



ENVIRONMENTAL DYNAMICS INC.  
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Date Received: 15-JUL-15  
Report Date: 24-JUL-15 15:42 (MT)  
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Client Phone: 867-393-4882

## Certificate of Analysis

Lab Work Order #: L1642738  
Project P.O. #: NOT SUBMITTED  
Job Reference: MOUNT NANSEN 15-Y-0146  
C of C Numbers: 1  
Legal Site Desc:

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1642738-1 Water 14-JUL-15 13:40 WQ-PIT-1 (TOP)	L1642738-2 Water 14-JUL-15 13:45 WQ-PIT-2 (MIDDLE) (1.5M)	L1642738-3 Water 14-JUL-15 14:00 WQ-PIT-3 (BOTTOM) (3.0M)	L1642738-4 Water 14-JUL-15 11:40 WQ-PW
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Colour, True (CU)				<5.0
	Conductivity (uS/cm)	1560	1560	1590	353
	Hardness (as CaCO3) (mg/L)	948	955	955	184
	pH (pH)	8.21	8.22	8.19	8.22
	Total Suspended Solids (mg/L)	<3.0	<3.0	<3.0	
	Total Dissolved Solids (mg/L)	1240	1270	1280	209
	Turbidity (NTU)				<0.10
<b>Anions and Nutrients</b>	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	152	150	152	
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	
	Alkalinity, Total (as CaCO3) (mg/L)	152	150	152	181
	Ammonia, Total (as N) (mg/L)	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	
	Chloride (Cl) (mg/L)	<1.0	<2.5	<2.5	<0.50
	Fluoride (F) (mg/L)	0.264	0.41 <sup>DLA</sup>	0.34 <sup>DLA</sup>	0.103
	Nitrate (as N) (mg/L)	0.033	<0.025 <sup>DLA</sup>	<0.025 <sup>DLA</sup>	0.137
	Nitrite (as N) (mg/L)	<0.0020 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	<0.0010
	Sulfate (SO4) (mg/L)	801	831	842	32.2
	Anion Sum (meq/L)	19.7	20.3	20.6	4.31
	Cation Sum (meq/L)	19.5	19.6	19.6	3.91
	Cation - Anion Balance (%)	-0.7	-1.8	-2.5	-4.8
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)	0.0136	0.0133	0.0110	<0.010
	Antimony (Sb)-Total (mg/L)	0.00330	0.00322	0.00333	<0.00050
	Arsenic (As)-Total (mg/L)	0.0105	0.00994	0.0107	0.00040
	Barium (Ba)-Total (mg/L)	0.0155	0.0153	0.0156	0.084
	Beryllium (Be)-Total (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Total (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Total (mg/L)	<0.010	<0.010	<0.010	<0.10
	Cadmium (Cd)-Total (mg/L)	0.00156	0.00149	0.00158	<0.00020
	Calcium (Ca)-Total (mg/L)	268	261	267	42.6
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.0020
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	0.00167	0.00162	0.00181	<0.0010
	Iron (Fe)-Total (mg/L)	0.023	0.022	0.024	<0.030
	Lead (Pb)-Total (mg/L)	0.000384	0.000340	0.000396	0.00058
	Lithium (Li)-Total (mg/L)	0.0079	0.0075	0.0068	
	Magnesium (Mg)-Total (mg/L)	74.4	72.8	75.8	18.9
	Manganese (Mn)-Total (mg/L)	0.0216	0.0219	0.0279	<0.0020

