ENVIRONMENTAL DYNAMICS INC.

2195 – 2ND Ave
Whitehorse, YT Y1A 3T8
P: (867) 393-4882 ▪ F: (867) 393-4883

December 3, 2013

EDI Job Number: 13-Y-0452

Assessment and Abandoned Mines
Yukon Government
Box 2703
Whitehorse, YT

Attention: Adrienne Turcotte, Project Officer

Re: Faro Rose Creek Surface and Groundwater Sampling Field Program – Trip 1

In response to an urgent request by Assessment and Abandoned Mines (AAM), EDI Environmental Dynamics Inc. (EDI) conducted a surface and groundwater sampling program at the Faro Mine Site November 12 to 14, 2013. Two crews of two personnel each completed the following tasks:

- Fish telemetry survey of NF1 Pond to confirm status of radio tagged fish (i.e., location and activity);
- Ground water sampling of 19 sites plus QA/QC samples;
- Surface water sampling in Rose Creek at 9 sites twice plus QA/QC samples; and,
- Piezometer water depth measurements at 18 sites.

The intent of this memo is to provide AAM with the field data obtained during the November 12 to 14 field program, referred to as Trip 1. A second, similar field program was conducted November 27 to 30, 2013 (Trip 2), which will be summarized in a separate memo.

In September 2013, ten adult Arctic grayling captured in or near NF1 Pond were implanted with internal radio tags. As the rock drain is a barrier to fish movement, these fish cannot leave the upper North Fork, nor can other tagged fish enter this area. Results of the telemetry survey indicate all 10 of 10 radio tagged fish were located in NF1 Pond (Table 1, attached). One of the tags was detected as inactive; however, an inactive status may indicate a fish in resting state. If additional surveys detect the same tag as inactive in the same location a mortality or shed tag is likely.

Field data collected at each surface and groundwater sampling site is summarized in Tables 2 and 3, respectively. The laboratory analytical reports for all samples submitted during this field program are also attached. Piezometer measurements can be found in Table 4. Photos of each site are also attached.

If you have any questions or concerns, please do not hesitate to contact Pat Tobler or myself at (867) 393-4882 or through email at mkearns@edynamics.com.

Yours truly,

EDI Environmental Dynamics Inc.

Submitted via email

Meighan Kearns, B.Sc., R.P.Bio.
Aquatic Biologist

Attachments:
- Tables 1 – 4
- Site Photos
- Laboratory Analytical Reports

Table 1. Fish telemetry data, November 13, 2013.

Tag ID	Location	Status
117	NF1 Pond	Active
120	NF1 Pond	Active
121	NF1 Pond	Active
124	NF1 Pond	Active
133	NF1 Pond	Active
157	NF1 Pond	Active
160	NF1 Pond	~Active
161	NF1 Pond	Active
164	NF1 Pond	Inactive
168	NF1 Pond	Active

Notes: ~ indicates the status is not certain but likely; an inactive status may indicate a fish in resting state, if additional surveys detect the same tag as inactive in the same location a mortality is likely.

Table 2. Surface water sampling field data, November 12 – 14, 2013.

Site Name	UTM Location (NAD83/ Zone 8)		Sample		QA/QC Rep. ID	In-situ Parameters			
	Easting	Northing	Date	Time		Temp (°C)	SPC (µS/cm)	pH	Turbidity (NTU)
X14	579341	6915080	12-Nov-13	13:30	-	0.10	801	6.73	2.95
X10	579441	6914881	12-Nov-13	14:05	-	-0.04	264	6.98	1.43
X3A	583152	6912542	12-Nov-13	14:50	X3A-r	0.09	255	6.99	1.35
X2	584069	6912778	12-Nov-13	15:05	-	-0.05	219	7.03	1.10
NF2	584687	6913013	12-Nov-13	15:30	-	-0.03	235	6.98	1.82
R10	585105	6913468	12-Nov-13	16:12	-	-0.05	221	7.23	0.94
R9	585228	6913663	12-Nov-13	16:30	-	-0.05	219	7.29	1.41
NF1-F	584844	6913207	13-Nov-13	8:17	-	-0.03	224	6.88	0.87
R8	-	-	13-Nov-13	9:35	-	0.00	199.2	6.59	0.88
X14	579338	6915014	14-Nov-13	8:06	-	0.23	976	7:17	2.85
X10	579435	6914881	14-Nov-13	8:30	-	-0.05	313	7.17	1.40
X3A	583151	6912541	14-Nov-13	9:00	X3A-r	0.10	303	6.65	0.66
X2	584072	6912777	14-Nov-13	9:20	-	-0.05	291	6.53	0.83
NF2	584689	6913009	14-Nov-13	9:45	-	-0.03	284	6.60	1.45
R10	585107	6913471	14-Nov-13	11:30	-	-0.04	253	6.98	0.77
R9	585230	6913664	14-Nov-13	11:50	-	-0.04	246	7.21	0.51
NF1-F	584837	6913227	14-Nov-13	11:05	-	-0.04	285	6.70	2.09
R8	-	-	14-Nov-13	12:30	-	0.00	185.3	7.83	1.65

Where, UTM = Universal Transverse Mercator;
QA/QC Rep = Quality Assurance/ Quality Control Replicate;
Temp = water temperature; and,
SPC = specific conductance.

Table 3. Groundwater sampling field data, November 13 – 14, 2013

	Well Data		Sample		Purge		Sample In-situ Parameters				Sample Collected	QA/QC Rep. ID
	DTW	DTB	Date	Time	Volume	Rate	T	pH	SPC	Turbidity		
Well Name	(m TOC)	(m TOC)	(dd/mm/yy)	(HH:SS)	(L)	(L/min)	(°C)		(µS/cm)	(NTU)	Y/N	
P96-6	12.635	18.620	13-Nov-13	11:50	36	1.03	1.4	6.49	2260	-	Y	-
SRK08-P13A	-	-	-	-	-	-	-	-	-	-	N	-
SRK08-P13B	-	-	-	-	-	-	-	-	-	-	N	-
BH5	1.995	7.520	13-Nov-13	12:53	30	1.67	2.4	5.66	523.2	-	Y	-
BH4	-	-	13-Nov-13	13:13	5	1.00	1.7	4.83	1106	-	Y	-
BH2	4.535	5.498	13-Nov-13	14:07	6	1.50	3.0	5.72	741.3	-	Y	-
BH1	-	-	-	-	-	-	-	-	-	-	N	-
BH7S	5.794	6.895	13-Nov-13	14:47	7	0.58	1.7	6.28	550.3	-	Y	-
BH10A	7.120	>30	14-Nov-13	8:56	34	0.94	1.9	5.65	755.1	-	Y	-
BH10B	7.140	-	14-Nov-13	9:46	30	1.00	1.9	5.40	1048	-	Y	-
SRK08-P12A	5.985	12.734	13-Nov-13	15:40	40	2.67	0.5	6.02	1252	-	Y	-
SRK08-P12B	4.115	8.421	13-Nov-13	16:11	24	2.10	0.0	5.85	719	-	Y	-
BH12A	-	-	-	-	-	-	-	-	-	-	N	-
BH12B	-	-	-	-	-	-	-	-	-	-	N	-
BH13A	-	-	-	-	-	-	-	-	-	-	N	-
BH13B	-	-	-	-	-	-	-	-	-	-	N	-
BH14A	3.400	6.435	14-Nov-13	12:09	10	-	2.4	6.86	3946	-	Y	-
BH14B	4.030	10.085	14-Nov-13	11:28	7	-	2.3	6.84	3623	-	Y	BH14B-r
P05-04	2.867	7.100	13-Nov-13	15:39	30	2.67	1.9	5.48	610	-	Y	-

Where, DTW = depth to water; DTB = depth to bottom; SPC = specific conductance; QA/QC Rep = Quality Assurance/ Quality Control Replicate
Notes:

- Cold temperatures caused the turbidimeter to malfunction; therefore, no turbidity measurements were obtained for the groundwater well sites.
- Where samples were not collected, the wells were dry or frozen.

