ENVIRONMENTAL DYNAMICS INC.

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August 10, 2014

EDI Job Number: 14-Y-0270

Assessment and Abandoned Mines
Yukon Government
Box 2703, K-419
Whitehorse, YT Y1A 2C6

Attention: Adrienne Turcotte, Project Officer

Re: Rose Creek Monitoring Program – May 26 and 27, 2014 (Revised)

Assessment and Abandoned Mines (AAM) retained EDI Environmental Dynamics Inc. (EDI) to conduct water quality sampling at the Faro Mine Site. The Rose Creek Monitoring Program has been ongoing since November 2013 in response to changing water quality conditions. Table 1, attached, summarizes the field trips completed for the 2014 fiscal year. The intent of this memo is to summarize field data obtained during the May 26/27, 2014 field trip.

This trip was conducted in combination with the AAM Faro Pelly Aquatics field program. The objective of this trip was to conduct surface water sampling at 10 monitoring sites, including QA/QC samples. Weather conditions on May 26 and 27, 2014 were partly cloudy, with light wind and air temperatures near 15°C. All 10 sites were sampled on May 26, with the exception of Site R3, which was sampled on May 27. Figure 1 provides the locations of all sampling sites. Table 2 summarizes field data collected at each sampling site. Representative photos of each site and the ALS laboratory analytical reports for all water chemistry samples submitted during this field trip are attached.

If you have any questions, please do not hesitate to contact me 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:

- Table 1. Summary of field trips conducted in the 2014 fiscal year, Rose Creek Monitoring Program.
- Table 2. Surface water sampling field data, Rose Creek Monitoring Program, May 26 - 27, 2014.
- Figure 1. Location of surface water sampling, Rose Creek Monitoring Program, May 26 - 27, 2014.
- Photos 1 – 10. Representative site photos.
- ALS Laboratory Analytical Reports

Table 1. Summary of field trips conducted in the 2014 fiscal year, Rose Creek Monitoring Program.

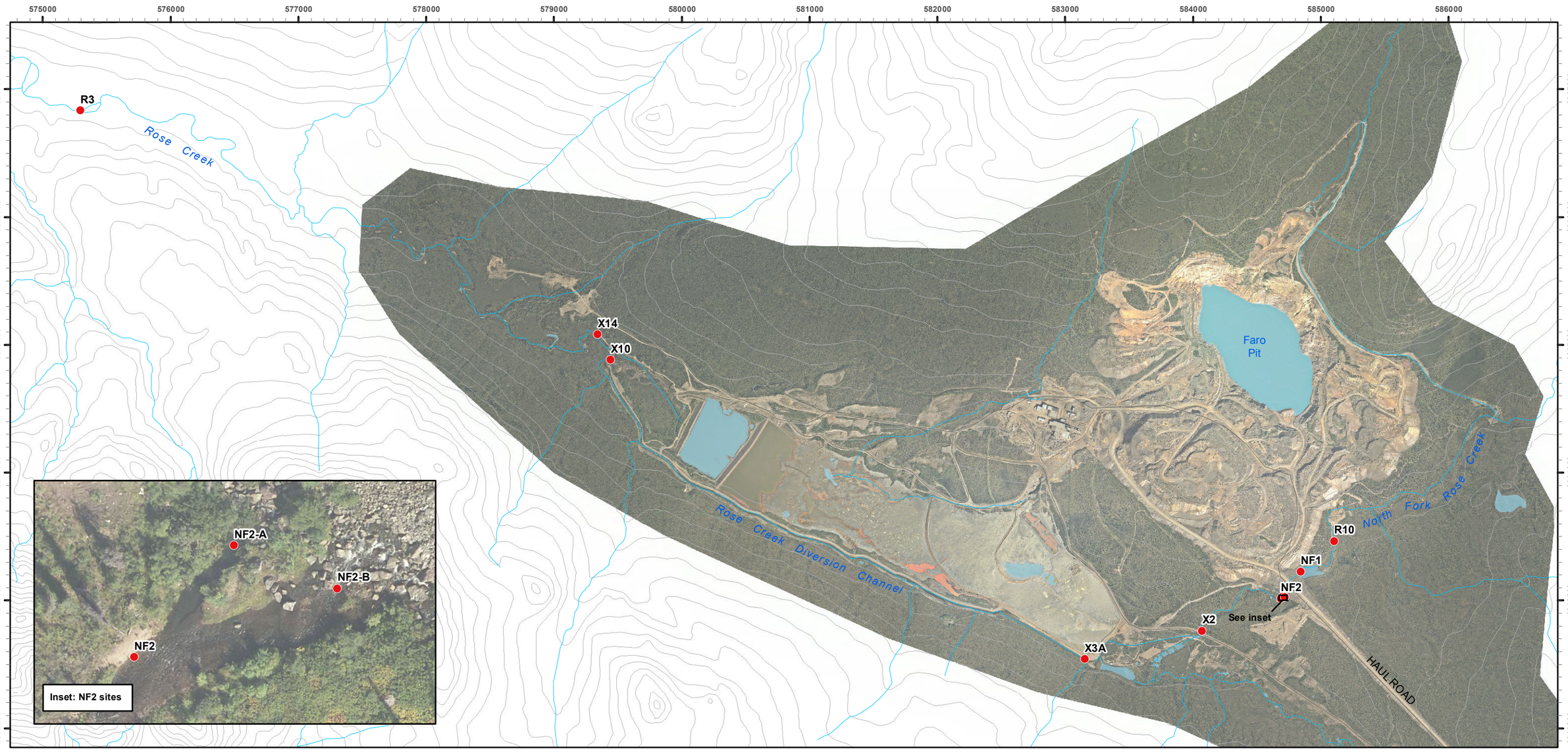
Field Date	General Tasks
April 01, 2014	• Surface water sampling
April 08, 2014	• Surface water sampling
April 15, 2014	• Surface water sampling
April 22, 2014	• Surface water sampling
April 29, 2014	• Surface water sampling
May 06, 2014	• Surface water sampling
May 13, 2014	• Surface water sampling
May 20, 2014	• Surface water sampling
May 26 - 27, 2014	• Surface water sampling; AAM Faro Pelly Aquatics Program combo trip

