Environment Canada
ATTN: JOHN MACIVER
Eureka Weather Station
Eureka NU

Date Received: 26-JUN-17
Report Date: 11-JUL-17 06:52 (MT)
Version: FINAL

Client Phone: 613-945-3145

Certificate of Analysis

Lab Work Order #: L1948893

Project P.O. #: NOT SUBMITTED
Job Reference: EUREKA WEATHER STATION
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1948893-1 WASTE WATER 1							
Sampled By: CLIENT on 24-JUN-17 @ 16:15							
Matrix: WASTE							
Alkalinity species as HCO3, CO3, OH							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	221		1.2	mg/L		28-JUN-17	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		28-JUN-17	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		28-JUN-17	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	181		1.0	mg/L		27-JUN-17	R3757513
Miscellaneous Parameters							
Ammonia, Total (as N)	13.8		1.0	mg/L		05-JUL-17	R3766088
Biochemical Oxygen Demand	60		20	mg/L		28-JUN-17	R3765045
Chloride (Cl)	874		10	mg/L		29-JUN-17	R3759649
Conductivity	3390		1.0	umhos/cm		27-JUN-17	R3757513
Hardness (as CaCO3)	442	HTC	0.54	mg/L		29-JUN-17	
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	30-JUN-17	05-JUL-17	R3766324
Oil and Grease	20.4		5.0	mg/L		05-JUL-17	R3764984
Phenols (4AAP)	0.0237		0.0010	mg/L		09-JUL-17	R3768925
Phosphorus (P)-Total	1.98		0.10	mg/L		04-JUL-17	R3762963
Phosphorus (P)-Total Dissolved	1.71		0.050	mg/L		05-JUL-17	R3765590
Phosphorus (P)-Total Reactive	1.19		0.050	mg/L		28-JUN-17	R3758449
Sulfate (SO4)	341		6.0	mg/L		29-JUN-17	R3759649
Total Organic Carbon	43.7		0.50	mg/L		06-JUL-17	R3768082
Total Suspended Solids	25.3		6.7	mg/L		29-JUN-17	R3759619
pH	7.59		0.10	pH units		27-JUN-17	R3757513
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.548		0.020	mg/L	28-JUN-17	28-JUN-17	R3758350
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Arsenic (As)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Barium (Ba)-Total	0.0181		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Boron (B)-Total	0.148		0.030	mg/L	28-JUN-17	28-JUN-17	R3758350
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	28-JUN-17	28-JUN-17	R3758350
Calcium (Ca)-Total	101		0.20	mg/L	28-JUN-17	28-JUN-17	R3758350
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Cobalt (Co)-Total	0.00060		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Copper (Cu)-Total	0.0781		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Iron (Fe)-Total	0.56		0.10	mg/L	28-JUN-17	28-JUN-17	R3758350
Lead (Pb)-Total	0.0015		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Lithium (Li)-Total	0.0213		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Magnesium (Mg)-Total	45.9		0.050	mg/L	28-JUN-17	28-JUN-17	R3758350
Manganese (Mn)-Total	0.0260		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Molybdenum (Mo)-Total	<0.00050		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Nickel (Ni)-Total	0.0039		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Phosphorus (P)-Total	2.76		0.50	mg/L	28-JUN-17	28-JUN-17	R3758350
Potassium (K)-Total	13.2		0.10	mg/L	28-JUN-17	28-JUN-17	R3758350
Rubidium (Rb)-Total	0.00768		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Selenium (Se)-Total	<0.0050		0.0050	mg/L	28-JUN-17	28-JUN-17	R3758350
Silicon (Si)-Total	1.87		0.30	mg/L	28-JUN-17	28-JUN-17	R3758350

