

## 2015 SECOND QUARTER REPORT FOR GN-CGS RANKIN INLET

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### QUARTER BEING REPORTED: April – June 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 <sup>3</sup> )	Quantity of Sewage Waste Discharged (Estimated, m <sup>3</sup> )
April	64,419.06	64,419.06
May	66,376.98	66,376.98
June	56,892.64	56,892.64
QUARTER TOTAL	187,688.68	187,688.68

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

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 <sup>3</sup> )
April	4
May	4
June	4
QUARTER TOTAL	12

## **2015 SECOND QUARTER REPORT FOR GN-CGS RANKIN INLET**

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- c) Quarterly sampling results from Monitoring Program Station;

Refer to attached sampling results for GRA-3 (Appendix A) for effluent discharge from the Sewage Treatment Facility.

Refer to attached sampling results for GRA-1, GRA-6 and GRA-7 (Appendices B and C) for water chemistry at Nipissar Lake, Char River and Lower Landing Lake, respectively.

- 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 April and May.

Golder Associates is currently completing a toolkit for then GN-CGS that will provide the current estimated volume from the staff gauge installed in Nipissar Lake after freshet 2015. This toolkit will be available by January 31, 2016.

### **List of Appendices**

**Appendix A: Summary of GRA-3 Sampling Parameters – 1 page**

**Appendix B: Summary of GRA-1, GRA-6 and GRA-7 Sampling Parameters – 2 pages**

**Appendix C: Summary of GRA-1, GRA-6 and GRA-7 Hydrocarbon Sampling Parameters – 2 pages**

**Appendix D: Certificate of Analysis, June 24, 2015 – 8 pages**

**Appendix E: Certificate of Analysis, June 30, 2015 – 4 pages**

**Appendix A: Summary of GRA-3 Sampling  
Parameters – 1 page**

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

Parameters	Unit	Detection Limit	GRA-3		
			30-Mar-15	34-Jun-15	CCME Guideline <sup>1</sup>
BOD <sub>5</sub>	mg/L	6.0	32.1	520	N/G
Fecal Coliforms	MPN/100mL	3	>110000	>110000	N/G
pH	pH units	0.10	7.93	5.61	7.0-8.7
Conductivity	umhos/cm	20	736	861	N/G
Total Suspended Solids	mg/L	5.0	85.0	11300.0	Compare to background levels
Ammonia Nitrogen	mg/L	1.0	736	9.4	N/G
Nitrate-Nitrite	mg/L	0.070	<0.070	<0.070	N/G
Oil and Grease	mg/L	2.0	19.9	896	N/G
Total Phenols	mg/L	0.0010	0.0095	0.027	N/G
Sulphate	mg/L	0.30	36	17.4	N/G
Sodium	mg/L	0.030	56.2	35.2	N/G
Potassium	mg/L	0.020	10.9	16.9	N/G
Magnesium	mg/L	0.010	10.3	16.3	N/G
Calcium	mg/L	0.10	39	106.0	N/G
Total Arsenic	mg/L	0.00020	0.00123	<0.020	0.0125
Total Cadmium	mg/L	0.000010	0.000108	0.0023	0.00012
Total Copper	mg/L	0.00020	0.147	2.81	0.004
Total Chromium	mg/L	0.0010	<0.0010	<0.10	0.0015
Total Iron	mg/L	0.10	0.44	<10	N/G
Total Lead	mg/L	0.000090	0.000789	0.0785	N/G
Total Mercury	mg/L	0.00020	<0.00020	<0.00040	0.000016
Total Nickel	mg/L	0.0020	0.0027	<0.20	N/G
Total Zinc	mg/L	0.0020	0.0960	3.2600	N/G

<sup>1</sup>Canadian Environmental Quality Guidelines - Water Quality Guidelines for the Protection of Aquatic Life, Marine  
N/G - No Guideline

**Appendix B: Summary of GRA-1, GRA-6 and GRA-7  
Sampling Parameters – 2 pages**

## Summary of Water Chemistry Analysis 2015

Parameters	Units	Detection Limit	24-Jun-14		07-Oct-14		24-Jun-15			Guidelines for Canadian Drinking Water Quality
			Nipissar Lake GRA-1	Char River GRA-6	Char River GRA-6	Lower Landing Lake GRA-7	Nipissar Lake GRA-1	Char River GRA-6	Lower Landing Lake GRA-7	
Miscellaneous Parameters										
Ammonia, Total (as N)	mg/L	0.010	<0.010	<0.010	<0.010	0.037	0.087	<0.010	0.12	None required
Biochemical Oxygen Demand	mg/L	6.0			<6.0		2.9	<2.0	<2.0	
Phosphorus (P)-Total	mg/L	0.010	0.02	0.013	<0.010	<0.010	0.014	<0.010	0.01	
Total Kjeldahl Nitrogen	mg/L	0.20			0.27	0.27				
Fecal Coliforms	MPN/100mL	3	<3	<3	<3	<3	<3	<3	<3	
Total Suspended Solids	mg/L	5	8	<5.0			<5.0	<5.0	<5.0	
Alkalinity										
Alkalinity, Total (as CaCO3)	mg/L	20	41	20	25.0	23	29.6	15.6	13.5	
Bicarbonate (HCO3)	mg/L	24	50	25	30.0	28	36.1	19	16.5	
Carbonate (CO3)	mg/L	12	<12	<12	<12	<12	<0.60	<0.60	<0.60	
Hydroxide (OH)	mg/L	6.8	<6.8	<6.8	<6.8	<6.8	<0.34	<0.34	<0.34	
Chloride by Ion Chromatography										
Chloride	mg/L	0.50	30.5	15.7	22.4	24.2	20.7	13.2	11.4	AO: ≤ 250 mg/L
Conductivity										
Conductivity	umhos/cm	20	210	104.0	150	151	19	88.7	77.1	
Hardness Calculated										
Hardness (as CaCO3)	mg/L	0.30	54.9	24.3	35.7	32.1	40.8	23	19.6	None required
Nitrate as N by Ion Chromatography										
Nitrate-N	mg/L	0.05	<0.050	<0.050	<0.050	<0.050	<0.020	<0.020	<0.020	
Nitrate+Nitrite										
Nitrate and Nitrite as N	mg/L	0.071	<0.071	<0.071	<0.071	<0.071	<0.070	<0.070	<0.070	10 mg/L as nitrate-nitrogen
Nitrite as N by Ion Chromatography										
Nitrite-N	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.010	<0.010	<0.010	
Sulfate by Ion Chromatography										
Sulfate	mg/L	0.50	11	4.75	8.99	7.89	10.9	4.42	3.99	AO: ≤ 500 mg/L
TDS Calculated										
TDS (Calculated)	mg/L	5.0	105	50.3	73.8	73.8				AO: < 500 mg/L
Total Metals by ICP-MS										
Aluminum (Al)-Total	mg/L	0.02	0.075	<0.020	<0.020	0.020	0.0491	0.015	0.014	OG: <0.1 mg/L (conventional); <0.2 mg/L (other treatment types)
Antimony (Sb)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010				MAC: 0.006 mg/L
Arsenic (As)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	0.00048	0.00023	0.00021	MAC: 0.010 mg/L
Barium (Ba)-Total	mg/L	0.0005	0.01444	0.0102	0.0149	0.0134				MAC: 1.0 mg/L
Beryllium (Be)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010				
Bismuth (Bi)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050				
Boron (B)-Total	mg/L	0.03	0.037	<0.030	<0.030	<0.030				MAC: 5 mg/L
Cadmium (Cd)-Total	mg/L	0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.000010	<0.000010	<0.000010	MAC: 0.005 mg/L
Calcium (Ca)-Total	mg/L	0.2	16.6	7.3	10.2	8.62	11.8	6.71	5.68	None required
Cesium (Cs)- Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050				
Chromium (Cr)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010	MAC: 0.05 mg/L
Cobalt (Co)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	<0.00020	
Copper (Cu)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	0.00085	0.00075	0.00068	AO: ≤ 1.0 mg/L
Iron (Fe)-Total	mg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	AO: ≤ 0.3 mg/L
Lead (Pb)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.000090	<0.000090	<0.000090	MAC: 0.010 mg/L
Lithium (Li)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020				
Magnesium (Mg)-Total	mg/L	0.05	3.24	1.47	2.49	2.58	2.72	1.52	1.32	None required
Manganese (Mn)-Total	mg/L	0.001	0.006	0.0043	0.0054	0.0039	0.031	0.00304	0.00312	AO: ≤ 0.05 mg/L
Molybdenum (Mo)-Total	mg/L	0.0005	0.00067	<0.00050	<0.00050	0.00055				
Nickel (Ni)- Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Phosphorus (P)-Total	mg/L	0.5	<0.50	<0.50	<0.50	<0.50	0.014	<0.010	0.01	
Potassium (K)-Total	mg/L	0.1	1.86	1.03	1.60	1.59	1.57	1.17	1.02	
Rubidium (Rb)-Total	mg/L	0.0005	0.00164	0.00144	0.00203	0.00195				
Selenium (Se)-Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050				MAC: 0.01 mg/L
Silicon (Si)-Total	mg/L	0.3	<0.30	<0.30	<0.30	<0.30				
Silver(Ag)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010				None required