Table 2. Surface water sampling field data, Rose Creek Monitoring Program, May 26 - 27, 2014.

	UTM Location		Sample		QA/ QC	In-situ Parameters			
Site Name	Easting	Northing	Date	Time	Rep. ID	Temp (°C)	SPC (µS/cm)	pH	Turbidity (NTU)
R3	0575266	6916832	27-May-2014	11:10	-	4.3	177.3	7.90	-
X14	0579340	6915078	26-May-2014	13:55	-	5.2	220.9	7.97	4.61
X10	0579420	6914863	26-May-2014	14:10	X10-r	5.3	130.2	8.28	4.71
X3A	0583154	6912536	26-May-2014	14:30	-	5.0	117.5	8.02	3.32
X2	0584066	6912762	26-May-2014	14:45	-	3.9	93.3	7.77	4.58
NF2-A	0584713	6913040	26-May-2014	14:55	-	3.7	88.7	7.68	3.67
NF2-B	0584728	6913029	26-May-2014	15:05	-	3.8	88.2	7.66	5.11
NF2	0584681	6913003	26-May-2014	15:15	-	3.8	96.7	7.65	3.66
NF1	0584893	6913282	26-May-2014	15:45	-	6.3	99.0	7.52	8.07
R10	0585103	6913487	26-May-2014	16:00	-	5.0	85.4	7.85	2.35

Where, UTM = Universal Transverse Mercator (NAD 83/ Zone 8);
QA/QC Rep = Quality Assurance/ Quality Control Replicate;
Temp = water temperature; and,
SPC = specific conductance.

Location of surface water sampling, Rose Creek Monitoring Program, May 26 - 27, 2014



Legend

- Surface Water Sample Collected
- Road (Mine Access/Haul)
- Topographic Contour (30 m Interval)

N
W E
S

0 500 1,000 1,500 2,000
metres

Map Scale = 1:30,000 (printed on 11 x 17)
Map Projection: North American Datum 1983 UTM Zone 8N

Data sources

1:50,000 topographic spatial data provided by Geomatics - Yukon Government via online source (Corporate Spatial Warehouse) www.geomaticsyukon.ca.