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1948893-1 WASTE WATER 1							
Sampled By: CLIENT on 24-JUN-17 @ 16:15							
Matrix: WASTE							
Total Metals by ICP-MS							
Silver (Ag)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Sodium (Na)-Total	686		0.050	mg/L	28-JUN-17	28-JUN-17	R3758350
Strontium (Sr)-Total	0.411		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	28-JUN-17	28-JUN-17	R3758350
Thorium (Th)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Tin (Sn)-Total	0.00422		0.00060	mg/L	28-JUN-17	28-JUN-17	R3758350
Titanium (Ti)-Total	0.0152		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Tungsten (W)-Total	<0.0020		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Uranium (U)-Total	0.00074		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Vanadium (V)-Total	<0.0020		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Zinc (Zn)-Total	0.083		0.020	mg/L	28-JUN-17	28-JUN-17	R3758350
Zirconium (Zr)-Total	0.0013		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Nitrogen Total							
Nitrate in Water by IC							
Nitrate (as N)	<0.40	DLM	0.40	mg/L		29-JUN-17	R3759649
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.45		0.45	mg/L		30-JUN-17	
Nitrite in Water by IC							
Nitrite (as N)	<0.20	DLM	0.20	mg/L		29-JUN-17	R3759649
Total Kjeldahl Nitrogen							
Total Kjeldahl Nitrogen	20.1		4.0	mg/L	07-JUL-17	10-JUL-17	R3768543
Total Nitrogen Calculated							
Total Nitrogen	20.1		4.0	mg/L		10-JUL-17	
L1948893-2 WASTE WATER 2							
Sampled By: CLIENT on 25-JUN-17 @ 07:15							
Matrix: WASTE							
Alkalinity species as HCO3, CO3, OH							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	301		1.2	mg/L		28-JUN-17	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		28-JUN-17	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		28-JUN-17	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	247		1.0	mg/L		27-JUN-17	R3757513
E.Coli by Quanti-tray 97							
Total Coliform and E.coli by MPN QT97							
Escherichia Coli	>2420	MBHT	1	MPN/100mL		26-JUN-17	R3758429
Miscellaneous Parameters							
Ammonia, Total (as N)	14.9		1.0	mg/L		05-JUL-17	R3766088
Biochemical Oxygen Demand	69		20	mg/L		28-JUN-17	R3765045
Chloride (Cl)	1030		10	mg/L		29-JUN-17	R3759649
Conductivity	4080		1.0	umhos/cm		27-JUN-17	R3757513
Hardness (as CaCO3)	688	HTC	0.54	mg/L		29-JUN-17	
Mercury (Hg)-Total	0.0000094		0.0000050	mg/L	30-JUN-17	05-JUL-17	R3766324
Oil and Grease	14.0		5.0	mg/L		05-JUL-17	R3764984
Phenols (4AAP)	0.0303		0.0010	mg/L		09-JUL-17	R3768925
Phosphorus (P)-Total	3.10		0.10	mg/L		04-JUL-17	R3762963
Phosphorus (P)-Total Dissolved	1.69		0.050	mg/L		05-JUL-17	R3765590

