2019 FOURTH QUARTER REPORT
FOR GN-CGS RANKIN INLET

QUARTER BEING REPORTED: October - December 2019

The following information is compiled pursuant to the requirements of Part B, Item 2 of Water Licence No. **3AM-GRA1624** issued to **Government of Nunavut, Department of Community and Government Services (GN-CGS)**.

a) Tabular summaries of all data generated under the Monitoring Program; and
b) Monthly quantities of fresh water obtained from all sources;

Below are results for Monitoring Program Stations GRA-1 and GRA-3.

Month Reported	Quantity of Water Obtained from all Sources (m^3)	Quantity of Sewage Waste Discharged (Estimated, m^3)
October	55,846.00	Same
November	53,006.00	Same
December	56,034.00	Same
QUARTER TOTAL	**164,886.00**	**164,886.00**

As per Part H, Item 5 of the Licence, below is a summary of solids removed from the Sewage Treatment Facility at Monitoring Station Number GRA-4.

Month Reported	Solids Removed from the Sewage Treatment Facility (m^3)
October	4
November	4
December	4
QUARTER TOTAL	**12**

c) Quarterly sampling results from monitoring Program Station GRA-3;

Refer to attached 2019 sampling results for GRA-3 (Appendix A).

d) The current estimated volume of Nipissar Lake based on water elevation determined at Monitoring Program Station GRA-5.

As per Part H, Item 6 of the Licence, the Licensee shall record water elevation monthly, during periods of open water at Monitoring Program Station GRA-5. Please note, water elevation is a measurement taken from a datum on the shoreline; therefore a decrease in elevation measurement represents an increase in Lake water level.

An elevation reading could not be taken as there was **no open water** during December of the quarter being reported.

Month Reported	Nipissar Lake Water Elevation (in)
October	No Reading on Record
November	No Reading on Record
December	No Open Water

List of Appendices

Appendix A: Certificate of Analysis, October 2, 2019 – 17 pages
Certificate of Analysis, October 31, 2019 – 19 pages
Certificate of Analysis, November 25, 2019 – 19 pages
Certificate of Analysis, December 4, 2019 – 19 pages
Appendix B: Daily Record of Nipissar Lake Volumes GRA-1 – 1 page

Appendix A: Certificate of Analysis, October 2, 2019
Certificate of Analysis, October 31, 2019
Certificate of Analysis, November 25, 2019
Certificate of Analysis, December 4, 2019

Nunavut Community & Government Services - Rankin Inlet
ATTN: SIMON DOIRON
P.O. Box 490
Rankin Inlet NU X0C 0G0

Date Received: 03-OCT-19
Report Date: 18-OCT-19 14:11 (MT)
Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2359342

Project P.O. #: NOT SUBMITTED
Job Reference:
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
L2359342-1 WWTP							
Sampled By: CLIENT on 02-OCT-19 @ 14:00							
Matrix: WASTE WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		17-OCT-19	R4873346
Toluene	0.0041		0.0010	mg/L		17-OCT-19	R4873346
Ethyl benzene	<0.00050		0.00050	mg/L		17-OCT-19	R4873346
o-Xylene	<0.00050		0.00050	mg/L		17-OCT-19	R4873346
m+p-Xylenes	<0.00040		0.00040	mg/L		17-OCT-19	R4873346
F1 (C6-C10)	<0.10		0.10	mg/L		17-OCT-19	R4873346
Surrogate: 4-Bromofluorobenzene (SS)	87.0		70-130	%		17-OCT-19	R4873346
CCME PHC F2-F4 in Water							
F2 (C10-C16)	2.04		0.10	mg/L	07-OCT-19	10-OCT-19	R4871231
F3 (C16-C34)	11.4		0.25	mg/L	07-OCT-19	10-OCT-19	R4871231
F4 (C34-C50)	9.46		0.25	mg/L	07-OCT-19	10-OCT-19	R4871231
Surrogate: 2-Bromobenzotrifluoride	128.1		60-140	%	07-OCT-19	10-OCT-19	R4871231
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		18-OCT-19	
F2-Naphth	2.04		0.10	mg/L		18-OCT-19	
F3-PAH	11.4		0.25	mg/L		18-OCT-19	
Total Hydrocarbons (C6-C50)	22.9		0.38	mg/L		18-OCT-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		18-OCT-19	
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000163		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
2-Methyl Naphthalene	0.000196		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Acenaphthene	0.000047		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Acenaphthylene	<0.000020		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Anthracene	<0.000010		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Acridine	<0.000020		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(a)anthracene	<0.000010		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Chrysene	<0.000020		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	08-OCT-19	18-OCT-19	R4867488
Fluoranthene	<0.000020		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Fluorene	0.000027	EMPC	0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Naphthalene	0.000486		0.000050	mg/L	08-OCT-19	18-OCT-19	R4867488
Phenanthrene	<0.000050		0.000050	mg/L	08-OCT-19	18-OCT-19	R4867488
Pyrene	0.000015		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Quinoline	<0.000020		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	08-OCT-19	18-OCT-19	R4867488
Surrogate: Acenaphthene d10	122.8		60-130	%	08-OCT-19	18-OCT-19	R4867488
Surrogate: Acridine d9	117.9		60-130	%	08-OCT-19	18-OCT-19	R4867488
Surrogate: Chrysene d12	120.2		60-130	%	08-OCT-19	18-OCT-19	R4867488
Surrogate: Naphthalene d8	118.0		50-130	%	08-OCT-19	18-OCT-19	R4867488
Surrogate: Phenanthrene d10	122.6		60-130	%	08-OCT-19	18-OCT-19	R4867488
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	75.6		1.2	mg/L		07-OCT-19	
Alkalinity, Carbonate							

* 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
L2359342-1 WWTP							
Sampled By: CLIENT on 02-OCT-19 @ 14:00							
Matrix: WASTE WATER							
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		07-OCT-19	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		07-OCT-19	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	62.0		1.0	mg/L		04-OCT-19	R4860614
Ammonia by colour							
Ammonia, Total (as N)	2.38		0.10	mg/L		11-OCT-19	R4869837
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	68		20	mg/L		04-OCT-19	R4865393
Carbonaceous BOD							
BOD Carbonaceous	86		20	mg/L		04-OCT-19	R4865393
Chloride in Water by IC							
Chloride (Cl)	46.6		0.50	mg/L		04-OCT-19	R4859929
Conductivity							
Conductivity	325		1.0	umhos/cm		04-OCT-19	R4860614
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200		10	MPN/100mL		03-OCT-19	R4859135
Hardness Calculated							
Hardness (as CaCO3)	90.1	HTC	0.20	mg/L		16-OCT-19	
Mercury Total							
Mercury (Hg)-Total	0.0000050		0.0000050	mg/L	10-OCT-19	10-OCT-19	R4866644
Nitrate in Water by IC							
Nitrate (as N)	0.029		0.020	mg/L		04-OCT-19	R4859929
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		08-OCT-19	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		04-OCT-19	R4859929
Oil & Grease - Gravimetric							
Oil and Grease	41.1		5.0	mg/L		11-OCT-19	R4867520
Phenol (4AAP)							
Phenols (4AAP)	0.0065		0.0010	mg/L		07-OCT-19	R4861668
Phosphorus, Total							
Phosphorus (P)-Total	1.05		0.0060	mg/L		08-OCT-19	R4861381
Sulfate in Water by IC							
Sulfate (SO4)	24.9		0.30	mg/L		04-OCT-19	R4859929
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.128		0.0030	mg/L	10-OCT-19	11-OCT-19	R4869129
Arsenic (As)-Total	0.00114		0.00010	mg/L	10-OCT-19	11-OCT-19	R4869129
Cadmium (Cd)-Total	0.0000567		0.0000050	mg/L	10-OCT-19	11-OCT-19	R4869129
Calcium (Ca)-Total	27.1		0.050	mg/L	10-OCT-19	11-OCT-19	R4869129
Chromium (Cr)-Total	0.00086		0.00010	mg/L	10-OCT-19	11-OCT-19	R4869129
Cobalt (Co)-Total	0.00035		0.00010	mg/L	10-OCT-19	11-OCT-19	R4869129
Copper (Cu)-Total	0.0843		0.00050	mg/L	10-OCT-19	11-OCT-19	R4869129
Iron (Fe)-Total	0.420		0.010	mg/L	10-OCT-19	11-OCT-19	R4869129
Lead (Pb)-Total	0.00318		0.000050	mg/L	10-OCT-19	11-OCT-19	R4869129
Magnesium (Mg)-Total	5.47		0.0050	mg/L	10-OCT-19	11-OCT-19	R4869129
Manganese (Mn)-Total	0.0478		0.00010	mg/L	10-OCT-19	11-OCT-19	R4869129
Nickel (Ni)-Total	0.00301		0.00050	mg/L	10-OCT-19	11-OCT-19	R4869129
Potassium (K)-Total	5.39		0.050	mg/L	10-OCT-19	11-OCT-19	R4869129
Sodium (Na)-Total	24.8		0.050	mg/L	10-OCT-19	11-OCT-19	R4869129
Zinc (Zn)-Total	0.0483		0.0030	mg/L	10-OCT-19	11-OCT-19	R4869129
Total Organic Carbon by Combustion							

* 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
L2359342-1 WWTP							
Sampled By: CLIENT on 02-OCT-19 @ 14:00							
Matrix: WASTE WATER							
Total Organic Carbon by Combustion							
Total Organic Carbon	44.5		0.50	mg/L		09-OCT-19	R4866495
Total Suspended Solids							
Total Suspended Solids	83.2		2.0	mg/L		09-OCT-19	R4865716
pH							
pH	6.88		0.10	pH units		04-OCT-19	R4860614

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
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-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-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are 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.

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.

BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA 8260C / EPA 5021A

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

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.

F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP	Water	CCME PHC F2-F4 in Water	EPA 3511

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 – 0.2°C for 18 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.

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-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

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

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (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.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

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-L

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

PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA 3511/8270D (mod)

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

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)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** 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:

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

Client: Nunavut Community & Government Services - Rankin Inlet
P.O. Box 490
Rankin Inlet NU X0C 0G0
Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R4860614								
WG3183951-9 LCS								
Alkalinity, Total (as CaCO3)			99.4		%		85-115	04-OCT-19
WG3183951-6 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	04-OCT-19
BOD-CBOD-WP	**Water**							
Batch R4865393								
WG3181736-7 LCS								
BOD Carbonaceous			108.0		%		85-115	04-OCT-19
WG3181736-6 MB								
BOD Carbonaceous			<2.0		mg/L		2	04-OCT-19
BOD-WP	**Water**							
Batch R4865393								
WG3181736-7 LCS								
Biochemical Oxygen Demand			108.3		%		85-115	04-OCT-19
WG3181736-6 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	04-OCT-19
BTEXS+F1-HSMS-WP	**Water**							
Batch R4873346								
WG3188057-17 LCS								
F1 (C6-C10)			105.2		%		70-130	17-OCT-19
WG3188057-8 LCS								
Benzene			86.2		%		70-130	17-OCT-19
Toluene			89.7		%		70-130	17-OCT-19
Ethyl benzene			95.0		%		70-130	17-OCT-19
o-Xylene			96.7		%		70-130	17-OCT-19
m+p-Xylenes			88.4		%		70-130	17-OCT-19
WG3188057-7 MB								
Benzene			<0.00050		mg/L		0.0005	17-OCT-19
Toluene			<0.0010		mg/L		0.001	17-OCT-19
Ethyl benzene			<0.00050		mg/L		0.0005	17-OCT-19
o-Xylene			<0.00050		mg/L		0.0005	17-OCT-19
m+p-Xylenes			<0.00040		mg/L		0.0004	17-OCT-19
F1 (C6-C10)			<0.10		mg/L		0.1	17-OCT-19
Surrogate: 4-Bromofluorobenzene (SS)			91.0		%		70-130	17-OCT-19
C-TOC-HTC-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	**Water**							
Batch R4866495								
WG3187943-2 LCS								
Total Organic Carbon			102.2		%		80-120	09-OCT-19
WG3187943-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	09-OCT-19
CL-IC-N-WP	**Water**							
Batch R4859929								
WG3182278-2 LCS								
Chloride (Cl)			100.2		%		90-110	04-OCT-19
WG3182278-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	04-OCT-19
EC-WP	**Water**							
Batch R4860614								
WG3183951-8 LCS								
Conductivity			99.3		%		90-110	04-OCT-19
WG3183951-6 MB								
Conductivity			<1.0		umhos/cm		1	04-OCT-19
F2-F4-FID-WP	**Water**							
Batch R4871231								
WG3183711-2 LCS								
F2 (C10-C16)			100.6		%		70-130	09-OCT-19
F3 (C16-C34)			92.9		%		70-130	09-OCT-19
F4 (C34-C50)			93.8		%		70-130	09-OCT-19
WG3183711-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	09-OCT-19
F3 (C16-C34)			<0.25		mg/L		0.25	09-OCT-19
F4 (C34-C50)			<0.25		mg/L		0.25	09-OCT-19
Surrogate: 2-Bromobenzotrifluoride			116.1		%		60-140	09-OCT-19
FC10-QT97-WP	**Water**							
Batch R4859135								
WG3181337-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	03-OCT-19
HG-T-CVAA-WP	**Water**							
Batch R4866644								
WG3189293-2 LCS								
Mercury (Hg)-Total			92.0		%		80-120	10-OCT-19
WG3189293-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WP	**Water**							
Batch R4866644								
WG3189293-1 MB								
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	10-OCT-19
MET-T-CCMS-WP	**Water**							
Batch R4869129								
WG3187722-2 LCS								
Aluminum (Al)-Total			103.7		%		80-120	11-OCT-19
Arsenic (As)-Total			103.1		%		80-120	11-OCT-19
Cadmium (Cd)-Total			104.2		%		80-120	11-OCT-19
Calcium (Ca)-Total			103.1		%		80-120	11-OCT-19
Chromium (Cr)-Total			104.8		%		80-120	11-OCT-19
Cobalt (Co)-Total			103.1		%		80-120	11-OCT-19
Copper (Cu)-Total			104.9		%		80-120	11-OCT-19
Iron (Fe)-Total			98.6		%		80-120	11-OCT-19
Lead (Pb)-Total			107.3		%		80-120	11-OCT-19
Magnesium (Mg)-Total			109.6		%		80-120	11-OCT-19
Manganese (Mn)-Total			102.9		%		80-120	11-OCT-19
Nickel (Ni)-Total			102.5		%		80-120	11-OCT-19
Potassium (K)-Total			102.6		%		80-120	11-OCT-19
Sodium (Na)-Total			104.2		%		80-120	11-OCT-19
Zinc (Zn)-Total			104.5		%		80-120	11-OCT-19
WG3187722-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	11-OCT-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	11-OCT-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	11-OCT-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	11-OCT-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	11-OCT-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	11-OCT-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	11-OCT-19
Iron (Fe)-Total			<0.010		mg/L		0.01	11-OCT-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	11-OCT-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	11-OCT-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	11-OCT-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	11-OCT-19
Potassium (K)-Total			<0.050		mg/L		0.05	11-OCT-19
Sodium (Na)-Total			<0.050		mg/L		0.05	11-OCT-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R4869129								
WG3187722-1 MB								
Zinc (Zn)-Total			<0.0030		mg/L		0.003	11-OCT-19
NH3-COL-WP	**Water**							
Batch R4869837								
WG3191087-6 LCS								
Ammonia, Total (as N)			103.2		%		85-115	11-OCT-19
WG3191087-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	11-OCT-19
NO2-IC-N-WP	**Water**							
Batch R4859929								
WG3182278-2 LCS								
Nitrite (as N)			100.9		%		90-110	04-OCT-19
WG3182278-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	04-OCT-19
NO3-IC-N-WP	**Water**							
Batch R4859929								
WG3182278-2 LCS								
Nitrate (as N)			99.3		%		90-110	04-OCT-19
WG3182278-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	04-OCT-19
OG-GRAV-WP	**Water**							
Batch R4867520								
WG3186073-2 LCS								
Oil and Grease			95.4		%		70-130	11-OCT-19
WG3186073-1 MB								
Oil and Grease			<5.0		mg/L		5	11-OCT-19
P-T-COL-WP	**Water**							
Batch R4861381								
WG3184297-2 LCS								
Phosphorus (P)-Total			96.6		%		80-120	08-OCT-19
WG3184297-1 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	08-OCT-19
PAH,PANH-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	**Water**							
Batch R4867488								
WG3186197-2 LCS								
1-Methyl Naphthalene			122.2		%		60-130	11-OCT-19
2-Methyl Naphthalene			114.6		%		60-130	11-OCT-19
Acenaphthene			116.6		%		60-130	11-OCT-19
Acenaphthylene			98.4		%		60-130	11-OCT-19
Anthracene			77.8		%		60-130	11-OCT-19
Acridine			93.9		%		60-130	11-OCT-19
Benzo(a)anthracene			85.3		%		60-130	11-OCT-19
Benzo(a)pyrene			90.9		%		60-130	11-OCT-19
Benzo(b&j)fluoranthene			87.8		%		60-130	11-OCT-19
Benzo(g,h,i)perylene			105.4		%		60-130	11-OCT-19
Benzo(k)fluoranthene			108.5		%		60-130	11-OCT-19
Chrysene			103.9		%		60-130	11-OCT-19
Dibenzo(a,h)anthracene			111.2		%		60-130	11-OCT-19
Fluoranthene			119.2		%		60-130	11-OCT-19
Fluorene			99.3		%		60-130	11-OCT-19
Indeno(1,2,3-cd)pyrene			83.2		%		60-130	11-OCT-19
Naphthalene			121.2		%		50-130	11-OCT-19
Phenanthrene			117.0		%		60-130	11-OCT-19
Pyrene			117.0		%		60-130	11-OCT-19
Quinoline			105.8		%		60-130	11-OCT-19
WG3186197-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	11-OCT-19
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	11-OCT-19
Acenaphthene			<0.000020		mg/L		0.00002	11-OCT-19
Acenaphthylene			<0.000020		mg/L		0.00002	11-OCT-19
Anthracene			<0.000010		mg/L		0.00001	11-OCT-19
Acridine			<0.000020		mg/L		0.00002	11-OCT-19
Benzo(a)anthracene			<0.000010		mg/L		0.00001	11-OCT-19
Benzo(a)pyrene			<0.000005(		mg/L		0.000005	11-OCT-19
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	11-OCT-19
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	11-OCT-19
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	11-OCT-19
Chrysene			<0.000020		mg/L		0.00002	11-OCT-19
Dibenzo(a,h)anthracene			<0.000005(		mg/L		0.000005	11-OCT-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	**Water**							
Batch R4867488								
WG3186197-1 MB								
Fluoranthene			<0.000020		mg/L		0.00002	11-OCT-19
Fluorene			<0.000020		mg/L		0.00002	11-OCT-19
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	11-OCT-19
Naphthalene			<0.000050		mg/L		0.00005	11-OCT-19
Phenanthrene			<0.000050		mg/L		0.00005	11-OCT-19
Pyrene			<0.000010		mg/L		0.00001	11-OCT-19
Quinoline			<0.000020		mg/L		0.00002	11-OCT-19
Surrogate: Acenaphthene d10			109.0		%		60-130	11-OCT-19
Surrogate: Acridine d9			94.0		%		60-130	11-OCT-19
Surrogate: Chrysene d12			118.0		%		60-130	11-OCT-19
Surrogate: Naphthalene d8			116.4		%		50-130	11-OCT-19
Surrogate: Phenanthrene d10			117.6		%		60-130	11-OCT-19
PH-WP	**Water**							
Batch R4860614								
WG3183951-7 LCS								
pH			7.38		pH units		7.3-7.5	04-OCT-19
PHENOLS-4AAP-WT	**Water**							
Batch R4861668								
WG3183904-2 LCS								
Phenols (4AAP)			113.7		%		85-115	07-OCT-19
WG3183904-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	07-OCT-19
SO4-IC-N-WP	**Water**							
Batch R4859929								
WG3182278-2 LCS								
Sulfate (SO4)			101.5		%		90-110	04-OCT-19
WG3182278-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	04-OCT-19
SOLIDS-TOTSUS-WP	**Water**							
Batch R4865716								
WG3185052-10 LCS								
Total Suspended Solids			102.3		%		85-115	09-OCT-19
WG3185052-9 MB								
Total Suspended Solids			<2.0		mg/L		2	09-OCT-19

Quality Control Report

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

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	02-OCT-19 14:00	04-OCT-19 12:00	0.25	46	hours	EHTR-FM
Volatile Organic Compounds							
BTX plus F1 by GCMS							
	1	02-OCT-19 14:00	17-OCT-19 18:12	14	15	days	EHT

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 L2359342 were received on 03-OCT-19 15:00.

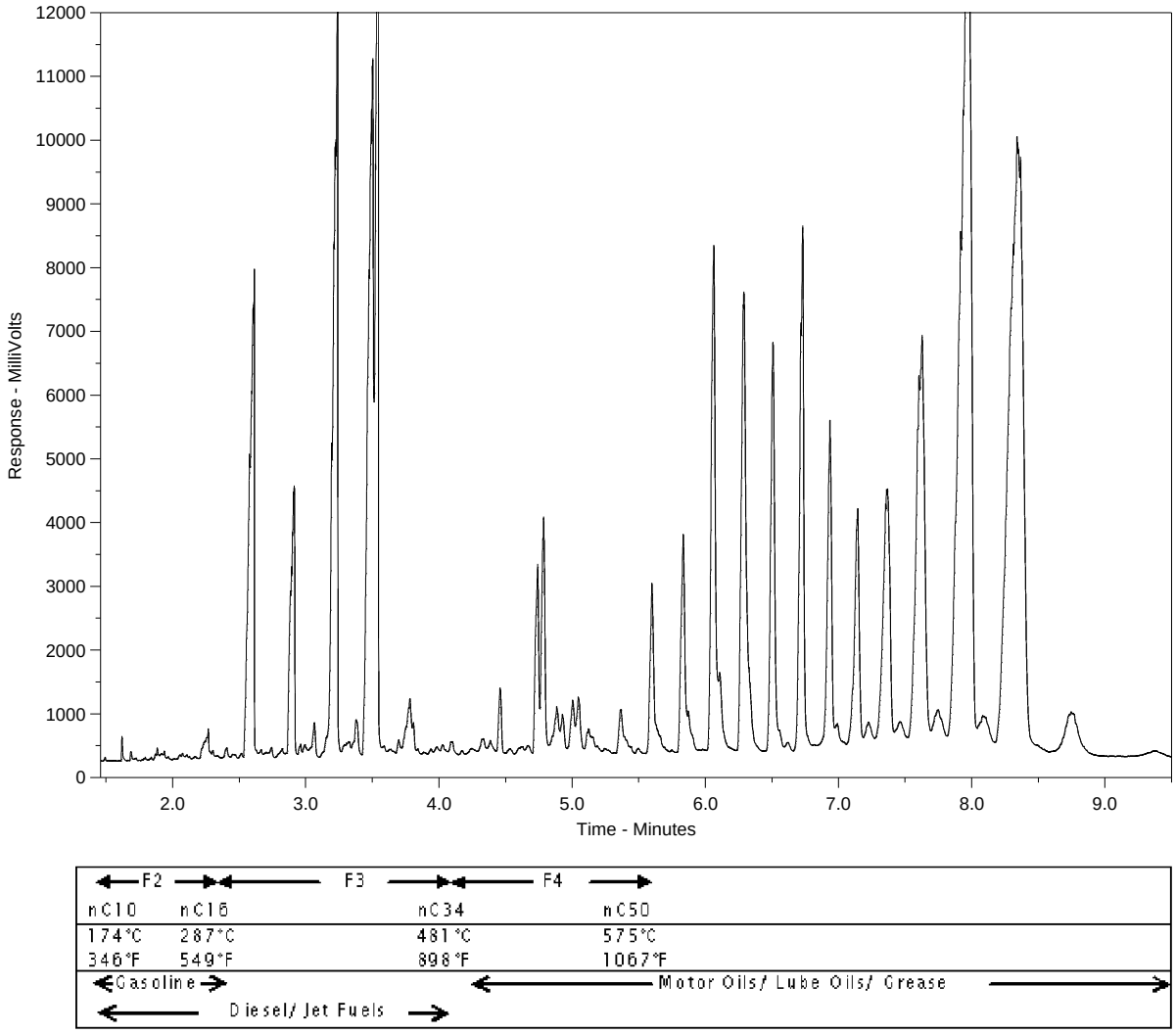
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2359342-1
Client Sample ID: WWTP



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2359342-COFC

COC Number: 17 - 750256

Page of

Report To	Contact and company name below will appear on the final report	Report Format	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	CGS Rankin Inlet	Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☐ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Simon Dutton	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	867-645-8155	☐ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:		Email 1 or Fax	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Rankin Inlet	Email 2	
Postal Code:	X0C-0G0	Email 3	

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
Company:		Email 2
Contact:		

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

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

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	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	WWTP	Oct 2/19	2:00pm			

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	☆ SIF, No leq analysis ☆
Are samples for human consumption/ use? ☐ YES ☑ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
7.7							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Bill Ross	Oct 2/19	2:00pm		Oct 3	3			3:40

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCT 0 3 2019

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

Nunavut Community & Government Services - Rankin Inlet
ATTN: SIMON DOIRON
P.O. Box 490
Rankin Inlet NU X0C 0G0

Date Received: 01-NOV-19
Report Date: 14-NOV-19 13:48 (MT)
Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2375853

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY
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
L2375853-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 31-OCT-19 @ 13:30							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050	VOCHS	0.00050	mg/L		06-NOV-19	R4900907
Toluene	0.0010	VOCHS	0.0010	mg/L		06-NOV-19	R4900907
Ethyl benzene	<0.00050	VOCHS	0.00050	mg/L		06-NOV-19	R4900907
o-Xylene	<0.00050	VOCHS	0.00050	mg/L		06-NOV-19	R4900907
m+p-Xylenes	<0.00040	VOCHS	0.00040	mg/L		06-NOV-19	R4900907
F1 (C6-C10)	<0.10	VOCHS	0.10	mg/L		06-NOV-19	R4900907
Surrogate: 4-Bromofluorobenzene (SS)	83.0		70-130	%		06-NOV-19	R4900907
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.51		0.10	mg/L	05-NOV-19	06-NOV-19	R4900866
F3 (C16-C34)	12.9		0.25	mg/L	05-NOV-19	06-NOV-19	R4900866
F4 (C34-C50)	4.23		0.25	mg/L	05-NOV-19	06-NOV-19	R4900866
Surrogate: 2-Bromobenzotrifluoride	83.5		60-140	%	05-NOV-19	06-NOV-19	R4900866
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		14-NOV-19	
F2-Naphth	0.51		0.10	mg/L		14-NOV-19	
F3-PAH	12.9		0.25	mg/L		14-NOV-19	
Total Hydrocarbons (C6-C50)	17.7		0.38	mg/L		14-NOV-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		13-NOV-19	
Miscellaneous Parameters							
Fluoride (F)	0.070		0.020	mg/L		02-NOV-19	R4898819
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200		10	MPN/100mL		01-NOV-19	R4896501
Escherichia Coli	>24200		10	MPN/100mL		01-NOV-19	R4896501
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000095		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
2-Methyl Naphthalene	0.000114		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Acenaphthene	0.000027	EMPC	0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Acenaphthylene	<0.000020		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Anthracene	<0.000010		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Acridine	<0.000020		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(a)anthracene	<0.000010		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(a)pyrene	0.0000323		0.0000050	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Chrysene	<0.000020		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	07-NOV-19	14-NOV-19	R4906524
Fluoranthene	<0.000020		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Fluorene	0.000047	EMPC	0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Indeno(1,2,3-cd)pyrene	0.000235		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Naphthalene	0.000108		0.000050	mg/L	07-NOV-19	14-NOV-19	R4906524
Phenanthrene	<0.000050		0.000050	mg/L	07-NOV-19	14-NOV-19	R4906524
Pyrene	0.000013	EMPC	0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Quinoline	0.000036	EMPC	0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
B(a)P Total Potency Equivalent	0.000060		0.000030	mg/L	07-NOV-19	14-NOV-19	R4906524
Surrogate: Acenaphthene d10	109.9		60-130	%	07-NOV-19	14-NOV-19	R4906524
Surrogate: Acridine d9	112.1		60-130	%	07-NOV-19	14-NOV-19	R4906524
Surrogate: Chrysene d12	112.4		60-130	%	07-NOV-19	14-NOV-19	R4906524
Surrogate: Naphthalene d8	113.2		50-130	%	07-NOV-19	14-NOV-19	R4906524
Surrogate: Phenanthrene d10	117.6		60-130	%	07-NOV-19	14-NOV-19	R4906524