Table 4. Piezometer field measurements, November 13, 2013

Piezometer	DTW (cm)	DTB (cm)	Notes
CH13-107-PZ001	43.7	-	frozen; cap missing; taped ziplock bag to top of pipe
CH13-107-PZ002	-	-	could not find
CH13-107-PZ003	-	-	could not find
CH13-107-PZ004	-	-	could not find
CH13-107-PZ006	75.5	-	frozen
CH13-107-PZ007	39.1	-	frozen
CH13-107-PZ008	39.0	-	frozen; same location as 8T
CH13-107-PZ008a	-	-	could not find
CH13-107-PZ008b	-	-	could not find
CH13-107-PZ008c	-	-	could not find
CH13-107-PZ008T	37.7	-	frozen; same location as 8
CH13-107-PZ009	25.8	-	frozen
CH13-107-PZ010	-	-	could not find
CH13-107-PZ011	26 (d/s); 25 (u/s)	-	2 pipes; both at stream level; frozen
CH13-107-PZ012A	67.0	-	frozen
CH13-107-PZ012B	31.8	-	old pipe; likely not the correct site but no other pipe in the vicinity
CH13-107-PZ013	-	-	could not find
CH13-107-PZ014	-	-	could not find

Where, DTW = depth to water; DTB = depth to bottom; u/s = upstream; and, d/s = downstream.

Photo 1. Piezometer CH13-107-PZ001 on right downstream bank, November 13, 2013.

Photo 2. Upstream view of approximate location of piezometer CH13-107-PZ002, November 13, 2013.

Photo 3. Upstream view of approximate location of piezometer CH13-107-PZ003, November 13, 2013.

Photo 4. Approximate location of piezometer CH13-107-PZ004, November 13, 2013.

Photo 5. Downstream view of piezometer CH13-107-PZ006, November 13, 2013.

Photo 6. Upstream view of piezometer CH13-107-PZ007, November 13, 2013.

Photo 7. Downstream view of piezometers CH13-107-PZ008/ 8T, November 13, 2013.

Photo 8. Upstream view of approximate location of piezometer CH13-107-PZ008a, November 13, 2013.

Photo 9. Approximate location of piezometer CH13-107-PZ008b, November 13, 2013.

Photo 10. Approximate location of piezometer CH13-107-PZ008c, November 13, 2013.

Photo 11. Downstream view of piezometer CH13-107-PZ009, November 13, 2013.

Photo 12. Upstream view of approximate location of piezometer CH13-107-PZ010, November 13, 2013.

Photo 13. Piezometer CH13-107-PZ011, November 13, 2013.

Photo 14. Second piezometer at site CH13-107-PZ011, November 13, 2013.

Photo 15. Downstream view of piezometer CH13-107-PZ012A, November 13, 2013.

Photo 16. View of label at piezometer CH13-107-PZ012A, November 13, 2013.

Photo 17. Approximate location of piezometer CH13-107-PZ013, November 13, 2013.

Photo 18. Upstream view of approximate location of piezometer CH13-107-PZ014, November 13, 2013.

Photo 19. Upstream view at surface water sampling site X14, November 12, 2013.

Photo 20. Downstream view from surface water sampling site X10, November 12, 2013.

Photo 21. Downstream view of surface water sampling site X3A, November 12, 2013.

Photo 22. Upstream view of surface water sampling site X2, November 12, 2013.

Photo 23. Downstream view of surface water sampling site NF2, November 12, 2013.

Photo 24. Downstream view of surface water sampling site R10, November 12, 2013.

Photo 25. Downstream view of surface water sampling site R9, November 12, 2013.

Photo 26. Downstream view of surface water sampling site NF1, November 14, 2013.

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

Date Received: 13-NOV-13
Report Date: 03-DEC-13 15:47 (MT)
Version: FINAL REV. 2

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1391431

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

Comments: 3-DEC-2013 This report replaces and supersedes previously sent report. This report includes revised sample id for ALS identified sample L1391431-1 and -10.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1391431-1 Surface Water 12-NOV-13 14:50 X3A-R	L1391431-2 Surface Water 12-NOV-13 14:50 X10	L1391431-3 Surface Water 12-NOV-13 16:30 R9	L1391431-4 Surface Water 12-NOV-13 13:30 X14	L1391431-5 Surface Water 12-NOV-13 16:12 R10
WATER						
Physical Tests	Conductivity (uS/cm)	244	246	201	655	203
	Hardness (as CaCO3) (mg/L)	125	128	106	396	106
	pH (pH)	7.74	7.66	7.71	7.55	7.69
	Total Suspended Solids (mg/L)	4.6	<1.0	<1.0	4.8	<1.0
	Total Dissolved Solids (mg/L)	152	148	118	533	122
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	106	114	97.5	151	104
	Ammonia, Total (as N) (mg/L)	0.0109	<0.0050	<0.0050	0.131	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	0.54	<0.50
	Fluoride (F) (mg/L)	0.135	0.131	0.128	0.134	0.131
	Nitrate (as N) (mg/L)	0.128	0.131	0.154	0.113	0.153
	Nitrite (as N) (mg/L)	<0.0010	0.0012	0.0012	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0026	0.0022	0.0053	<0.0020	0.0034
	Sulfate (SO4) (mg/L)	32.1	27.5	16.4	279	16.4
	Anion Sum (meq/L)	2.80	2.86	2.31	8.86	2.44
	Cation Sum (meq/L)	2.91	2.70	2.23	8.64	2.25
	Cation - Anion Balance (%)	2.0	-2.9	-1.7	-1.2	-4.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	2.13	2.28	2.19	2.06	2.03
	Total Organic Carbon (mg/L)	1.93	1.94	1.63	1.89	1.64
Total Metals	Aluminum (Al)-Total (mg/L)	0.0103	0.0086	0.0123	0.0132	0.0163
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00036	0.00028	0.00046	0.00031	0.00042
	Barium (Ba)-Total (mg/L)	0.0594	0.0617	0.0580	0.0578	0.0592
	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)	0.000132	0.000082	<0.000010	0.000089	0.000010
	Calcium (Ca)-Total (mg/L)	33.5	35.9	31.5	118	31.1
	Chromium (Cr)-Total (mg/L)	0.00013	<0.00010	0.00012	<0.00010	0.00013
	Cobalt (Co)-Total (mg/L)	0.00085	0.00063	<0.00010	0.0140	<0.00010
	Copper (Cu)-Total (mg/L)	0.00060	0.00057	<0.00050	0.00061	0.00055
	Iron (Fe)-Total (mg/L)	2.07	0.317	0.085	1.76	0.096
	Lead (Pb)-Total (mg/L)	0.000500	0.000376	0.000095	0.000383	0.000265
	Lithium (Li)-Total (mg/L)	0.00345	0.00331	0.00415	0.00612	0.00401
	Magnesium (Mg)-Total (mg/L)	8.06	8.65	6.64	26.3	6.73
	Manganese (Mn)-Total (mg/L)	0.132	0.114	0.0244	7.73	0.0271
	Molybdenum (Mo)-Total (mg/L)	0.000479	0.000493	0.000611	0.000535	0.000608

