	96.9	
	Chromium (Cr)-Total (mg/L)	0.0279	0.00039	0.00025	
	Cobalt (Co)-Total (mg/L)	0.00857	0.00910	0.0205	
	Copper (Cu)-Total (mg/L)	0.0391	0.00064	<0.00050	
	Iron (Fe)-Total (mg/L)	46.6	36.6	35.2	
	Lead (Pb)-Total (mg/L)	0.0820	0.00542	0.000854	
	Lithium (Li)-Total (mg/L)	0.0355	0.123	0.0658	
	Magnesium (Mg)-Total (mg/L)	24.9	44.7	33.2	
	Manganese (Mn)-Total (mg/L)	0.319	0.849	1.09	
	Molybdenum (Mo)-Total (mg/L)	0.00546	<0.000050	0.000073	
	Nickel (Ni)-Total (mg/L)	0.0433	0.0218	0.0263	
	Phosphorus (P)-Total (mg/L)	0.31	<0.30	<0.30	
	Potassium (K)-Total (mg/L)	3.66	6.68	4.72	
	Selenium (Se)-Total (mg/L)	0.00068	<0.00010	<0.00010	
	Silicon (Si)-Total (mg/L)	24.8	17.5	14.9	
	Silver (Ag)-Total (mg/L)	0.000675	0.000053	0.000039	
	Sodium (Na)-Total (mg/L)	6.51	19.8	12.4	
	Strontium (Sr)-Total (mg/L)	0.426	0.846	0.548	
	Thallium (Tl)-Total (mg/L)	0.000207	<0.000010	<0.000010	
Tin (Sn)-Total (mg/L)	0.00079	0.00142	0.00022		
Titanium (Ti)-Total (mg/L)	0.351	<0.010	<0.010		
Uranium (U)-Total (mg/L)	0.0110	0.000018	0.000065		