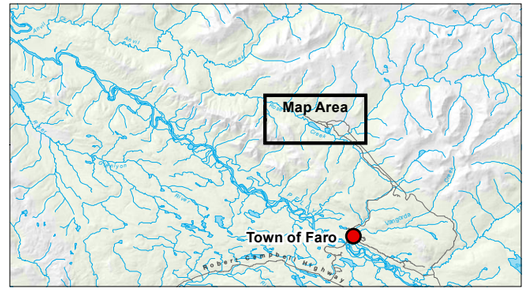
National Road Network courtesy of Her Majesty the Queen in Right of Canada, Department of Natural Resources. All Rights Reserved.

Detailed toppgraphic features of the Faro, Grum and Vangorda mine sites were provided by Yukon Government - Energy, Mines and Resources - Assessment and Abandoned Mines Branch (March 2012).

Project data displayed is site specific. Data collected by EDI Environmental Dynamics Inc. was obtained using Garmin GPS technology.

This document is not an official land survey and the spatial data presented is subject to change.

Drawn:	Checked:		
LG	MK	FIGURE 1	Date: 29/04/2014



EDI

Map Prepared by
EDI Environmental Dynamics Inc.

Path: J:\Yukon\Projects\2014\14_Y_0270_AAM_Faro_RCSampling\Mapping\Fig1_WaterSampling_01Apr2014.mxd

Site Photos

Photo 1. Upstream view of surface water sampling site R3, May 27, 2014

Photo 2. Downstream view at surface water sampling site X14, May 26, 2014.

Photo 3. Downstream view at surface water sampling site X10, May 26, 2014.

Photo 4. Overview at surface water sampling site X3A, May 26, 2014.

Photo 5. Upstream view at surface water sampling site X2, May 26, 2014.

Photo 6. Overview at surface water sampling site NF2-A, May 26, 2014.

Photo 7. Downstream view from surface water sampling site NF2-B, May 26, 2014.

Photo 8. Downstream view at surface water sampling site NF2, May 26, 2014.

Photo 9. Aerial overview at surface water sampling site NF1, May 26, 2014.

Photo 10. Upstream view at surface water sampling site R10, May 26, 2014.

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

Date Received: 29-MAY-14
Report Date: 10-JUN-14 14:48 (MT)
Version: FINAL

Client Phone: 867-393-4882

Certificate of Analysis

Lab Work Order #: L1462103

Project P.O. #: NOT SUBMITTED
Job Reference: 14-Y-270
C of C Numbers: 1, 2
Legal Site Desc:

Can Dang
Senior Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1462103-1 Grab 26-MAY-14 17:45 FIELD BLANK	L1462103-2 Grab TRAVEL BLANK	L1462103-3 Grab 26-MAY-14 14:55 NF2-A	L1462103-4 Grab 26-MAY-14 14:30 X3A	L1462103-5 Grab 26-MAY-14 15:15 NF2
WATER						
Physical Tests	Conductivity (uS/cm)	<2.0	<2.0	101	134	110
	Hardness (as CaCO3) (mg/L)	<0.50	<0.50	46.7	61.0	52.6
	pH (pH)	5.61	5.61	7.34	7.56	7.42
	Total Suspended Solids (mg/L)	<1.0	<1.0	4.0	3.4	3.8
	Total Dissolved Solids (mg/L)	<1.0	<1.0	60.8	79.2	67.7
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<2.0	<2.0	46.9	61.9	46.5
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	0.0053	0.0051	0.0052
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	<0.020	<0.020	0.072	0.083	0.079
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	0.0384	0.0523	0.0403
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	<0.0020	<0.0020	0.0073	0.0085	0.0082
	Sulfate (SO4) (mg/L)	<0.50	<0.50	7.58	11.9	12.0
	Anion Sum (meq/L)	<0.10	<0.10	1.10	1.49	1.19
	Cation Sum (meq/L)	<0.10	<0.10	1.02	1.31	1.15
	Cation - Anion Balance (%)	0.0	0.0	-3.9	-6.5	-1.3
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	<0.50		6.31	5.39	6.22
	Total Organic Carbon (mg/L)	<0.50	<0.50	5.86	5.59	6.20
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	<0.0030	0.142	0.103	0.155
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	0.00013
	Arsenic (As)-Total (mg/L)	<0.00010	<0.00010	0.00061	0.00051	0.00061
	Barium (Ba)-Total (mg/L)	<0.000050	<0.000050	0.0328	0.0336	0.0320
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.000010	<0.000010	0.000044	0.000065	0.000297
	Calcium (Ca)-Total (mg/L)	<0.020	<0.020	13.7	17.3	13.6
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	0.00033	0.00027	0.00037
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	0.00025	0.00036	0.00167
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	0.00149	0.00124	0.00152
	Iron (Fe)-Total (mg/L)	<0.010	<0.010	0.312	0.278	0.347
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	0.00192	0.00118	0.00191
	Lithium (Li)-Total (mg/L)	<0.00050	<0.00050	0.00158	0.00134	0.00222
	Magnesium (Mg)-Total (mg/L)	<0.0050	<0.0050	2.94	4.04	3.82
	Manganese (Mn)-Total (mg/L)	<0.000050	<0.000050	0.0201	0.0330	0.0922
	Molybdenum (Mo)-Total (mg/L)	0.000062 RRV	<0.000050	0.000325	0.000297	0.000279