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1391431-6 Surface Water 12-NOV-13 15:30 NF2	L1391431-7 Surface Water 12-NOV-13 15:05 X2	L1391431-8 Surface Water 12-NOV-13 14:50 X3A	L1391431-9 Surface Water 13-NOV-13 09:30 R-08	L1391431-10 Surface Water 13-NOV-13 08:17 NF1-F
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Physical Tests	Conductivity (uS/cm)	224	226	283	185	211
	Hardness (as CaCO3) (mg/L)	118	111	125	95.0	112
	pH (pH)	7.35	7.53	6.97	7.75	7.55
	Total Suspended Solids (mg/L)	3.4	<1.0	40.0	2.0	2.2
	Total Dissolved Solids (mg/L)	136	133	183	106	128
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	103	104	73.0	96.4	106
	Ammonia, Total (as N) (mg/L)	0.0051	<0.0050	0.0092	0.0056	0.0154
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.141	0.136	0.137	0.123	0.139
	Nitrate (as N) (mg/L)	0.161	0.152	0.126	0.0970	0.187
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0044	0.0025	0.0032	0.0050	0.0052
	Sulfate (SO4) (mg/L)	25.3	24.6	79.1	8.75	16.8
	Anion Sum (meq/L)	2.61	2.60	3.12	2.12	2.49
	Cation Sum (meq/L)	2.53	2.36	3.12	2.02	2.39
	Cation - Anion Balance (%)	-1.6	-4.8	0.0	-2.4	-1.9
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.97	1.98	2.08	2.05	2.45
	Total Organic Carbon (mg/L)	1.70	2.06	1.73	1.96	2.10
Total Metals	Aluminum (Al)-Total (mg/L)	0.0546	0.0118	0.0148	0.0234	0.0410
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00049	0.00034	0.00034	0.00055	0.00057
	Barium (Ba)-Total (mg/L)	0.0606	0.0612	0.0605	0.0546	0.0613
	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)	0.000326	0.000165	0.000130	<0.000010	0.000015
	Calcium (Ca)-Total (mg/L)	32.9	34.8	38.5	28.6	34.1
	Chromium (Cr)-Total (mg/L)	0.00019	<0.00010	<0.00010	0.00015	0.00020
	Cobalt (Co)-Total (mg/L)	0.00286	0.00142	0.00106	<0.00010	0.00016
	Copper (Cu)-Total (mg/L)	0.00122	<0.00050	0.00054	0.00075	0.00095
	Iron (Fe)-Total (mg/L)	0.339	0.117	4.78	0.123	0.202
	Lead (Pb)-Total (mg/L)	0.00287	0.000950	0.000527	0.000155	0.00118
	Lithium (Li)-Total (mg/L)	0.00484	0.00504	0.00373	0.00419	0.00444
	Magnesium (Mg)-Total (mg/L)	8.06	7.97	8.44	5.50	6.85
	Manganese (Mn)-Total (mg/L)	0.181	0.126	0.196	0.0236	0.0812
	Molybdenum (Mo)-Total (mg/L)	0.000616	0.000622	0.000486	0.000655	0.000727

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1391431-1	L1391431-2	L1391431-3	L1391431-4	L1391431-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	12-NOV-13	12-NOV-13	12-NOV-13	12-NOV-13	12-NOV-13
	Sampled Time	14:50	14:50	16:30	13:30	16:12
	Client ID	X3A-R	X10	R9	X14	R10
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.00171	0.00174	<0.00050	0.0103	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	0.928	0.939	0.735	1.93	0.730
	Selenium (Se)-Total (mg/L)	0.00031	0.00033	0.00034	0.00032	0.00031
	Silicon (Si)-Total (mg/L)	5.37	5.48	5.73	6.02	5.75
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	2.43	2.41	2.43	7.24	2.38
	Strontium (Sr)-Total (mg/L)	0.159	0.165	0.134	0.364	0.134
	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)	0.00169	0.00177	0.00158	0.00246	0.00159
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.267	0.182	<0.0030	0.169	0.0060
	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)	0.0031	0.0024	0.0036	0.0017	0.0048
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00030	0.00018	0.00039	0.00021	0.00038
	Barium (Ba)-Dissolved (mg/L)	0.0603	0.0621	0.0576	0.0567	0.0580
	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)	0.000136	0.000071	<0.000010	0.000086	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	36.9	37.1	31.4	116	31.4
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00100	0.00061	<0.00010	0.0135	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00040	0.00041	0.00031	0.00033	0.00039
	Iron (Fe)-Dissolved (mg/L)	4.81 DTC	0.194	0.043	1.44	0.046
	Lead (Pb)-Dissolved (mg/L)	0.000191	0.000130	<0.000050	0.000069	0.000098
	Lithium (Li)-Dissolved (mg/L)	0.00385	0.00355	0.00425	0.00587	0.00448
	Magnesium (Mg)-Dissolved (mg/L)	8.03	8.55	6.60	26.0	6.77
	Manganese (Mn)-Dissolved (mg/L)	0.191 DTC	0.111	0.0231	7.48	0.0249
	Molybdenum (Mo)-Dissolved (mg/L)	0.000494	0.000511	0.000610	0.000507	0.000631
	Nickel (Ni)-Dissolved (mg/L)	0.00185	0.00161	<0.00050	0.0100	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.953	0.933	0.725	1.90	0.728