* 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
L2375853-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 31-OCT-19 @ 13:30							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	137		1.2	mg/L		04-NOV-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		04-NOV-19	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		04-NOV-19	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	112		1.0	mg/L		01-NOV-19	R4896808
Ammonia by colour							
Ammonia, Total (as N)	9.05		0.50	mg/L		04-NOV-19	R4898963
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	195		50	mg/L		01-NOV-19	R4901810
Carbonaceous BOD							
BOD Carbonaceous	158		50	mg/L		01-NOV-19	R4901810
Chloride in Water by IC							
Chloride (Cl)	54.5		0.50	mg/L		02-NOV-19	R4898819
Conductivity							
Conductivity	463		1.0	umhos/cm		01-NOV-19	R4896808
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200		10	MPN/100mL		01-NOV-19	R4896510
Hardness Calculated							
Hardness (as CaCO3)	473	HTC	0.20	mg/L		08-NOV-19	
Mercury Total							
Mercury (Hg)-Total	0.0000090		0.0000050	mg/L	05-NOV-19	06-NOV-19	R4901178
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		02-NOV-19	R4898819
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		05-NOV-19	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		02-NOV-19	R4898819
Oil & Grease - Gravimetric							
Oil and Grease	35.7		5.0	mg/L		08-NOV-19	R4903191
Phenol (4AAP)							
Phenols (4AAP)	0.0153	DLM	0.0050	mg/L		06-NOV-19	R4901001
Phosphorus, Total							
Phosphorus (P)-Total	3.28		0.015	mg/L		05-NOV-19	R4898746
Sulfate in Water by IC							
Sulfate (SO4)	27.0		0.30	mg/L		02-NOV-19	R4898819
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L	07-NOV-19	07-NOV-19	R4903044
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Arsenic (As)-Total	0.00077		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Barium (Ba)-Total	0.0380		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	07-NOV-19	07-NOV-19	R4903044
Boron (B)-Total	0.139		0.010	mg/L	07-NOV-19	07-NOV-19	R4903044
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	07-NOV-19	07-NOV-19	R4903044
Calcium (Ca)-Total	70.9		0.050	mg/L	07-NOV-19	07-NOV-19	R4903044
Cesium (Cs)-Total	0.000010		0.000010	mg/L	07-NOV-19	07-NOV-19	R4903044
Chromium (Cr)-Total	0.00014		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Cobalt (Co)-Total	0.00022		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Copper (Cu)-Total	0.0271		0.00050	mg/L	07-NOV-19	07-NOV-19	R4903044

* 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
L2375853-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 31-OCT-19 @ 13:30							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS							
Iron (Fe)-Total	0.191		0.010	mg/L	07-NOV-19	07-NOV-19	R4903044
Lead (Pb)-Total	0.000198		0.000050	mg/L	07-NOV-19	07-NOV-19	R4903044
Lithium (Li)-Total	0.0265		0.0010	mg/L	07-NOV-19	07-NOV-19	R4903044
Magnesium (Mg)-Total	71.8		0.0050	mg/L	07-NOV-19	07-NOV-19	R4903044
Manganese (Mn)-Total	0.00839		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Molybdenum (Mo)-Total	0.000434		0.000050	mg/L	07-NOV-19	07-NOV-19	R4903044
Nickel (Ni)-Total	0.00085		0.00050	mg/L	07-NOV-19	07-NOV-19	R4903044
Potassium (K)-Total	5.68		0.050	mg/L	07-NOV-19	07-NOV-19	R4903044
Phosphorus (P)-Total	<0.030		0.030	mg/L	07-NOV-19	07-NOV-19	R4903044
Rubidium (Rb)-Total	0.00343		0.00020	mg/L	07-NOV-19	07-NOV-19	R4903044
Selenium (Se)-Total	<0.000050		0.000050	mg/L	07-NOV-19	07-NOV-19	R4903044
Silicon (Si)-Total	5.71		0.10	mg/L	07-NOV-19	07-NOV-19	R4903044
Silver (Ag)-Total	<0.000010		0.000010	mg/L	07-NOV-19	07-NOV-19	R4903044
Sodium (Na)-Total	22.0		0.050	mg/L	07-NOV-19	07-NOV-19	R4903044
Strontium (Sr)-Total	0.252		0.00020	mg/L	07-NOV-19	07-NOV-19	R4903044
Sulfur (S)-Total	20.6		0.50	mg/L	07-NOV-19	07-NOV-19	R4903044
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	07-NOV-19	07-NOV-19	R4903044
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	07-NOV-19	07-NOV-19	R4903044
Thorium (Th)-Total	<0.00010		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Tin (Sn)-Total	<0.00010		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Titanium (Ti)-Total	<0.00030		0.00030	mg/L	07-NOV-19	07-NOV-19	R4903044
Tungsten (W)-Total	<0.00010		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Uranium (U)-Total	0.000283		0.000010	mg/L	07-NOV-19	07-NOV-19	R4903044
Vanadium (V)-Total	<0.00050		0.00050	mg/L	07-NOV-19	07-NOV-19	R4903044
Zinc (Zn)-Total	0.0052		0.0030	mg/L	07-NOV-19	07-NOV-19	R4903044
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	07-NOV-19	07-NOV-19	R4903044
Total Organic Carbon by Combustion							
Total Organic Carbon	86.7		5.0	mg/L		04-NOV-19	R4898931
Total Suspended Solids							
Total Suspended Solids	209		3.8	mg/L		06-NOV-19	R4902207
pH							
pH	7.00		0.10	pH units		01-NOV-19	R4896808

* 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).
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
VOCHS	VOC analysis was conducted for a water sample that contained > 5% headspace. Results may be biased low.

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-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B
Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are 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.			
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.			
BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA 8260C / EPA 5021A
The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
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-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc			
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.			
F-IC-N-WP	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			
In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and			

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP	Water	CCME PHC F2-F4 in Water	EPA 3511

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 – 0.2°C for 18 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.

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-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

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

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (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.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

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-L

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

PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA 3511/8270D (mod)

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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,EC10-QT97-WP	Water	Total and E. coli, 1:10 dilution by QT97	APHA 9223B QT97
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of 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.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** 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:

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

Client: Nunavut Community & Government Services - Rankin Inlet
P.O. Box 490
Rankin Inlet NU X0C 0G0
Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R4896808								
WG3209636-14 LCS								
Alkalinity, Total (as CaCO3)			100.8		%		85-115	01-NOV-19
WG3209636-11 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	01-NOV-19
BOD-CBOD-WP	**Water**							
Batch R4901810								
WG3208063-12 LCS								
BOD Carbonaceous			104.3		%		85-115	01-NOV-19
WG3208063-11 MB								
BOD Carbonaceous			<2.0		mg/L		2	01-NOV-19
BOD-WP	**Water**							
Batch R4901810								
WG3208063-13 DUP		**L2375853-1**						
Biochemical Oxygen Demand		195	240		mg/L	19	20	01-NOV-19
WG3208063-12 LCS								
Biochemical Oxygen Demand			111.8		%		85-115	01-NOV-19
WG3208063-11 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	01-NOV-19
BTEXS+F1-HSMS-WP	**Water**							
Batch R4900907								
WG3211351-2 LCS								
Benzene			93.5		%		70-130	05-NOV-19
Toluene			93.0		%		70-130	05-NOV-19
Ethyl benzene			90.2		%		70-130	05-NOV-19
o-Xylene			92.6		%		70-130	05-NOV-19
m+p-Xylenes			93.3		%		70-130	05-NOV-19
WG3211351-3 LCS								
F1 (C6-C10)			94.9		%		70-130	05-NOV-19
WG3211351-1 MB								
Benzene			<0.00050		mg/L		0.0005	05-NOV-19
Toluene			<0.0010		mg/L		0.001	05-NOV-19
Ethyl benzene			<0.00050		mg/L		0.0005	05-NOV-19
o-Xylene			<0.00050		mg/L		0.0005	05-NOV-19
m+p-Xylenes			<0.00040		mg/L		0.0004	05-NOV-19
F1 (C6-C10)			<0.10		mg/L		0.1	05-NOV-19
Surrogate: 4-Bromofluorobenzene (SS)			79.0		%		70-130	05-NOV-19
C-TOC-HTC-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	**Water**							
Batch R4898931								
WG3210721-2 LCS								
Total Organic Carbon			91.7		%		80-120	04-NOV-19
WG3210721-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	04-NOV-19
CL-IC-N-WP	**Water**							
Batch R4898819								
WG3208962-2 LCS								
Chloride (Cl)			99.6		%		90-110	02-NOV-19
WG3208962-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	02-NOV-19
EC-WP	**Water**							
Batch R4896808								
WG3209636-13 LCS								
Conductivity			98.9		%		90-110	01-NOV-19
WG3209636-11 MB								
Conductivity			<1.0		umhos/cm		1	01-NOV-19
F-IC-N-WP	**Water**							
Batch R4898819								
WG3208962-2 LCS								
Fluoride (F)			102.3		%		90-110	02-NOV-19
WG3208962-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	02-NOV-19
F2-F4-FID-WP	**Water**							
Batch R4900866								
WG3211137-2 LCS								
F2 (C10-C16)			106.9		%		70-130	06-NOV-19
F3 (C16-C34)			99.4		%		70-130	06-NOV-19
F4 (C34-C50)			102.1		%		70-130	06-NOV-19
WG3211137-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	06-NOV-19
F3 (C16-C34)			<0.25		mg/L		0.25	06-NOV-19
F4 (C34-C50)			<0.25		mg/L		0.25	06-NOV-19
Surrogate: 2-Bromobenzotrifluoride			85.3		%		60-140	06-NOV-19
FC10-QT97-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	**Water**							
Batch R4896510								
WG3208665-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	01-NOV-19
HG-T-CVAA-WP	**Water**							
Batch R4901178								
WG3212454-2 LCS								
Mercury (Hg)-Total			98.0		%		80-120	06-NOV-19
WG3212454-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	06-NOV-19
MET-T-CCMS-WP	**Water**							
Batch R4903044								
WG3213018-2 LCS								
Aluminum (Al)-Total			102.9		%		80-120	07-NOV-19
Antimony (Sb)-Total			102.7		%		80-120	07-NOV-19
Arsenic (As)-Total			100.1		%		80-120	07-NOV-19
Barium (Ba)-Total			102.1		%		80-120	07-NOV-19
Beryllium (Be)-Total			99.6		%		80-120	07-NOV-19
Bismuth (Bi)-Total			94.9		%		80-120	07-NOV-19
Boron (B)-Total			102.1		%		80-120	07-NOV-19
Cadmium (Cd)-Total			98.8		%		80-120	07-NOV-19
Calcium (Ca)-Total			99.3		%		80-120	07-NOV-19
Cesium (Cs)-Total			99.8		%		80-120	07-NOV-19
Chromium (Cr)-Total			101.3		%		80-120	07-NOV-19
Cobalt (Co)-Total			99.5		%		80-120	07-NOV-19
Copper (Cu)-Total			100.4		%		80-120	07-NOV-19
Iron (Fe)-Total			99.9		%		80-120	07-NOV-19
Lead (Pb)-Total			96.6		%		80-120	07-NOV-19
Lithium (Li)-Total			100.7		%		80-120	07-NOV-19
Magnesium (Mg)-Total			99.7		%		80-120	07-NOV-19
Manganese (Mn)-Total			102.3		%		80-120	07-NOV-19
Molybdenum (Mo)-Total			102.0		%		80-120	07-NOV-19
Nickel (Ni)-Total			99.8		%		80-120	07-NOV-19
Potassium (K)-Total			102.2		%		80-120	07-NOV-19
Phosphorus (P)-Total			103.0		%		80-120	07-NOV-19
Rubidium (Rb)-Total			99.2		%		80-120	07-NOV-19
Selenium (Se)-Total			99.5		%		80-120	07-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R4903044								
WG3213018-2 LCS								
Silicon (Si)-Total			104.6		%		80-120	07-NOV-19
Silver (Ag)-Total			103.2		%		80-120	07-NOV-19
Sodium (Na)-Total			101.2		%		80-120	07-NOV-19
Strontium (Sr)-Total			101.0		%		80-120	07-NOV-19
Sulfur (S)-Total			99.8		%		80-120	07-NOV-19
Tellurium (Te)-Total			101.4		%		80-120	07-NOV-19
Thallium (Tl)-Total			98.6		%		80-120	07-NOV-19
Thorium (Th)-Total			91.9		%		80-120	07-NOV-19
Tin (Sn)-Total			100.5		%		80-120	07-NOV-19
Titanium (Ti)-Total			99.8		%		80-120	07-NOV-19
Tungsten (W)-Total			100.5		%		80-120	07-NOV-19
Uranium (U)-Total			94.6		%		80-120	07-NOV-19
Vanadium (V)-Total			102.2		%		80-120	07-NOV-19
Zinc (Zn)-Total			99.4		%		80-120	07-NOV-19
Zirconium (Zr)-Total			98.9		%		80-120	07-NOV-19
WG3213018-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-NOV-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-NOV-19
Boron (B)-Total			<0.010		mg/L		0.01	07-NOV-19
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	07-NOV-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-NOV-19
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	07-NOV-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-NOV-19
Iron (Fe)-Total			<0.010		mg/L		0.01	07-NOV-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	07-NOV-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	07-NOV-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	07-NOV-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	07-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R4903044								
WG3213018-1 MB								
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	07-NOV-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-NOV-19
Potassium (K)-Total			<0.050		mg/L		0.05	07-NOV-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	07-NOV-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	07-NOV-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	07-NOV-19
Silicon (Si)-Total			<0.10		mg/L		0.1	07-NOV-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	07-NOV-19
Sodium (Na)-Total			<0.050		mg/L		0.05	07-NOV-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-NOV-19
Sulfur (S)-Total			<0.50		mg/L		0.5	07-NOV-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	07-NOV-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	07-NOV-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-NOV-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	07-NOV-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-NOV-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-NOV-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	07-NOV-19
NH3-COL-WP	**Water**							
Batch R4898963								
WG3211108-10 LCS								
Ammonia, Total (as N)			98.6		%		85-115	04-NOV-19
WG3211108-9 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	04-NOV-19
NO2-IC-N-WP	**Water**							
Batch R4898819								
WG3208962-2 LCS								
Nitrite (as N)			99.6		%		90-110	02-NOV-19
WG3208962-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	02-NOV-19
NO3-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-WP	**Water**							
Batch R4898819								
WG3208962-2 LCS								
Nitrate (as N)			101.1		%		90-110	02-NOV-19
WG3208962-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	02-NOV-19
OG-GRAV-WP	**Water**							
Batch R4903191								
WG3211955-2 LCS								
Oil and Grease			102.4		%		70-130	08-NOV-19
WG3211955-1 MB								
Oil and Grease			<5.0		mg/L		5	08-NOV-19
P-T-COL-WP	**Water**							
Batch R4898746								
WG3210251-6 LCS								
Phosphorus (P)-Total			100.2		%		80-120	05-NOV-19
WG3210251-5 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	05-NOV-19
PAH,PANH-WP	**Water**							
Batch R4906524								
WG3216498-2 LCS								
1-Methyl Naphthalene			115.3		%		60-130	13-NOV-19
2-Methyl Naphthalene			107.7		%		60-130	13-NOV-19
Acenaphthene			113.4		%		60-130	13-NOV-19
Acenaphthylene			101.5		%		60-130	13-NOV-19
Anthracene			85.6		%		60-130	13-NOV-19
Acridine			106.5		%		60-130	13-NOV-19
Benzo(a)anthracene			106.4		%		60-130	13-NOV-19
Benzo(a)pyrene			103.6		%		60-130	13-NOV-19
Benzo(b&j)fluoranthene			109.2		%		60-130	13-NOV-19
Benzo(g,h,i)perylene			109.3		%		60-130	13-NOV-19
Benzo(k)fluoranthene			98.3		%		60-130	13-NOV-19
Chrysene			115.3		%		60-130	13-NOV-19
Dibenzo(a,h)anthracene			114.4		%		60-130	13-NOV-19
Fluoranthene			107.8		%		60-130	13-NOV-19
Fluorene			97.6		%		60-130	13-NOV-19
Indeno(1,2,3-cd)pyrene			111.4		%		60-130	13-NOV-19
Naphthalene			109.5		%		50-130	13-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	**Water**							
Batch R4906524								
WG3216498-2 LCS								
Phenanthrene			106.4		%		60-130	13-NOV-19
Pyrene			115.3		%		60-130	13-NOV-19
Quinoline			113.5		%		60-130	13-NOV-19
WG3216498-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	13-NOV-19
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	13-NOV-19
Acenaphthene			<0.000020		mg/L		0.00002	13-NOV-19
Acenaphthylene			<0.000020		mg/L		0.00002	13-NOV-19
Anthracene			<0.000010		mg/L		0.00001	13-NOV-19
Acridine			<0.000020		mg/L		0.00002	13-NOV-19
Benzo(a)anthracene			<0.000010		mg/L		0.00001	13-NOV-19
Benzo(a)pyrene			<0.000005C		mg/L		0.000005	13-NOV-19
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	13-NOV-19
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	13-NOV-19
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	13-NOV-19
Chrysene			<0.000020		mg/L		0.00002	13-NOV-19
Dibenzo(a,h)anthracene			<0.000005C		mg/L		0.000005	13-NOV-19
Fluoranthene			<0.000020		mg/L		0.00002	13-NOV-19
Fluorene			<0.000020		mg/L		0.00002	13-NOV-19
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	13-NOV-19
Naphthalene			<0.000050		mg/L		0.00005	13-NOV-19
Phenanthrene			<0.000050		mg/L		0.00005	13-NOV-19
Pyrene			<0.000010		mg/L		0.00001	13-NOV-19
Quinoline			<0.000020		mg/L		0.00002	13-NOV-19
Surrogate: Acenaphthene d10			97.6		%		60-130	13-NOV-19
Surrogate: Acridine d9			94.3		%		60-130	13-NOV-19
Surrogate: Chrysene d12			111.7		%		60-130	13-NOV-19
Surrogate: Naphthalene d8			98.8		%		50-130	13-NOV-19
Surrogate: Phenanthrene d10			102.2		%		60-130	13-NOV-19
PH-WP	**Water**							
Batch R4896808								
WG3209636-12 LCS								
pH			7.39		pH units		7.3-7.5	01-NOV-19
PHENOLS-4AAP-WT	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	**Water**							
Batch R4901001								
WG3212127-14 LCS								
Phenols (4AAP)			95.4		%		85-115	06-NOV-19
WG3212127-13 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	06-NOV-19
SO4-IC-N-WP	**Water**							
Batch R4898819								
WG3208962-2 LCS								
Sulfate (SO4)			101.9		%		90-110	02-NOV-19
WG3208962-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	02-NOV-19
SOLIDS-TOTSUS-WP	**Water**							
Batch R4902207								
WG3211709-17 LCS								
Total Suspended Solids			103.6		%		85-115	06-NOV-19
WG3211709-16 MB								
Total Suspended Solids			<2.0		mg/L		2	06-NOV-19
TC,EC10-QT97-WP	**Water**							
Batch R4896501								
WG3208672-2 DUP		**L2375853-1**						
Total Coliforms		>24200	>24200		MPN/100mL	0.0	65	01-NOV-19
Escherichia Coli		>24200	>24200		MPN/100mL	0.0	65	01-NOV-19
WG3208672-1 MB								
Total Coliforms			<1		MPN/100mL		1	01-NOV-19
Escherichia Coli			<1		MPN/100mL		1	01-NOV-19