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1462103-6 Grab 26-MAY-14 15:05 NF2-B	L1462103-7 Grab 26-MAY-14 14:45 X2	L1462103-8 Grab 26-MAY-14 15:45 NF1	L1462103-9 Grab 26-MAY-14 14:10 X10-R	L1462103-10 Grab 26-MAY-14 14:10 X10
Sample ID / **Description** / **Sampled Date** / **Sampled Time** / **Client ID**						
WATER						
Physical Tests	Conductivity (uS/cm)	98.9	108	117	152	151
	Hardness (as CaCO3) (mg/L)	46.0	48.9	49.5	68.1	69.0
	pH (pH)	7.34	7.50	7.39	7.73	7.75
	Total Suspended Solids (mg/L)	4.6	4.2	5.2	3.2	3.8
	Total Dissolved Solids (mg/L)	59.5	63.2	68.1	87.5	86.5
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	45.5	45.9	45.9	71.2	68.5
	Ammonia, Total (as N) (mg/L)	<0.0050	0.0058	0.0068	0.0058	0.0053
	Chloride (Cl) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Fluoride (F) (mg/L)	0.073	0.077	0.075	0.081	0.086
	Nitrate (as N) (mg/L)	0.0384	0.0359	0.0322	0.0364	0.0368
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Phosphorus (P)-Total (mg/L)	0.0098	0.0077	0.0123	0.0065	0.0066
	Sulfate (SO4) (mg/L)	7.25	9.53	13.7	12.5	12.6
	Anion Sum (meq/L)	1.07	1.12	1.21	1.69	1.64
	Cation Sum (meq/L)	1.00	1.07	1.08	1.45	1.47
	Cation - Anion Balance (%)	-3.2	-2.5	-5.5	-7.7	-5.5
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	5.97	6.09	6.25	5.55	5.58
	Total Organic Carbon (mg/L)	6.10	6.09	6.66	5.68	5.91
Total Metals	Aluminum (Al)-Total (mg/L)	0.166	0.156	0.194	0.134	0.119
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)	0.00062	0.00062	0.00096	0.00047	0.00052
	Barium (Ba)-Total (mg/L)	0.0326	0.0328	0.0444	0.0367	0.0373
	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)	0.000025	0.000110	0.000046	0.000053	0.000054
	Calcium (Ca)-Total (mg/L)	13.6	13.9	15.1	20.0	20.2
	Chromium (Cr)-Total (mg/L)	0.00041	0.00033	0.00045	0.00039	0.00036
	Cobalt (Co)-Total (mg/L)	0.00016	0.00060	0.00060	0.00029	0.00030
	Copper (Cu)-Total (mg/L)	0.00155	0.00149	0.00191	0.00129	0.00135
	Iron (Fe)-Total (mg/L)	0.339	0.321	0.519	0.310	0.328
	Lead (Pb)-Total (mg/L)	0.00236	0.00203	0.00274	0.00101	0.00116
	Lithium (Li)-Total (mg/L)	0.00128	0.00159	0.00165	0.00159	0.00158
	Magnesium (Mg)-Total (mg/L)	2.78	3.20	3.97	5.12	4.90
	Manganese (Mn)-Total (mg/L)	0.0174	0.0427	0.175	0.0258	0.0284
	Molybdenum (Mo)-Total (mg/L)	0.000298	0.000317	0.000336	0.000371	0.000381