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1642738-1 Water 14-JUL-15 13:40 WQ-PIT-1 (TOP)	L1642738-2 Water 14-JUL-15 13:45 WQ-PIT-2 (MIDDLE) (1.5M)	L1642738-3 Water 14-JUL-15 14:00 WQ-PIT-3 (BOTTOM) (3.0M)	L1642738-4 Water 14-JUL-15 11:40 WQ-PW
Grouping	Analyte				
<b>WATER</b>					
<b>Total Metals</b>	Mercury (Hg)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.00020
	Molybdenum (Mo)-Total (mg/L)	0.000192	0.000176	0.000166	
	Nickel (Ni)-Total (mg/L)	<0.00050	<0.00050	<0.00050	
	Phosphorus (P)-Total (mg/L)	<0.050	<0.050	<0.050	
	Potassium (K)-Total (mg/L)	3.36	3.24	3.37	0.89
	Selenium (Se)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.0010
	Silicon (Si)-Total (mg/L)	2.99	2.91	2.98	
	Silver (Ag)-Total (mg/L)	0.000012	0.000012	0.000013	
	Sodium (Na)-Total (mg/L)	10.7	10.6	10.2	4.8
	Strontium (Sr)-Total (mg/L)	0.938	0.937	0.937	
	Sulfur (S)-Total (mg/L)	262	257	266	
	Thallium (Tl)-Total (mg/L)	0.000073	0.000070	0.000073	
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Total (mg/L)	<0.00030	<0.00030	<0.00030	
	Uranium (U)-Total (mg/L)	0.00390	0.00385	0.00398	0.00178
	Vanadium (V)-Total (mg/L)	<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Total (mg/L)	0.149	0.146	0.159	<0.050
	Zirconium (Zr)-Total (mg/L)	<0.00030	<0.00030	<0.00030	
<b>Dissolved Metals</b>	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0021	0.0021	0.0022	
	Antimony (Sb)-Dissolved (mg/L)	0.00318	0.00318	0.00330	
	Arsenic (As)-Dissolved (mg/L)	0.00984	0.0101	0.0101	
	Barium (Ba)-Dissolved (mg/L)	0.0151	0.0157	0.0156	
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.00145	0.00149	0.00152	
	Calcium (Ca)-Dissolved (mg/L)	260	261	260	
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Dissolved (mg/L)	0.00139	0.00141	0.00137	
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010	
	Lead (Pb)-Dissolved (mg/L)	0.000052	0.000050	<0.000050	
	Lithium (Li)-Dissolved (mg/L)	0.0067	0.0069	0.0061	
	Magnesium (Mg)-Dissolved (mg/L)	72.2	73.8	74.4	
	Manganese (Mn)-Dissolved (mg/L)	0.0198	0.0193	0.0231	

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1642738-1	L1642738-2	L1642738-3	L1642738-4
		Description	Water	Water	Water	Water
		Sampled Date	14-JUL-15	14-JUL-15	14-JUL-15	14-JUL-15
		Sampled Time	13:40	13:45	14:00	11:40
		Client ID	WQ-PIT-1 (TOP)	WQ-PIT-2 (MIDDLE) (1.5M)	WQ-PIT-3 (BOTTOM) (3.0M)	WQ-PW
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Mercury (Hg)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	
	Molybdenum (Mo)-Dissolved (mg/L)		0.000154	0.000152	0.000151	
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	
	Phosphorus (P)-Dissolved (mg/L)		<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)		3.20	3.24	3.21	
	Selenium (Se)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	
	Silicon (Si)-Dissolved (mg/L)		2.86	2.92	2.83	
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	
	Sodium (Na)-Dissolved (mg/L)		10.3	9.49	9.57	
	Strontium (Sr)-Dissolved (mg/L)		0.898	0.916	0.902	
	Sulfur (S)-Dissolved (mg/L)		253	256	254	
	Thallium (Tl)-Dissolved (mg/L)		0.000068	0.000070	0.000072	
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	
	Uranium (U)-Dissolved (mg/L)		0.00373	0.00376	0.00375	
	Vanadium (V)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	
	Zinc (Zn)-Dissolved (mg/L)		0.146	0.146	0.153	
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	<0.00030	<0.00030	

\* 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	Bismuth (Bi)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Chromium (Cr)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Cobalt (Co)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Lead (Pb)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Nickel (Ni)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Silver (Ag)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Tin (Sn)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Vanadium (V)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1642738-1, -2, -3
Duplicate	Cadmium (Cd)-Dissolved	DLM	L1642738-1, -2, -3
Matrix Spike	Sulfate (SO4)	MS-B	L1642738-1, -2, -3, -4
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L1642738-3
Matrix Spike	Strontium (Sr)-Total	MS-B	L1642738-3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Boron (B)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1642738-1, -2, -3
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1642738-1, -2, -3

**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**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	EPA 310.2

## Reference Information

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

**ALK-TITR-VA** Water Alkalinity Species by Titration APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

**BE-D-L-CCMS-VA** Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**BE-T-L-CCMS-VA** Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**CL-IC-N-WR** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**COLOUR-TRUE-VA** Water Colour (True) by Spectrometer BCMOE Colour Single Wavelength

This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method.

Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

**EC-PCT-VA** Water Conductivity (Automated) APHA 2510 Auto. Conduc.

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

**F-IC-N-WR** Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**HARDNESS-CALC-VA** Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-TOT-CVAFS-VA** Water Total Hg in Water by CVAFS LOR=50ppt EPA 1631E (mod)

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 procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

**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 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-DIS-LOW-ICP-VA** Water Dissolved Metals in Water by ICPOES EPA 3005A/6010B

## 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 procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-TOT-ICP-VA** Water Total Metals in Water by ICPOES EPA SW-846 3005A/6010B

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 (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

**MET-TOT-LOW-ICP-VA** Water Total Metals in Water by ICPOES EPA 3005A/6010B

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 (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

**NH3-F-VA** Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

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.