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

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	31-OCT-19 13:30	01-NOV-19 12:00	0.25	23	hours	EHTR-FM

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 L2375853 were received on 01-NOV-19 13:15.

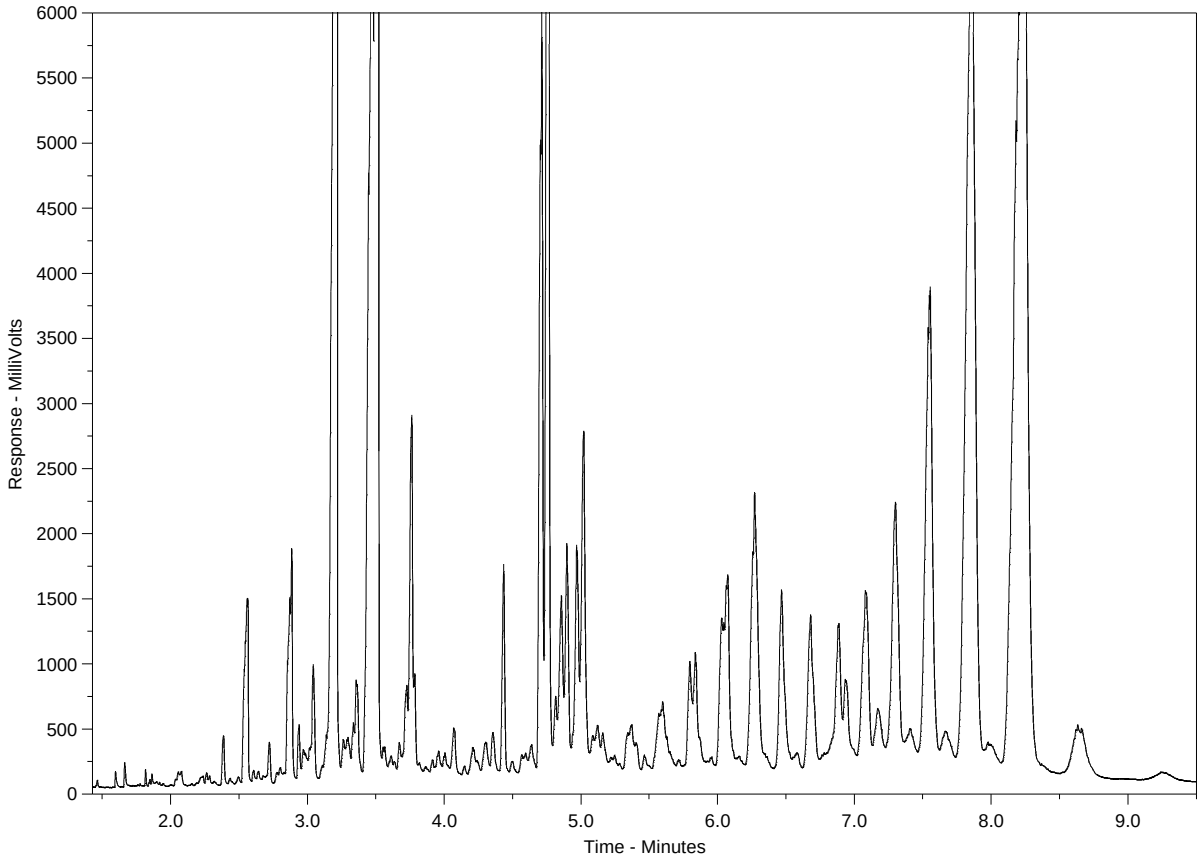
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

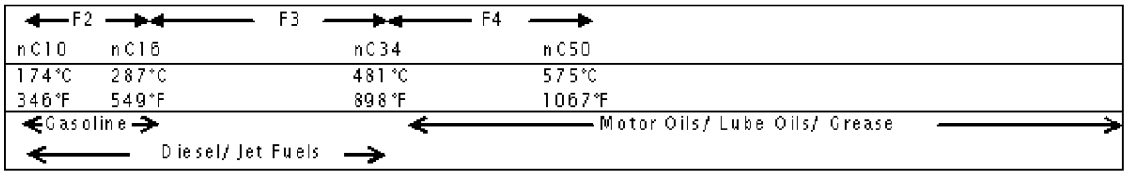
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2375853-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

L2375853-COFC

COC # _____

Page ___ of ___

Report To							
Company:	Nunavut CGS - Rankin Inlet (W8133)	☑ PDF	☐ Excel	☐ Digital	☐ Fax	**Service Requested** (Rush for routine analysis subject to availability)	
Contact:	SIMON DOIRON					◉ Regular (Standard Turnaround Times - Business Days)	
Address:	Box 490	*Email 1:* sdoiron@gov.nu.ca				○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT	
	Rankin Inlet , NU, X0C 0G0	Email 2: scollins@gov.nu.ca				○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT	
Phone:	867-645-8155 Cell# :	Email 3: mlusty@gov.nu.ca				○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT	
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**				**Analysis Request**	
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #: Rankin Inlet WWTP- Monthly Effluent				Please indicate below Filtered, Preserved or both (F, P, F/P)	
Company:		**PO / AFE:**					
Contact:		LSD:					
Address:							
Phone:	Fax:	Quote #:					
Lab Work Order # (lab use only)		**ALS Contact:** Craig Riddell	**Sampled By:** Simon Doiron				

Sample #	Sample Identification (This description will appear on the report)	Date Sampled	Time Sampled	Sample Type	BTX,F1-F4-WP	PAH,PANH-WP	NUNAVUT-WW-GRP1-WP	F-IC-N-WP	TC,EC-QT97-WP	Number of Containers
	Rankin Inlet WWTP - Effluent	Oct 31/19	1:30pm	Waste	x	x	x	x	x	15
	**NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1									
	So all ICP-MS metals report.									

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

Nunavut-WW-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine, 250 ml Metals , 40 ml Mercury Vial, 250 ml Amber Nutrient , 250 ml Amber Phenols, 2 x 250 ml Amber Oil & Grease , 250 ml Bacteria (9 bottles) + 5 Vials for BTX,F1-F4 and 1 L Amber for PAH's = Total of 15 Bottles per sample.

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
Bill Ross	Oct 31/19	1:30pm	AR	Nov 1	1:15	4.8 °C				

GENF 18.01 Front

Nunavut Community & Government Services - Rankin Inlet
ATTN: SIMON DOIRON
P.O. Box 490
Rankin Inlet NU X0C 0G0

Date Received: 26-NOV-19
Report Date: 05-DEC-19 14:54 (MT)
Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2387882

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT
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
L2387882-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 25-NOV-19 @ 13:30							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050	VOCHS	0.00050	mg/L		27-NOV-19	R4929936
Toluene	0.0012	VOCHS	0.0010	mg/L		27-NOV-19	R4929936
Ethyl benzene	<0.00050	VOCHS	0.00050	mg/L		27-NOV-19	R4929936
o-Xylene	<0.00050	VOCHS	0.00050	mg/L		27-NOV-19	R4929936
m+p-Xylenes	<0.00040	VOCHS	0.00040	mg/L		27-NOV-19	R4929936
F1 (C6-C10)	<0.10	VOCHS	0.10	mg/L		27-NOV-19	R4929936
Surrogate: 4-Bromofluorobenzene (SS)	86.0		70-130	%		27-NOV-19	R4929936
CCME PHC F2-F4 in Water							
F2 (C10-C16)	1.51		0.10	mg/L	28-NOV-19	30-NOV-19	R4929054
F3 (C16-C34)	21.6		0.25	mg/L	28-NOV-19	30-NOV-19	R4929054
F4 (C34-C50)	6.41		0.25	mg/L	28-NOV-19	30-NOV-19	R4929054
Surrogate: 2-Bromobenzotrifluoride	97.3		60-140	%	28-NOV-19	30-NOV-19	R4929054
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		05-DEC-19	
F2-Naphth	1.51		0.10	mg/L		05-DEC-19	
F3-PAH	21.6		0.25	mg/L		05-DEC-19	
Total Hydrocarbons (C6-C50)	29.5		0.38	mg/L		05-DEC-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		02-DEC-19	
Miscellaneous Parameters							
Fluoride (F)	0.155		0.020	mg/L		27-NOV-19	R4928444
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200		10	MPN/100mL		26-NOV-19	R4927006
Escherichia Coli	>24200		10	MPN/100mL		26-NOV-19	R4927006
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000291		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
2-Methyl Naphthalene	0.000287		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Acenaphthene	0.000044		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Acenaphthylene	<0.000020		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Anthracene	0.000027	EMPC	0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Acridine	<0.000020		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Benzo(a)anthracene	0.000058		0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Benzo(a)pyrene	0.0000311		0.0000050	mg/L	03-DEC-19	04-DEC-19	R4934049
Benzo(b&j)fluoranthene	0.000028		0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Chrysene	0.000058		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Dibenzo(a,h)anthracene	0.0000228	EMPC	0.0000050	mg/L	03-DEC-19	04-DEC-19	R4934049
Fluoranthene	0.000097	EMPC	0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Fluorene	0.000073	EMPC	0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Naphthalene	0.000186	EMPC	0.000050	mg/L	03-DEC-19	04-DEC-19	R4934049
Phenanthrene	0.000127		0.000050	mg/L	03-DEC-19	04-DEC-19	R4934049
Pyrene	0.000123	EMPC	0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Quinoline	0.000034		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
B(a)P Total Potency Equivalent	0.000064		0.000030	mg/L	03-DEC-19	04-DEC-19	R4934049
Surrogate: Acenaphthene d10	97.6		60-130	%	03-DEC-19	04-DEC-19	R4934049
Surrogate: Acridine d9	110.7		60-130	%	03-DEC-19	04-DEC-19	R4934049
Surrogate: Chrysene d12	115.0		60-130	%	03-DEC-19	04-DEC-19	R4934049
Surrogate: Naphthalene d8	107.3		50-130	%	03-DEC-19	04-DEC-19	R4934049
Surrogate: Phenanthrene d10	104.2		60-130	%	03-DEC-19	04-DEC-19	R4934049

* 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
L2387882-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 25-NOV-19 @ 13:30							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	152		1.2	mg/L		28-NOV-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		28-NOV-19	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		28-NOV-19	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	124		1.0	mg/L		27-NOV-19	R4927641
Ammonia by colour							
Ammonia, Total (as N)	13.1		1.0	mg/L		03-DEC-19	R4934147
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	> 150		20	mg/L		27-NOV-19	R4930316
Carbonaceous BOD							
BOD Carbonaceous	> 160		20	mg/L		27-NOV-19	R4930316
Chloride in Water by IC							
Chloride (Cl)	56.3		0.50	mg/L		27-NOV-19	R4928444
Conductivity							
Conductivity	492		1.0	umhos/cm		27-NOV-19	R4927641
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200		10	MPN/100mL		26-NOV-19	R4927011
Hardness Calculated							
Hardness (as CaCO3)	89.5	HTC	0.20	mg/L		05-DEC-19	
Mercury Total							
Mercury (Hg)-Total	0.0000150		0.0000050	mg/L	04-DEC-19	04-DEC-19	R4935627
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		27-NOV-19	R4928444
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		29-NOV-19	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		27-NOV-19	R4928444
Oil & Grease - Gravimetric							
Oil and Grease	44.7		5.0	mg/L		02-DEC-19	R4930010
Phenol (4AAP)							
Phenols (4AAP)	0.0191		0.0010	mg/L		29-NOV-19	R4929516
Phosphorus, Total							
Phosphorus (P)-Total	3.71		0.030	mg/L		28-NOV-19	R4927765
Sulfate in Water by IC							
Sulfate (SO4)	27.1		0.30	mg/L		27-NOV-19	R4928444
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.283		0.0030	mg/L	03-DEC-19	03-DEC-19	R4933220
Antimony (Sb)-Total	0.00020		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Arsenic (As)-Total	0.00085		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Barium (Ba)-Total	0.0290		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Bismuth (Bi)-Total	0.00258		0.000050	mg/L	03-DEC-19	03-DEC-19	R4933220
Boron (B)-Total	0.128		0.010	mg/L	03-DEC-19	03-DEC-19	R4933220
Cadmium (Cd)-Total	0.000135		0.0000050	mg/L	03-DEC-19	03-DEC-19	R4933220
Calcium (Ca)-Total	25.4		0.050	mg/L	03-DEC-19	03-DEC-19	R4933220
Cesium (Cs)-Total	0.000109		0.000010	mg/L	03-DEC-19	03-DEC-19	R4933220
Chromium (Cr)-Total	0.00085		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Cobalt (Co)-Total	0.00024		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Copper (Cu)-Total	0.191		0.00050	mg/L	03-DEC-19	03-DEC-19	R4933220

