2015 FOURTH QUARTER REPORT
FOR GN-CGS RANKIN INLET

QUARTER BEING REPORTED: October – December 2015

The following information is compiled pursuant to the requirements of Part B, Item 2 of Water Licence No. **3AM-GRA1015** 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	45,005.44	45,005.44
November	45,333.83	45,333.83
December	55,443.76	55,443.76
QUARTER TOTAL	**145,783.03**	**145,783.03**

Note: The sewage discharge volume is considered equal to the volume of water consumption since no metering system exists at the Sewage Treatment Plant.

There was no water transferred from Char River to Nipissar Lake at Monitoring Program Station GRA-6 from October to December 2015.

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	5
November	3
December	5
QUARTER TOTAL	**13**

c) Quarterly sampling results from Monitoring Program Station;

Sewage Effluent was sampled at Monitoring Program Station GRA-3 on December 14, 2015. Refer to Appendix A and B for the sampling parameter summary and lab results.

As requested by Environment Canada, Total Petroleum Hydrocarbons was included in the analysis.

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. There was **no open water** during the months of October to December.

List of Appendices

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Appendix A: Summary of GRA-3 Sampling Parameters

GN-CGS Rankin Inlet Monitoring Stations and Sampling Parameters for Licence No. 3AM-GRA1015

			GRA-3				
Parameters	**Unit**	**Detection Limit**	**30-Mar-15**	**34-Jun-15**	**15-Oct-15**	**14-Dec-15**	**CCME Guideline[1]**
BOD_5	mg/L	20.0	32.1	520	95	83	N/G
Fecal Coliforms	MPN/100mL	3	>110000	>110000	>110000	>110000	N/G
pH	pH units	0.10	7.93	5.61	7.14	6.87	7.0-8.7
Conductivity	umhos/cm	1.0	736	861	595	531	N/G
Total Suspended Solids	mg/L	5.0	85.0	11300.0	73.0	42.0	N/G
Ammonia Nitrogen	mg/L	1.0	736	9.4	12.2	24.2	N/G
Nitrate-Nitrite	mg/L	0.070	<0.070	<0.070	<0.070	<0.070	N/G
Oil and Grease	mg/L	2.0	19.9	896	23	19.0	N/G
Total Phenols	mg/L	0.050	0.0095	0.027	0.093	0.094	N/G
Sulphate	mg/L	0.30	36	17.4	29.6	26.7	N/G
Sodium	mg/L	0.030	56.2	35.2	37.8	33.5	N/G
Potassium	mg/L	0.020	10.9	16.9	10.7	7.59	N/G
Magnesium	mg/L	0.010	10.3	16.3	6.02	5.39	N/G
Calcium	mg/L	0.10	39	106.0	26.9	23.0	N/G
Total Arsenic	mg/L	0.00020	0.00123	<0.020	0.001	0.00085	0.0125
Total Cadmium	mg/L	0.000010	0.000108	0.0023	0.0002	0.000066	0.00012
Total Copper	mg/L	0.00020	0.147	2.81	0.15	0.1410	0.004
Total Chromium	mg/L	0.0010	<0.0010	<0.10	<0.0010	<0.0010	0.0015
Total Iron	mg/L	0.010	0.44	<10	0.30	0.160	N/G
Total Lead	mg/L	0.000090	0.000789	0.0785	0.00108	0.00085	N/G
Total Mercury	mg/L	0.00002	<0.00020	<0.00040	<0.00020	<0.000020	0.000016
Total Nickel	mg/L	0.0020	0.0027	<0.20	0.0026	<0.0020	N/G
Total Zinc	mg/L	0.0020	0.0960	3.2600	0.0807	0.0727	N/G
Total Hydrocarbons (C6-C50)	mg/L	0.44				14.80	N/G
F1 (C6-C10)	mg/L	0.10				<0.10	N/G
F2 (C10-C16)	mg/L	0.25				0.46	N/G
F3 (C16-C34)	mg/L	0.25				9.63	N/G
F4 (C34-C50)	mg/L	0.25				4.73	N/G
Benzene	mg/L	0.00050				<0.00050	0.11
Toluene	mg/L	0.0010				0.0014	0.215
Ethyl Benzene	mg/L	0.00050				<0.00050	0.025
Xylene	mg/L	0.00050				<0.00050	N/G