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1391431-6	L1391431-7	L1391431-8	L1391431-9	L1391431-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	12-NOV-13	12-NOV-13	12-NOV-13	13-NOV-13	13-NOV-13
	Sampled Time	15:30	15:05	14:50	09:30	08:17
	Client ID	NF2	X2	X3A	R-08	NF1-F
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.00469	0.00254	0.00186	<0.00050	0.00070
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	0.779	0.820	0.960	0.671	0.878
	Selenium (Se)-Total (mg/L)	0.00030	0.00032	0.00027	0.00033	0.00032
	Silicon (Si)-Total (mg/L)	5.74	5.88	5.52	5.65	5.98
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	2.45	2.55	2.47	2.32	2.49
	Strontium (Sr)-Total (mg/L)	0.143	0.148	0.173	0.121	0.140
	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)	0.00158	0.00159	0.00181	0.00146	0.00175
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.568	0.286	0.389	<0.0030	0.0162
	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)	0.0070	0.0054	0.0031	0.0045	0.0052
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00035	0.00031	0.00028	0.00045	0.00050
	Barium (Ba)-Dissolved (mg/L)	0.0611	0.0605	0.0595	0.0583	0.0649
	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)	0.000313	0.000160	0.000145	<0.000010	0.000011
	Calcium (Ca)-Dissolved (mg/L)	34.2	31.6	36.2	28.4	33.1
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00264	0.00138	0.00131 DTC	<0.00010	0.00015
	Copper (Cu)-Dissolved (mg/L)	0.00039	0.00043	0.00037	0.00043	0.00050
	Iron (Fe)-Dissolved (mg/L)	0.145	0.057	8.75 DTC	0.070	0.107
	Lead (Pb)-Dissolved (mg/L)	0.000316	0.000307	0.000132	<0.000050	0.000205
	Lithium (Li)-Dissolved (mg/L)	0.00494	0.00475	0.00359	0.00417	0.00468
	Magnesium (Mg)-Dissolved (mg/L)	8.02	7.75	8.29	5.87	7.11
	Manganese (Mn)-Dissolved (mg/L)	0.169	0.124	0.283 DTC	0.0232	0.0824
	Molybdenum (Mo)-Dissolved (mg/L)	0.000607	0.000582	0.000436	0.000639	0.000738
	Nickel (Ni)-Dissolved (mg/L)	0.00427	0.00253	0.00215	<0.00050	0.00056
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.782	0.805	0.973	0.684	0.909

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1391431-1	L1391431-2	L1391431-3	L1391431-4	L1391431-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	12-NOV-13	12-NOV-13	12-NOV-13	12-NOV-13	12-NOV-13
	Sampled Time	14:50	14:50	16:30	13:30	16:12
	Client ID	X3A-R	X10	R9	X14	R10
Grouping	**Analyte**					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00033	0.00032	0.00037	0.00030	0.00036
	Silicon (Si)-Dissolved (mg/L)	5.41	5.43	5.77	5.85	5.79
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.48	2.37	2.33	7.18	2.36
	Strontium (Sr)-Dissolved (mg/L)	0.169	0.165	0.132	0.360	0.135
	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)	0.00171	0.00168	0.00157	0.00241	0.00159
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.392 DTC	0.182	<0.0010	0.162	0.0061
	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

Grouping	Analyte	L1391431-6 Surface Water 12-NOV-13 15:30 NF2	L1391431-7 Surface Water 12-NOV-13 15:05 X2	L1391431-8 Surface Water 12-NOV-13 14:50 X3A	L1391431-9 Surface Water 13-NOV-13 09:30 R-08	L1391431-10 Surface Water 13-NOV-13 08:17 NF1-F
Sample ID						
Description						
Sampled Date						
Sampled Time						
Client ID						
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00034	0.00034	0.00031	0.00035	0.00036
	Silicon (Si)-Dissolved (mg/L)	5.93	5.88	5.40	5.81	6.06
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.50	2.50	2.49	2.35	2.89
	Strontium (Sr)-Dissolved (mg/L)	0.143	0.144	0.164	0.120	0.143
	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)	0.00159	0.00159	0.00168	0.00142	0.00172
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.551	0.289	0.570 DTC	0.0015	0.0122
	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.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Dissolved Organic Carbon	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Antimony (Sb)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1391431-1, -10, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

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.

Reference Information

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.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

IONBALANCE-VA	Water	Ion Balance Calculation	APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

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

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

Reference Information

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:

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.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Page 1 of 1

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	EDI			☑ Standard	☐ Other			○ Regular (Standard Turnaround Times - Business Days)
Contact:	Meighan Kearns			☑ PDF	☑ Excel	☐ Digital	☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	2195 - 2nd Avenue			Email 1:	mkearns@edynamics.com			◉ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Whitehorse, YT Y1A 3T8			Email 2:	Adrienne.Turcotte@gov.yk.ca			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	867-393-4882	Fax:		Email 3:	Patricia.Randell@gov.yk.ca			
Invoice To	Same as Report ?	☑ Yes	☐ No	Client / Project Information				
Hardcopy of Invoice with Report?		☑ Yes	☐ No	Job #:	13-Y-0452			
Company:				PO / AFE:				
Contact:				LSD:				
Address:								
Phone:		Fax:		Quote #:	Q38556			
Lab Work Order # (lab use only)				ALS Contact:		Sampler:	MK | LG	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ALK-COL-VA,P-T-COL-VA	ANIONS-ALL-IC-WR	CARBONS-DOC-VA	CARBONS-TOC-VA,NH3-F-VA	EC-MAN-WR,PH-MAN-WR	MET-D-CCMS-VA,ZR-D-MS-VA	MET-T-CCMS-VA,ZR-T-MS-VA	IONBALANCE-VA	TDS-CALC-VA	TSS-LOW-WR	HARDNESS-CALC-VA		Number of Containers
	BL	12-Nov-13	14:50	Surface Water	X	X	X	X	X	X	X	X	X	X	X		5
	X10	12-Nov-13	14:50	"	X	X	X	X	X	X	X	X	X	X	X		
	B9	12-Nov-13	16:30	"	X	X	X	X	X	X	X	X	X	X	X		
	X14	12-Nov-13	13:30	"	X	X	X	X	X	X	X	X	X	X	X		
	R10	12-Nov-13	16:12	"	X	X	X	X	X	X	X	X	X	X	X		
	NF2	12-Nov-13	16:30	"	X	X	X	X	X	X	X	X	X	X	X		
	X2	12-Nov-13	15:05	"	X	X	X	X	X	X	X	X	X	X	X		
	X3A	12-Nov-13	14:50	"	X	X	X	X	X	X	X	X	X	X	X		
	R-08	13-Nov-13	9:30	"	X	X	X	X	X	X	X	X	X	X	X		
	NF1	13-Nov-13	8:17	"	X	X	X	X	X	X	X	X	X	X	X		

L1391431-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB 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-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
	13-Nov-13	15:20	Daisha Zuo	13-Nov-13	15:20	2.8 °C				

GENF 18.01 Front

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

Date Received: 15-NOV-13
Report Date: 03-DEC-13 15:50 (MT)
Version: FINAL REV. 3

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	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
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	0.185	0.245	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	0.0292	0.0330	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	715	748	175	99.0
	Chromium (Cr)-Total (mg/L)	<0.00050 DLA	<0.00050 DLA	0.00085	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	0.00993	0.905	1.56
	Molybdenum (Mo)-Total (mg/L)	0.00037	<0.00025 DLA	0.00027	0.000312	0.00151
	Nickel (Ni)-Total (mg/L)	0.199	0.0031	<0.0025 DLA	0.0216	0.111
	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	4.38	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	10.8	11.4	14.1	18.2
	Silver (Ag)-Total (mg/L)	<0.000050 DLA	<0.000050 DLA	<0.000050 DLA	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	L1392260-6	L1392260-7	L1392260-8	L1392260-9	L1392260-10
	Description	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
	Sampled Date	13-NOV-13	13-NOV-13	13-NOV-13	13-NOV-13	13-NOV-13
	Sampled Time	11:45	16:11	12:53	13:13	14:47
	Client ID	P96-6	SRK08-P12B	BH5	BH4	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	0.369	0.509	27.4	30.7
	Antimony (Sb)-Total (mg/L)	<0.00020 DLA	<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