* 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
L2387882-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 25-NOV-19 @ 13:30							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS							
Iron (Fe)-Total	0.276		0.010	mg/L	03-DEC-19	03-DEC-19	R4933220
Lead (Pb)-Total	0.00279		0.000050	mg/L	03-DEC-19	03-DEC-19	R4933220
Lithium (Li)-Total	0.0032		0.0010	mg/L	03-DEC-19	03-DEC-19	R4933220
Magnesium (Mg)-Total	6.33		0.0050	mg/L	03-DEC-19	03-DEC-19	R4933220
Manganese (Mn)-Total	0.0378		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Molybdenum (Mo)-Total	0.00133		0.000050	mg/L	03-DEC-19	03-DEC-19	R4933220
Nickel (Ni)-Total	0.00298		0.00050	mg/L	03-DEC-19	03-DEC-19	R4933220
Potassium (K)-Total	12.1		0.050	mg/L	03-DEC-19	03-DEC-19	R4933220
Phosphorus (P)-Total	3.90		0.030	mg/L	03-DEC-19	03-DEC-19	R4933220
Rubidium (Rb)-Total	0.0132		0.00020	mg/L	03-DEC-19	03-DEC-19	R4933220
Selenium (Se)-Total	0.000329		0.000050	mg/L	03-DEC-19	03-DEC-19	R4933220
Silicon (Si)-Total	0.39		0.10	mg/L	03-DEC-19	03-DEC-19	R4933220
Silver (Ag)-Total	0.000068		0.000010	mg/L	03-DEC-19	03-DEC-19	R4933220
Sodium (Na)-Total	34.6		0.050	mg/L	03-DEC-19	03-DEC-19	R4933220
Strontium (Sr)-Total	0.116		0.00020	mg/L	03-DEC-19	03-DEC-19	R4933220
Sulfur (S)-Total	9.12		0.50	mg/L	03-DEC-19	03-DEC-19	R4933220
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-DEC-19	03-DEC-19	R4933220
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	03-DEC-19	03-DEC-19	R4933220
Thorium (Th)-Total	<0.00010		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Tin (Sn)-Total	0.00232		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Titanium (Ti)-Total	0.00291		0.00030	mg/L	03-DEC-19	03-DEC-19	R4933220
Tungsten (W)-Total	<0.00010		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Uranium (U)-Total	0.000175		0.000010	mg/L	03-DEC-19	03-DEC-19	R4933220
Vanadium (V)-Total	0.00052		0.00050	mg/L	03-DEC-19	03-DEC-19	R4933220
Zinc (Zn)-Total	0.108		0.0030	mg/L	03-DEC-19	03-DEC-19	R4933220
Zirconium (Zr)-Total	0.00069		0.00020	mg/L	03-DEC-19	03-DEC-19	R4933220
Total Organic Carbon by Combustion							
Total Organic Carbon	129		5.0	mg/L		27-NOV-19	R4929906
Total Suspended Solids							
Total Suspended Solids	166		6.0	mg/L		28-NOV-19	R4929899
pH							
pH	7.30		0.10	pH units		28-NOV-19	R4928689

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
VOCHS	VOC analysis was conducted for a water sample that contained > 5% headspace. Results may be biased low.

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-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are 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.

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.

BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA 8260C / EPA 5021A

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

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-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

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.

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

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

F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP	Water	CCME PHC F2-F4 in Water	EPA 3511

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 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.

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-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

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

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (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.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

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-L

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

PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA 3511/8270D (mod)

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

PH-WP	Water	pH	APHA 4500H

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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,EC10-QT97-WP	Water	Total and E. coli, 1:10 dilution by QT97	APHA 9223B QT97
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees 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.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** 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:

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: L2387882 Report Date: 05-DEC-19

Client: Nunavut Community & Government Services - Rankin Inlet
P.O. Box 490
Rankin Inlet NU X0C 0G0
Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R4927641								
WG3230521-5 DUP		**L2387882-1**						
Alkalinity, Total (as CaCO3)		124	120		mg/L	3.5	20	27-NOV-19
WG3230521-4 LCS								
Alkalinity, Total (as CaCO3)			104.1		%		85-115	27-NOV-19
WG3230521-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	27-NOV-19
BOD-CBOD-WP	**Water**							
Batch R4930316								
WG3228792-12 LCS								
BOD Carbonaceous			100.1		%		85-115	27-NOV-19
WG3228792-11 MB								
BOD Carbonaceous			<2.0		mg/L		2	27-NOV-19
BOD-WP	**Water**							
Batch R4930316								
WG3228792-12 LCS								
Biochemical Oxygen Demand			100.0		%		85-115	27-NOV-19
WG3228792-11 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	27-NOV-19
BTEXS+F1-HSMS-WP	**Water**							
Batch R4929936								
WG3229963-2 LCS								
Benzene			87.7		%		70-130	27-NOV-19
Toluene			92.4		%		70-130	27-NOV-19
Ethyl benzene			87.7		%		70-130	27-NOV-19
o-Xylene			90.9		%		70-130	27-NOV-19
m+p-Xylenes			101.4		%		70-130	27-NOV-19
WG3229963-3 LCS								
F1 (C6-C10)			96.0		%		70-130	27-NOV-19
WG3229963-1 MB								
Benzene			<0.00050		mg/L		0.0005	27-NOV-19
Toluene			<0.0010		mg/L		0.001	27-NOV-19
Ethyl benzene			<0.00050		mg/L		0.0005	27-NOV-19
o-Xylene			<0.00050		mg/L		0.0005	27-NOV-19
m+p-Xylenes			<0.00040		mg/L		0.0004	27-NOV-19
F1 (C6-C10)			<0.10		mg/L		0.1	27-NOV-19
Surrogate: 4-Bromofluorobenzene (SS)			92.0		%		70-130	27-NOV-19
C-TOC-HTC-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	**Water**							
Batch R4929906								
WG3232819-2 LCS								
Total Organic Carbon			101.4		%		80-120	27-NOV-19
WG3232819-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	27-NOV-19
CL-IC-N-WP	**Water**							
Batch R4928444								
WG3229533-2 LCS								
Chloride (Cl)			98.2		%		90-110	27-NOV-19
WG3229533-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	27-NOV-19
EC-WP	**Water**							
Batch R4927641								
WG3230521-5 DUP		**L2387882-1**						
Conductivity		492	493		umhos/cm	0.2	10	27-NOV-19
WG3230521-3 LCS								
Conductivity			98.4		%		90-110	27-NOV-19
WG3230521-1 MB								
Conductivity			<1.0		umhos/cm		1	27-NOV-19
F-IC-N-WP	**Water**							
Batch R4928444								
WG3229533-2 LCS								
Fluoride (F)			99.6		%		90-110	27-NOV-19
WG3229533-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	27-NOV-19
F2-F4-FID-WP	**Water**							
Batch R4929054								
WG3230328-2 LCS								
F2 (C10-C16)			104.8		%		70-130	29-NOV-19
F3 (C16-C34)			96.5		%		70-130	29-NOV-19
F4 (C34-C50)			99.3		%		70-130	29-NOV-19
WG3230328-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	29-NOV-19
F3 (C16-C34)			<0.25		mg/L		0.25	29-NOV-19
F4 (C34-C50)			<0.25		mg/L		0.25	29-NOV-19
Surrogate: 2-Bromobenzotrifluoride			98.7		%		60-140	29-NOV-19
FC10-QT97-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	**Water**							
Batch R4927011								
WG3228979-2 DUP		**L2387882-1**						
Fecal Coliforms		>24200	>24200		MPN/100mL	0.0	65	26-NOV-19
WG3228979-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	26-NOV-19
HG-T-CVAA-WP	**Water**							
Batch R4935627								
WG3235353-2 LCS								
Mercury (Hg)-Total			102.0		%		80-120	04-DEC-19
WG3235353-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	04-DEC-19
MET-T-CCMS-WP	**Water**							
Batch R4933220								
WG3233720-2 LCS								
Aluminum (Al)-Total			101.6		%		80-120	03-DEC-19
Antimony (Sb)-Total			100.8		%		80-120	03-DEC-19
Arsenic (As)-Total			101.1		%		80-120	03-DEC-19
Barium (Ba)-Total			103.9		%		80-120	03-DEC-19
Beryllium (Be)-Total			102.5		%		80-120	03-DEC-19
Bismuth (Bi)-Total			101.9		%		80-120	03-DEC-19
Boron (B)-Total			97.5		%		80-120	03-DEC-19
Cadmium (Cd)-Total			103.5		%		80-120	03-DEC-19
Calcium (Ca)-Total			104.0		%		80-120	03-DEC-19
Cesium (Cs)-Total			108.4		%		80-120	03-DEC-19
Chromium (Cr)-Total			102.0		%		80-120	03-DEC-19
Cobalt (Co)-Total			101.1		%		80-120	03-DEC-19
Copper (Cu)-Total			101.1		%		80-120	03-DEC-19
Iron (Fe)-Total			92.5		%		80-120	03-DEC-19
Lead (Pb)-Total			103.1		%		80-120	03-DEC-19
Lithium (Li)-Total			101.6		%		80-120	03-DEC-19
Magnesium (Mg)-Total			114.4		%		80-120	03-DEC-19
Manganese (Mn)-Total			101.2		%		80-120	03-DEC-19
Molybdenum (Mo)-Total			99.3		%		80-120	03-DEC-19
Nickel (Ni)-Total			98.6		%		80-120	03-DEC-19
Potassium (K)-Total			99.1		%		80-120	03-DEC-19
Phosphorus (P)-Total			101.4		%		80-120	03-DEC-19
Rubidium (Rb)-Total			100.8		%		80-120	03-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R4933220								
WG3233720-2 LCS								
Selenium (Se)-Total			104.1		%		80-120	03-DEC-19
Silicon (Si)-Total			91.6		%		80-120	03-DEC-19
Silver (Ag)-Total			100.7		%		80-120	03-DEC-19
Sodium (Na)-Total			103.7		%		80-120	03-DEC-19
Strontium (Sr)-Total			108.7		%		80-120	03-DEC-19
Sulfur (S)-Total			91.4		%		80-120	03-DEC-19
Tellurium (Te)-Total			93.9		%		80-120	03-DEC-19
Thallium (Tl)-Total			104.3		%		80-120	03-DEC-19
Thorium (Th)-Total			104.5		%		80-120	03-DEC-19
Tin (Sn)-Total			98.4		%		80-120	03-DEC-19
Titanium (Ti)-Total			96.5		%		80-120	03-DEC-19
Tungsten (W)-Total			102.0		%		80-120	03-DEC-19
Uranium (U)-Total			110.2		%		80-120	03-DEC-19
Vanadium (V)-Total			102.4		%		80-120	03-DEC-19
Zinc (Zn)-Total			99.6		%		80-120	03-DEC-19
Zirconium (Zr)-Total			98.2		%		80-120	03-DEC-19
WG3233720-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	03-DEC-19
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	03-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-DEC-19
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	03-DEC-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R4933220								
WG3233720-1 MB								
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	03-DEC-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	03-DEC-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	03-DEC-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	03-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Sodium (Na)-Total			<0.050		mg/L		0.05	03-DEC-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-DEC-19
Sulfur (S)-Total			<0.50		mg/L		0.5	03-DEC-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	03-DEC-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-DEC-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-DEC-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	03-DEC-19
NH3-COL-WP	**Water**							
Batch R4934147								
WG3235151-6 LCS								
Ammonia, Total (as N)			101.4		%		85-115	03-DEC-19
WG3235151-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	03-DEC-19
NO2-IC-N-WP	**Water**							
Batch R4928444								
WG3229533-2 LCS								
Nitrite (as N)			101.4		%		90-110	27-NOV-19
WG3229533-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	27-NOV-19
NO3-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-WP	**Water**							
Batch R4928444								
WG3229533-2 LCS								
Nitrate (as N)			101.2		%		90-110	27-NOV-19
WG3229533-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	27-NOV-19
OG-GRAV-WP	**Water**							
Batch R4930010								
WG3231394-2 LCS								
Oil and Grease			94.1		%		70-130	02-DEC-19
WG3231394-1 MB								
Oil and Grease			<5.0		mg/L		5	02-DEC-19
P-T-COL-WP	**Water**							
Batch R4927765								
WG3230456-14 LCS								
Phosphorus (P)-Total			101.0		%		80-120	28-NOV-19
WG3230456-13 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	28-NOV-19
PAH,PANH-WP	**Water**							
Batch R4934049								
WG3235119-2 LCS								
1-Methyl Naphthalene			100.9		%		60-130	04-DEC-19
2-Methyl Naphthalene			92.4		%		60-130	04-DEC-19
Acenaphthene			100.0		%		60-130	04-DEC-19
Acenaphthylene			88.2		%		60-130	04-DEC-19
Anthracene			77.2		%		60-130	04-DEC-19
Acridine			91.9		%		60-130	04-DEC-19
Benzo(a)anthracene			107.5		%		60-130	04-DEC-19
Benzo(a)pyrene			106.1		%		60-130	04-DEC-19
Benzo(b&j)fluoranthene			106.1		%		60-130	04-DEC-19
Benzo(g,h,i)perylene			98.4		%		60-130	04-DEC-19
Benzo(k)fluoranthene			101.3		%		60-130	04-DEC-19
Chrysene			99.0		%		60-130	04-DEC-19
Dibenzo(a,h)anthracene			90.5		%		60-130	04-DEC-19
Fluoranthene			110.4		%		60-130	04-DEC-19
Fluorene			88.2		%		60-130	04-DEC-19
Indeno(1,2,3-cd)pyrene			92.4		%		60-130	04-DEC-19
Naphthalene			100.8		%		50-130	04-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	**Water**							
Batch R4934049								
WG3235119-2 LCS								
Phenanthrene			104.3		%		60-130	04-DEC-19
Pyrene			116.2		%		60-130	04-DEC-19
Quinoline			105.4		%		60-130	04-DEC-19
WG3235119-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	04-DEC-19
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	04-DEC-19
Acenaphthene			<0.000020		mg/L		0.00002	04-DEC-19
Acenaphthylene			<0.000020		mg/L		0.00002	04-DEC-19
Anthracene			<0.000010		mg/L		0.00001	04-DEC-19
Acridine			<0.000020		mg/L		0.00002	04-DEC-19
Benzo(a)anthracene			<0.000010		mg/L		0.00001	04-DEC-19
Benzo(a)pyrene			<0.000005(		mg/L		0.000005	04-DEC-19
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	04-DEC-19
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	04-DEC-19
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	04-DEC-19
Chrysene			<0.000020		mg/L		0.00002	04-DEC-19
Dibenzo(a,h)anthracene			<0.000005(		mg/L		0.000005	04-DEC-19
Fluoranthene			<0.000020		mg/L		0.00002	04-DEC-19
Fluorene			<0.000020		mg/L		0.00002	04-DEC-19
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	04-DEC-19
Naphthalene			<0.000050		mg/L		0.00005	04-DEC-19
Phenanthrene			<0.000050		mg/L		0.00005	04-DEC-19
Pyrene			<0.000010		mg/L		0.00001	04-DEC-19
Quinoline			<0.000020		mg/L		0.00002	04-DEC-19
Surrogate: Acenaphthene d10			97.0		%		60-130	04-DEC-19
Surrogate: Acridine d9			93.7		%		60-130	04-DEC-19
Surrogate: Chrysene d12			111.4		%		60-130	04-DEC-19
Surrogate: Naphthalene d8			92.8		%		50-130	04-DEC-19
Surrogate: Phenanthrene d10			96.6		%		60-130	04-DEC-19
PH-WP	**Water**							
Batch R4928689								
WG3230521-5 DUP		**L2387882-1**						
pH		7.30	7.29	J	pH units	0.01	0.2	28-NOV-19
WG3231568-2 LCS								
pH			7.37		pH units		7.3-7.5	28-NOV-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	**Water**							
Batch R4929516								
WG3231641-6 LCS								
Phenols (4AAP)			108.3		%		85-115	29-NOV-19
WG3231641-5 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	29-NOV-19
SO4-IC-N-WP	**Water**							
Batch R4928444								
WG3229533-2 LCS								
Sulfate (SO4)			101.2		%		90-110	27-NOV-19
WG3229533-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	27-NOV-19
SOLIDS-TOTSUS-WP	**Water**							
Batch R4929899								
WG3231016-2 LCS								
Total Suspended Solids			93.4		%		85-115	28-NOV-19
WG3231016-1 MB								
Total Suspended Solids			<2.0		mg/L		2	28-NOV-19
TC,EC10-QT97-WP	**Water**							
Batch R4927006								
WG3229470-2 DUP		**L2387882-1**						
Total Coliforms		>24200	>24200		MPN/100mL	0.0	65	26-NOV-19
Escherichia Coli		>24200	>24200		MPN/100mL	0.0	65	26-NOV-19
WG3229470-1 MB								
Total Coliforms			<1		MPN/100mL		1	26-NOV-19
Escherichia Coli			<1		MPN/100mL		1	26-NOV-19