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1392260-1 Groundwater 14-NOV-13 BH14A	L1392260-2 Groundwater 14-NOV-13 BH14B	L1392260-3 Groundwater 14-NOV-13 BH14B-R	L1392260-4 Groundwater 13-NOV-13 15:40 SRK08-PIZA	L1392260-5 Groundwater 13-NOV-13 14:07 BH2	
Grouping	Analyte					
WATER						
Total Metals	Vanadium (V)-Total (mg/L)	<0.0050 ^{DLA}	<0.0050 ^{DLA}	<0.0050 ^{DLA}	0.0065	0.0185
	Zinc (Zn)-Total (mg/L)	18.1	0.191	0.150	1.13	18.5
	Zirconium (Zr)-Total (mg/L)	<0.0040 ^{DLA}	<0.0040 ^{DLA}	<0.0040 ^{DLA}	<0.00080	<0.0016 ^{DLA}
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0050 ^{DLA}	<0.0050 ^{DLA}	<0.0050 ^{DLA}	0.0294	0.906
	Antimony (Sb)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLM}	<0.00020 ^{DLA}
	Arsenic (As)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	0.00321	<0.00020 ^{DLA}
	Barium (Ba)-Dissolved (mg/L)	0.0150	0.0176	0.0178	0.0381	0.0521
	Beryllium (Be)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	0.00078	<0.00020 ^{DLA}
	Bismuth (Bi)-Dissolved (mg/L)	<0.0025 ^{DLA}	<0.0025 ^{DLA}	<0.0025 ^{DLA}	<0.0025 ^{DLM}	<0.0010 ^{DLA}
	Boron (B)-Dissolved (mg/L)	<0.050 ^{DLA}	<0.050 ^{DLA}	<0.050 ^{DLA}	<0.050 ^{DLM}	<0.020 ^{DLA}
	Cadmium (Cd)-Dissolved (mg/L)	0.00214	0.000056	0.000075	<0.000050 ^{DLM}	0.0443
	Calcium (Ca)-Dissolved (mg/L)	641	646	645	178	94.0
	Chromium (Cr)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLM}	0.00025
	Cobalt (Co)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	0.00851	0.00174
	Copper (Cu)-Dissolved (mg/L)	0.0017	<0.0010 ^{DLA}	<0.0010 ^{DLA}	<0.0010 ^{DLM}	0.00140
	Iron (Fe)-Dissolved (mg/L)	<0.050 ^{DLA}	<0.050 ^{DLA}	<0.050 ^{DLA}	13.3	0.036
	Lead (Pb)-Dissolved (mg/L)	0.00701	0.00496	0.00469	0.00101	0.00160
	Lithium (Li)-Dissolved (mg/L)	0.0994	0.0702	0.0687	0.0948	0.0160
	Magnesium (Mg)-Dissolved (mg/L)	410	314	311	49.9	27.5
	Manganese (Mn)-Dissolved (mg/L)	0.0273	0.00108	0.00103	0.850	0.175
	Molybdenum (Mo)-Dissolved (mg/L)	0.00036	<0.00025 ^{DLA}	<0.00025 ^{DLA}	<0.00025 ^{DLM}	<0.00010 ^{DLA}
	Nickel (Ni)-Dissolved (mg/L)	0.192	0.0027	<0.0025 ^{DLA}	0.0151	0.0753
	Phosphorus (P)-Dissolved (mg/L)	<1.5 ^{DLA}	<1.5 ^{DLA}	<1.5 ^{DLA}	<1.5 ^{DLM}	<0.60 ^{DLA}
	Potassium (K)-Dissolved (mg/L)	4.26	4.40	4.40	3.19	2.42
	Selenium (Se)-Dissolved (mg/L)	0.00101	0.00054	0.00057	<0.00050 ^{DLM}	0.00065
	Silicon (Si)-Dissolved (mg/L)	11.9	10.1	10.0	11.1	6.91
	Silver (Ag)-Dissolved (mg/L)	<0.000050 ^{DLA}	<0.000050 ^{DLA}	<0.000050 ^{DLA}	<0.000050 ^{DLM}	<0.000020 ^{DLA}
	Sodium (Na)-Dissolved (mg/L)	19.5	17.1	16.5	22.4	6.01
	Strontium (Sr)-Dissolved (mg/L)	3.52	3.50	3.58	1.11	0.453
	Thallium (Tl)-Dissolved (mg/L)	<0.000050 ^{DLA}	<0.000050 ^{DLA}	<0.000050 ^{DLA}	0.000089	0.000073
	Tin (Sn)-Dissolved (mg/L)	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLA}	<0.00050 ^{DLM}	<0.00020 ^{DLA}
	Titanium (Ti)-Dissolved (mg/L)	<0.050 ^{DLA}	<0.050 ^{DLA}	<0.050 ^{DLA}	<0.050 ^{DLM}	<0.020 ^{DLA}
	Uranium (U)-Dissolved (mg/L)	0.148	0.189	0.195	0.00492	0.000189
	Vanadium (V)-Dissolved (mg/L)	<0.0050 ^{DLA}	<0.0050 ^{DLA}	<0.0050 ^{DLA}	<0.0050 ^{DLM}	<0.0020 ^{DLA}
	Zinc (Zn)-Dissolved (mg/L)	17.6	0.164	0.138	1.18	15.8
	Zirconium (Zr)-Dissolved (mg/L)	<0.0040 ^{DLA}	<0.0040 ^{DLA}	<0.0040 ^{DLA}	<0.0040 ^{DLM}	<0.0016 ^{DLA}