[1]Canadian Environmental Quality Guidelines - Water Quality Guidelines for the Protection of Aquatic Life, Marine

N/G - No Guideline

Appendix B: Certificate of Analysis, December 14, 2015

Nunavut - Community & Government Services - Rankin Inlet
ATTN: JOE STRICKLAND - FACILITY MGR
P.O. Box 490
Rankin Inlet NU X0C 0G0

Date Received: 15-DEC-15
Report Date: 24-DEC-15 11:28 (MT)
Version: FINAL

Client Phone: 867-645-8158

Certificate of Analysis

Lab Work Order #: L1714628

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
L1714628-1 GRA-3							
Sampled By: MEGAN/LES on 14-DEC-15 @ 11:00							
Matrix: WASTE WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		21-DEC-15	R3343780
Toluene	0.0014		0.0010	mg/L		21-DEC-15	R3343780
Ethyl benzene	<0.00050		0.00050	mg/L		21-DEC-15	R3343780
o-Xylene	<0.00050		0.00050	mg/L		21-DEC-15	R3343780
m+p-Xylenes	<0.00050		0.00050	mg/L		21-DEC-15	R3343780
F1 (C6-C10)	<0.10		0.10	mg/L		21-DEC-15	R3343780
Surrogate: 4-Bromofluorobenzene (SS)	97.7		70-130	%		21-DEC-15	R3343780
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		23-DEC-15	
F2-Naphth	0.46		0.25	mg/L		23-DEC-15	
F3-PAH	9.63		0.25	mg/L		23-DEC-15	
Total Hydrocarbons (C6-C50)	14.8		0.44	mg/L		23-DEC-15	
F2-F4 PHC method							
F2 (C10-C16)	0.46		0.25	mg/L	16-DEC-15	16-DEC-15	R3337365
F3 (C16-C34)	9.63		0.25	mg/L	16-DEC-15	16-DEC-15	R3337365
F4 (C34-C50)	4.73		0.25	mg/L	16-DEC-15	16-DEC-15	R3337365
Surrogate: 2-Bromobenzotrifluoride	95.1		60-140	%	16-DEC-15	16-DEC-15	R3337365
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.0015		0.0015	mg/L		22-DEC-15	
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	21-DEC-15	23-DEC-15	R3346160
2-Methyl Naphthalene	0.000020		0.000020	mg/L	21-DEC-15	23-DEC-15	R3346160
Acenaphthene	<0.000020		0.000020	mg/L	21-DEC-15	23-DEC-15	R3346160
Acenaphthylene	<0.000020		0.000020	mg/L	21-DEC-15	23-DEC-15	R3346160
Anthracene	<0.000010		0.000010	mg/L	21-DEC-15	23-DEC-15	R3346160
Acridine	<0.000020		0.000020	mg/L	21-DEC-15	23-DEC-15	R3346160
Benzo(a)anthracene	<0.000010		0.000010	mg/L	21-DEC-15	23-DEC-15	R3346160
Benzo(a)pyrene	<0.00010	DLM	0.00010	mg/L	21-DEC-15	23-DEC-15	R3346160
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	21-DEC-15	23-DEC-15	R3346160
Benzo(g,h,i)perylene	<0.00020	DLM	0.00020	mg/L	21-DEC-15	23-DEC-15	R3346160
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	21-DEC-15	23-DEC-15	R3346160
Chrysene	<0.000020		0.000020	mg/L	21-DEC-15	23-DEC-15	R3346160
Dibenzo(a,h)anthracene	<0.000050	DLM	0.000050	mg/L	21-DEC-15	23-DEC-15	R3346160
Fluoranthene	<0.000020		0.000020	mg/L	21-DEC-15	23-DEC-15	R3346160
Fluorene	<0.000020		0.000020	mg/L	21-DEC-15	23-DEC-15	R3346160
Indeno(1,2,3-cd)pyrene	<0.00010	DLM	0.00010	mg/L	21-DEC-15	23-DEC-15	R3346160
Naphthalene	<0.000050		0.000050	mg/L	21-DEC-15	23-DEC-15	R3346160
Phenanthrene	<0.000050		0.000050	mg/L	21-DEC-15	23-DEC-15	R3346160
Pyrene	<0.000010		0.000010	mg/L	21-DEC-15	23-DEC-15	R3346160
Quinoline	0.000038		0.000020	mg/L	21-DEC-15	23-DEC-15	R3346160
B(a)P Total Potency Equivalent	<0.000083		0.000083	mg/L	21-DEC-15	23-DEC-15	R3346160
Surrogate: Acenaphthene d10	83.6		40-130	%	21-DEC-15	23-DEC-15	R3346160
Surrogate: Acridine d9	94.2		40-130	%	21-DEC-15	23-DEC-15	R3346160
Surrogate: Chrysene d12	75.7		40-130	%	21-DEC-15	23-DEC-15	R3346160