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
J	Duplicate results and limits are expressed in terms of absolute difference.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	25-NOV-19 13:30	28-NOV-19 12:00	0.25	71	hours	EHTR-FM

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 L2387882 were received on 26-NOV-19 13:35.

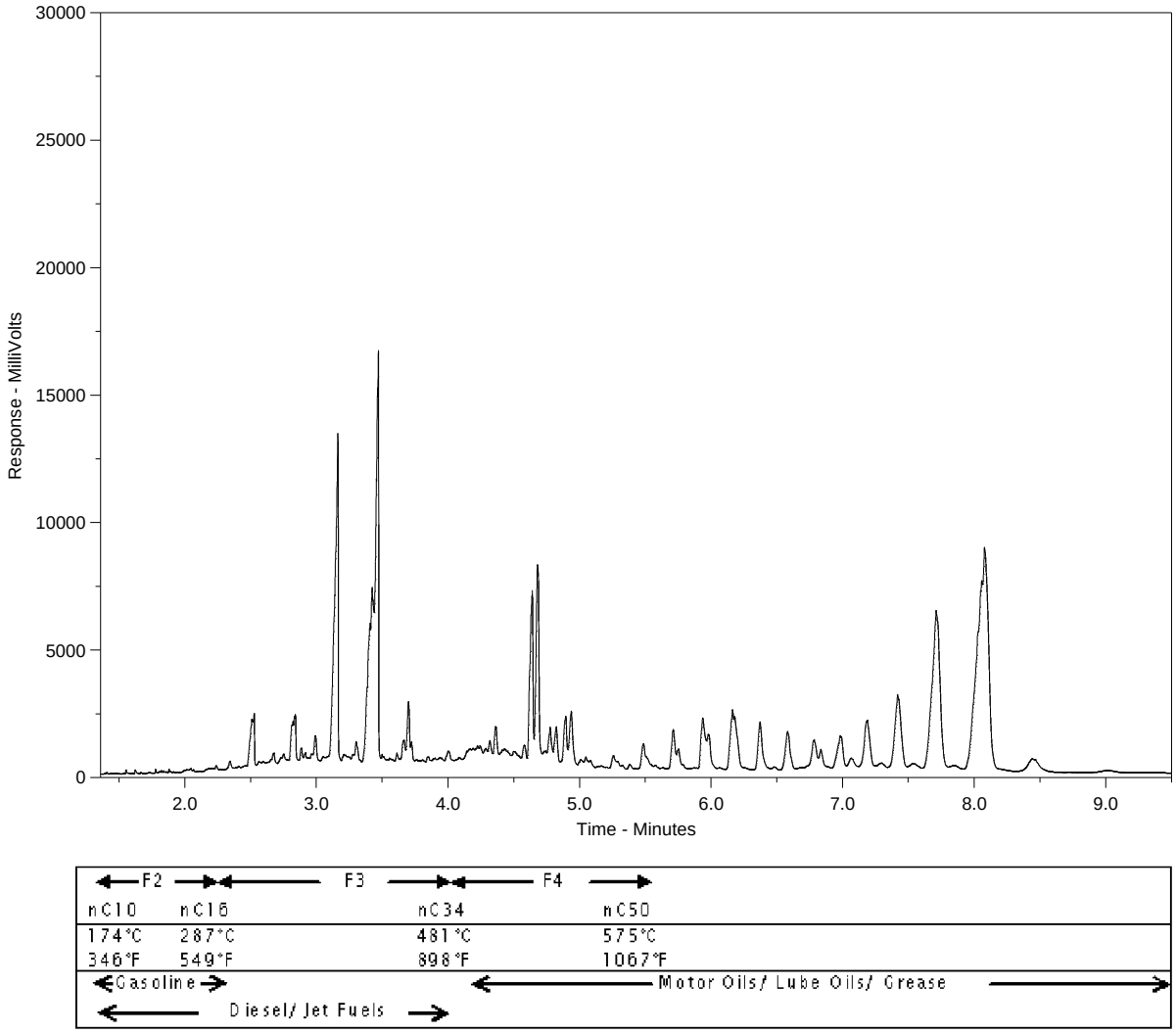
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2387882-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

L2387882-COFC

COC # _____

Page ____ of ____

Report To							
Company:	Nunavut CGS - Rankin Inlet (W8133)	☑ Standard	☐				
Contact:	SIMON DOIRON	☑ PDF	☐ Excel	☐ Digital	☐ Fax		
Address:	Box 490	Email 1:	sdoiron@gov.nu.ca				
	Rankin Inlet , NU, X0C 0G0	Email 2:	scollins@gov.nu.ca				
Phone:	867-645-8155 Cell# :	Email 3:	mlusty@gov.nu.ca				
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**					
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Rankin Inlet WWTP- Monthly Effluent				
Company:		**PO / AFE:**					
Contact:		LSD:					
Address:							
Phone:	Fax:	Quote #:					
Lab Work Order # (lab use only)		**ALS Contact:**	Craig Riddell	**Sampled By:**	Simon Doiron		

Service Requested (Rush for routine analysis subject to availability)

- (●) Regular (Standard Turnaround Times - Business Days)
- ( ) Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ( ) Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ( ) Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date Sampled	Time Sampled	Sample Type	BTX,F1-F4-WP	PAH,PANH-WP	NUNAVUT-WW-GRP1-WP	F-IC-N-WP	TC,EC-QT97-WP								Number of Containers
	Rankin Inlet WWTP - Effluent	Nov 25/19	1:30 pm	Waste	x	x	x	x	x								15
		Nov 25/19	1:30 pm														
	**NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1																
	So all ICP-MS metals report.																

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

Nunavut-WW-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine, 250 ml Metals , 40 ml Mercury Vial, 250 ml Amber Nutrient , 250 ml Amber Phenols, 2 x 250 ml Amber Oil & Grease , 250 ml Bacteria (9 bottles) + 5 Vials for BTX,F1-F4 and 1 L Amber for PAH's = Total of 15 Bottles per sample.

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
Bill Ross	Nov 25/19	1:30 pm		NOV 26 2019	1:35	6.1 °C		NOV 26 2019	1:35	

GENF 18.01 Front

Nunavut Community & Government Services - Rankin Inlet
ATTN: SIMON DOIRON
P.O. Box 490
Rankin Inlet NU X0C 0G0

Date Received: 06-DEC-19
Report Date: 23-DEC-19 07:30 (MT)
Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2393039

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT
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
L2393039-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 04-DEC-19 @ 13:00							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		13-DEC-19	R4942527
Toluene	0.0023		0.0010	mg/L		13-DEC-19	R4942527
Ethyl benzene	<0.00050		0.00050	mg/L		13-DEC-19	R4942527
o-Xylene	0.00100		0.00050	mg/L		13-DEC-19	R4942527
m+p-Xylenes	0.00211		0.00040	mg/L		13-DEC-19	R4942527
F1 (C6-C10)	<0.10		0.10	mg/L		13-DEC-19	R4942527
Surrogate: 4-Bromofluorobenzene (SS)	84.3		70-130	%		13-DEC-19	R4942527
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.32		0.10	mg/L	07-DEC-19	07-DEC-19	R4939831
F3 (C16-C34)	8.33		0.25	mg/L	07-DEC-19	07-DEC-19	R4939831
F4 (C34-C50)	2.09		0.25	mg/L	07-DEC-19	07-DEC-19	R4939831
Surrogate: 2-Bromobenzotrifluoride	100.4		60-140	%	07-DEC-19	07-DEC-19	R4939831
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		20-DEC-19	
F2-Naphth	0.32		0.10	mg/L		20-DEC-19	
F3-PAH	8.33		0.25	mg/L		20-DEC-19	
Total Hydrocarbons (C6-C50)	10.7		0.38	mg/L		20-DEC-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	0.00311		0.00064	mg/L		17-DEC-19	
Miscellaneous Parameters							
Fluoride (F)	0.108		0.020	mg/L		07-DEC-19	R4941476
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	PEHR	10	MPN/100mL		06-DEC-19	R4937096
Escherichia Coli	>24200	PEHR	10	MPN/100mL		06-DEC-19	R4937096
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000264		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
2-Methyl Naphthalene	0.000413		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Acenaphthene	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Acenaphthylene	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Anthracene	<0.000010		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Acridine	0.000028	EMPC	0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Benzo(a)anthracene	<0.000010		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Benzo(a)pyrene	0.0000065	EMPC	0.0000050	mg/L	12-DEC-19	19-DEC-19	R4949449
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Chrysene	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	12-DEC-19	19-DEC-19	R4949449
Fluoranthene	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Fluorene	0.000037	EMPC	0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Naphthalene	0.000302		0.000050	mg/L	12-DEC-19	19-DEC-19	R4949449
Phenanthrene	<0.000050		0.000050	mg/L	12-DEC-19	19-DEC-19	R4949449
Pyrene	0.000017		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Quinoline	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	12-DEC-19	19-DEC-19	R4949449
Surrogate: Acenaphthene d10	112.6		60-130	%	12-DEC-19	19-DEC-19	R4949449
Surrogate: Acridine d9	115.0		60-130	%	12-DEC-19	19-DEC-19	R4949449
Surrogate: Chrysene d12	122.0		60-130	%	12-DEC-19	19-DEC-19	R4949449
Surrogate: Naphthalene d8	100.3		50-130	%	12-DEC-19	19-DEC-19	R4949449
Surrogate: Phenanthrene d10	106.8		60-130	%	12-DEC-19	19-DEC-19	R4949449

* 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
L2393039-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 04-DEC-19 @ 13:00							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	71.1		1.2	mg/L		12-DEC-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		12-DEC-19	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		12-DEC-19	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	58.3		1.0	mg/L		11-DEC-19	R4941615
Ammonia by colour							
Ammonia, Total (as N)	1.97		0.10	mg/L		11-DEC-19	R4941859
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	63		20	mg/L		06-DEC-19	R4941414
Carbonaceous BOD							
BOD Carbonaceous	53		20	mg/L		06-DEC-19	R4941414
Chloride in Water by IC							
Chloride (Cl)	47.5		0.50	mg/L		07-DEC-19	R4941476
Conductivity							
Conductivity	300		1.0	umhos/cm		11-DEC-19	R4941615
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200	PEHR	10	MPN/100mL		06-DEC-19	R4937094
Hardness Calculated							
Hardness (as CaCO3)	82.1	HTC	0.20	mg/L		13-DEC-19	
Mercury Total							
Mercury (Hg)-Total	0.0000070		0.0000050	mg/L	19-DEC-19	19-DEC-19	R4947031
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		07-DEC-19	R4941476
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		12-DEC-19	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		07-DEC-19	R4941476
Oil & Grease - Gravimetric							
Oil and Grease	24.0		5.0	mg/L		13-DEC-19	R4942983
Phenol (4AAP)							
Phenols (4AAP)	0.0032		0.0010	mg/L		10-DEC-19	R4940476
Phosphorus, Total							
Phosphorus (P)-Total	0.984		0.0030	mg/L		10-DEC-19	R4939913
Sulfate in Water by IC							
Sulfate (SO4)	24.6		0.30	mg/L		07-DEC-19	R4941476
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.118		0.0030	mg/L	12-DEC-19	12-DEC-19	R4942418
Antimony (Sb)-Total	0.00087		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Arsenic (As)-Total	0.00083		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Barium (Ba)-Total	0.0270		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Bismuth (Bi)-Total	0.00118		0.000050	mg/L	12-DEC-19	12-DEC-19	R4942418
Boron (B)-Total	0.056		0.010	mg/L	12-DEC-19	12-DEC-19	R4942418
Cadmium (Cd)-Total	0.0000371		0.0000050	mg/L	12-DEC-19	12-DEC-19	R4942418
Calcium (Ca)-Total	23.5		0.050	mg/L	12-DEC-19	12-DEC-19	R4942418
Cesium (Cs)-Total	0.000043		0.000010	mg/L	12-DEC-19	12-DEC-19	R4942418
Chromium (Cr)-Total	0.00064		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Cobalt (Co)-Total	0.00015		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Copper (Cu)-Total	0.136		0.00050	mg/L	12-DEC-19	12-DEC-19	R4942418