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1392260-11	L1392260-12	L1392260-13		
	Description	Groundwater	Groundwater	Groundwater		
	Sampled Date	13-NOV-13	14-NOV-13	14-NOV-13		
	Sampled Time	15:40	09:48	09:00		
	Client ID	PO5-04	BH10B	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		

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	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
WATER						
Total Metals	Vanadium (V)-Total (mg/L)	DLA <0.0050	DLA <0.0050	DLA <0.0050	0.0065	0.0185
	Zinc (Zn)-Total (mg/L)	18.1	0.191	0.150	1.13	18.5
	Zirconium (Zr)-Total (mg/L)	DLA <0.0040	DLA <0.0040	DLA <0.0040	<0.00080	DLA <0.0016
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0050	DLA <0.0050	0.0294	0.906
	Antimony (Sb)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00050	DLA <0.00050	DLM <0.00050	DLA <0.00020
	Arsenic (As)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00050	DLA <0.00050	0.00321	DLA <0.00020
	Barium (Ba)-Dissolved (mg/L)	0.0150	0.0176	0.0178	0.0381	0.0521
	Beryllium (Be)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00050	DLA <0.00050	0.00078	DLA <0.00020
	Bismuth (Bi)-Dissolved (mg/L)	DLA <0.0025	DLA <0.0025	DLA <0.0025	DLM <0.0025	DLA <0.0010
	Boron (B)-Dissolved (mg/L)	DLA <0.050	DLA <0.050	DLA <0.050	DLM <0.050	DLA <0.020
	Cadmium (Cd)-Dissolved (mg/L)	0.00214	0.000056	0.000075	DLM <0.000050	0.0443
	Calcium (Ca)-Dissolved (mg/L)	641	646	645	178	94.0
	Chromium (Cr)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00050	DLA <0.00050	DLM <0.00050	0.00025
	Cobalt (Co)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00050	DLA <0.00050	0.00851	0.00174
	Copper (Cu)-Dissolved (mg/L)	0.0017	DLA <0.0010	DLA <0.0010	DLM <0.0010	0.00140
	Iron (Fe)-Dissolved (mg/L)	DLA <0.050	DLA <0.050	DLA <0.050	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	DLA <0.00025	DLA <0.00025	DLM <0.00025	DLA <0.00010
	Nickel (Ni)-Dissolved (mg/L)	0.192	0.0027	DLA <0.0025	0.0151	0.0753
	Phosphorus (P)-Dissolved (mg/L)	DLA <1.5	DLA <1.5	DLA <1.5	DLM <1.5	DLA <0.60
	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	DLM <0.00050	0.00065
	Silicon (Si)-Dissolved (mg/L)	11.9	10.1	10.0	11.1	6.91
	Silver (Ag)-Dissolved (mg/L)	DLA <0.000050	DLA <0.000050	DLA <0.000050	DLM <0.000050	DLA <0.000020
	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)	DLA <0.000050	DLA <0.000050	DLA <0.000050	0.000089	0.000073
	Tin (Sn)-Dissolved (mg/L)	DLA <0.00050	DLA <0.00050	DLA <0.00050	DLM <0.00050	DLA <0.00020
	Titanium (Ti)-Dissolved (mg/L)	DLA <0.050	DLA <0.050	DLA <0.050	DLM <0.050	DLA <0.020
	Uranium (U)-Dissolved (mg/L)	0.148	0.189	0.195	0.00492	0.000189
	Vanadium (V)-Dissolved (mg/L)	DLA <0.0050	DLA <0.0050	DLA <0.0050	DLM <0.0050	DLA <0.0020
	Zinc (Zn)-Dissolved (mg/L)	17.6	0.164	0.138	1.18	15.8
	Zirconium (Zr)-Dissolved (mg/L)	DLA <0.0040	DLA <0.0040	DLA <0.0040	DLM <0.0040	DLA <0.0016

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1392260-6	L1392260-7	L1392260-8	L1392260-9	L1392260-10
	Description	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
	Sampled Date	13-NOV-13	13-NOV-13	13-NOV-13	13-NOV-13	13-NOV-13
	Sampled Time	11:45	16:11	12:53	13:13	14:47
	Client ID	P96-6	SRK08-P12B	BH5	BH4	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	L1392260-11	L1392260-12	L1392260-13		
	Description	Groundwater	Groundwater	Groundwater		
	Sampled Date	13-NOV-13	14-NOV-13	14-NOV-13		
	Sampled Time	15:40	09:48	09:00		
	Client ID	PO5-04	BH10B	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	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	1.03		
	Molybdenum (Mo)-Dissolved (mg/L)	0.000071	<0.00025 DLM	0.000054		
	Nickel (Ni)-Dissolved (mg/L)	0.0261	0.0232	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	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.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

Page 1 of 1

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	EDI			☑ Standard ☐ Other				○ Regular (Standard Turnaround Times - Business Days)
Contact:	Meighan Kearns			☑ PDF ☑ Excel ☐ Digital ☐ Fax				○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	2195 - 2nd Avenue			Email 1:	mkearns@edynamics.com			◉ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Whitehorse, YT Y1A 3T8			Email 2:	Adrienne.Turcotte@gov.yk.ca			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	867-393-4882	Fax:		Email 3:	Patricia.Randell@gov.yk.ca			
Invoice To	Same as Report ?	☑ Yes	☐ No	Client / Project Information				Analysis Request
Hardcopy of Invoice with Report?		☑ Yes	☐ No	Job #:	13-Y-0452			Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:				PO / AFE:				
Contact:				LSD:				
Address:								
Phone:		Fax:		Quote #:	Q38554			
Lab Work Order # (lab use only)				ALS Contact:		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
	BH14A	14-NOV-13		Groundwater	X	X	X	X	X	X	X	X	X				3
	BH 14 B	14-NOV-13															3
	BH 14 B REP	14-NOV-13															3
	SARC08-P12A	13-NOV-13	1540														3
	BH2	13-NOV-13	1407														3
	P96-6	13-NOV-13	1145														3
	SARC08-P12B	13-NOV-13	1611														3
	BH5	13-NOV-13	1253														3
	BH4	13-NOV-13	1313														3
	BH-7S	13-NOV-13	1447														3
	P05-04	13-NOV-13	1540														3

L1392260-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB 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-mmm-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	2.1, 2.3 °C				

GENF 18.01 Front

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			☑ Standard ☐ Other				○ Regular (Standard Turnaround Times - Business Days)
Contact:	Meighan Kearns			☑ PDF ☑ Excel ☐ Digital ☐ Fax				○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	2195 - 2nd Avenue			Email 1: mkearns@edynamics.com				◉ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Whitehorse, YT Y1A 3T8			Email 2: Adrienne.Turcotte@gov.yk.ca				○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	867-393-4882	Fax:		Email 3: Patricia.Randell@gov.yk.ca				
Invoice To	Same as Report ? ☑ Yes	☐ No		**Client / Project Information**				**Analysis Request**
Hardcopy of Invoice with Report?	☑ Yes	☐ No		Job #: 13-Y-0452				Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:				PO / AFE:				
Contact:				LSD:				
Address:								
Phone:		Fax:		Quote #: Q38554				
Lab Work Order # (lab use only)				ALS Contact:		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-nov-13	9:40	Groundwater	X	X	X	X	X	X	X	X	X				3
	BH 10 A	14-nov-13	9:00	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓				

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB 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-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature: °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

GENF 18.01 Front

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

Date Received: 15-NOV-13
Report Date: 03-DEC-13 15:53 (MT)
Version: FINAL REV. 2

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1392267

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

Comments: 3-DEC-2013 This report replaces and supersedes previously sent report. This report includes the modified sample id for ALS identified sample L1392267-7 and -8.