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1948893-2 WASTE WATER 2							
Sampled By: CLIENT on 25-JUN-17 @ 07:15							
Matrix: WASTE							
Phosphorus (P)-Total Reactive	1.39		0.050	mg/L		28-JUN-17	R3758449
Sulfate (SO4)	558		6.0	mg/L		29-JUN-17	R3759649
Total Coliforms	>2420	MBHT	1	MPN/100mL		26-JUN-17	R3757878
Total Organic Carbon	55.4		0.50	mg/L		06-JUL-17	R3768082
Total Suspended Solids	54.0		5.0	mg/L		29-JUN-17	R3759619
pH	7.67		0.10	pH units		27-JUN-17	R3757513
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.527		0.020	mg/L	28-JUN-17	28-JUN-17	R3758350
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Arsenic (As)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Barium (Ba)-Total	0.0267		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Boron (B)-Total	0.195		0.030	mg/L	28-JUN-17	28-JUN-17	R3758350
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	28-JUN-17	28-JUN-17	R3758350
Calcium (Ca)-Total	159		0.20	mg/L	28-JUN-17	28-JUN-17	R3758350
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Chromium (Cr)-Total	0.0021		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Cobalt (Co)-Total	0.00075		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Copper (Cu)-Total	0.120		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Iron (Fe)-Total	0.67		0.10	mg/L	28-JUN-17	28-JUN-17	R3758350
Lead (Pb)-Total	0.0019		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Lithium (Li)-Total	0.0313		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Magnesium (Mg)-Total	70.6		0.050	mg/L	28-JUN-17	28-JUN-17	R3758350
Manganese (Mn)-Total	0.0441		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Molybdenum (Mo)-Total	<0.00050		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Nickel (Ni)-Total	0.0047		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Phosphorus (P)-Total	3.62		0.50	mg/L	28-JUN-17	28-JUN-17	R3758350
Potassium (K)-Total	16.1		0.10	mg/L	28-JUN-17	28-JUN-17	R3758350
Rubidium (Rb)-Total	0.00883		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Selenium (Se)-Total	<0.0050		0.0050	mg/L	28-JUN-17	28-JUN-17	R3758350
Silicon (Si)-Total	2.09		0.30	mg/L	28-JUN-17	28-JUN-17	R3758350
Silver (Ag)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Sodium (Na)-Total	796		0.050	mg/L	28-JUN-17	28-JUN-17	R3758350
Strontium (Sr)-Total	0.641		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	28-JUN-17	28-JUN-17	R3758350
Thorium (Th)-Total	<0.0010		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Tin (Sn)-Total	0.00501		0.00060	mg/L	28-JUN-17	28-JUN-17	R3758350
Titanium (Ti)-Total	0.0154		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Tungsten (W)-Total	<0.0020		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Uranium (U)-Total	0.00117		0.00050	mg/L	28-JUN-17	28-JUN-17	R3758350
Vanadium (V)-Total	<0.0020		0.0020	mg/L	28-JUN-17	28-JUN-17	R3758350
Zinc (Zn)-Total	0.102		0.020	mg/L	28-JUN-17	28-JUN-17	R3758350
Zirconium (Zr)-Total	0.0031		0.0010	mg/L	28-JUN-17	28-JUN-17	R3758350
Nitrogen Total							
Nitrate in Water by IC							
Nitrate (as N)	<0.40	DLM	0.40	mg/L		29-JUN-17	R3759649
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.45		0.45	mg/L		30-JUN-17	
Nitrite in Water by IC							
Nitrite (as N)	<0.20	DLM	0.20	mg/L		29-JUN-17	R3759649

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1948893-2 WASTE WATER 2							
Sampled By: CLIENT on 25-JUN-17 @ 07:15							
Matrix: WASTE							
Total Kjeldahl Nitrogen							
Total Kjeldahl Nitrogen	23.8		1.0	mg/L	07-JUL-17	09-JUL-17	R3768543
Total Nitrogen Calculated							
Total Nitrogen	23.8		1.0	mg/L		10-JUL-17	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may be valid in some cases (refer to Health Canada guidance).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.			
ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L			
ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.			
ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B
The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.			
BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B
Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.			
C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP
Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.			
CL-IC-N-WP	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-WP	Water	Conductivity	APHA 2510B
Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.			
ETL-N-TOT-ANY-WP	Water	Total Nitrogen Calculated	Calculated
HARDNESS-CALC-WP	Water	Hardness Calculated	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.			
HG-T-CVAF-WP	Water	Mercury Total	EPA245.7 V2.0
Mercury in filtered and unfiltered waters is oxidized with Bromine monochloride and analyzed by cold-vapour atomic fluorescence spectrometry.			
MET-T-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-T
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	APHA 4500 NorgD (modified)
Aqueous samples are digested in a block digester with sulfuric acid and copper sulfate as a catalyst. Total Kjeldahl Nitrogen is then analyzed using a discrete analyzer with colorimetric detection.			
NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.			
NO2+NO3-CALC-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-WP	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-N-WP	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
OG-GRAV-WP	Water	Oil & Grease - Gravimetric	EPA 1664 (modified)
Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.			
P-T-COL-WP	Water	Phosphorus, Total	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.			
P-TD-COL-WP	Water	Phosphorus, Total Dissolved	APHA 4500 P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Dissolved Phosphorus is determined colourimetrically after persulphate digestion of a sample that has been lab or field filtered through a 0.45 micron membrane filter.			
P-TR-COL-WP	Water	Phosphorus, Total Reactive in Water	APHA 4500 P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Reactive Phosphorus is determined colourimetrically.			
PH-WP	Water	pH	APHA 4500H
The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.			
TC,EC-QT97-WP	Water	Total Coliform and E.coli by MPN QT97	APHA 9223B QT97
This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 35.0 – 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.			
TC-QT97-WP	Water	Total Coliforms by QT97	APHA 9223B QT97
This analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Coliform bacteria are determined by mixing sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 – 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.			