* 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
L2393039-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 04-DEC-19 @ 13:00							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS							
Iron (Fe)-Total	0.240		0.010	mg/L	12-DEC-19	12-DEC-19	R4942418
Lead (Pb)-Total	0.00279		0.000050	mg/L	12-DEC-19	12-DEC-19	R4942418
Lithium (Li)-Total	0.0034		0.0010	mg/L	12-DEC-19	12-DEC-19	R4942418
Magnesium (Mg)-Total	5.71		0.0050	mg/L	12-DEC-19	12-DEC-19	R4942418
Manganese (Mn)-Total	0.0252		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Molybdenum (Mo)-Total	0.00104		0.000050	mg/L	12-DEC-19	12-DEC-19	R4942418
Nickel (Ni)-Total	0.00293		0.00050	mg/L	12-DEC-19	12-DEC-19	R4942418
Potassium (K)-Total	4.83		0.050	mg/L	12-DEC-19	12-DEC-19	R4942418
Phosphorus (P)-Total	1.07		0.030	mg/L	12-DEC-19	12-DEC-19	R4942418
Rubidium (Rb)-Total	0.00466		0.00020	mg/L	12-DEC-19	12-DEC-19	R4942418
Selenium (Se)-Total	0.000129		0.000050	mg/L	12-DEC-19	12-DEC-19	R4942418
Silicon (Si)-Total	0.28		0.10	mg/L	12-DEC-19	12-DEC-19	R4942418
Silver (Ag)-Total	0.000027		0.000010	mg/L	12-DEC-19	12-DEC-19	R4942418
Sodium (Na)-Total	28.1		0.050	mg/L	12-DEC-19	12-DEC-19	R4942418
Strontium (Sr)-Total	0.115		0.00020	mg/L	12-DEC-19	12-DEC-19	R4942418
Sulfur (S)-Total	9.69		0.50	mg/L	12-DEC-19	12-DEC-19	R4942418
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	12-DEC-19	12-DEC-19	R4942418
Thallium (Tl)-Total	<0.000010		0.000010	mg/L	12-DEC-19	12-DEC-19	R4942418
Thorium (Th)-Total	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Tin (Sn)-Total	0.00067		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Titanium (Ti)-Total	0.0107		0.00030	mg/L	12-DEC-19	12-DEC-19	R4942418
Tungsten (W)-Total	<0.00010		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Uranium (U)-Total	0.000162		0.000010	mg/L	12-DEC-19	12-DEC-19	R4942418
Vanadium (V)-Total	0.00059		0.00050	mg/L	12-DEC-19	12-DEC-19	R4942418
Zinc (Zn)-Total	0.0473		0.0030	mg/L	12-DEC-19	12-DEC-19	R4942418
Zirconium (Zr)-Total	0.00020		0.00020	mg/L	12-DEC-19	12-DEC-19	R4942418
Total Organic Carbon by Combustion							
Total Organic Carbon	28.6		0.50	mg/L		12-DEC-19	R4942510
Total Suspended Solids							
Total Suspended Solids	97.2		6.0	mg/L		11-DEC-19	R4941843
pH							
pH	7.14		0.10	pH units		11-DEC-19	R4941615

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

Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2393039-1	RANKIN INLET WWTP - EFFI	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Sample Parameter Qualifier Key:

Qualifier	Description
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
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-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are 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.

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.

BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA 8260C / EPA 5021A

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

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-SCREEN-WP	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc

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.

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

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP	Water	CCME PHC F2-F4 in Water	EPA 3511

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 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.

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-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

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

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (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.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

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-L

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

PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA 3511/8270D (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.			
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,EC10-QT97-WP	Water	Total and E. coli, 1:10 dilution by QT97	APHA 9223B QT97
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Escherichia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees 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.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** 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:

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

Client: Nunavut Community & Government Services - Rankin Inlet
P.O. Box 490
Rankin Inlet NU X0C 0G0
Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R4941615								
WG3239080-14 LCS								
Alkalinity, Total (as CaCO3)			101.0		%		85-115	11-DEC-19
WG3239080-11 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	11-DEC-19
BOD-CBOD-WP	**Water**							
Batch R4941414								
WG3236928-7 LCS								
BOD Carbonaceous			110.7		%		85-115	06-DEC-19
WG3236928-6 MB								
BOD Carbonaceous			<2.0		mg/L		2	06-DEC-19
BOD-WP	**Water**							
Batch R4941414								
WG3236928-7 LCS								
Biochemical Oxygen Demand			104.0		%		85-115	06-DEC-19
WG3236928-6 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	06-DEC-19
BTEXS+F1-HSMS-WP	**Water**							
Batch R4942527								
WG3239444-8 LCS								
Benzene			95.0		%		70-130	11-DEC-19
Toluene			94.7		%		70-130	11-DEC-19
Ethyl benzene			94.1		%		70-130	11-DEC-19
o-Xylene			98.7		%		70-130	11-DEC-19
m+p-Xylenes			93.0		%		70-130	11-DEC-19
WG3239444-9 LCS								
F1 (C6-C10)			107.4		%		70-130	11-DEC-19
WG3239444-7 MB								
Benzene			<0.00050		mg/L		0.0005	11-DEC-19
Toluene			<0.0010		mg/L		0.001	11-DEC-19
Ethyl benzene			<0.00050		mg/L		0.0005	11-DEC-19
o-Xylene			<0.00050		mg/L		0.0005	11-DEC-19
m+p-Xylenes			<0.00040		mg/L		0.0004	11-DEC-19
F1 (C6-C10)			<0.10		mg/L		0.1	11-DEC-19
Surrogate: 4-Bromofluorobenzene (SS)			87.1		%		70-130	11-DEC-19
WG3239444-12 MS		**L2393039-1**						
F1 (C6-C10)			113.5		%		50-150	11-DEC-19
C-TOC-HTC-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	**Water**							
Batch R4942510								
WG3241750-3 DUP		**L2393039-1**						
Total Organic Carbon		28.6	27.7		mg/L	3.3	20	12-DEC-19
WG3241750-2 LCS								
Total Organic Carbon			94.2		%		80-120	12-DEC-19
WG3241750-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	12-DEC-19
CL-IC-N-WP	**Water**							
Batch R4941476								
WG3237580-2 LCS								
Chloride (Cl)			100.3		%		90-110	07-DEC-19
WG3237580-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	07-DEC-19
EC-WP	**Water**							
Batch R4941615								
WG3239080-13 LCS								
Conductivity			97.4		%		90-110	11-DEC-19
WG3239080-11 MB								
Conductivity			<1.0		umhos/cm		1	11-DEC-19
F-IC-N-WP	**Water**							
Batch R4941476								
WG3237580-2 LCS								
Fluoride (F)			103.0		%		90-110	07-DEC-19
WG3237580-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	07-DEC-19
F2-F4-FID-WP	**Water**							
Batch R4939831								
WG3237617-2 LCS								
F2 (C10-C16)			106.3		%		70-130	07-DEC-19
F3 (C16-C34)			97.7		%		70-130	07-DEC-19
F4 (C34-C50)			98.3		%		70-130	07-DEC-19
WG3237617-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	07-DEC-19
F3 (C16-C34)			<0.25		mg/L		0.25	07-DEC-19
F4 (C34-C50)			<0.25		mg/L		0.25	07-DEC-19
Surrogate: 2-Bromobenzotrifluoride			103.2		%		60-140	07-DEC-19
FC10-QT97-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	**Water**							
Batch R4937094								
WG3237315-2 DUP		**L2393039-1**						
Fecal Coliforms		>24200	>24200		MPN/100mL	0.0	65	06-DEC-19
WG3237315-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	06-DEC-19
HG-T-CVAA-WP	**Water**							
Batch R4947031								
WG3246670-2 LCS								
Mercury (Hg)-Total			99.0		%		80-120	19-DEC-19
WG3246670-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	19-DEC-19
MET-T-CCMS-WP	**Water**							
Batch R4942418								
WG3240862-2 LCS								
Aluminum (Al)-Total			103.7		%		80-120	12-DEC-19
Antimony (Sb)-Total			105.9		%		80-120	12-DEC-19
Arsenic (As)-Total			103.7		%		80-120	12-DEC-19
Barium (Ba)-Total			102.8		%		80-120	12-DEC-19
Beryllium (Be)-Total			101.3		%		80-120	12-DEC-19
Bismuth (Bi)-Total			100.3		%		80-120	12-DEC-19
Boron (B)-Total			104.8		%		80-120	12-DEC-19
Cadmium (Cd)-Total			102.6		%		80-120	12-DEC-19
Calcium (Ca)-Total			101.2		%		80-120	12-DEC-19
Cesium (Cs)-Total			109.0		%		80-120	12-DEC-19
Chromium (Cr)-Total			100.4		%		80-120	12-DEC-19
Cobalt (Co)-Total			103.1		%		80-120	12-DEC-19
Copper (Cu)-Total			103.7		%		80-120	12-DEC-19
Iron (Fe)-Total			95.4		%		80-120	12-DEC-19
Lead (Pb)-Total			104.5		%		80-120	12-DEC-19
Lithium (Li)-Total			103.6		%		80-120	12-DEC-19
Magnesium (Mg)-Total			110.9		%		80-120	12-DEC-19
Manganese (Mn)-Total			103.9		%		80-120	12-DEC-19
Molybdenum (Mo)-Total			105.3		%		80-120	12-DEC-19
Nickel (Ni)-Total			101.4		%		80-120	12-DEC-19
Potassium (K)-Total			103.6		%		80-120	12-DEC-19
Phosphorus (P)-Total			104.4		%		80-120	12-DEC-19
Rubidium (Rb)-Total			103.3		%		80-120	12-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R4942418								
WG3240862-2 LCS								
Selenium (Se)-Total			103.8		%		80-120	12-DEC-19
Silicon (Si)-Total			104.3		%		80-120	12-DEC-19
Silver (Ag)-Total			105.7		%		80-120	12-DEC-19
Sodium (Na)-Total			102.9		%		80-120	12-DEC-19
Strontium (Sr)-Total			109.3		%		80-120	12-DEC-19
Sulfur (S)-Total			110.1		%		80-120	12-DEC-19
Tellurium (Te)-Total			104.8		%		80-120	12-DEC-19
Thallium (Tl)-Total			100.8		%		80-120	12-DEC-19
Thorium (Th)-Total			104.6		%		80-120	12-DEC-19
Tin (Sn)-Total			101.6		%		80-120	12-DEC-19
Titanium (Ti)-Total			98.3		%		80-120	12-DEC-19
Tungsten (W)-Total			102.1		%		80-120	12-DEC-19
Uranium (U)-Total			102.5		%		80-120	12-DEC-19
Vanadium (V)-Total			104.3		%		80-120	12-DEC-19
Zinc (Zn)-Total			102.9		%		80-120	12-DEC-19
Zirconium (Zr)-Total			103.4		%		80-120	12-DEC-19
WG3240862-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	12-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	12-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	12-DEC-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	12-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	12-DEC-19
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	12-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	12-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	12-DEC-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	12-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	12-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	12-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R4942418								
WG3240862-1 MB								
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	12-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	12-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	12-DEC-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	12-DEC-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	12-DEC-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	12-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	12-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	12-DEC-19
Sodium (Na)-Total			<0.050		mg/L		0.05	12-DEC-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	12-DEC-19
Sulfur (S)-Total			<0.50		mg/L		0.5	12-DEC-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	12-DEC-19
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	12-DEC-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	12-DEC-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	12-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	12-DEC-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	12-DEC-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	12-DEC-19
NH3-COL-WP	**Water**							
Batch R4941859								
WG3241093-2 LCS								
Ammonia, Total (as N)			98.2		%		85-115	11-DEC-19
WG3241093-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	11-DEC-19
NO2-IC-N-WP	**Water**							
Batch R4941476								
WG3237580-2 LCS								
Nitrite (as N)			102.0		%		90-110	07-DEC-19
WG3237580-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	07-DEC-19
NO3-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-WP	**Water**							
Batch R4941476								
WG3237580-2 LCS								
Nitrate (as N)			100.1		%		90-110	07-DEC-19
WG3237580-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	07-DEC-19
OG-GRAV-WP	**Water**							
Batch R4942983								
WG3241703-2 LCS								
Oil and Grease			101.6		%		70-130	13-DEC-19
WG3241703-1 MB								
Oil and Grease			<5.0		mg/L		5	13-DEC-19
P-T-COL-WP	**Water**							
Batch R4939913								
WG3238472-2 LCS								
Phosphorus (P)-Total			101.4		%		80-120	10-DEC-19
WG3238472-1 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	10-DEC-19
PAH,PANH-WP	**Water**							
Batch R4949449								
WG3243349-2 LCS								
1-Methyl Naphthalene			109.9		%		60-130	18-DEC-19
2-Methyl Naphthalene			103.1		%		60-130	18-DEC-19
Acenaphthene			112.8		%		60-130	18-DEC-19
Acenaphthylene			99.2		%		60-130	18-DEC-19
Anthracene			87.5		%		60-130	18-DEC-19
Acridine			101.9		%		60-130	18-DEC-19
Benzo(a)anthracene			104.6		%		60-130	18-DEC-19
Benzo(a)pyrene			88.1		%		60-130	18-DEC-19
Benzo(b&j)fluoranthene			123.4		%		60-130	18-DEC-19
Benzo(g,h,i)perylene			100.0		%		60-130	18-DEC-19
Benzo(k)fluoranthene			117.0		%		60-130	18-DEC-19
Chrysene			108.8		%		60-130	18-DEC-19
Dibenzo(a,h)anthracene			112.0		%		60-130	18-DEC-19
Fluoranthene			105.8		%		60-130	18-DEC-19
Fluorene			101.9		%		60-130	18-DEC-19
Indeno(1,2,3-cd)pyrene			103.9		%		60-130	18-DEC-19
Naphthalene			106.4		%		50-130	18-DEC-19