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1462103-11	L1462103-12			
	Description	Grab	Grab			
	Sampled Date	26-MAY-14	26-MAY-14			
	Sampled Time	13:55	16:00			
	Client ID	X14	R10			
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	251	101			
	Hardness (as CaCO3) (mg/L)	117	45.1			
	pH (pH)	7.75	7.48			
	Total Suspended Solids (mg/L)	3.0	5.0			
	Total Dissolved Solids (mg/L)	153	58.6			
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	77.8	44.7			
	Ammonia, Total (as N) (mg/L)	0.0257	0.0055			
	Chloride (Cl) (mg/L)	<0.50	<0.50			
	Fluoride (F) (mg/L)	0.086	0.071			
	Nitrate (as N) (mg/L)	0.0575	0.0338			
	Nitrite (as N) (mg/L)	<0.0010	<0.0010			
	Phosphorus (P)-Total (mg/L)	0.0027	0.0105			
	Sulfate (SO4) (mg/L)	54.3	6.98			
	Anion Sum (meq/L)	2.69	1.04			
	Cation Sum (meq/L)	2.51	0.98			
	Cation - Anion Balance (%)	-3.6	-3.0			
Organic / Inorganic Carbon	Dissolved Organic Carbon (mg/L)	5.47	5.97			
	Total Organic Carbon (mg/L)	5.52	6.25			
Total Metals	Aluminum (Al)-Total (mg/L)	0.0961	0.215			
	Antimony (Sb)-Total (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Total (mg/L)	0.00054	0.00060			
	Barium (Ba)-Total (mg/L)	0.0369	0.0333			
	Beryllium (Be)-Total (mg/L)	<0.00010	<0.00010			
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050			
	Boron (B)-Total (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Total (mg/L)	0.000056	0.000024			
	Calcium (Ca)-Total (mg/L)	35.2	13.0			
	Chromium (Cr)-Total (mg/L)	0.00032	0.00043			
	Cobalt (Co)-Total (mg/L)	0.00131	0.00015			
	Copper (Cu)-Total (mg/L)	0.00130	0.00145			
	Iron (Fe)-Total (mg/L)	0.318	0.369			
	Lead (Pb)-Total (mg/L)	0.00104	0.00204			
	Lithium (Li)-Total (mg/L)	0.00232	0.00260			
	Magnesium (Mg)-Total (mg/L)	8.01	2.80			
	Manganese (Mn)-Total (mg/L)	0.852	0.0174			
	Molybdenum (Mo)-Total (mg/L)	0.000381	0.000312			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1462103-1	L1462103-2	L1462103-3	L1462103-4	L1462103-5
	Description	Grab	Grab	Grab	Grab	Grab
	Sampled Date	26-MAY-14		26-MAY-14	26-MAY-14	26-MAY-14
	Sampled Time	17:45		14:55	14:30	15:15
	Client ID	FIELD BLANK	TRAVEL BLANK	NF2-A	X3A	NF2
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	0.00106	0.00114	0.00308
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	<0.050	<0.050	0.687	0.767	0.691
	Selenium (Se)-Total (mg/L)	<0.00010	<0.00010	0.00020	0.00021	0.00023
	Silicon (Si)-Total (mg/L)	<0.050	<0.050	4.20	3.76	4.41
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	<0.050	<0.050	1.32	1.39	1.43
	Strontium (Sr)-Total (mg/L)	<0.00020	<0.00020	0.0658	0.0876	0.0609
	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	0.00152
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Total (mg/L)	<0.000010	<0.000010	0.000592	0.000884	0.000567
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	0.0401	0.0694	0.389
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080
Dissolved Metals	Dissolved Metals Filtration Location	FIELD		FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0010		0.0335	0.0239	0.0363
	Antimony (Sb)-Dissolved (mg/L)	<0.00010		<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	<0.00010		0.00043	0.00039	0.00047
	Barium (Ba)-Dissolved (mg/L)	<0.000050		0.0306	0.0340	0.0302
	Beryllium (Be)-Dissolved (mg/L)	<0.00010		<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050		<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<0.010		<0.010	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010		0.000039	0.000059	0.000291
	Calcium (Ca)-Dissolved (mg/L)	<0.020		13.9	17.7	15.0
	Chromium (Cr)-Dissolved (mg/L)	<0.00010		0.00010	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010		0.00014	0.00028	0.00157
	Copper (Cu)-Dissolved (mg/L)	<0.00020		0.00112	0.00100	0.00120
	Iron (Fe)-Dissolved (mg/L)	<0.010		0.101	0.119	0.138
	Lead (Pb)-Dissolved (mg/L)	<0.000050		0.000778	0.000485	0.000833
	Lithium (Li)-Dissolved (mg/L)	<0.00050		0.00185	0.00140	0.00203
	Magnesium (Mg)-Dissolved (mg/L)	<0.0050		2.90	4.11	3.70
	Manganese (Mn)-Dissolved (mg/L)	<0.000050		0.0118	0.0266	0.0861
	Molybdenum (Mo)-Dissolved (mg/L)	0.000054 RRV		0.000299	0.000279	0.000278
	Nickel (Ni)-Dissolved (mg/L)	<0.00050		0.00089	0.00095	0.00287
	Phosphorus (P)-Dissolved (mg/L)	<0.30		<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	<0.050		0.655	0.765	0.668