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1392267-1	L1392267-2	L1392267-3	L1392267-4	L1392267-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13
	Sampled Time	09:45	09:20	09:00	08:30	10:00
	Client ID	NF2	X2	X3A	X10	F1 (FIELD BLANK)
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	466	309	327	401	<2.0
	Hardness (as CaCO3) (mg/L)	118	123	130	132	<0.50
	pH (pH)	7.36	7.38	7.48	7.79	5.79
	Total Suspended Solids (mg/L)	4.8	<1.0	3.6	<1.0	<1.0
	Total Dissolved Solids (mg/L)	136	139	149	148	<1.0
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	104	104	105	111	<2.0
	Ammonia, Total (as N) (mg/L)	0.0068	0.0059	0.0133	0.0082	<0.0050
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.141	0.139	0.135	0.131	<0.020
	Nitrate (as N) (mg/L)	0.176	0.168	0.145	0.138	<0.0050
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0064	0.0044	0.0025	0.0023	<0.0020
	Sulfate (SO4) (mg/L)	24.0	25.5	30.4	27.8	<0.50
	Anion Sum (meq/L)	2.60	2.64	2.75	2.80	<0.10
	Cation Sum (meq/L)	2.52	2.61	2.90	2.79	<0.10
	Cation - Anion Balance (%)	-1.5	-0.6	2.6	-0.3	0.0
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.68	1.74	1.69	1.76	<0.50
	Total Organic Carbon (mg/L)	1.80	1.71	1.87	2.07	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	0.0440	0.0122	0.0184	0.0081	<0.0030
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00054	0.00040	0.00037	0.00029	<0.00010
	Barium (Ba)-Total (mg/L)	0.0618	0.0590	0.0605	0.0615	<0.000050
	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)	0.000249	0.000185	0.000134	0.000088	<0.000010
	Calcium (Ca)-Total (mg/L)	35.4	34.3	40.2	39.4	<0.020
	Chromium (Cr)-Total (mg/L)	0.00020	0.00013	0.00012	0.00011	<0.00010
	Cobalt (Co)-Total (mg/L)	0.00208	0.00141	0.00111	0.00063	<0.00010
	Copper (Cu)-Total (mg/L)	0.00070	<0.00050	0.00053	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	0.284	0.116	8.89	0.319	<0.010
	Lead (Pb)-Total (mg/L)	0.00176	0.000682	0.000491	0.000328	<0.000050
	Lithium (Li)-Total (mg/L)	0.00529	0.00547	0.00437	0.00405	<0.00050
	Magnesium (Mg)-Total (mg/L)	7.84	8.38	8.41	8.63	<0.0050
	Manganese (Mn)-Total (mg/L)	0.146	0.128	0.265	0.117	<0.000050
	Molybdenum (Mo)-Total (mg/L)	0.000628	0.000618	0.000577	0.000540	<0.000050

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1392267-6	L1392267-7	L1392267-8	L1392267-9	L1392267-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13
	Sampled Time	08:06	09:00	12:05	12:30	11:50
	Client ID	X14	X3A-R	NF1-F	R8	R9
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	810	465	399	336	206
	Hardness (as CaCO3) (mg/L)	416	127	115	96.2	111
	pH (pH)	7.61	7.44	7.61	7.81	7.77
	Total Suspended Solids (mg/L)	5.6	13.0	6.2	3.2	<1.0
	Total Dissolved Solids (mg/L)	554	158	127	107	124
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	146	99.0	103	96.3	102
	Ammonia, Total (as N) (mg/L)	0.139	0.0118	0.0122	0.0070	0.0055
	Chloride (Cl) (mg/L)	0.56	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.133	0.136	0.135	0.132	0.127
	Nitrate (as N) (mg/L)	0.122	0.146	0.182	0.0995	0.167
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	0.0034	0.0063	0.0069	0.0090
	Sulfate (SO4) (mg/L)	295	40.7	17.4	8.87	16.6
	Anion Sum (meq/L)	9.10	2.84	2.45	2.12	2.41
	Cation Sum (meq/L)	9.09	2.98	2.42	2.05	2.35
	Cation - Anion Balance (%)	-0.1	2.4	-0.5	-1.7	-1.3
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.69	1.81	1.93	1.75	1.78
	Total Organic Carbon (mg/L)	1.62	1.84	2.12	1.79	1.68
Total Metals	Aluminum (Al)-Total (mg/L)	0.0139	0.0275	0.0282	0.0201	0.0151
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00035	0.00037	0.00068	0.00058	0.00049
	Barium (Ba)-Total (mg/L)	0.0540	0.0575	0.0603	0.0543	0.0560
	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)	0.000098	0.000132	0.000019	<0.000010	<0.000010
	Calcium (Ca)-Total (mg/L)	122	39.0	34.3	29.6	33.4
	Chromium (Cr)-Total (mg/L)	0.00010	0.00016	0.00021	0.00035	0.00013
	Cobalt (Co)-Total (mg/L)	0.0146	0.00100	0.00014	<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	0.00073	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	2.49	7.43	0.168	0.125	0.093
	Lead (Pb)-Total (mg/L)	0.000279	0.000572	0.00138	0.000121	0.000105
	Lithium (Li)-Total (mg/L)	0.00664	0.00393	0.00462	0.00417	0.00450
	Magnesium (Mg)-Total (mg/L)	27.3	8.54	6.96	6.02	6.92
	Manganese (Mn)-Total (mg/L)	8.21	0.236	0.0567	0.0231	0.0236
	Molybdenum (Mo)-Total (mg/L)	0.000664	0.000518	0.000715	0.000660	0.000642