** 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
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
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
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
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.

Quality Control Report

Workorder: L1948893 Report Date: 11-JUL-17

Client: Environment Canada
Eureka Weather Station
Eureka NU

Contact: JOHN MACIVER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R3757513								
WG2558589-14 LCS								
Alkalinity, Total (as CaCO3)			103.1		%		85-115	27-JUN-17
WG2558589-11 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-JUN-17
BOD-WP	**Water**							
Batch R3765045								
WG2558653-2 LCS								
Biochemical Oxygen Demand			91.0		%		85-115	28-JUN-17
WG2558653-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	28-JUN-17
C-TOC-HTC-WP	**Water**							
Batch R3768082								
WG2566062-2 LCS								
Total Organic Carbon			94.4		%		80-120	06-JUL-17
WG2566062-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	06-JUL-17
CL-IC-N-WP	**Water**							
Batch R3759649								
WG2559954-2 LCS								
Chloride (Cl)			99.8		%		90-110	29-JUN-17
WG2559954-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	29-JUN-17
EC-WP	**Water**							
Batch R3757513								
WG2558589-13 LCS								
Conductivity			100.6		%		90-110	27-JUN-17
WG2558589-11 MB								
Conductivity			<1.0		umhos/cm		1	27-JUN-17
HG-T-CVAF-WP	**Water**							
Batch R3766324								
WG2564208-2 LCS								
Mercury (Hg)-Total			84.0		%		80-120	05-JUL-17
WG2564208-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	05-JUL-17
MET-T-MS-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WP	**Water**							
Batch R3758350								
WG2558857-2 LCS								
Aluminum (Al)-Total			110.1		%		80-120	28-JUN-17
Antimony (Sb)-Total			102.0		%		80-120	28-JUN-17
Arsenic (As)-Total			105.5		%		80-120	28-JUN-17
Barium (Ba)-Total			105.6		%		80-120	28-JUN-17
Beryllium (Be)-Total			106.8		%		80-120	28-JUN-17
Bismuth (Bi)-Total			104.5		%		80-120	28-JUN-17
Boron (B)-Total			110.4		%		80-120	28-JUN-17
Cadmium (Cd)-Total			104.0		%		80-120	28-JUN-17
Calcium (Ca)-Total			106.9		%		80-120	28-JUN-17
Cesium (Cs)-Total			105.4		%		80-120	28-JUN-17
Chromium (Cr)-Total			105.8		%		80-120	28-JUN-17
Cobalt (Co)-Total			108.0		%		80-120	28-JUN-17
Copper (Cu)-Total			104.3		%		80-120	28-JUN-17
Iron (Fe)-Total			109.4		%		80-120	28-JUN-17
Lead (Pb)-Total			95.3		%		80-120	28-JUN-17
Lithium (Li)-Total			107.3		%		80-120	28-JUN-17
Magnesium (Mg)-Total			107.0		%		80-120	28-JUN-17
Manganese (Mn)-Total			110.9		%		80-120	28-JUN-17
Molybdenum (Mo)-Total			107.3		%		80-120	28-JUN-17
Nickel (Ni)-Total			106.8		%		80-120	28-JUN-17
Phosphorus (P)-Total			111.1		%		80-120	28-JUN-17
Potassium (K)-Total			100.4		%		80-120	28-JUN-17
Rubidium (Rb)-Total			104.2		%		80-120	28-JUN-17
Selenium (Se)-Total			98.5		%		80-120	28-JUN-17
Silicon (Si)-Total			108.6		%		80-120	28-JUN-17
Silver (Ag)-Total			106.0		%		80-120	28-JUN-17
Sodium (Na)-Total			109.2		%		80-120	28-JUN-17
Strontium (Sr)-Total			102.3		%		80-120	28-JUN-17
Tellurium (Te)-Total			100.4		%		80-120	28-JUN-17
Thallium (Tl)-Total			94.8		%		80-120	28-JUN-17
Thorium (Th)-Total			108.8		%		80-120	28-JUN-17
Tin (Sn)-Total			106.7		%		80-120	28-JUN-17
Titanium (Ti)-Total			102.5		%		80-120	28-JUN-17
Tungsten (W)-Total			103.3		%		80-120	28-JUN-17