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L1462103-6 Grab 26-MAY-14 15:05 NF2-B	L1462103-7 Grab 26-MAY-14 14:45 X2	L1462103-8 Grab 26-MAY-14 15:45 NF1	L1462103-9 Grab 26-MAY-14 14:10 X10-R	L1462103-10 Grab 26-MAY-14 14:10 X10
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.00099	0.00161	0.00148	0.00128	0.00131
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	0.657	0.697	0.839	0.749	0.751
	Selenium (Se)-Total (mg/L)	0.00020	0.00020	0.00022	0.00023	0.00024
	Silicon (Si)-Total (mg/L)	4.05	4.14	4.28	3.75	3.80
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	0.000013	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	1.27	1.33	1.53	1.30	1.30
	Strontium (Sr)-Total (mg/L)	0.0635	0.0673	0.0686	0.0930	0.0935
	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)	0.000588	0.000600	0.000643	0.000946	0.000965
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Total (mg/L)	0.0079	0.118	0.0330	0.0597	0.0609
	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)	0.0320	0.0345	0.0358	0.0222	0.0237
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)	0.00045	0.00045	0.00057	0.00035	0.00036
	Barium (Ba)-Dissolved (mg/L)	0.0301	0.0305	0.0333	0.0353	0.0355
	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)	0.000015	0.000096	0.000024	0.000045	0.000044
	Calcium (Ca)-Dissolved (mg/L)	13.8	14.3	14.5	19.1	19.3
	Chromium (Cr)-Dissolved (mg/L)	0.00011	0.00011	0.00012	0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00049	0.00030	0.00019	0.00020
	Copper (Cu)-Dissolved (mg/L)	0.00110	0.00114	0.00110	0.00106	0.00105
	Iron (Fe)-Dissolved (mg/L)	0.096	0.115	0.197	0.119	0.120
	Lead (Pb)-Dissolved (mg/L)	0.000797	0.000779	0.000962	0.000433	0.000452
	Lithium (Li)-Dissolved (mg/L)	0.00163	0.00198	0.00179	0.00167	0.00180
	Magnesium (Mg)-Dissolved (mg/L)	2.80	3.22	3.26	4.96	5.03
	Manganese (Mn)-Dissolved (mg/L)	0.00639	0.0341	0.105	0.0197	0.0198
	Molybdenum (Mo)-Dissolved (mg/L)	0.000295	0.000307	0.000315	0.000351	0.000346
	Nickel (Ni)-Dissolved (mg/L)	0.00060	0.00127	0.00087	0.00103	0.00098
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.639	0.668	0.665	0.723	0.755