Surrogate: Naphthalene d8	118.8		40-130	%	21-DEC-15	23-DEC-15	R3346160
Surrogate: Phenanthrene d10	84.8		40-130	%	21-DEC-15	23-DEC-15	R3346160
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	159		1.2	mg/L		24-DEC-15	
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
L1714628-1 GRA-3							
Sampled By: MEGAN/LES on 14-DEC-15 @ 11:00							
Matrix: WASTE WATER							
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		24-DEC-15	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		24-DEC-15	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	131		1.0	mg/L		24-DEC-15	R3347320
Ammonia by colour							
Ammonia, Total (as N)	24.2		1.0	mg/L		16-DEC-15	R3338795
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	83	DLA	20	mg/L		16-DEC-15	R3344255
Carbonaceous BOD							
BOD Carbonaceous	71	DLA	20	mg/L		16-DEC-15	R3344255
Chloride in Water by IC							
Chloride (Cl)	57.2		0.50	mg/L		15-DEC-15	R3338953
Conductivity							
Conductivity	531		1.0	umhos/cm		20-DEC-15	R3343133
Fecal Coliform							
Fecal Coliforms	>110000		3	MPN/100mL		15-DEC-15	R3342022
Hardness Calculated							
Hardness (as CaCO3)	79.7		0.30	mg/L		18-DEC-15	
Mercury Total							
Mercury (Hg)-Total	<0.000020		0.000020	mg/L	18-DEC-15	18-DEC-15	R3346393
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		15-DEC-15	R3338953
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		18-DEC-15	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		15-DEC-15	R3338953
Oil and Grease, Total							
Oil and Grease, Total	19.0		2.0	mg/L	18-DEC-15	18-DEC-15	R3341835
Phenol (4AAP)							
Phenols (4AAP)	0.094	DLHC	0.050	mg/L		21-DEC-15	R3343994
Phosphorus, Total							
Phosphorus (P)-Total	3.44		0.10	mg/L		18-DEC-15	R3339479
Sulfate in Water by IC							
Sulfate (SO4)	26.7		0.30	mg/L		15-DEC-15	R3338953
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.161		0.0050	mg/L	16-DEC-15	17-DEC-15	R3339274
Arsenic (As)-Total	0.00085		0.00020	mg/L	16-DEC-15	17-DEC-15	R3339274
Cadmium (Cd)-Total	0.000066		0.000010	mg/L	16-DEC-15	17-DEC-15	R3339274
Calcium (Ca)-Total	23.0		0.10	mg/L	16-DEC-15	17-DEC-15	R3339274
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	16-DEC-15	17-DEC-15	R3339274
Cobalt (Co)-Total	<0.00020		0.00020	mg/L	16-DEC-15	17-DEC-15	R3339274
Copper (Cu)-Total	0.141		0.00020	mg/L	16-DEC-15	17-DEC-15	R3339274
Iron (Fe)-Total	0.160		0.010	mg/L	16-DEC-15	17-DEC-15	R3339274
Lead (Pb)-Total	0.000854		0.000090	mg/L	16-DEC-15	17-DEC-15	R3339274
Magnesium (Mg)-Total	5.39		0.010	mg/L	16-DEC-15	17-DEC-15	R3339274
Manganese (Mn)-Total	0.0256		0.00030	mg/L	16-DEC-15	17-DEC-15	R3339274
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	16-DEC-15	17-DEC-15	R3339274
Potassium (K)-Total	7.59		0.020	mg/L	16-DEC-15	17-DEC-15	R3339274
Sodium (Na)-Total	33.5		0.030	mg/L	16-DEC-15	17-DEC-15	R3339274
Zinc (Zn)-Total	0.0727		0.0020	mg/L	16-DEC-15	17-DEC-15	R3339274
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
L1714628-1 GRA-3							
Sampled By: MEGAN/LES on 14-DEC-15 @ 11:00							
Matrix: WASTE WATER							
Total Organic Carbon by Combustion							
Total Organic Carbon	72.6		2.5	mg/L		17-DEC-15	R3339694
Total Suspended Solids							
Total Suspended Solids	42.0		5.0	mg/L		16-DEC-15	R3337628
pH							
pH	6.87		0.10	pH units		20-DEC-15	R3343133