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WP	**Water**							
Batch R3758350								
WG2558857-2 LCS								
Uranium (U)-Total			100.6		%		80-120	28-JUN-17
Vanadium (V)-Total			107.7		%		80-120	28-JUN-17
Zinc (Zn)-Total			99.3		%		80-120	28-JUN-17
Zirconium (Zr)-Total			102.6		%		80-120	28-JUN-17
WG2558857-1 MB								
Aluminum (Al)-Total			<0.020		mg/L		0.02	28-JUN-17
Antimony (Sb)-Total			<0.0010		mg/L		0.001	28-JUN-17
Arsenic (As)-Total			<0.0010		mg/L		0.001	28-JUN-17
Barium (Ba)-Total			<0.00050		mg/L		0.0005	28-JUN-17
Beryllium (Be)-Total			<0.0010		mg/L		0.001	28-JUN-17
Bismuth (Bi)-Total			<0.00050		mg/L		0.0005	28-JUN-17
Boron (B)-Total			<0.030		mg/L		0.03	28-JUN-17
Cadmium (Cd)-Total			<0.00020		mg/L		0.0002	28-JUN-17
Calcium (Ca)-Total			<0.20		mg/L		0.2	28-JUN-17
Cesium (Cs)-Total			<0.00050		mg/L		0.0005	28-JUN-17
Chromium (Cr)-Total			<0.0020		mg/L		0.002	28-JUN-17
Cobalt (Co)-Total			<0.00050		mg/L		0.0005	28-JUN-17
Copper (Cu)-Total			<0.0020		mg/L		0.002	28-JUN-17
Iron (Fe)-Total			<0.10		mg/L		0.1	28-JUN-17
Lead (Pb)-Total			<0.0010		mg/L		0.001	28-JUN-17
Lithium (Li)-Total			<0.0020		mg/L		0.002	28-JUN-17
Magnesium (Mg)-Total			<0.050		mg/L		0.05	28-JUN-17
Manganese (Mn)-Total			<0.0010		mg/L		0.001	28-JUN-17
Molybdenum (Mo)-Total			<0.00050		mg/L		0.0005	28-JUN-17
Nickel (Ni)-Total			<0.0020		mg/L		0.002	28-JUN-17
Phosphorus (P)-Total			<0.50		mg/L		0.5	28-JUN-17
Potassium (K)-Total			<0.10		mg/L		0.1	28-JUN-17
Rubidium (Rb)-Total			<0.00050		mg/L		0.0005	28-JUN-17
Selenium (Se)-Total			<0.0050		mg/L		0.005	28-JUN-17
Silicon (Si)-Total			<0.30		mg/L		0.3	28-JUN-17
Silver (Ag)-Total			<0.0010		mg/L		0.001	28-JUN-17
Sodium (Na)-Total			<0.050		mg/L		0.05	28-JUN-17
Strontium (Sr)-Total			<0.00050		mg/L		0.0005	28-JUN-17
Tellurium (Te)-Total			<0.0010		mg/L		0.001	28-JUN-17