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1462103-11	L1462103-12			
	Description	Grab	Grab			
	Sampled Date	26-MAY-14	26-MAY-14			
	Sampled Time	13:55	16:00			
	Client ID	X14	R10			
Grouping	**Analyte**					
WATER						
Total Metals	Nickel (Ni)-Total (mg/L)	0.00238	0.00091			
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30			
	Potassium (K)-Total (mg/L)	0.962	0.642			
	Selenium (Se)-Total (mg/L)	0.00021	0.00016			
	Silicon (Si)-Total (mg/L)	3.88	4.15			
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Total (mg/L)	2.11	1.26			
	Strontium (Sr)-Total (mg/L)	0.141	0.0614			
	Thallium (Tl)-Total (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010			
	Uranium (U)-Total (mg/L)	0.00117	0.000603			
	Vanadium (V)-Total (mg/L)	<0.0010	<0.0010			
	Zinc (Zn)-Total (mg/L)	0.0571	0.0061			
	Zirconium (Zr)-Total (mg/L)	<0.00080	<0.00080			
Dissolved Metals	Dissolved Metals Filtration Location	FIELD	FIELD			
	Aluminum (Al)-Dissolved (mg/L)	0.0218	0.0389			
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010			
	Arsenic (As)-Dissolved (mg/L)	0.00035	0.00042			
	Barium (Ba)-Dissolved (mg/L)	0.0349	0.0297			
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010			
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050			
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010			
	Cadmium (Cd)-Dissolved (mg/L)	0.000052	0.000014			
	Calcium (Ca)-Dissolved (mg/L)	34.0	13.5			
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00011			
	Cobalt (Co)-Dissolved (mg/L)	0.00121	<0.00010			
	Copper (Cu)-Dissolved (mg/L)	0.00100	0.00101			
	Iron (Fe)-Dissolved (mg/L)	0.158	0.091			
	Lead (Pb)-Dissolved (mg/L)	0.000403	0.00104			
	Lithium (Li)-Dissolved (mg/L)	0.00320	0.00262			
	Magnesium (Mg)-Dissolved (mg/L)	7.92	2.77			
	Manganese (Mn)-Dissolved (mg/L)	0.835	0.00900			
	Molybdenum (Mo)-Dissolved (mg/L)	0.000366	0.000281			
	Nickel (Ni)-Dissolved (mg/L)	0.00201	0.00057			
	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30			
	Potassium (K)-Dissolved (mg/L)	0.941	0.605			

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1462103-1	L1462103-2	L1462103-3	L1462103-4	L1462103-5
	Description	Grab	Grab	Grab	Grab	Grab
	Sampled Date	26-MAY-14		26-MAY-14	26-MAY-14	26-MAY-14
	Sampled Time	17:45		14:55	14:30	15:15
	Client ID	FIELD BLANK	TRAVEL BLANK	NF2-A	X3A	NF2
Grouping	**Analyte**					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	<0.00010		0.00017	0.00018	0.00020
	Silicon (Si)-Dissolved (mg/L)	<0.050		4.02	3.82	4.01
	Silver (Ag)-Dissolved (mg/L)	<0.000010		<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	<0.050		1.30	1.39	1.35
	Strontium (Sr)-Dissolved (mg/L)	<0.00020		0.0635	0.0847	0.0656
	Thallium (Tl)-Dissolved (mg/L)	<0.000010		<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010		<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	<0.000010		0.000571	0.000865	0.000563
	Vanadium (V)-Dissolved (mg/L)	<0.0010		<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0010		0.0360	0.0684	0.394
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080		<0.00080	<0.00080	<0.00080

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1462103-6	L1462103-7	L1462103-8	L1462103-9	L1462103-10
	Description	Grab	Grab	Grab	Grab	Grab
	Sampled Date	26-MAY-14	26-MAY-14	26-MAY-14	26-MAY-14	26-MAY-14
	Sampled Time	15:05	14:45	15:45	14:10	14:10
	Client ID	NF2-B	X2	NF1	X10-R	X10
Grouping	**Analyte**					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00018	0.00019	0.00020	0.00022	0.00023
	Silicon (Si)-Dissolved (mg/L)	4.02	4.02	4.21	3.63	3.73
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	1.27	1.33	1.29	1.31	1.33
	Strontium (Sr)-Dissolved (mg/L)	0.0631	0.0647	0.0667	0.0920	0.0930
	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)	0.000554	0.000573	0.000597	0.000924	0.000947
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0058	0.116	0.0194	0.0567	0.0595
	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	L1462103-11	L1462103-12			
	Description	Grab	Grab			
	Sampled Date	26-MAY-14	26-MAY-14			
	Sampled Time	13:55	16:00			
	Client ID	X14	R10			
Grouping	**Analyte**					
WATER						
Dissolved Metals	Selenium (Se)-Dissolved (mg/L)	0.00023	0.00020			
	Silicon (Si)-Dissolved (mg/L)	4.01	4.19			
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010			
	Sodium (Na)-Dissolved (mg/L)	2.08	1.28			
	Strontium (Sr)-Dissolved (mg/L)	0.125	0.0612			
	Thallium (Tl)-Dissolved (mg/L)	<0.000010	<0.000010			
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010			
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010			
	Uranium (U)-Dissolved (mg/L)	0.00109	0.000588			
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010			
	Zinc (Zn)-Dissolved (mg/L)	0.0538	0.0047			
	Zirconium (Zr)-Dissolved (mg/L)	<0.00080	<0.00080			