Sodium(Na)-Total	mg/L	0.05	16.6	7.98	13.4	15.2	13.1	7.86	6.71	AO: ≤ 200 mg/L
Strontium(Sr)-Total	mg/L	0.0005	0.0826	0.0426	0.0547	0.0514				
Tellurium(Te)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010				
Thallium(Tl)-Total	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050				
Thorium(Th)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010				
Tin(Sn)-Total	mg/L	0.0006	<0.00060	<0.00060	<0.00060	<0.00060				
Titanium(Ti)-Total	mg/L	0.001	0.0029	<0.0010	<0.0010	<0.0010				
Tungsten(W)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020				
Uranium(U)-Total	mg/L	0.0005	<0.00050	<0.00050	<0.00050	<0.00050				MAC: 0.02 mg/L
Vanadium(V)-Total	mg/L	0.002	<0.0020	<0.0020	<0.0020	<0.0020				
Zinc(Zn)-Total	mg/L	0.02	<0.020	<0.020	<0.020	<0.020	<0.0020	<0.0020	<0.0020	AO: ≤ 5.0 mg/L
Zirconium(Zr)-Total	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010				
<b>pH</b>										
pH	pH Units	0.1	7.77	7.46	7.63	7.62	7.63	7.43	7.35	6.5-8.5

MAC - Maximum acceptable concentrations (health based)

AO - Aesthetic objectives (based on aesthetic considerations)

OG - Operational guidance values (based on operational considerations)

**Appendix C: Summary of GRA-1, GRA-6 and GRA-7  
Hydrocarbon Sampling Parameters – 1 page**



## Summary of Hydrocarbon Contamination Analysis 2015

Parameters	Units	Detection Limit	07-Oct-14			24-Jun-15			Guidelines for Canadian Drinking Water Quality
			Nipissar Lake GRA-1	Char River GRA-6	Lower Landing Lake GRA-7	Nipissar Lake GRA-1	Char River GRA-6	Lower Landing Lake GRA-7	
BTX plus F1 by GCMS									
Benzene	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	MAC: 0.005 mg/L
Toluene	mg/L	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	AO: ≤ 0.024 mg/L <sup>1</sup>
Ethylbenzene	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	AO: ≤ 0.0024 mg/L <sup>2</sup>
o-Xylene	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
m+p-Xylenes	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00071	<0.00050	
F1 (C6-C10)	mg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
CCME Total Hydrocarbons									
F1-BTEX	mg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
F2-Naphth	mg/L	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
F3-PAH	mg/L	0.25	<.025	<.025	<0.25	<0.25	<0.25	<0.25	
Total Hydrocarbons (C6-C50)	mg/L	0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	
F2-F4 PHC Method									
F2 (C10-C16)	mg/L	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
F3 (C16-C34)	mg/L	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
F4 (C34-C50)	mg/L	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
Sum of Xylene Isomer Concentrations									
Xylenes (Total)	mg/L	0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	AO: ≤ 0.3 mg/L <sup>3</sup>
Polyaromatic Hydrocarbons (PAHs)									
1-Methyl Naphthalene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
2-Methyl Naphthalene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Acenaphthene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Acenaphthylene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Anthracene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Acridine	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000010	<0.000020	
Benzo(a)anthracene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Benzo(a)pyrene	mg/L	0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	MAC: 0.00001 mg/L
Benzo(b&j)fluoranthene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Benzo(g,h,i)perylene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Benzo(k)fluoranthene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Chrysene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.0000020	<0.000020	
Dibenzo(a,h)anthracene	mg/L	0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
Fluoranthene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Fluorene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Indeno(1,2,3-cd)pyrene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020	<0.000010	
Naphthalene	mg/L	0.000050	0.000061	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Phenanthrene	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Pyrene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Quinoline	mg/L	0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
B(a)P Total Potency Equivalent	mg/L	0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030	

MAC - Maximum acceptable concentrations (health based)

AO - Aesthetic objectives (based on aesthetic considerations)

OG - Operational guidance values (based on operational considerations)

<sup>1</sup> AO based on odour

<sup>2</sup> AO based on odour; levels above the AO would render drinking water unpalatable

<sup>3</sup> AO based on taste and odour; levels above the AO would render water unpalatable

**2015 SECOND QUARTER REPORT  
FOR GN-CGS RANKIN INLET**

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**Appendix D: Certificate of Analysis, June 24, 2015 –  
16 pages**



Nunavut - Community & Government  
Services - Rankin Inlet  
ATTN: BLAINE CHISLETT  
PO Box 490  
Rankin Inlet NU X0C 0G0

Date Received: 25-JUN-15  
Report Date: 17-JUL-15 11:45 (MT)  
Version: FINAL

Client Phone: 867-645-8172

## Certificate of Analysis

Lab Work Order #: L1633161  
Project P.O. #: NOT SUBMITTED  
Job Reference: RANKIN INLET GRA  
C of C Numbers:  
Legal Site Desc:



Hua Wo  
Chemistry Laboratory Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1633161-1      GRA-6 Sampled By:    MEGAN LUSTY on 24-JUN-15 @ 09:00 Matrix:        WATER <b>BTEX plus F1-F4</b> <b>BTX plus F1 by GCMS</b> Benzene                      <0.00050                      0.00050                      mg/L                      08-JUL-15                      R3221017 Toluene                      <0.0010                      0.0010                      mg/L                      08-JUL-15                      R3221017 Ethyl benzene                <0.00050                      0.00050                      mg/L                      08-JUL-15                      R3221017 o-Xylene                      <0.00050                      0.00050                      mg/L                      08-JUL-15                      R3221017 m+p-Xylenes                0.00071                      0.00050                      mg/L                      08-JUL-15                      R3221017 F1 (C6-C10)                <0.10                      0.10                      mg/L                      08-JUL-15                      R3221017 Surrogate: 4-Bromofluorobenzene (SS)                90.2                      70-130                      %                      08-JUL-15                      R3221017 <b>CCME Total Hydrocarbons</b> F1-BTEX                      <0.10                      0.10                      mg/L                      08-JUL-15 F2-Naphth                    <0.25                      0.25                      mg/L                      08-JUL-15 F3-PAH                      <0.25                      0.25                      mg/L                      08-JUL-15 Total Hydrocarbons (C6-C50)                    <0.44                      0.44                      mg/L                      08-JUL-15 <b>F2-F4 PHC method</b> F2 (C10-C16)                <0.25                      0.25                      mg/L                      02-JUL-15                      02-JUL-15                      R3219951 F3 (C16-C34)                <0.25                      0.25                      mg/L                      02-JUL-15                      02-JUL-15                      R3219951 F4 (C34-C50)                <0.25                      0.25                      mg/L                      02-JUL-15                      02-JUL-15                      R3219951 Surrogate: 2-Bromobenzotrifluoride                98.8                      60-140                      %                      02-JUL-15                      02-JUL-15                      R3219951 <b>Sum of Xylene Isomer Concentrations</b> Xylenes (Total)                <0.0015                      0.0015                      mg/L                      08-JUL-15  <b>Polyaromatic Hydrocarbons (PAHs)</b> 1-Methyl Naphthalene                    <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 2-Methyl Naphthalene                    <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Acenaphthene                <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Acenaphthylene                <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Anthracene                    <0.000010                      0.000010                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Acridine                      <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Benzo(a)anthracene                    <0.000010                      0.000010                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Benzo(a)pyrene                <0.0000050                      0.0000050                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Benzo(b&j)fluoranthene                    <0.000010                      0.000010                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Benzo(g,h,i)perylene                    <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Benzo(k)fluoranthene                    <0.000010                      0.000010                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Chrysene                      <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Dibenzo(a,h)anthracene                    <0.0000050                      0.0000050                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Fluoranthene                <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Fluorene                      <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Indeno(1,2,3-cd)pyrene                    <0.000010                      0.000010                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Naphthalene                <0.000050                      0.000050                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Phenanthrene                <0.000050                      0.000050                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Pyrene                      <0.000010                      0.000010                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Quinoline                    <0.000020                      0.000020                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 B(a)P Total Potency Equivalent                    <0.000030                      0.000030                      mg/L                      07-JUL-15                      07-JUL-15                      R3221586 Surrogate: Acenaphthene d10                    92.1                      40-130                      %                      07-JUL-15                      07-JUL-15                      R3221586 Surrogate: Acridine d9                    105.0                      40-130                      %                      07-JUL-15                      07-JUL-15                      R3221586 Surrogate: Chrysene d12                    96.1                      40-130                      %                      07-JUL-15                      07-JUL-15                      R3221586 Surrogate: Naphthalene d8                    81.2                      40-130                      %                      07-JUL-15                      07-JUL-15                      R3221586 Surrogate: Phenanthrene d10                    95.1                      40-130                      %                      07-JUL-15                      07-JUL-15                      R3221586  <b>Nunavut WW Group 1</b> <b>Alkalinity, Bicarbonate</b> Bicarbonate (HCO3)                    19.0                      1.2                      mg/L                      13-JUL-15 <b>Alkalinity, Carbonate</b>							

\* 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
L1633161-1    GRA-6 Sampled By:    MEGAN LUSTY on 24-JUN-15 @ 09:00 Matrix:        WATER							
<b>Alkalinity, Carbonate</b> Carbonate (CO3)	<0.60		0.60	mg/L		13-JUL-15	
<b>Alkalinity, Hydroxide</b> Hydroxide (OH)	<0.34		0.34	mg/L		13-JUL-15	
<b>Ammonia by colour</b> Ammonia, Total (as N)	<0.010		0.010	mg/L		30-JUN-15	R3218142
<b>Biochemical Oxygen Demand (BOD)</b> Biochemical Oxygen Demand	<2.0		2.0	mg/L		26-JUN-15	R3222093
<b>Carbonaceous BOD</b> BOD Carbonaceous	<2.0		2.0	mg/L		26-JUN-15	R3222093
<b>Chloride in Water by IC</b> Chloride (Cl)	13.2		0.50	mg/L		26-JUN-15	R3218414
<b>Conductivity</b> Conductivity	88.7		1.0	umhos/cm		09-JUL-15	R3224268
<b>Fecal Coliform</b> Fecal Coliforms	<3	MBHT	3	MPN/100mL		25-JUN-15	R3218195
<b>Hardness Calculated</b> Hardness (as CaCO3)	23.0		0.30	mg/L		07-JUL-15	
<b>Mercury Total</b> Mercury (Hg)-Total	<0.000020		0.000020	mg/L	06-JUL-15	06-JUL-15	R3221292
<b>Nitrate in Water by IC</b> Nitrate (as N)	<0.020		0.020	mg/L		26-JUN-15	R3218414
<b>Nitrate+Nitrite</b> Nitrate and Nitrite as N	<0.070		0.070	mg/L		02-JUL-15	
<b>Nitrite in Water by IC</b> Nitrite (as N)	<0.010		0.010	mg/L		26-JUN-15	R3218414
<b>Oil and Grease, Total</b> Oil and Grease, Total	<2.0		2.0	mg/L	03-JUL-15	03-JUL-15	R3220114
<b>Phenol (4AAP)</b> Phenols (4AAP)	<0.0010		0.0010	mg/L		07-JUL-15	R3221471
<b>Phosphorus, Total</b> Phosphorus (P)-Total	<0.010		0.010	mg/L		01-JUL-15	R3218033
<b>Sulfate in Water by IC</b> Sulfate (SO4)	4.42		0.30	mg/L		26-JUN-15	R3218414
<b>Total Alkalinity as CaCO3</b> Alkalinity, Total (as CaCO3)	15.6		1.0	mg/L		09-JUL-15	R3224268
<b>Total Metals by ICP-MS</b> Aluminum (Al)-Total	0.0154		0.0050	mg/L	06-JUL-15	06-JUL-15	R3220699
Arsenic (As)-Total	0.00023		0.00020	mg/L	06-JUL-15	06-JUL-15	R3220699
Cadmium (Cd)-Total	<0.000010		0.000010	mg/L	06-JUL-15	06-JUL-15	R3220699
Calcium (Ca)-Total	6.71		0.10	mg/L	06-JUL-15	06-JUL-15	R3220699
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	06-JUL-15	06-JUL-15	R3220699
Cobalt (Co)-Total	<0.00020		0.00020	mg/L	06-JUL-15	06-JUL-15	R3220699
Copper (Cu)-Total	0.00075		0.00020	mg/L	06-JUL-15	06-JUL-15	R3220699
Iron (Fe)-Total	<0.10		0.10	mg/L	06-JUL-15	06-JUL-15	R3220699
Lead (Pb)-Total	<0.000090		0.000090	mg/L	06-JUL-15	06-JUL-15	R3220699
Magnesium (Mg)-Total	1.52		0.010	mg/L	06-JUL-15	06-JUL-15	R3220699
Manganese (Mn)-Total	0.00304		0.00030	mg/L	06-JUL-15	06-JUL-15	R3220699
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	06-JUL-15	06-JUL-15	R3220699
Potassium (K)-Total	1.17		0.020	mg/L	06-JUL-15	06-JUL-15	R3220699
Sodium (Na)-Total	7.86		0.030	mg/L	06-JUL-15	06-JUL-15	R3220699
Zinc (Zn)-Total	<0.0020		0.0020	mg/L	06-JUL-15	06-JUL-15	R3220699
<b>Total Organic Carbon</b>							

\* 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
L1633161-1      GRA-6 Sampled By:    MEGAN LUSTY on 24-JUN-15 @ 09:00 Matrix:        WATER <b>Total Organic Carbon</b> Total Organic Carbon <b>Total Suspended Solids</b> Total Suspended Solids <b>pH</b> pH								
		4.6		1.0	mg/L		17-JUL-15	R3227602
		<5.0		5.0	mg/L		30-JUN-15	R3218516
		7.43		0.10	pH units		09-JUL-15	R3224268
L1633161-2      GRA-7 Sampled By:    MEGAN LUSTY on 24-JUN-15 @ 09:30 Matrix:        WATER <b>BTEX plus F1-F4</b> <b>BTX    plus F1 by GCMS</b> Benzene Toluene Ethyl benzene o-Xylene m+p-Xylenes F1 (C6-C10) Surrogate: 4-Bromofluorobenzene (SS) <b>CCME Total Hydrocarbons</b> F1-BTEX F2-Naphth F3-PAH Total Hydrocarbons (C6-C50) <b>F2-F4 PHC method</b> F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Surrogate: 2-Bromobenzotrifluoride <b>Sum of Xylene Isomer Concentrations</b> Xylenes (Total)  <b>Polyaromatic Hydrocarbons (PAHs)</b> 1-Methyl Naphthalene 2-Methyl Naphthalene Acenaphthene Acenaphthylene Anthracene Acridine Benzo(a)anthracene Benzo(a)pyrene Benzo(b&j)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Dibenzo(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene Naphthalene Phenanthrene Pyrene Quinoline								
		<0.00050		0.00050	mg/L		06-JUL-15	R3221017
		<0.0010		0.0010	mg/L		06-JUL-15	R3221017
		<0.00050		0.00050	mg/L		06-JUL-15	R3221017
		<0.00050		0.00050	mg/L		06-JUL-15	R3221017
		<0.00050		0.00050	mg/L		06-JUL-15	R3221017
		<0.10		0.10	mg/L		06-JUL-15	R3221017
		88.6		70-130	%		06-JUL-15	R3221017
		<0.10		0.10	mg/L		08-JUL-15	
		<0.25		0.25	mg/L		08-JUL-15	
		<0.25		0.25	mg/L		08-JUL-15	
		<0.44		0.44	mg/L		08-JUL-15	
		<0.25		0.25	mg/L	02-JUL-15	02-JUL-15	R3219951
		<0.25		0.25	mg/L	02-JUL-15	02-JUL-15	R3219951
		<0.25		0.25	mg/L	02-JUL-15	02-JUL-15	R3219951
		101.1		60-140	%	02-JUL-15	02-JUL-15	R3219951
		<0.0015		0.0015	mg/L		07-JUL-15	
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000010		0.000010	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000010		0.000010	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000050		0.000050	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000010		0.000010	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000010		0.000010	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000050		0.000050	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000010		0.000010	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000050		0.000050	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000050		0.000050	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000010		0.000010	mg/L	07-JUL-15	07-JUL-15	R3221586
		<0.000020		0.000020	mg/L	07-JUL-15	07-JUL-15	R3221586

\* 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
L1633161-2 GRA-7 Sampled By: MEGAN LUSTY on 24-JUN-15 @ 09:30 Matrix: WATER							
<b>Polyaromatic Hydrocarbons (PAHs)</b>							
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	07-JUL-15	07-JUL-15	R3221586
Surrogate: Acenaphthene d10	85.2		40-130	%	07-JUL-15	07-JUL-15	R3221586
Surrogate: Acridine d9	99.3		40-130	%	07-JUL-15	07-JUL-15	R3221586
Surrogate: Chrysene d12	92.1		40-130	%	07-JUL-15	07-JUL-15	R3221586
Surrogate: Naphthalene d8	77.2		40-130	%	07-JUL-15	07-JUL-15	R3221586
Surrogate: Phenanthrene d10	88.2		40-130	%	07-JUL-15	07-JUL-15	R3221586
<b>Nunavut WW Group 1</b>							
<b>Alkalinity, Bicarbonate</b>							
Bicarbonate (HCO3)	16.5		1.2	mg/L		13-JUL-15	
<b>Alkalinity, Carbonate</b>							
Carbonate (CO3)	<0.60		0.60	mg/L		13-JUL-15	
<b>Alkalinity, Hydroxide</b>							
Hydroxide (OH)	<0.34		0.34	mg/L		13-JUL-15	
<b>Ammonia by colour</b>							
Ammonia, Total (as N)	0.12	DLA	0.10	mg/L		30-JUN-15	R3218142
<b>Biochemical Oxygen Demand (BOD)</b>							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		26-JUN-15	R3222093
<b>Carbonaceous BOD</b>							
BOD Carbonaceous	<2.0		2.0	mg/L		26-JUN-15	R3222093
<b>Chloride in Water by IC</b>							
Chloride (Cl)	11.4		0.50	mg/L		26-JUN-15	R3218414
<b>Conductivity</b>							
Conductivity	77.1		1.0	umhos/cm		09-JUL-15	R3224268
<b>Fecal Coliform</b>							
Fecal Coliforms	<3	MBHT	3	MPN/100mL		25-JUN-15	R3218195
<b>Hardness Calculated</b>							
Hardness (as CaCO3)	19.6		0.30	mg/L		07-JUL-15	
<b>Mercury Total</b>							
Mercury (Hg)-Total	<0.000020		0.000020	mg/L	06-JUL-15	06-JUL-15	R3221292
<b>Nitrate in Water by IC</b>							
Nitrate (as N)	<0.020		0.020	mg/L		26-JUN-15	R3218414
<b>Nitrate+Nitrite</b>							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		02-JUL-15	
<b>Nitrite in Water by IC</b>							
Nitrite (as N)	<0.010		0.010	mg/L		26-JUN-15	R3218414
<b>Oil and Grease, Total</b>							
Oil and Grease, Total	<2.0		2.0	mg/L	03-JUL-15	03-JUL-15	R3219907
<b>Phenol (4AAP)</b>							
Phenols (4AAP)	<0.0010		0.0010	mg/L		07-JUL-15	R3221471
<b>Phosphorus, Total</b>							
Phosphorus (P)-Total	0.010		0.010	mg/L		01-JUL-15	R3218033
<b>Sulfate in Water by IC</b>							
Sulfate (SO4)	3.99		0.30	mg/L		26-JUN-15	R3218414
<b>Total Alkalinity as CaCO3</b>							
Alkalinity, Total (as CaCO3)	13.5		1.0	mg/L		09-JUL-15	R3224268
<b>Total Metals by ICP-MS</b>							
Aluminum (Al)-Total	0.0139		0.0050	mg/L	06-JUL-15	06-JUL-15	R3220699
Arsenic (As)-Total	0.00021		0.00020	mg/L	06-JUL-15	06-JUL-15	R3220699
Cadmium (Cd)-Total	<0.000010		0.000010	mg/L	06-JUL-15	06-JUL-15	R3220699
Calcium (Ca)-Total	5.68		0.10	mg/L	06-JUL-15	06-JUL-15	R3220699
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	06-JUL-15	06-JUL-15	R3220699
Cobalt (Co)-Total	<0.00020		0.00020	mg/L	06-JUL-15	06-JUL-15	R3220699

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

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\* 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
L1633161-3	GRA-1							
Sampled By: MEGAN LUSTY on 24-JUN-15 @ 09:55								
Matrix: WATER								
Chloride in Water by IC								
Chloride (Cl)		20.7		0.50	mg/L		26-JUN-15	R3218414
Conductivity								
Conductivity		149		1.0	umhos/cm		09-JUL-15	R3224268
Fecal Coliform								
Fecal Coliforms		<3	MBHT	3	MPN/100mL		25-JUN-15	R3218195
Hardness Calculated								
Hardness (as CaCO3)		40.8		0.30	mg/L		07-JUL-15	
Mercury Total								
Mercury (Hg)-Total		<0.000020		0.000020	mg/L	06-JUL-15	06-JUL-15	R3221292
Nitrate in Water by IC								
Nitrate (as N)		<0.020		0.020	mg/L		26-JUN-15	R3218414
Nitrate+Nitrite								
Nitrate and Nitrite as N		<0.070		0.070	mg/L		02-JUL-15	
Nitrite in Water by IC								
Nitrite (as N)		<0.010		0.010	mg/L		26-JUN-15	R3218414
Oil and Grease, Total								
Oil and Grease, Total		<2.0		2.0	mg/L	03-JUL-15	03-JUL-15	R3219907
Phenol (4AAP)								
Phenols (4AAP)		<0.0010		0.0010	mg/L		07-JUL-15	R3221471
Phosphorus, Total								
Phosphorus (P)-Total		0.014		0.010	mg/L		01-JUL-15	R3218033
Sulfate in Water by IC								
Sulfate (SO4)		10.9		0.30	mg/L		26-JUN-15	R3218414
Total Alkalinity as CaCO3								
Alkalinity, Total (as CaCO3)		29.6		1.0	mg/L		09-JUL-15	R3224268
Total Metals by ICP-MS								
Aluminum (Al)-Total		0.0491		0.0050	mg/L	06-JUL-15	06-JUL-15	R3220699
Arsenic (As)-Total		0.00048		0.00020	mg/L	06-JUL-15	06-JUL-15	R3220699
Cadmium (Cd)-Total		<0.000010		0.000010	mg/L	06-JUL-15	06-JUL-15	R3220699
Calcium (Ca)-Total		11.8		0.10	mg/L	06-JUL-15	06-JUL-15	R3220699
Chromium (Cr)-Total		<0.0010		0.0010	mg/L	06-JUL-15	06-JUL-15	R3220699
Cobalt (Co)-Total		<0.00020		0.00020	mg/L	06-JUL-15	06-JUL-15	R3220699
Copper (Cu)-Total		0.00085		0.00020	mg/L	06-JUL-15	06-JUL-15	R3220699
Iron (Fe)-Total		<0.10		0.10	mg/L	06-JUL-15	06-JUL-15	R3220699
Lead (Pb)-Total		<0.000090		0.000090	mg/L	06-JUL-15	06-JUL-15	R3220699
Magnesium (Mg)-Total		2.72		0.010	mg/L	06-JUL-15	06-JUL-15	R3220699
Manganese (Mn)-Total		0.0310		0.00030	mg/L	06-JUL-15	06-JUL-15	R3220699
Nickel (Ni)-Total		<0.0020		0.0020	mg/L	06-JUL-15	06-JUL-15	R3220699
Potassium (K)-Total		1.57		0.020	mg/L	06-JUL-15	06-JUL-15	R3220699
Sodium (Na)-Total		13.1		0.030	mg/L	06-JUL-15	06-JUL-15	R3220699
Zinc (Zn)-Total		<0.0020		0.0020	mg/L	06-JUL-15	06-JUL-15	R3220699
Total Organic Carbon								
Total Organic Carbon		4.1		1.0	mg/L		17-JUL-15	R3227602
Total Suspended Solids								
Total Suspended Solids		<5.0		5.0	mg/L		30-JUN-15	R3218516
pH								
pH		7.63		0.10	pH units		09-JUL-15	R3224268
L1633161-4	GRA-3							
Sampled By: MEGAN LUSTY on 24-JUN-15 @ 10:20								
Matrix: WASTEWATER								
Nunavut WW Group 1								

\* 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
L1633161-4 GRA-3							
Sampled By: MEGAN LUSTY on 24-JUN-15 @ 10:20							
Matrix: WASTEWATER							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	412		1.2	mg/L		13-JUL-15	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		13-JUL-15	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		13-JUL-15	
Ammonia by colour							
Ammonia, Total (as N)	9.4	DLA	1.0	mg/L		02-JUL-15	R3218855
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	520	DLA	300	mg/L		26-JUN-15	R3222093
Carbonaceous BOD							
BOD Carbonaceous	390	DLA	300	mg/L		26-JUN-15	R3222093
Chloride in Water by IC							
Chloride (Cl)	45.6		0.50	mg/L		26-JUN-15	R3218414
Conductivity							
Conductivity	861		1.0	umhos/cm		09-JUL-15	R3224268
Fecal Coliform							
Fecal Coliforms	>110000	MBHT	3	MPN/100mL		25-JUN-15	R3218195
Hardness Calculated							
Hardness (as CaCO3)	332		0.30	mg/L		07-JUL-15	
Mercury Total							
Mercury (Hg)-Total	<0.00040	DLM	0.00040	mg/L	06-JUL-15	06-JUL-15	R3221292
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		26-JUN-15	R3218414
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		02-JUL-15	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		26-JUN-15	R3218414
Oil and Grease, Total							
Oil and Grease, Total	896	DLM	8.0	mg/L	03-JUL-15	03-JUL-15	R3219907
Phenol (4AAP)							
Phenols (4AAP)	0.027	DLA	0.010	mg/L		07-JUL-15	R3221471
Phosphorus, Total							
Phosphorus (P)-Total	20.0	DLA	0.20	mg/L		01-JUL-15	R3218033
Sulfate in Water by IC							
Sulfate (SO4)	17.4		0.30	mg/L		26-JUN-15	R3218414
Total Alkalinity as CaCO3							
Alkalinity, Total (as CaCO3)	337		1.0	mg/L		09-JUL-15	R3224268
Total Metals by ICP-MS							
Aluminum (Al)-Total	8.83	DLM	0.50	mg/L	06-JUL-15	06-JUL-15	R3220699
Arsenic (As)-Total	<0.020	DLM	0.020	mg/L	06-JUL-15	06-JUL-15	R3220699
Cadmium (Cd)-Total	0.0023	DLM	0.0010	mg/L	06-JUL-15	06-JUL-15	R3220699
Calcium (Ca)-Total	106	DLM	10	mg/L	06-JUL-15	06-JUL-15	R3220699
Chromium (Cr)-Total	<0.10	DLM	0.10	mg/L	06-JUL-15	06-JUL-15	R3220699
Cobalt (Co)-Total	<0.020	DLM	0.020	mg/L	06-JUL-15	06-JUL-15	R3220699
Copper (Cu)-Total	2.81	DLM	0.020	mg/L	06-JUL-15	06-JUL-15	R3220699
Iron (Fe)-Total	<10	DLM	10	mg/L	06-JUL-15	06-JUL-15	R3220699
Lead (Pb)-Total	0.0785	DLM	0.0090	mg/L	06-JUL-15	06-JUL-15	R3220699
Magnesium (Mg)-Total	16.3	DLM	1.0	mg/L	06-JUL-15	06-JUL-15	R3220699
Manganese (Mn)-Total	0.363	DLM	0.030	mg/L	06-JUL-15	06-JUL-15	R3220699
Nickel (Ni)-Total	<0.20	DLM	0.20	mg/L	06-JUL-15	06-JUL-15	R3220699
Potassium (K)-Total	16.9	DLM	2.0	mg/L	06-JUL-15	06-JUL-15	R3220699
Sodium (Na)-Total	35.2	DLM	3.0	mg/L	06-JUL-15	06-JUL-15	R3220699

\* 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
L1633161-4 GRA-3 Sampled By: MEGAN LUSTY on 24-JUN-15 @ 10:20 Matrix: WASTEWATER <b>Total Metals by ICP-MS</b> Zinc (Zn)-Total <b>Total Organic Carbon</b> Total Organic Carbon <b>Total Suspended Solids</b> Total Suspended Solids <b>pH</b> pH	3.26       11300  5.61	DLM	0.20  1.0  5.0  0.10	mg/L  mg/L  mg/L  pH units	06-JUL-15	06-JUL-15  17-JUL-15  30-JUN-15  09-JUL-15	R3220699  R3227602  R3218516  R3224268

\* 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
DLM	Detection Limit Adjusted due to sample matrix effects.
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may be valid in some cases (refer to Health Canada guidance).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## 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 CO <sub>3</sub> 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 HCO <sub>3</sub> -/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	Total Alkalinity as CaCO <sub>3</sub>	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 HCO <sub>3</sub> - and H <sub>2</sub> CO <sub>3</sub> 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 transferred into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
C-TOT-ORG-WP	Water	Total Organic Carbon	APHA 5310 B-INSTRUMENTAL-WP
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
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.			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>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.</p> <p>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.</p> <p>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.</p> <p>Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:</p> <ol style="list-style-type: none"> <li>1. All extraction and analysis holding times were met.</li> <li>2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.</li> <li>3. Linearity of gasoline response within 15% throughout the calibration range.</li> </ol> <p>Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:</p> <ol style="list-style-type: none"> <li>1. All extraction and analysis holding times were met.</li> <li>2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.</li> <li>3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.</li> <li>4. Linearity of diesel or motor oil response within 15% throughout the calibration range.</li> </ol>			
F2-F4-FID-WP	Water	F2-F4 PHC method	CWS (CCME)
<p>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).</p>			
FC-MPN-WP	Water	Fecal Coliform	APHA 9221E
<p>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.</p>			
HG-T-CVAF-WP	Water	Mercury Total	EPA245.7 V2.0
<p>Mercury in filtered and unfiltered waters is oxidized with Bromine monochloride and analyzed by cold-vapour atomic fluorescence spectrometry.</p>			
MET-T-L-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-TL
<p>This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).</p>			
NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F
<p>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.</p>			
NO2+NO3-CALC-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-WP	Water	Nitrite in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
NO3-IC-N-WP	Water	Nitrate in Water by IC	EPA 300.1 (mod)
<p>Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.</p>			
OGG-TOT-WT	Water	Oil and Grease, Total	APHA 5520 B
<p>Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.</p>			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.</p>			
PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA SW 846/8270-GC/MS
<p>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.</p>			
PH-WP	Water	pH	APHA 4500H
<p>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</p>			

## Reference Information

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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 aqueous 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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
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.

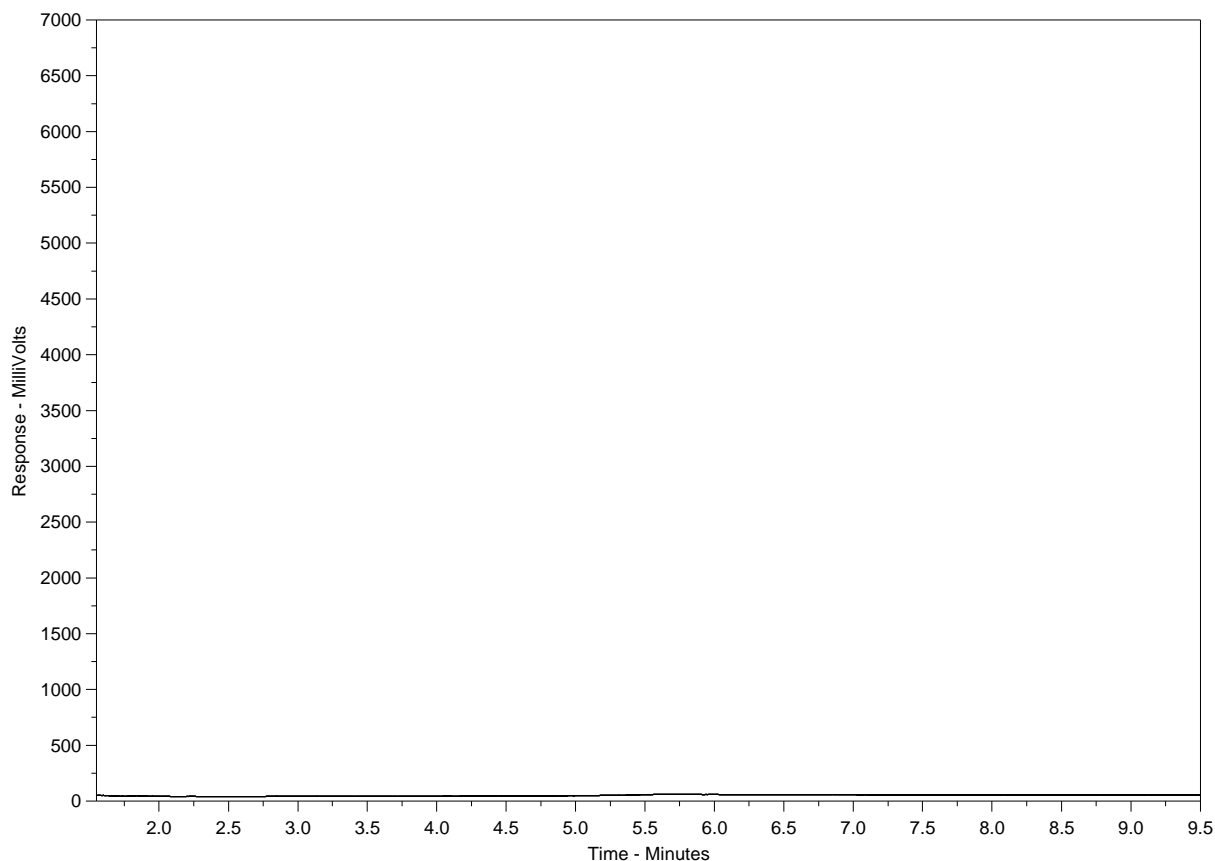
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

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: L1633161-1  
Client Sample ID: GRA-6



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

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.

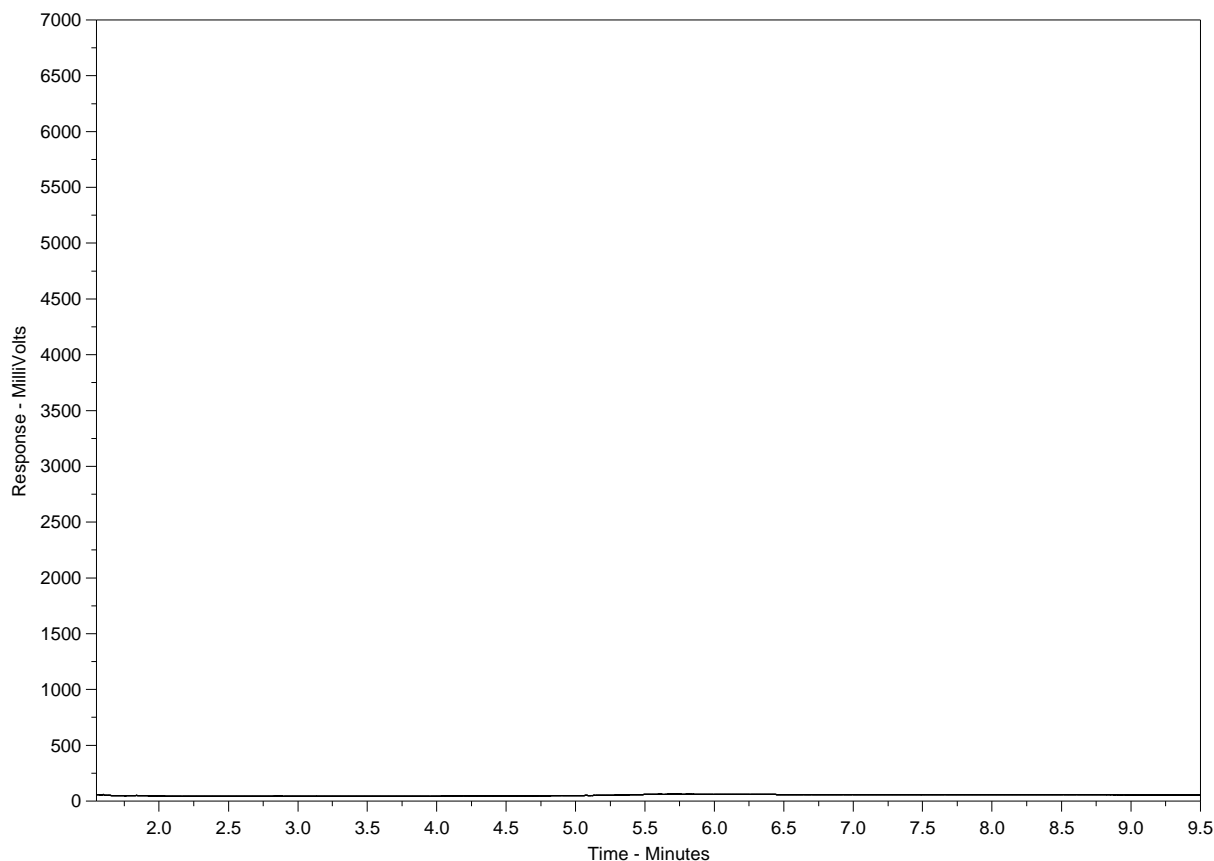
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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](http://www.alsglobal.com).

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L1633161-2  
Client Sample ID: GRA-7



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

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.

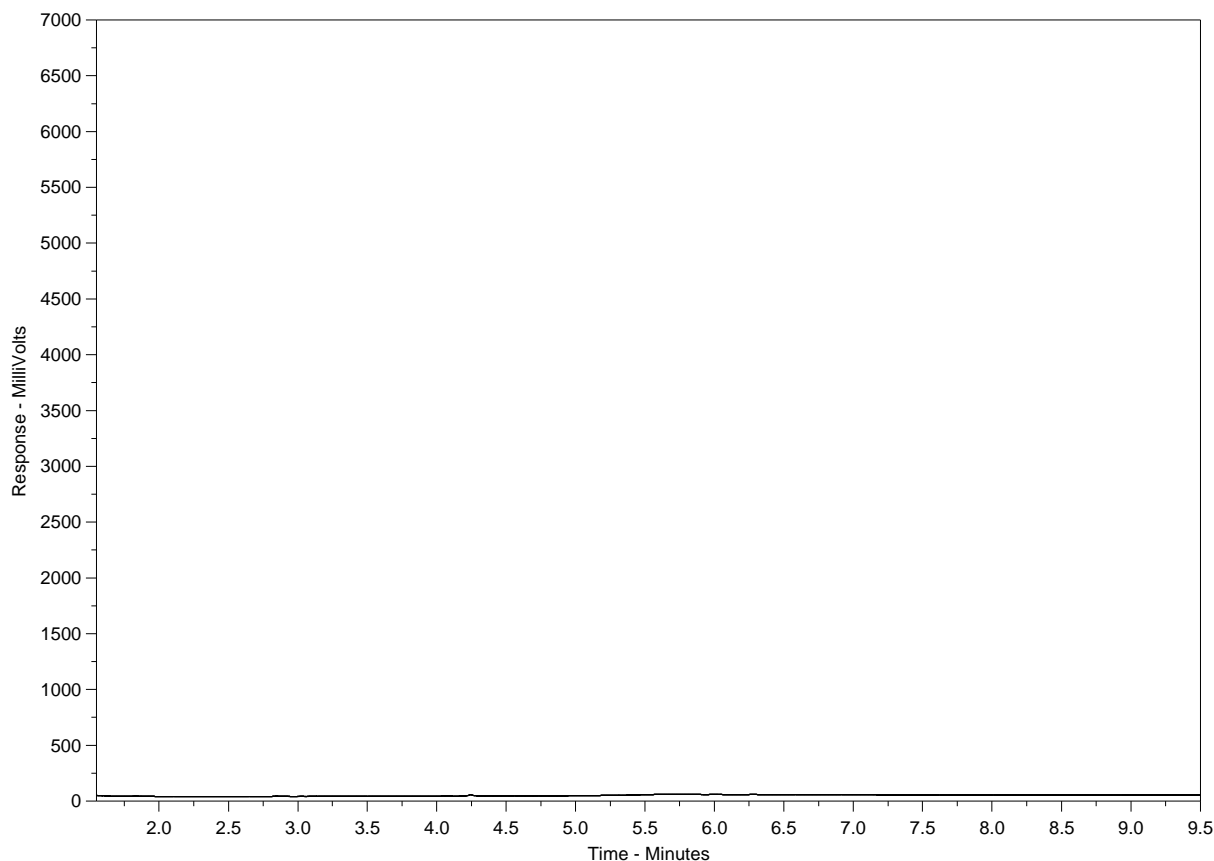
Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at [www.alsglobal.com](http://www.alsglobal.com).



# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L1633161-3  
Client Sample ID: GRA-1



← F2 →		F3		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

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](http://www.alsglobal.com).



L1633161-COFC

COC Number: 14 - 454492

Page 1 of 1

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<b>Report To</b> Company: <u>Government of Nunavut - CFS Rankin Inlet</u> Contact: <u>Blair Riddell / Megan Lusty</u> Address: <u>P.O. Box 490 Rankin Inlet, NU X0C0G0</u> Phone: <u>867-645-8176</u>			<b>Report Format / Distribution</b> Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax Email 2			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests) R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3pm) P <input type="checkbox"/> Priority (2-4 business days if received by 3pm) E <input type="checkbox"/> Emergency (1-2 business days if received by 3pm) E2 <input type="checkbox"/> Same day or weekend emergency if received by 10am - contact ALS for surcharge. Specify Date Required for E2,E or P:																																																														
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Company: Contact: <b>Project Information</b> ALS Quote #: <u>W8133</u> Job #: PO / AFE: LSD:			<b>Invoice Distribution</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax Email 2 <b>Oil and Gas Required Fields (client use)</b> Approver ID: <u>[Signature]</u> Cost Center: <u>[Signature]</u> GL Account: <u>[Signature]</u> Routing Code: <u>[Signature]</u> Activity Code: <u>[Signature]</u> Location: <u>[Signature]</u>			<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																														
ALS Lab Work Order # (lab use only)			ALS Contact: <u>Craig Riddell</u> Sampler: <u>Megan Lusty</u>			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Routine</th> <th>BOD</th> <th>Phenols</th> <th>Total Metals</th> <th>Total Nutrients</th> <th>Oil &amp; Grease x2</th> <th>Bacteria</th> <th>Total Metals x3</th> <th>BTX, FI x2</th> <th>F2-F4 x2</th> <th>PAH</th> <th>Number of Containers</th> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>15</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>15</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>15</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td>9</td> </tr> </table>			Routine	BOD	Phenols	Total Metals	Total Nutrients	Oil & Grease x2	Bacteria	Total Metals x3	BTX, FI x2	F2-F4 x2	PAH	Number of Containers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	9
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ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type																																																																
	GRA-6	24-06-15	9:00AM	Water																																																																
	GRA-7	24-06-15	9:30AM	Water																																																																
	GRA-1	24-06-15	9:55AM	Water																																																																
	GRA-3	24-06-15	10:20AM	Wastewater																																																																
<b>Drinking Water (DW) Samples (client use)</b> Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			<b>Special Instructions / Specify Criteria to add on report (client use)</b> <u>NUNAVUT - WW - GRP1 - WP</u> <u>BTX, FI-F4</u> <u>PAH</u>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b> Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice packs Yes <input type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C <u>14</u> FINAL COOLER TEMPERATURES °C																																																														
<b>SHIPMENT RELEASE (client use)</b> Released by: <u>[Signature]</u> Date: <u>24-06-15</u> Time: <u>10:40 AM</u>			<b>INITIAL SHIPMENT RECEPTION (lab use only)</b> Received by: <u>[Signature]</u> Date: <u>25-06-15</u> Time: <u>11:00</u>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b> Received by: Date: Time:																																																														

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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NA-FM-0228a-008 Form 03/03/04/2013

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

**2015 SECOND QUARTER REPORT  
FOR GN-CGS RANKIN INLET**

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**Appendix E: Certificate of Analysis, June 26, 2015 – 4  
pages**



Nunavut - Community & Government  
Services - Rankin Inlet  
ATTN: MEGAN LUSTY  
Bag 002  
Rankin Inlet NU XOC OGO

Date Received: 30-JUN-15  
Report Date: 08-JUL-15 14:28 (MT)  
Version: FINAL

Client Phone: 867-645-8176

## Certificate of Analysis

Lab Work Order #: L1635013  
Project P.O. #: NOT SUBMITTED  
Job Reference:  
C of C Numbers:  
Legal Site Desc:

Barb Bayer, B.Sc.  
General Manager, Winnipeg

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ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721  
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1635013-1	GRA-1							
Sampled By:	MARIA K on 26-JUN-15 @ 13:25							
Matrix:	WATER							
<b>Polyaromatic Hydrocarbons (PAHs)</b>								
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
Acenaphthene	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
Acenaphthylene	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
Anthracene	<0.000010		0.000010	mg/L	07-JUL-15	08-JUL-15	R3221586	
Acridine	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
Benzo(a)anthracene	<0.000010		0.000010	mg/L	07-JUL-15	08-JUL-15	R3221586	
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	07-JUL-15	08-JUL-15	R3221586	
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	07-JUL-15	08-JUL-15	R3221586	
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	07-JUL-15	08-JUL-15	R3221586	
Chrysene	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	07-JUL-15	08-JUL-15	R3221586	
Fluoranthene	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
Fluorene	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	07-JUL-15	08-JUL-15	R3221586	
Naphthalene	<0.000050		0.000050	mg/L	07-JUL-15	08-JUL-15	R3221586	
Phenanthrene	<0.000050		0.000050	mg/L	07-JUL-15	08-JUL-15	R3221586	
Pyrene	<0.000010		0.000010	mg/L	07-JUL-15	08-JUL-15	R3221586	
Quinoline	<0.000020		0.000020	mg/L	07-JUL-15	08-JUL-15	R3221586	
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	07-JUL-15	08-JUL-15	R3221586	
Surrogate: Acenaphthene d10	93.8		40-130	%	07-JUL-15	08-JUL-15	R3221586	
Surrogate: Acridine d9	107.8		40-130	%	07-JUL-15	08-JUL-15	R3221586	
Surrogate: Chrysene d12	99.4		40-130	%	07-JUL-15	08-JUL-15	R3221586	
Surrogate: Naphthalene d8	84.2		40-130	%	07-JUL-15	08-JUL-15	R3221586	
Surrogate: Phenanthrene d10	95.2		40-130	%	07-JUL-15	08-JUL-15	R3221586	

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

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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.			

\*\* 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 ww - 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.*

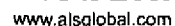
*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

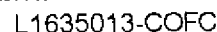
*Test results reported relate only to the samples as received by the laboratory.*

*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.*



**Canada Toll Free: 1 800 668 9878**



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NA ELL-0138a v06 Em-0100 October 2011

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