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	**Water**							
Batch R4949449								
WG3243349-2 LCS								
Phenanthrene			113.3		%		60-130	18-DEC-19
Pyrene			111.0		%		60-130	18-DEC-19
Quinoline			98.6		%		60-130	18-DEC-19
WG3243349-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	18-DEC-19
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	18-DEC-19
Acenaphthene			<0.000020		mg/L		0.00002	18-DEC-19
Acenaphthylene			<0.000020		mg/L		0.00002	18-DEC-19
Anthracene			<0.000010		mg/L		0.00001	18-DEC-19
Acridine			<0.000020		mg/L		0.00002	18-DEC-19
Benzo(a)anthracene			<0.000010		mg/L		0.00001	18-DEC-19
Benzo(a)pyrene			<0.000005		mg/L		0.000005	18-DEC-19
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	18-DEC-19
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	18-DEC-19
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	18-DEC-19
Chrysene			<0.000020		mg/L		0.00002	18-DEC-19
Dibenzo(a,h)anthracene			<0.000005		mg/L		0.000005	18-DEC-19
Fluoranthene			<0.000020		mg/L		0.00002	18-DEC-19
Fluorene			<0.000020		mg/L		0.00002	18-DEC-19
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	18-DEC-19
Naphthalene			<0.000050		mg/L		0.00005	18-DEC-19
Phenanthrene			<0.000050		mg/L		0.00005	18-DEC-19
Pyrene			<0.000010		mg/L		0.00001	18-DEC-19
Quinoline			<0.000020		mg/L		0.00002	18-DEC-19
Surrogate: Acenaphthene d10			87.6		%		60-130	18-DEC-19
Surrogate: Acridine d9			83.8		%		60-130	18-DEC-19
Surrogate: Chrysene d12			109.2		%		60-130	18-DEC-19
Surrogate: Naphthalene d8			75.6		%		50-130	18-DEC-19
Surrogate: Phenanthrene d10			81.2		%		60-130	18-DEC-19
PH-WP	**Water**							
Batch R4941615								
WG3239080-12 LCS								
pH			7.42		pH units		7.3-7.5	11-DEC-19
PHENOLS-4AAP-WT	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	**Water**							
Batch R4940476								
WG3239134-2 LCS								
Phenols (4AAP)			110.7		%		85-115	10-DEC-19
WG3239134-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	10-DEC-19
SO4-IC-N-WP	**Water**							
Batch R4941476								
WG3237580-2 LCS								
Sulfate (SO4)			101.8		%		90-110	07-DEC-19
WG3237580-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	07-DEC-19
SOLIDS-TOTSUS-WP	**Water**							
Batch R4941843								
WG3239020-14 LCS								
Total Suspended Solids			95.6		%		85-115	11-DEC-19
WG3239020-13 MB								
Total Suspended Solids			<2.0		mg/L		2	11-DEC-19
TC,EC10-QT97-WP	**Water**							
Batch R4937096								
WG3237333-2 DUP		**L2393039-1**						
Total Coliforms		>24200	>24200		MPN/100mL	0.0	65	06-DEC-19
Escherichia Coli		>24200	>24200		MPN/100mL	0.0	65	06-DEC-19
WG3237333-1 MB								
Total Coliforms			<1		MPN/100mL		1	06-DEC-19
Escherichia Coli			<1		MPN/100mL		1	06-DEC-19

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

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	04-DEC-19 13:00	11-DEC-19 12:00	0.25	167	hours	EHTR-FM
Bacteriological Tests							
Fecal coliforms, 1:10 dilution by QT97							
	1	04-DEC-19 13:00	06-DEC-19 17:45	30	53	hours	EHTR
Total and E. coli, 1:10 dilution by QT97							
	1	04-DEC-19 13:00	06-DEC-19 17:45	30	53	hours	EHTR

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 L2393039 were received on 06-DEC-19 13:45.

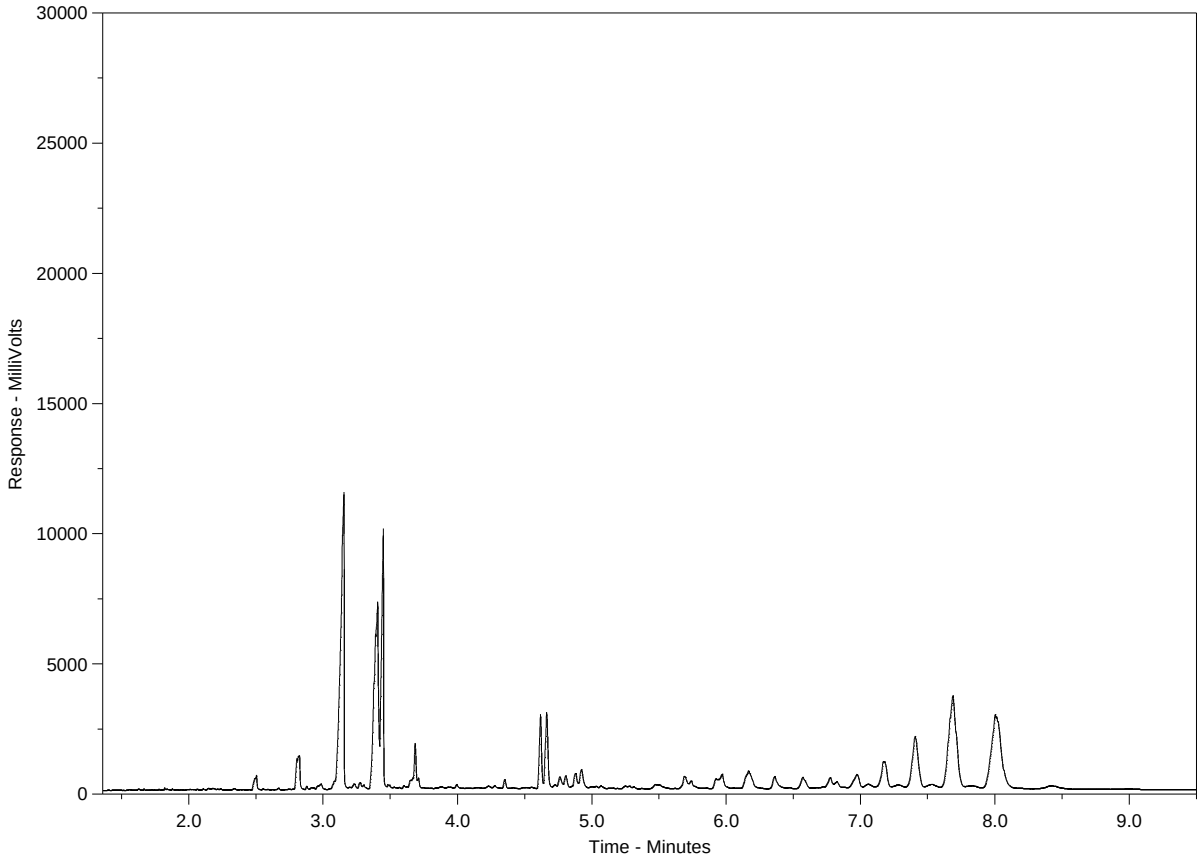
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

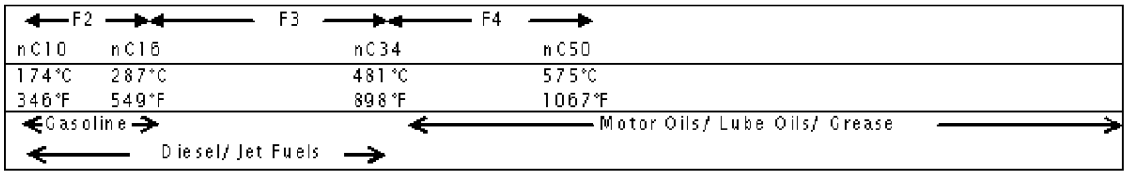
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2393039-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

L2393039-COFC

Form

COC # _____

Page ___ of ___

Report To					
Company:	Nunavut CGS - Rankin Inlet (W8133)	☑ PDF	☐ Excel	☐ Digital	☐ Fax
Contact:	SIMON DOIRON	Email 1:	sdoiron@gov.nu.ca		
Address:	Box 490	Email 2:	mlusty@gov.nu.ca		
	Rankin Inlet , NU, X0C 0G0	Email 3:			
Phone:	867-645-8155 Cell# :				
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information			
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #:	Rankin Inlet WWTP- Monthly Effluent		
Company:		PO / AFE:			
Contact:		LSD:			
Address:					
Phone:	Fax:	Quote #:			
Lab Work Order # (lab use only)		ALS Contact:	Craig Riddell	Sampled By:	Simon Doiron

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

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

Sample #	Sample Identification (This description will appear on the report)	Date Sampled	Time Sampled	Sample Type	BTX,F1-F4-WP	PAH,PANH-WP	NUNAVUT-WW-GRP1-WP	F-IC-N-WP	TC,EC-QT97-WP							Number of Containers
	Rankin Inlet WWTP - Effluent	Dec 04/19	1:00pm	Waste	x	x	x	x	x							15
	**NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1															
	So all ICP-MS metals report.															

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

Nunavut-WW-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine, 250 ml Metals , 40 ml Mercury Vial, 250 ml Amber Nutrient , 250 ml Amber Phenols, 2 x 250 ml Amber Oil & Grease , 250 ml Bacteria (9 bottles) + 5 Vials for BTX,F1-F4 and 1 L Amber for PAH's = Total of 15 Bottles per sample.

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
Bill Ross	Dec 04/19	1:00 pm	AR	Dec 6	145	1-8 °C		DEC 06 2019	2D	

DEC 06 2019

GENF 18.01 Front

Appendix B: Daily Record of Nipissar Lake Volumes GRA-1

Raw Water Supply From Nipissar Lake

Water Licence No. 3AM-GRA1624

GRA-1

Date	Volume (m^3)	Daily Volume (m^3)	Total Volume (m^3)	Total Monthly Volume (m^3)
01-Oct-19	4,266,294.00	1,726.00	483,033.00	
02-Oct-19	4,268,234.00	1,940.00	484,973.00	
03-Oct-19	4,270,128.00	1,894.00	486,867.00	
04-Oct-19	4,272,083.00	1,955.00	488,822.00	
05-Oct-19	4,273,957.00	1,874.00	490,696.00	
06-Oct-19	4,275,738.00	1,781.00	492,477.00	
07-Oct-19	4,277,793.00	2,055.00	494,532.00	
08-Oct-19	4,279,602.00	1,809.00	496,341.00	
09-Oct-19	4,281,529.00	1,927.00	498,268.00	
10-Oct-19	4,283,457.00	1,928.00	500,196.00	
11-Oct-19	4,285,572.00	2,115.00	502,311.00	
12-Oct-19	4,287,563.00	1,991.00	504,302.00	
13-Oct-19	4,289,440.00	1,877.00	506,179.00	
14-Oct-19	4,291,306.00	1,866.00	508,045.00	
15-Oct-19	4,293,147.02	1,841.02	509,886.02	
16-Oct-19			509,886.02	
17-Oct-19	4,297,195.00	4,047.98	513,934.00	
18-Oct-19	4,298,846.00	1,651.00	515,585.00	
19-Oct-19	4,300,032.00	1,186.00	516,771.00	
20-Oct-19	4,302,512.00	2,480.00	519,251.00	
21-Oct-19	4,304,426.00	1,914.00	521,165.00	
22-Oct-19	4,306,281.00	1,855.00	523,020.00	
23-Oct-19	4,307,977.00	1,696.00	524,716.00	
24-Oct-19	4,309,908.00	1,931.00	526,647.00	
25-Oct-19	4,311,535.00	1,627.00	528,274.00	
26-Oct-19	4,313,233.00	1,698.00	529,972.00	
27-Oct-19	4,314,882.00	1,649.00	531,621.00	
28-Oct-19			531,621.00	
29-Oct-19	4,318,558.00	3,676.00	535,297.00	
30-Oct-19			535,297.00	
31-Oct-19	4,322,140.00	3,582.00	538,879.00	**55,846.00**
01-Nov-19	4,323,943.00	1,803.00	540,682.00	
02-Nov-19	4,325,704.00	1,761.00	542,443.00	
03-Nov-19	4,327,485.00	1,781.00	544,224.00	
04-Nov-19	4,329,489.00	2,004.00	546,228.00	
05-Nov-19	4,331,239.00	1,750.00	547,978.00	
06-Nov-19	4,333,072.00	1,833.00	549,811.00	
07-Nov-19	4,334,999.00	1,927.00	551,738.00	
08-Nov-19	4,336,676.00	1,677.00	553,415.00	
09-Nov-19	4,338,610.00	1,934.00	555,349.00	
10-Nov-19	4,340,381.00	1,771.00	557,120.00	
11-Nov-19	4,342,221.00	1,840.00	558,960.00	
12-Nov-19	4,343,924.00	1,703.00	560,663.00	
13-Nov-19	4,345,810.00	1,886.00	562,549.00	
14-Nov-19	4,347,539.00	1,729.00	564,278.00	
15-Nov-19	4,349,366.00	1,827.00	566,105.00	
16-Nov-19	4,351,227.00	1,861.00	567,966.00	
17-Nov-19	4,352,966.00	1,739.00	569,705.00	
18-Nov-19	4,354,794.00	1,828.00	571,533.00	
19-Nov-19	4,356,686.00	1,892.00	573,425.00	
20-Nov-19	4,358,545.00	1,859.00	575,284.00	
21-Nov-19	4,360,608.00	2,063.00	577,347.00	
22-Nov-19	4,362,076.00	1,468.00	578,815.00	
23-Nov-19	4,363,920.00	1,844.00	580,659.00	
24-Nov-19	4,365,803.00	1,883.00	582,542.00	
25-Nov-19	4,367,723.00	1,920.00	584,462.00	
26-Nov-19	4,369,472.00	1,749.00	586,211.00	
27-Nov-19	4,371,304.00	1,832.00	588,043.00	
28-Nov-19	4,373,231.00	1,927.00	589,970.00	
29-Nov-19	4,375,097.00	1,866.00	591,836.00	
30-Nov-19	4,376,949.00	1,852.00	593,688.00	**53,006.00**
01-Dec-19	4,378,747.00	1,798.00	595,486.00	
02-Dec-19	4,380,673.00	1,926.00	597,412.00	
03-Dec-19	4,382,431.00	1,758.00	599,170.00	
04-Dec-19	4,384,406.00	1,975.00	601,145.00	
05-Dec-19	4,386,283.00	1,877.00	603,022.00	
06-Dec-19	4,388,012.00	1,729.00	604,751.00	
07-Dec-19	4,389,946.00	1,934.00	606,685.00	
08-Dec-19	4,391,909.00	1,963.00	608,648.00	
09-Dec-19			608,648.00	
10-Dec-19			608,648.00	
11-Dec-19	4,397,805.00	5,896.00	614,544.00	
12-Dec-19	4,399,562.00	1,757.00	616,301.00	
13-Dec-19	4,401,519.00	1,957.00	618,258.00	
14-Dec-19	4,403,529.00	2,010.00	620,268.00	
15-Dec-19	4,404,990.00	1,461.00	621,729.00	
16-Dec-19	4,407,341.00	2,351.00	624,080.00	
17-Dec-19	4,409,353.00	2,012.00	626,092.00	
18-Dec-19			626,092.00	
19-Dec-19	4,413,448.00	4,095.00	630,187.00	
20-Dec-19	4,415,481.00	2,033.00	632,220.00	
21-Dec-19			632,220.00	
22-Dec-19			632,220.00	
23-Dec-19	4,421,103.00	5,622.00	637,842.00	
24-Dec-19	4,422,923.00	1,820.00	639,662.00	
25-Dec-19	4,424,847.00	1,924.00	641,586.00	
26-Dec-19	4,426,677.00	1,830.00	643,416.00	
27-Dec-19	4,428,584.00	1,907.00	645,323.00	
28-Dec-19	4,430,530.00	1,946.00	647,269.00	
29-Dec-19	4,432,582.00	2,052.00	649,321.00	
30-Dec-19	4,434,781.00	2,199.00	651,520.00	
31-Dec-19			651,520.00	**56,034.00**