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1392267-11
	Description	Surface Water
	Sampled Date	14-NOV-13
	Sampled Time	11:30
	Client ID	R10
Grouping	**Analyte**	
WATER		
Physical Tests	Conductivity (uS/cm)	210
	Hardness (as CaCO3) (mg/L)	112
	pH (pH)	7.64
	Total Suspended Solids (mg/L)	<1.0
	Total Dissolved Solids (mg/L)	125
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	102
	Ammonia, Total (as N) (mg/L)	0.0057
	Chloride (Cl) (mg/L)	<0.50
	Fluoride (F) (mg/L)	0.132
	Nitrate (as N) (mg/L)	0.168
	Nitrite (as N) (mg/L)	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0048
	Sulfate (SO4) (mg/L)	17.2
	Anion Sum (meq/L)	2.42
	Cation Sum (meq/L)	2.37
	Cation - Anion Balance (%)	-0.9
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	1.69
	Total Organic Carbon (mg/L)	1.75
Total Metals	Aluminum (Al)-Total (mg/L)	0.0152
	Antimony (Sb)-Total (mg/L)	<0.00010
	Arsenic (As)-Total (mg/L)	0.00049
	Barium (Ba)-Total (mg/L)	0.0578
	Beryllium (Be)-Total (mg/L)	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050
	Boron (B)-Total (mg/L)	<0.010
	Cadmium (Cd)-Total (mg/L)	0.000016
	Calcium (Ca)-Total (mg/L)	34.1
	Chromium (Cr)-Total (mg/L)	0.00012
	Cobalt (Co)-Total (mg/L)	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050
	Iron (Fe)-Total (mg/L)	0.093
	Lead (Pb)-Total (mg/L)	0.000141
	Lithium (Li)-Total (mg/L)	0.00462
	Magnesium (Mg)-Total (mg/L)	7.02
	Manganese (Mn)-Total (mg/L)	0.0261
	Molybdenum (Mo)-Total (mg/L)	0.000644

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1392267-1	L1392267-2	L1392267-3	L1392267-4	L1392267-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13
	Sampled Time	09:45	09:20	09:00	08:30	10:00
	Client ID	NF2	X2	X3A	X10	F1 (FIELD BLANK)
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.00356	0.00266	0.00210	0.00175	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	0.799	0.816	0.985	0.939	<0.050
	Selenium (Se)-Total (mg/L)	0.00033	0.00035	0.00029	0.00033	<0.00010
	Silicon (Si)-Total (mg/L)	6.08	6.03	5.78	5.67	<0.050
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	2.59	2.69	2.58	2.48	<0.050
	Strontium (Sr)-Total (mg/L)	0.146	0.150	0.181	0.176	<0.00020
	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)	0.00165	0.00166	0.00183	0.00188	<0.000010
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.390	0.286	0.489	0.178	<0.0030
	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)	0.0053	0.0037	0.0037	0.0023	<0.0010
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00040	0.00034	0.00027	0.00022	<0.00010
	Barium (Ba)-Dissolved (mg/L)	0.0621	0.0600	0.0589	0.0603	<0.000050
	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)	0.000212	0.000185	0.000113	0.000079	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	34.5	35.6	38.2	38.7	<0.020
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00175	0.00143	0.00085	0.00059	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00037	0.00038	0.00036	0.00034	<0.00020
	Iron (Fe)-Dissolved (mg/L)	0.115	0.052	2.97	0.172	<0.010
	Lead (Pb)-Dissolved (mg/L)	0.000229	0.000216	0.000136	0.000109	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00512	0.00560	0.00414	0.00396	<0.00050
	Magnesium (Mg)-Dissolved (mg/L)	7.83	8.20	8.26	8.62	<0.0050
	Manganese (Mn)-Dissolved (mg/L)	0.129	0.128	0.152	0.113	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.000637	0.000619	0.000473	0.000511	<0.000050
	Nickel (Ni)-Dissolved (mg/L)	0.00299	0.00269	0.00180	0.00169	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.795	0.827	0.931	0.917	<0.050

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1392267-6	L1392267-7	L1392267-8	L1392267-9	L1392267-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13
	Sampled Time	08:06	09:00	12:05	12:30	11:50
	Client ID	X14	X3A-R	NF1-F	R8	R9
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.0107	0.00198	0.00063	<0.00050	<0.00050
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	1.92	0.955	0.834	0.684	0.740
	Selenium (Se)-Total (mg/L)	0.00029	0.00029	0.00036	0.00034	0.00034
	Silicon (Si)-Total (mg/L)	6.12	5.66	6.16	6.15	6.15
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	7.07	2.48	2.52	2.35	2.48
	Strontium (Sr)-Total (mg/L)	0.386	0.177	0.148	0.126	0.140
	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)	0.00250	0.00184	0.00176	0.00151	0.00176
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.158	0.433	0.0255	<0.0030	<0.0030
	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)	0.0041	0.0030	0.0041	0.0036	0.0034
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00021	0.00029	0.00053	0.00049	0.00044
	Barium (Ba)-Dissolved (mg/L)	0.0543	0.0596	0.0587	0.0549	0.0578
	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)	0.000088	0.000114	0.000012	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	121	37.2	34.5	29.3	33.1
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	0.00027	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.0144	0.00090	0.00012	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00026	0.00033	0.00041	0.00040	0.00027
	Iron (Fe)-Dissolved (mg/L)	2.09	5.55	0.084	0.062	0.045
	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.000118	0.000167	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.00651	0.00394	0.00473	0.00422	0.00457
	Magnesium (Mg)-Dissolved (mg/L)	27.3	8.27	6.92	5.61	6.89
	Manganese (Mn)-Dissolved (mg/L)	7.98	0.201	0.0527	0.0213	0.0226
	Molybdenum (Mo)-Dissolved (mg/L)	0.000623	0.000491	0.000656	0.000623	0.000618
	Nickel (Ni)-Dissolved (mg/L)	0.0104	0.00182	0.00053	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	1.90	0.935	0.811	0.662	0.743

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1392267-11
		Description	Surface Water
		Sampled Date	14-NOV-13
		Sampled Time	11:30
		Client ID	R10
Grouping	**Analyte**		
WATER			
Total Metals	Nickel (Ni)-Total (mg/L)		<0.00050
	Phosphorus (P)-Total (mg/L)		<0.30
	Potassium (K)-Total (mg/L)		0.760
	Selenium (Se)-Total (mg/L)		0.00035
	Silicon (Si)-Total (mg/L)		6.05
	Silver (Ag)-Total (mg/L)		<0.000010
	Sodium (Na)-Total (mg/L)		2.47
	Strontium (Sr)-Total (mg/L)		0.144
	Thallium (Tl)-Total (mg/L)		<0.000010
	Tin (Sn)-Total (mg/L)		<0.00010
	Titanium (Ti)-Total (mg/L)		<0.010
	Uranium (U)-Total (mg/L)		0.00172
	Vanadium (V)-Total (mg/L)		<0.0010
	Zinc (Zn)-Total (mg/L)		0.0091
	Zirconium (Zr)-Total (mg/L)		<0.00080
Dissolved Metals	Dissolved Metals Filtration Location		FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0044
	Antimony (Sb)-Dissolved (mg/L)		<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00048
	Barium (Ba)-Dissolved (mg/L)		0.0567
	Beryllium (Be)-Dissolved (mg/L)		<0.00010
	Bismuth (Bi)-Dissolved (mg/L)		<0.00050
	Boron (B)-Dissolved (mg/L)		<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.000026
	Calcium (Ca)-Dissolved (mg/L)		33.3
	Chromium (Cr)-Dissolved (mg/L)		<0.00010
	Cobalt (Co)-Dissolved (mg/L)		<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00035
	Iron (Fe)-Dissolved (mg/L)		0.047
	Lead (Pb)-Dissolved (mg/L)		0.000058
	Lithium (Li)-Dissolved (mg/L)		0.00494
	Magnesium (Mg)-Dissolved (mg/L)		7.01
	Manganese (Mn)-Dissolved (mg/L)		0.0248
	Molybdenum (Mo)-Dissolved (mg/L)		0.000615
	Nickel (Ni)-Dissolved (mg/L)		<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.30
	Potassium (K)-Dissolved (mg/L)		0.762