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-MS-WP	**Water**							
Batch R3758350								
WG2558857-1 MB								
Thallium (Tl)-Total			<0.0050		mg/L		0.005	28-JUN-17
Thorium (Th)-Total			<0.0010		mg/L		0.001	28-JUN-17
Tin (Sn)-Total			<0.00060		mg/L		0.0006	28-JUN-17
Titanium (Ti)-Total			<0.0010		mg/L		0.001	28-JUN-17
Tungsten (W)-Total			<0.0020		mg/L		0.002	28-JUN-17
Uranium (U)-Total			<0.00050		mg/L		0.0005	28-JUN-17
Vanadium (V)-Total			<0.0020		mg/L		0.002	28-JUN-17
Zinc (Zn)-Total			<0.020		mg/L		0.02	28-JUN-17
Zirconium (Zr)-Total			<0.0010		mg/L		0.001	28-JUN-17
N-TOTKJ-WP	**Water**							
Batch R3768543								
WG2565193-10 LCS								
Total Kjeldahl Nitrogen			100.4		%		75-125	09-JUL-17
WG2565193-9 MB								
Total Kjeldahl Nitrogen			<0.20		mg/L		0.2	09-JUL-17
NH3-COL-WP	**Water**							
Batch R3766088								
WG2563477-6 LCS								
Ammonia, Total (as N)			100.2		%		85-115	05-JUL-17
WG2563477-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	05-JUL-17
NO2-IC-N-WP	**Water**							
Batch R3759649								
WG2559954-2 LCS								
Nitrite (as N)			99.8		%		90-110	29-JUN-17
WG2559954-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	29-JUN-17
NO3-IC-N-WP	**Water**							
Batch R3759649								
WG2559954-2 LCS								
Nitrate (as N)			99.0		%		90-110	29-JUN-17
WG2559954-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	29-JUN-17
OG-GRAV-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OG-GRAV-WP	**Water**							
Batch R3764984								
WG2560186-2 LCS								
Oil and Grease			97.2		%		70-130	05-JUL-17
WG2560186-1 MB								
Oil and Grease			<5.0		mg/L		5	05-JUL-17
P-T-COL-WP	**Water**							
Batch R3762963								
WG2562050-2 LCS								
Phosphorus (P)-Total			87.8		%		80-120	04-JUL-17
WG2562050-1 MB								
Phosphorus (P)-Total			<0.010		mg/L		0.01	04-JUL-17
P-TD-COL-WP	**Water**							
Batch R3765590								
WG2562562-2 LCS								
Phosphorus (P)-Total	Dissolved		87.4		%		80-120	05-JUL-17
WG2562562-6 LCS								
Phosphorus (P)-Total	Dissolved		90.0		%		80-120	05-JUL-17
WG2562562-1 MB								
Phosphorus (P)-Total	Dissolved		<0.010		mg/L		0.01	05-JUL-17
WG2562562-5 MB								
Phosphorus (P)-Total	Dissolved		<0.010		mg/L		0.01	05-JUL-17
P-TR-COL-WP	**Water**							
Batch R3758449								
WG2558862-3 DUP		**L1948893-1**						
Phosphorus (P)-Total	Reactive	1.19	1.07		mg/L	11	20	28-JUN-17
WG2558862-2 LCS								
Phosphorus (P)-Total	Reactive		98.4		%		80-120	28-JUN-17
WG2558862-1 MB								
Phosphorus (P)-Total	Reactive		<0.010		mg/L		0.01	28-JUN-17
WG2558862-4 MS		**L1948893-2**						
Phosphorus (P)-Total	Reactive		N/A	MS-B	%		-	28-JUN-17
PH-WP	**Water**							
Batch R3757513								
WG2558589-12 LCS								
pH			7.41		pH units		7.3-7.5	27-JUN-17
PHENOLS-4AAP-WT	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	**Water**							
Batch R3768925								
WG2566259-2 LCS								
Phenols (4AAP)			108.3		%		85-115	09-JUL-17
WG2566259-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	09-JUL-17
SO4-IC-N-WP	**Water**							
Batch R3759649								
WG2559954-2 LCS								
Sulfate (SO4)			100.4		%		90-110	29-JUN-17
WG2559954-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	29-JUN-17
SOLIDS-TOTSUS-WP	**Water**							
Batch R3759619								
WG2559928-18 LCS								
Total Suspended Solids			99.3		%		85-115	29-JUN-17
WG2559928-17 MB								
Total Suspended Solids			<5.0		mg/L		5	29-JUN-17
TC,EC-QT97-WP	**Water**							
Batch R3758429								
WG2559608-1 MB								
Escherichia Coli			<1		MPN/100mL		1	26-JUN-17
TC-QT97-WP	**Water**							
Batch R3757878								
WG2558221-1 MB								
Total Coliforms			<1		MPN/100mL		1	26-JUN-17