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1392260-6 Groundwater 13-NOV-13 11:45 P96-6	L1392260-7 Groundwater 13-NOV-13 16:11 SRK08-P12B	L1392260-8 Groundwater 13-NOV-13 12:53 BH5	L1392260-9 Groundwater 13-NOV-13 13:13 BH4	L1392260-10 Groundwater 13-NOV-13 14:47 BH-7S
Grouping	Analyte					
WATER						
Total Metals	Vanadium (V)-Total (mg/L)	<0.0020 ^{DLA}	0.0012	0.0014	0.0204	0.0590
	Zinc (Zn)-Total (mg/L)	0.367	0.174	1.72	12.3	2.63
	Zirconium (Zr)-Total (mg/L)	<0.0016 ^{DLA}	<0.00080	<0.00080	0.00081	0.00455
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0020 ^{DLA}	0.0331	0.0279	16.9	0.0137
	Antimony (Sb)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010	<0.00010	0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00020 ^{DLA}	0.00012	0.00026	0.00064	0.00011
	Barium (Ba)-Dissolved (mg/L)	0.0169	0.0909	0.0277	0.0206	0.0239
	Beryllium (Be)-Dissolved (mg/L)	<0.00020 ^{DLA}	0.00038	0.00017	0.00659	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.0010 ^{DLA}	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<0.020 ^{DLA}	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000272	0.000043	0.000705	0.0441	0.00493
	Calcium (Ca)-Dissolved (mg/L)	344	98.9	56.2	152	79.7
	Chromium (Cr)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010	<0.00010	0.00073	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00020 ^{DLA}	0.00245	0.0135	0.103	0.00059
	Copper (Cu)-Dissolved (mg/L)	<0.00040 ^{DLA}	<0.00020	0.00025	0.279	0.00229
	Iron (Fe)-Dissolved (mg/L)	<0.020 ^{DLA}	3.71	13.1	0.277	0.086
	Lead (Pb)-Dissolved (mg/L)	<0.00010 ^{DLA}	0.000109	0.000350	0.0268	0.000618
	Lithium (Li)-Dissolved (mg/L)	0.0342	0.0844	0.0256	0.0903	0.0109
	Magnesium (Mg)-Dissolved (mg/L)	150	25.0	19.7	28.6	19.5
	Manganese (Mn)-Dissolved (mg/L)	0.00153	0.445	1.67	1.36	0.0185
	Molybdenum (Mo)-Dissolved (mg/L)	<0.00010 ^{DLA}	<0.000050	<0.000050	0.000067	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.0122	0.00482	0.0157	0.154	0.00455
	Phosphorus (P)-Dissolved (mg/L)	<0.60 ^{DLA}	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	4.41	3.14	2.72	1.87	1.47
	Selenium (Se)-Dissolved (mg/L)	0.00372	<0.00010	<0.00010	0.00015	0.00063
	Silicon (Si)-Dissolved (mg/L)	9.12	9.80	9.59	15.2	7.12
	Silver (Ag)-Dissolved (mg/L)	<0.000020 ^{DLA}	<0.000010	<0.000010	0.000041	<0.000010
	Sodium (Na)-Dissolved (mg/L)	5.73	13.2	7.26	6.05	5.69
	Strontium (Sr)-Dissolved (mg/L)	0.845	0.658	0.264	0.593	0.380
	Thallium (Tl)-Dissolved (mg/L)	<0.000020 ^{DLA}	0.000042	0.000057	0.000198	0.000080
	Tin (Sn)-Dissolved (mg/L)	<0.00020 ^{DLA}	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.020 ^{DLA}	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.0588	0.000835	0.000129	0.00200	0.000145
	Vanadium (V)-Dissolved (mg/L)	<0.0020 ^{DLA}	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.363	0.184	1.86	13.0	1.02
	Zirconium (Zr)-Dissolved (mg/L)	<0.0016 ^{DLA}	<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	L1392260-11 Groundwater 13-NOV-13 15:40 PO5-04	L1392260-12 Groundwater 14-NOV-13 09:48 BH10B	L1392260-13 Groundwater 14-NOV-13 09:00 BH10A		
Grouping	Analyte				
WATER					
Total Metals	Vanadium (V)-Total (mg/L)	0.0264	<0.0010	<0.0010	
	Zinc (Zn)-Total (mg/L)	4.47	3.28	4.76	
	Zirconium (Zr)-Total (mg/L)	0.00246	<0.00080	<0.00080	
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0902	0.0535	0.0295	
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00050 ^{DLM}	<0.00010	
	Arsenic (As)-Dissolved (mg/L)	0.00011	0.0331	0.00623	
	Barium (Ba)-Dissolved (mg/L)	0.0336	0.0106	0.0117	
	Beryllium (Be)-Dissolved (mg/L)	0.00010	0.00157	0.00073	
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.0025 ^{DLM}	<0.00050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.050 ^{DLM}	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.00557	<0.000050 ^{DLM}	0.000013	
	Calcium (Ca)-Dissolved (mg/L)	80.8	140 ^{DLM}	91.2	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00050 ^{DLM}	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	0.00105	0.00921	0.0196	
	Copper (Cu)-Dissolved (mg/L)	0.00104	<0.0010 ^{DLM}	<0.00020	
	Iron (Fe)-Dissolved (mg/L)	0.018	37.6	34.1	
	Lead (Pb)-Dissolved (mg/L)	0.000158	<0.00025 ^{DLM}	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0183	0.110	0.0589	
	Magnesium (Mg)-Dissolved (mg/L)	23.4	47.2	31.8	
	Manganese (Mn)-Dissolved (mg/L)	0.0651	0.853 ^{DLM}	1.03	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000071	<0.00025 ^{DLM}	0.000054	
	Nickel (Ni)-Dissolved (mg/L)	0.0261	0.0232 ^{DLM}	0.0253	
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<1.5 ^{DLM}	<0.30	
	Potassium (K)-Dissolved (mg/L)	1.80	6.42	4.35	
	Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00050 ^{DLM}	<0.00010	
	Silicon (Si)-Dissolved (mg/L)	6.65	18.2	14.6	
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000050 ^{DLM}	<0.000010	
	Sodium (Na)-Dissolved (mg/L)	6.21	19.4	11.9	
	Strontium (Sr)-Dissolved (mg/L)	0.369	0.816	0.500	
	Thallium (Tl)-Dissolved (mg/L)	0.000014	<0.000050 ^{DLM}	<0.000010	
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00050 ^{DLM}	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.050 ^{DLM}	<0.010	
	Uranium (U)-Dissolved (mg/L)	0.00173	<0.000050 ^{DLM}	0.000059	
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0050 ^{DLM}	<0.0010	
	Zinc (Zn)-Dissolved (mg/L)	4.09	3.55 ^{DLM}	4.89	
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	<0.0040 ^{DLM}	<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	Sulfate (SO4)	MS-B	L1392260-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1392260-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1392260-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1392260-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1392260-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1392260-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1392260-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1392260-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1392260-1, -10, -11, -12, -13, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
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**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"
		This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.	
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity
		This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.	
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-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.	
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.	
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).	
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."	
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