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1392267-1	L1392267-2	L1392267-3	L1392267-4	L1392267-5
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13
	Sampled Time	09:45	09:20	09:00	08:30	10:00
	Client ID	NF2	X2	X3A	X10	F1 (FIELD BLANK)
Grouping	**Analyte**					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00037	0.00036	0.00033	0.00035	<0.00010
	Silicon (Si)-Dissolved (mg/L)	6.06	5.97	5.55	5.50	<0.050
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.60	2.66	2.50	2.41	<0.050
	Strontium (Sr)-Dissolved (mg/L)	0.145	0.147	0.173	0.167	<0.00020
	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)	0.00164	0.00166	0.00180	0.00181	<0.000010
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.365	0.307	0.313	0.183	<0.0010
	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	L1392267-6	L1392267-7	L1392267-8	L1392267-9	L1392267-10
	Description	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
	Sampled Date	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13	14-NOV-13
	Sampled Time	08:06	09:00	12:05	12:30	11:50
	Client ID	X14	X3A-R	NF1-F	R8	R9
Grouping	**Analyte**					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00030	0.00030	0.00040	0.00037	0.00039
	Silicon (Si)-Dissolved (mg/L)	6.10	5.67	6.02	5.96	6.06
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	7.28	2.43	2.41	2.46	2.40
	Strontium (Sr)-Dissolved (mg/L)	0.383	0.168	0.140	0.121	0.139
	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)	0.00252	0.00179	0.00171	0.00145	0.00168
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.160	0.394	0.0158	0.0017	<0.0010
	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	L1392267-11
	Description	Surface Water
	Sampled Date	14-NOV-13
	Sampled Time	11:30
	Client ID	R10
Grouping	**Analyte**	
WATER		
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00042
	Silicon (Si)-Dissolved (mg/L)	6.13
	Silver (Ag)-Dissolved (mg/L)	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.54
	Strontium (Sr)-Dissolved (mg/L)	0.136
	Thallium (Tl)-Dissolved (mg/L)	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00167
	Vanadium (V)-Dissolved (mg/L)	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0085
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Antimony (Sb)-Total	DLA	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Duplicate	Beryllium (Be)-Total	DLA	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Duplicate	Bismuth (Bi)-Total	DLA	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Duplicate	Phosphorus (P)-Total	DLA	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Duplicate	Silver (Ag)-Total	DLA	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Duplicate	Thallium (Tl)-Total	DLA	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Duplicate	Tin (Sn)-Total	DLA	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Duplicate	Titanium (Ti)-Total	DLA	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Duplicate	Vanadium (V)-Total	DLA	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Ammonia, Total (as N)	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Phosphorus (P)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1392267-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Aluminum (Al)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Cadmium (Cd)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Total	MS-B	L1392267-1, -10, -11, -2, -3, -4, -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.

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

Reference Information

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.

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

IONBALANCE-VA	Water	Ion Balance Calculation	APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

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

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

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

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

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

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

TSS-LOW-WR	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540 D

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

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

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or

Reference Information

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 2

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

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COC # _____

Page 1 of 1

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	EDI			☑ Standard ☐ Other				○ Regular (Standard Turnaround Times - Business Days)
Contact:	Meighan Kearns			☑ PDF ☑ Excel ☐ Digital ☐ Fax				○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	2195 - 2nd Avenue			Email 1: mkearns@edynamics.com				◉ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Whitehorse, YT Y1A 3T8			Email 2: Adrienne.Turcotte@gov.yk.ca				○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	867-393-4882	Fax:		Email 3: Patricia.Randell@gov.yk.ca				
Invoice To	Same as Report ? ☑ Yes	☐ No		Client / Project Information				
Hardcopy of Invoice with Report?	☑ Yes	☐ No		Job #: 13-Y-0452				
Company:				PO / AFE:				
Contact:				LSD:				
Address:								
Phone:		Fax:		Quote #: Q38556				
Lab Work Order # (lab use only)				ALS Contact:		Sampler:		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ALK-COL-VA,P-T-COL-VA	ANIONS-ALL-IC-WR	CARBONS-DOC-VA	CARBONS-TOC-VA,NH3-F-VA	EC-MAN-WR,PH-MAN-WR	MET-D-CCMS-VA,ZR-D-MS-VA	MET-T-CCMS-VA,ZR-T-MS-VA	IONBALANCE-VA	TDS-CALC-VA	TSS-LOW-WR	HARDNESS-CALC-VA		Number of Containers
	NF2	14-Nov-13	09:45	Surface Water	X	X	X	X	X	X	X	X	X	X	X		5
	X2		09:20														5
	X3A		09:00														5
	X10		08:30														5
	F1 (field blank)		10:00														5
	X14		08:06														5
	R2 (replicate)		09:00														5

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

L1392267-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commerci

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

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-mmm-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	25.2.1 °C				

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ALS Environmental

Chain of Custody / Analytical Request Form

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Page 1 of 1

Report To				Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	EDI			☑ Standard	☐ Other			○ Regular (Standard Turnaround Times - Business Days)
Contact:	Meighan Kearns			☑ PDF	☑ Excel	☐ Digital	☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	2195 - 2nd Avenue			Email 1:	mkearns@edynamics.com			◉ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Whitehorse, YT Y1A 3T8			Email 2:	Adrienne.Turcotte@gov.yk.ca			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	867-393-4882	Fax:		Email 3:	Patricia.Randell@gov.yk.ca			
Invoice To	Same as Report ?	☑ Yes	☐ No	Client / Project Information				
Hardcopy of Invoice with Report?		☑ Yes	☐ No	Job #:	13-Y-0452			
Company:				PO / AFE:				
Contact:				LSD:				
Address:								
Phone:		Fax:		Quote #:	Q38556			
Lab Work Order # (lab use only)				ALS Contact:		Sampler:		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ALK-COL-VA,P-T-COL-VA	ANIONS-ALL-IC-WR	CARBONS-DOC-VA	CARBONS-TOC-VA,NH3-F-\	EC-MAN-WR,PH-MAN-WR	MET-D-CCMS-VA,ZR-D-MS	MET-T-CCMS-VA,ZR-T-MS-\	IONBALANCE-VA	TDS-CALC-VA	TSS-LOW-WR	HARDNESS-CALC-VA		Number of Containers
	NF1	14-Nov-13	12:05	Surface Water	X	X	X	X	X	X	X	X	X	X	X		5
	R8	14-Nov-13	12:30	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		5
	R9	14-Nov-13	11:50														5
	R10	14-Nov-13	11:30														5

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

L1392267-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commerci

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

GENF 18.01 Front