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	24-JUN-17 16:15	27-JUN-17 12:00	0.25	68	hours	EHTR-FM
	2	25-JUN-17 07:15	27-JUN-17 12:00	0.25	53	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC							
	1	24-JUN-17 16:15	29-JUN-17 12:00	3	5	days	EHTL
	2	25-JUN-17 07:15	29-JUN-17 12:00	3	4	days	EHT
Nitrite in Water by IC							
	1	24-JUN-17 16:15	29-JUN-17 12:00	3	5	days	EHTL
	2	25-JUN-17 07:15	29-JUN-17 12:00	3	4	days	EHT
Phosphorus, Total Reactive in Water							
	1	24-JUN-17 16:15	28-JUN-17 09:19	3	4	days	EHTL
Bacteriological Tests							
Total Coliform and E.coli by MPN QT97							
	2	25-JUN-17 07:15	26-JUN-17 18:05	30	35	hours	EHTR
Total Coliforms by QT97							
	2	25-JUN-17 07:15	26-JUN-17 18:05	30	35	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Demand (BOD)							
	1	24-JUN-17 16:15	28-JUN-17 07:00	48	87	hours	EHTR
	2	25-JUN-17 07:15	28-JUN-17 07:00	48	72	hours	EHTL

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L1948893 were received on 26-JUN-17 17:35.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

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:	Environment Canada W5335	☑ Standard ☐ Other	◉ Regular
Contact:	JOHN MACIVER	☑ PDF ☐ Excel ☐ Digital ☑ Fax	○ Priority
Address:	Eureka Weather Station	Email 1: john.maciver@canada.ca	○ Emerge
	613-945-3145 ext. 4460	Email 2: matt.aitchison@canada.ca	○ Same D
Phone:	Fax:	Email 3:	
Invoice To	Same as Report ? ☐ Yes ☐ No	**Client / Project Information**	
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #: Eureka Weather Station	
Company:	Environment Canada W5335	PO / AFE:	
Contact:	matt.aitchison@canada.ca	LSD:	
Address:			
Phone:	Fax:	Quote #: Q55002	
Lab Work Order # (lab use only)		ALS Contact:	Sampler:

L1948893-COFC

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-T-MS-WP	ETL-HARDNESS-TOT-WP	TURBIDITY-WP	TDS-WP	C-TOC-HTC-WP	THM-HS-WP	TC,EC-QT51-WP						Number of Containers
	Waste Water 1 ~~(plus waste water 1 extra bottle)~~	24-JUN-17	16:15	Waste	X	X	X	X	X	X	X						10
	Waste Water 2 ~~(plus extra bottle)~~	25 Jun 17	07:15	Waste	X	X	X	X	X	X	X						10
	AIC/26June17																
	- client also sent ~~extra~~ bottles ~~for~~ of Waste Water 1 & 2 for QT51 (AIC/26 June 17)																

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

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
			AIC	26June17	17:35	5.7 °C				