Reference Information

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:

1

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		Service Requested (Rush for routine analysis subject to availability)	
Company: EDI	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax		<input type="checkbox"/> Regular (Standard Turnaround Times - Business Days) <input type="checkbox"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT <input checked="" type="checkbox"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT <input type="checkbox"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
Contact: Meighan Kearns	2195 - 2nd Avenue	Email 1: mkearns@edynamics.com	Email 2: Adrienne.Turcotte@gov.yk.ca	Analysis Request Please indicate below Filtered, Preserved or both (F, P, F/P)	
Address: Whitehorse, YT Y1A 3T8	Whitehorse, YT Y1A 3T8	Email 3: Patricia.Randell@gov.yk.ca			
Phone: 867-393-4882	Fax: 867-393-4882	Client / Project Information			
Invoice To: Same as Report?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Job #: 13-Y-0452	PO / AFE:		
Hardcopy of Invoice with Report?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	LSD:	Quote #: Q38554		
Company:		ALS	Sampler:		
Contact:		ALS			
Address:		ALS			
Phone:		ALS			
Fax:		ALS			
Lab Work Order # (lab use only)					
Sample Identification (This description will appear on the report)		Date (dd-mm-yy)	Time (hh:mm)	Sample Type	
Sample #					
BH14A		14-Nov-13		Groundwater	X
BH14B		14-Nov-13			X
BH14B REP		14-Nov-13			X
SAK08-P12A		13-Nov-13	1540		X
BH2		13-Nov-13	1407		X
P96-6		13-Nov-13	145		X
SAK08-P12B		13-Nov-13	1611		X
BH5		13-Nov-13	1253		X
BH4		13-Nov-13	1313		X
BH7S		13-Nov-13	1442		X
P05-04		13-Nov-13	1540		X

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/LAB Tier 1 - Natural, etc) / Hazardous Details



Use Faro Equis format to report

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (Client use) SHIPMENT RECEPTION (Lab use only) SHIPMENT VERIFICATION (Lab use only)

Released by:	Date (dd-mm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
				15-Nov-13	10:15	21.23 °C				



ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC #

Page ____ of ____

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)										
Company:	EDI	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Other	<input type="radio"/> Regular (Standard Turnaround Times - Business Days)										
Contact:	Meighan Kearns	<input checked="" type="checkbox"/> PDF	<input checked="" type="checkbox"/> Excel	<input type="checkbox"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT										
Address:	2195 - 2nd Avenue Whitehorse, YT Y1A 3T8	Email 1:	mkearns@edynamics.com	<input checked="" type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT										
Phone:	867-393-4882	Email 2:	Adrienne.Turcotte@gov.yk.ca	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT										
Invoice To	Same as Report ?	Email 3:	Patricia.Randell@gov.yk.ca	Analysis Request										
Hardcopy of Invoice with Report?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F/P)										
Company:		Job #:	13-Y-0452											
Contact:		PO / AFE:	LSD:											
Address:		Quote #:	Q38554											
Phone:		ALS Contact:												
Lab Work Order # (lab use only)		Sampler:												
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ACY-PCT-VA,ALK-COL-VA	ANIONS-CL-IC-WR,	ANIONS-SO4-IC-WR	EC-PCT-VA,PH-PCT-VA	TSS-LOW-VA	MET-D-CCMS-VA,	MET-T-CCMS-VA,	ZR-D-MS-VA	ZR-T-MS-VA	Number of Containers
	BH 10 B	14-000113	9:40	Groundwater	X	X	X	X	X	X	X	X	X	3
	DH10 A	14-000113	9:00		X	X	X	X	X	X	X	X		

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/LB Tier 1 - Natural, etc) / Hazardous Details

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SHIPMENT RELEASE (client use) SHIPMENT RECEPTION (lab use only) SHIPMENT VERIFICATION (lab use only)

Released by:	Date (dd-mm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
						°C				