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Cadmium (Cd)-Dissolved	DLM	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Aluminum (Al)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Antimony (Sb)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Copper (Cu)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Zinc (Zn)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Boron (B)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L1462103-1, -10, -11, -12, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Dissolved Organic Carbon	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Dissolved Organic Carbon	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Dissolved Organic Carbon	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Potassium (K)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1462103-1, -10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Aluminum (Al)-Total	MS-B	L1462103-10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1462103-10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L1462103-10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L1462103-10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Total	MS-B	L1462103-10, -11, -12, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L1462103-10, -11, -12, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
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.
RRV	Reported Result Verified By Repeat Analysis

Reference Information

Test Method References:

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

Reference Information

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

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

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

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

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

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

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

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

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

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

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

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

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.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

L1462103-COFC

COC Number: 14 -

Page ____ of ____

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

Invoice To		Invoice Distribution	
	Same as Report To ☐ Yes ☑ No	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
	Copy of Invoice with Report ☑ Yes ☐ No	Email 1 or Fax sjenner@edynamics.com	
Company:	EDI	Email 2	
Contact:	S Jenner		

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q38556	Approver ID:	Cost Center:
Job #:	14-Y-270	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler: BSm ; LG

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ALK-COL-VA,P-T-COL-VA,IONBALANCE-V	ANIONS-ALL-IC-WR, TDS-CALC-VA	EC-MAN-WR,PH-MAN-WR	TSS-LOW-WR	CARBONS-TOC-VA,NH3-F-VA	CARBONS-DOC-VA	MET-T-CCMS-VA,ZR-T-MS-VA	MET-D-CCMS-VA,ZR-D-MS-VA	HARDNESS-CALC-VA	Number of Containers
	Field Blank	26 MAY 14	17:45	—	R	R	R	R	R	R	R	R	R	5
	Travel Blank	—	—	—	R									
	NF2-A	26MAY14	14:55	GRAB	R									
	X3A	26MAY14	14:30	GRAB	R									
	NF2	26MAY14	15:15	GRAB	R									
	NF2-B	26 MAY 14	15:05	GRAB	R									
	X2	26MAY14	14:45	GRAB	R									
	NF1	26MAY14	15:45	GRAB	R									

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No	Use CH2M_EQUIS for EDD.
Are samples for human drinking water use? ☐ Yes ☐ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☐	No ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C		
1.0	4.0			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: B. Smi	Date:	Time:	Received by:	Date: 27-May-14	Time: 9:20	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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 specified on the back page of the white - report copy.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1462103-COFC

COC Number: 14 -

Page ____ of ____

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

Invoice To	Same as Report To ☐ Yes ☑ No	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:	EDI	Email 1 or Fax sjenner@edynamics.com	
Contact:	S Jenner	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:	Q38556	Approver ID:	Cost Center:
Job #:	14-Y-270	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler: BSm / LG

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	ALK-COL-VA,P-T-COL-VA,IONBALANCE-VA	ANIONS-ALL-IC-WR, TDS-CALC-VA	EC-MAN-WR,PH-MAN-WR	TSS-LOW-WR	CARBONS-TOC-VA,NH3-F-VA	CARBONS-DOC-VA	MET-T-CCMS-VA,ZR-T-MS-VA	MET-D-CCMS-VA,ZR-D-MS-VA	HARDNESS-CALC-VA	Number of Containers
	X10-F	26MAY14	14:10	GRAB	R	R	R	R	R	R	R	R	R	5
	X10	26MAY14	14:10	GRAB	R									
	X14	26MAY14	13:55	GRAB	R									
	R10	26MAY14	16:00	GRAB	R									

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No Are samples for human drinking water use? ☐ Yes ☐ No	Use CH2M_EQUIS for EDD.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☐	No ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: B. Smith	Date: 28MAY14	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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