**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.

**NO2-L-IC-N-WR** Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**NO3-L-IC-N-WR** Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**PH-PCT-VA** Water pH by Meter (Automated) APHA 4500-H "pH Value"

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

It is recommended that this analysis be conducted in the field.

**PH-PCT-VA** Water pH by Meter (Automated) APHA 4500-H pH Value

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

It is recommended that this analysis be conducted in the field.

**S-DIS-ICP-VA** Water Dissolved Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

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 - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

**S-TOT-ICP-VA** Water Total Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

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 - optical emission spectrophotometry (EPA Method 6010B).

## Reference Information

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

**SO4-IC-N-WR** Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**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-MAN-WR** Water Total Suspended Solids by Gravimetric 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.

**TURBIDITY-VA** Water Turbidity by Meter APHA 2130 "Turbidity"

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

**TURBIDITY-VA** Water Turbidity by Meter APHA 2130 Turbidity

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\*\* 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:*

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

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**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.*





<b>Report To</b> Company: EDI Contact: Meghan Marjanovic Address: 2195 - 2nd Avenue Whitehorse, YT Y1A 3T8 Phone: 867-393-4882		<b>Report Format / Distribution</b> Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax <a href="mailto:mmarjanovic@edynamics.com">mmarjanovic@edynamics.com</a> Email 2 <a href="mailto:Emilie.Hamm@gov.yk.ca">Emilie.Hamm@gov.yk.ca</a> Email 3 <a href="mailto:erik.pit@gov.yk.ca">erik.pit@gov.yk.ca</a>			<b>Select Service Level Below</b> (Rush Turnaround Time (TAT) is not available for all tests) R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days) P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge Specify Date Required for E2,E or P:																																																																																				
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Copy of Invoice with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Company: EDI Contact: S Jenner		<b>Invoice Distribution</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax <a href="mailto:sjenner@edynamics.com">sjenner@edynamics.com</a> Email 2 <a href="mailto:mmarjanovic@edynamics.com">mmarjanovic@edynamics.com</a>			<b>Analysis Request</b> Indicate Filled (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																																				
<b>Project Information</b> ALS Quote #: Q49311 and Q49312 Job #: MOUNT NANSEN 15-Y-0146 PO / AFE: LSD:		<b>Oil and Gas Required Fields (client use)</b> Approver ID: GL Account: Activity Code: Location:			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th></th> <th>P</th> <th>P</th> <th>F/P</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> <tr> <td>ALK-PCT-VA,PH-PCT-VA,EC-PCT-VA</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>ANIONS-ALL-IC-WR,TSS-MAN-WR</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>NH3-FWA</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>MET-T-BCMDG-VA</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>MET-D-BCMDG-VA</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>TDS-CALC-VA,IONBLANCE-VA</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>FULL-TOT-DWA-WR</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>						P	P	F/P							ALK-PCT-VA,PH-PCT-VA,EC-PCT-VA										ANIONS-ALL-IC-WR,TSS-MAN-WR										NH3-FWA										MET-T-BCMDG-VA										MET-D-BCMDG-VA										TDS-CALC-VA,IONBLANCE-VA										FULL-TOT-DWA-WR									
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ALS Lab Work Order # (lab use only):		ALS Contact: Sean Sluggett    Sampler: LD/DH			Number of Containers																																																																																				
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																																																																															
	WA-Pit-1 (Top)		14 June - 15	13:40						Water																																																																															
	WA-Pit-2 (Middle) (1.5m)		14 - June - 15	13:45						Water																																																																															
	WA-Pit-3 (Bottom) (3.0m)		14 - June - 15	14:00						Water																																																																															
	WA-PW		14 - June - 15	11:40	Water																																																																																				
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b> Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Special Instructions / Specify Criteria to add on report (client Use)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b> Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice packs Yes <input type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C: _____ FINAL COOLER TEMPERATURES °C: _____																																																																																				
<b>SHIPMENT RELEASE (client use)</b> Released by:  Date: 15 Jul 2015 Time: 12:16		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b> Received by:  Date: 15 Jul 2015 Time: 12:16			<b>FINAL SHIPMENT RECEPTION (lab use only)</b> Received by: _____ Date: _____ Time: _____																																																																																				