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects.
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
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.

ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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	F2-F4 PHC method	CWS (CCME)

Petroleum Hydrocarbons (F2-F4) in Water Method is adapted from US EPA Method 3511: Organic Compounds in Water by Micro-extraction" (Nov 2002) with instrumental analysis as per the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method" (CCMS, Dec 2000) Water samples (in their entirety) are extracted using hexane prior to capillary column gas chromatography with flame ionization detection (GC/FID).

FC-MPN-WP	Water	Fecal Coliform	APHA 9221E

The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.

HG-T-CVAF-WP	Water	Mercury Total	EPA245.7 V2.0

Mercury in filtered and unfiltered waters is oxidized with Bromine monochloride and analyzed by cold-vapour atomic fluorescence spectrometry.

MET-T-L-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-TL

This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

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.

OGG-TOT-WT	Water	Oil and Grease, Total	APHA 5520 B

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to determine Oil and Grease.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS

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

PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA SW 846/8270-GC/MS

Water is spiked with a surrogate spike mix and extracted using solvent extraction techniques. Analysis is performed by GC/MS in the selected ion monitoring (SIM) mode.

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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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.			
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

Chain of Custody Numbers:

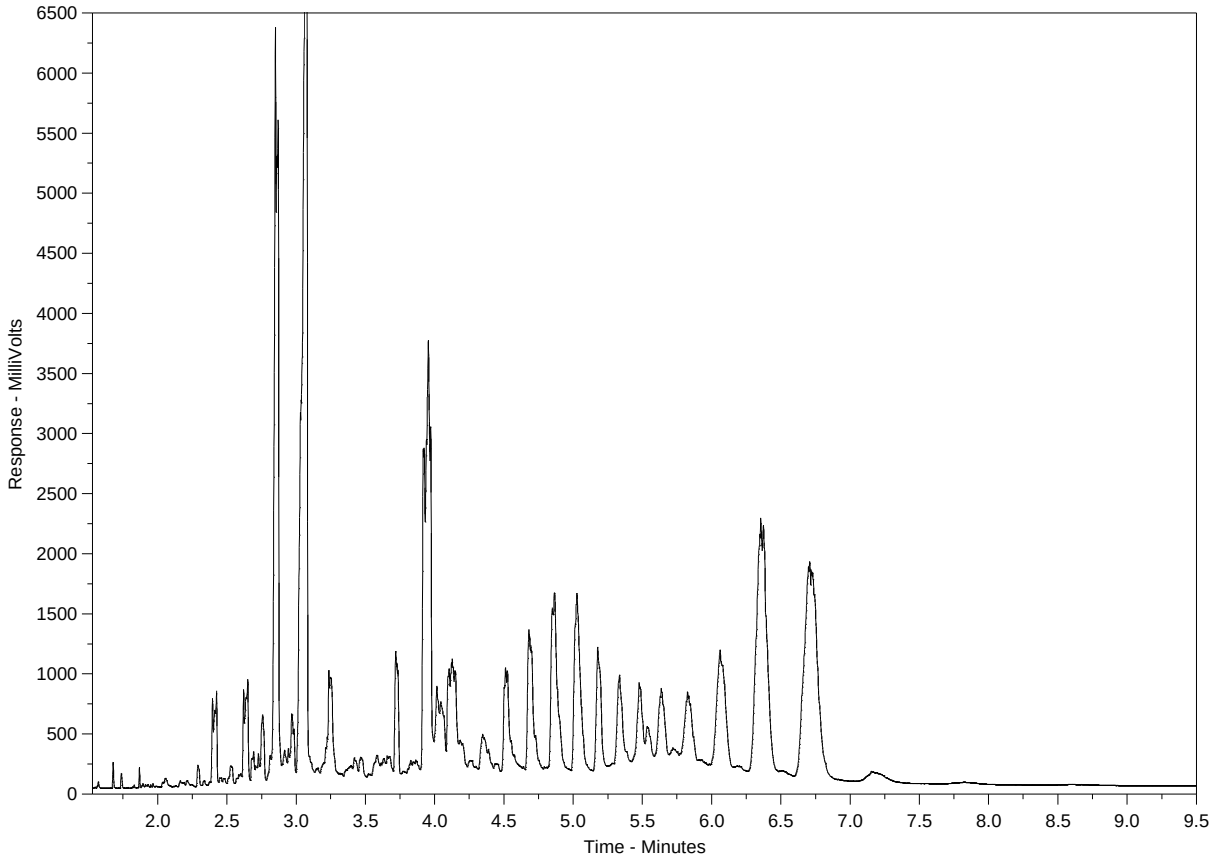
GLOSSARY OF REPORT TERMS

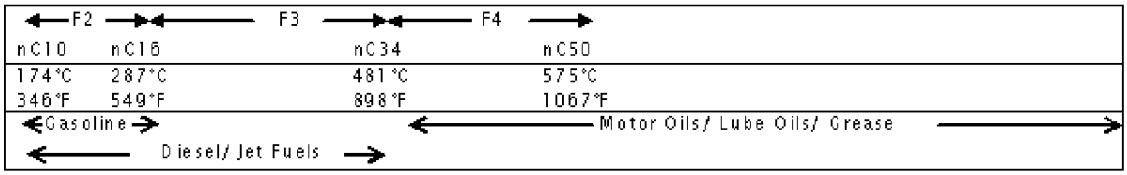
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates 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.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1714628-1
Client Sample ID: GRA-3





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

L1714628-COFC

COC #:

Report To		**Report Format / Distribution**	
Company:	GN-CGS Rankin Inlet	☑ Standard ☐ Other	
Contact:	Joe Strickland	☑ PDF ☐ Excel ☐ Digital ☐ Fax	
Address:	P.O. Box 490, Rankin Inlet, NU, X0C 0G0	Email 1:	jstrickland@gov.nu.ca
		Email 2:	mlusty@gov.nu.ca
Phone:	867-645-8154 Fax: 867-645-8197	Email 3:	
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	
Hardcopy of Invoice with Report?	☑ Yes ☐ No	Job #:	
Company:	W8133	PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	
Lab Work Order # (lab use only)		ALS Contact: Craig Riddell	Sampler: Megan/Les

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 (dd-mmm-yy)	Time (hh:mm)	Sample Type	Routine	BOD	Total Metals	Total Nutrients	Phenols	Bacteria	Oil & Grease (x2)	Total Mercury	BTEX, F1 (x3)	F2-F4 (x2)	PAH		Number of Containers
	GRA-3	14-12-15	1100AM	Waste water	✓	✓	P	P	P	P	P	P	P	P	P		15

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 & Hydrocarbons

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: [signature]	Date (dd-mmm-yy) 14-12-15	Time (hh-mm) 11:15 PM	Received by: [signature]	Date: 15-12-15	Time: 12:20	Temperature: 9 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF