# ANNUAL REPORT
# FOR THE HAMLET OF RANKIN INLET

## YEAR BEING REPORTED: 2021

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence No. **3AM-GRA1624** issued to the **Government of Nunavut, Department of Community and Government Services (GN-CGS)**.

Below are tabular summaries of all data generated under the "Monitoring Program".

I. Monthly and annual quantities of freshwater obtained by daily logs for all freshwater sources and estimated sewage waste discharged.

**Table 1: Summary of water obtained from three raw water cells combined and estimated sewage water discharge in $m^3$**

| Month Reported | Quantity of Water Obtained from all sources ($m^3$) | Quantity of Sewage Waste Discharged ($m^3$) |
|---|---|---|
| **January** | 67,245.00 | Same |
| **February** | 59,655.00 | Same |
| **March** | 68,226.00 | Same |
| **April** | 73,943.00 | Same |
| **May** | 66,399.00 | Same |
| **June** | 57,189.00 | Same |
| **July** | 54,052.00 | Same |
| **August** | 53,447.00 | Same |
| **September** | 52,909.00 | Same |
| **October** | 52,358.00 | Same |
| **November** | 55,120.00 | Same |
| **December** | 55,612.00 | Same |
| **ANNUAL TOTAL** | 716,155.00 | Same |

**Note**: No meter exists to measure the sewage discharge volumes, therefore Sewage discharge volumes are considered equal to the water consumption volumes.

**Table 2: Summary of water obtained from Wolf Creek to Raw Water Cells in $m^3$**

| Month Reported | Estimated Water Transferred from Wolf Creek to Raw Water Cells ($m^3$) |
|---|---|
| **July** | 62,651 |
| **August** | 90,938 |
| **September** | 84,665 |
| **TOTAL** | **238,254** |

Pumping from Lower Landing Lake began on July 16, 2021 and ended on September 22, 2021. An estimated total of 238,254 $m^3$ was pumped to Nipissar Lake in 2021.

II. Below are the elevation measurements for Nipissar Lake and Lower Landing Lake taken from the datum to the shoreline.

**Table 3: Elevation measurements for Nipissar Lake and Lower Landing Lake in meters**

| Date | Nipissar Lake Elevation (m) | Lower Landing Lake Elevation (m) |
|---|---|---|
| **July** | 2.77 | 1.24 |
| **August 18** | 2.70 | 1.07 |
| **August 25** | 2.63 | 1.07 |
| **September** | 2.44 | 1.04 |

Note: Water Elevation is a measurement taken from the datum to the shoreline. Therefore, a decrease in elevation measurement represents an increase in lake water level.

III. As per Part H, Item 5 of the Water Licence No: 3AM-GRA1624, below is a summary of solids removed from Sewage Treatment Facility (GRA-4).

The WWTP consists of a splitter tank which diverts flow of wastewater collected to either one of two screening channels where the screening system is used to remove large solids. Solids collected from the screening system are transported to the Rankin Inlet Landfill and effluent is discharged through a diffuser into Prairie Bay. Approximately 1 $m^3$ of solids are removed weekly.

**Table 4: Approximate cubic meters of solids removed each month**

| Month Reported | Solids Removed from the Sewage Treatment Facility ($m^3$) |
|---|---|
| **January** | 4 |
| **February** | 4 |
| **March** | 4 |
| **April** | 4 |
| **May** | 4 |
| **June** | 4 |
| **July** | 4 |
| **August** | 4 |
| **September** | 4 |
| **October** | 4 |
| **November** | 4 |
| **December** | 4 |
| **ANNUAL TOTAL** | **48** |

IV. A summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities:

- Repairs were done to the liner in wetwell #2 at the Williamson Lake Pumphouse.

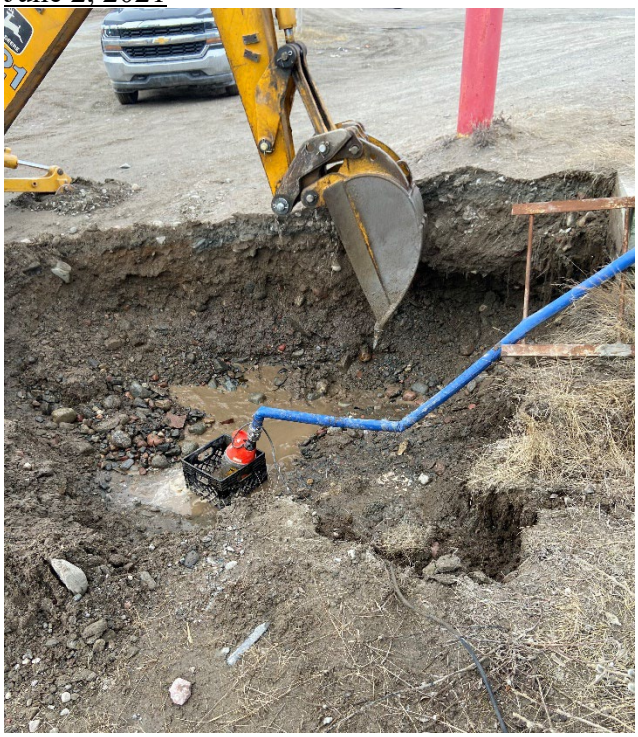
V. A list of unauthorized discharges and summary of follow-up action taken:

- Spill Report 2021200 was initiated for a sewage leak occurring at Johnston Cove lift station from May 25-June 24, 2021.
- CGS was in regular contact with Curtis Didham, ECCC, who identified himself as the key contact to provide updates.
- CGS received emergency approval for bypassing the wastewater treatment plant during repairs from the NWB on June 3, 2021.
- A temporary sump pump system was left installed to expediate any response in the immediate future. With this sump operators would be able to pump any leaking effluent back into the wetwell of the lift station. This was reviewed by a consultant engaged in completing the upgrade design for the liftstation. This liftstation is being upgraded and this situation will not be expected to occur again after upgrade is complete.
- A total of approximately 2 $m^3$ of material that was contaminated with the small leak was disposed of at the landfill site.

*Rankin Inlet Johnston Cove sewage leak Pictures:*

June 1, 2021

June 2, 2021



VI. A summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year:

- None

VII. A summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned:

- A business case for an upgrade to the Rankin Inlet water treatment plant is expected to be completed by the end of April 2022.
- A business case to an upgrade to the Rankin Inlet wastewater treatment plat is expected to be completed by the end of April 2022.

VIII. Any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and

- None

IX. updates or revisions to the approved Operation and Maintenance Plans:

- None

## ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

### Water Licensing Sampling Points:



GRA-1: Raw water supply Nipissar Lake
GRA-3: Wastewater treatment Plant
GRA-7: Lower Landing Lake

**FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:**

- None

**Appendix A: Landing Lake Volumes with Nipissar lake Elevations**

**Appendix B: Hazardous Materials Spill Database, Rankin Inlet 2021**

**Appendix C: Rankin Inlet 2021 Sampling Summary**

**Appendix D: Certificate of Analysis January 12, 2021**

**Certificate of Analysis February 09, 2021**
**Certificate of Analysis March 08, 2021**
**Certificate of Analysis April 06, 2021**
**Certificate of Analysis May 11, 2021**
**Certificate of Analysis June 15, 2021**
**Certificate of Analysis July 6, 2021**
**Certificate of Analysis August 23, 2021**
**Certificate of Analysis September 15, 2021**
**Certificate of Analysis October 19, 2021**
**Certificate of Analysis December 7, 2021**

**Appendix E: Rankin Inlet-CGS CIRNAC Inspection Report**

# Appendix A

Lower Landing Lake Water Pumped to Nipissar Lake

Water Licence No. 3AM-GRA1624

**GRA-7**

| Date | Time | Flow Meter Reading ($m^3$) | Name |
|---|---|---|---|
| 16.07.21 | 08:50 | 1163 Kgal | [illegible] |
| 17.07.21 | 09:36 | 5294 | [illegible] |
| 18.07.21 | 13:21 | 12731 | [illegible] |
| 19.07.21 | 08:53 | 18010 | SP |
| 20.07.21 | 10:01 | 24777 | SP |
| 21.07.21 | 09:17 | 31080 | SP |
| 22.07.21 | 0817 | 37244 | SP |
| 23.07.21 | Not Pumping | | AP |
| 24.07.21 | Not Pumping | | AP |
| 25.07.21 | Not Pumping | | AP |
| 26.07.21 | 10:13 | 42265 | SP |
| 27.07.21 | 0657 | ~~46462~~ 46492 | SP |
| 28.07.21 | 0643 | 51919 | SP |
| 29.07.21 | 0321 | 55265 | SP |
| 30.07.21 | 0941 | 59698 | SP |
| 31.07.21 | 1009 | 62651 | SP |
| 01.08.21 | 0940 | 65505 | SP |
| 02.08.21 | 0932 | 65881 | SP |
| 03.08.21 | 0846 | 69791 | SP |
| 04.08.21 | 0938 | 71293 | SP |
| 05.08.21 | 0830 | 75000 | SP |
| 06.08.21 | 0902 | 79976 | SP |
| 07.08.21 | Shut down | | |
| 08.08.21 | Shut down | | |
| 09.08.21 | 0742 | 81154 | SP |

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## Lower Landing Lake Water Pumped to Nipissar Lake

Water Licence No. 3AM-GRA1624

**GRA-7**

| Date | Time | Flow Meter Reading ($m^3$) | Name |
|---|---|---|---|
| Aug 09/21 | 9:10 | 81940 | BR |
| Aug 10/21 | 1:20 | 85005 | BR |
| Aug 11/21 | 9:35 | 92786 | BR |
| Aug 13/21 | 2:52 | 93901 | BR |
| Aug 14/21 | 3:00 | 96479 | BR |
| Aug 15/21 | 4:00 | 98868 | BR |
| Aug 16/21 | 2:30 | 99924 | BR |
| Aug 17/21 | 2:30 | 102196 | BR |
| Aug 18/21 | 9:05 | 102943 | BR |
| Aug 19/21 | 1:30 | 108005 | BR |
| Aug 20/21 | 2:00 | 109056 | BR |
| Aug 21/21 | 10:45 | 113024 | M |
| Aug 22/21 | 10:45 | 116569 | M |
| Aug 23/21 | 4:00 | 120050 | BR |
| Aug 24/21 | 4:00 | 123901 | BR |
| Aug 25/21 | 4:00 | 127830 | BR |
| Aug 26/21 | 4:66 | 132169 | BR |
| Aug 27/21 | 2:40 | 136010 | BR |
| Aug 28/21 | 2:30 | 140178 | BR |
| Aug 29/21 | 1:30 | 144487 | BR |
| Aug 30/21 | 2:10 | 149143 | BR |
| Aug 31/21 | 1:40 | 153589 | BR |
| Sept 1/21 | 2:00 | 158072 | BR |
| Sept 2/21 | 2:30 | 162798 | BR |
| Sept 03/21 | 1:45 | 166858 | BT / BR |

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## Lower Landing Lake Water Pumped to Nipissar Lake

Water Licence No. 3AM-GRA1624

**GRA-7**

| Date | Time | Flow Meter Reading ($m^3$) | Name |
|---|---|---|---|
| Sept04/21 | 1:21 pm | 170977 | BT |
| Sept05/21 | 12:30 pm | 175177 | BT |
| Sept06/21 | 11:30 am | 179223 | BT |
| Sept07/21 | 1:30 pm | 183706 | BR |
| Sept08/21 | 1:30 | 186629 | BR |
| Sept9/21 | 4:00 | 189723 | BR |
| Sept 10/21 | ~~4:00~~ | 189121 | BR |
| Sept 11/21 | 12:00 | 192262 | ~~BR~~ |
| ~~Sept 12/21~~ | | 195587 | ~~BR~~ |
| Sept 13/21 | 130 | 200203 | BR |
| Sept 14/21 | ~~3~~:30 | 204892 | BR |
| Sept15/21 | 2:00 | 208816 | BR |
| Sept 16/21 | 2:30 | 212978 | BR |
| Sept 17/21 | 2:30 | 217393 | BR |
| Sept 18/21 | 2:00 | 221548 | BR |
| Sept 19/21 | 1:30 | 225758 | BR |
| Sept 20/21 | 1:38 | 230343 | BR |
| Sept 21/21 | 4:00 | 235016 | BR |
| Sept 22/21 | 9:30 | 238254 | BR |
| | | | |
| | | | |
| | | | |
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# Appendix B

**List of spills reported to the NT-NU Spill Report Line and are listed on the Hazardous Materials Spills Database of Rankin Inlet in 2021**

| Spill | Occurrence Date | Location Description | Product Spilled | Quantity |
|---|---|---|---|---|
| 2021483 | 07-Nov-21 | No additional information available. | Petroleum- fuel oil (jet A, diesel, turbo A, heat) | 522 L |
| 2021433 | 04-Oct-21 | Meliadine Gold Mine - 63Â°01'28.0"N 92Â°12'31.0"W | Other | Unknown Quantity |
| 2021400 | 15-Sep-21 | Meliadine Gold Project | Petroleum - lubricating oil (lube, hydraulic) | 300 L |
| 2021363 | 22-Aug-21 | Old Resupply Manifold Area Leak | Petroleum - fuel oil (jet A, diesel, turbo A, heat) | 20 L |
| 2021301 | 14-Jul-21 | Meliadine Gold Project | Other | 20 $m^3$ |
| 2021299 | 12-Jul-21 | Meliadine Gold Project | Wastewater (sewage, mine tailings) | 1 $m^3$ |
| 2021233 | 04-Jun-21 | 122-4 Sivulliq Ave-Community Hall | Petroleum - fuel oil (jet A, diesel, turbo A, heat) | 946.35 L |
| 2021219 | 01-Jun-21 | Lot 47 plan 603 | Petroleum - fuel oil (jet A, diesel, turbo A, heat) | 1100 L |
| 2021217 | 31-May-21 | Meliadine Gold Project | Petroleum - lubricating oil (lube, hydraulic) | 5 L |
| 2021203 | 23-May-21 | 100-65 Piqtuq Ave (Unit 592, 5 Plex), Rankin Inlet, NU | Petroleum - fuel oil (jet A, diesel, turbo A, heat) | 572 L |
| 2021200 | 20-May-21 | Johnston Cove lift station | Wastewater (sewage, mine tailings) | 100 L |
| 2021184 | 17-May-21 | Tuapak 56-62, private residence in Rankin Inlet | Petroleum - fuel oil (jet A, diesel, turbo A, heat) | 150 L |
| 2021109 | 29-Mar-21 | Meliadine Gold Project / Nunavut / Rankin Inlet | Petroleum - lubricating oil (lube, hydraulic) | 3 $m^3$ |
| 2021110 | 29-Mar-21 | Meliadine Gold Project, Nunavut. Rankin Inlet. | Petroleum - lubricating oil (lube, hydraulic) | 20 L |
| 2021086 | 09-Mar-21 | Rankin Inlet - Qulliq Energy Power Plant Yard | | 615 L |

# Appendix C

**Rankin Inlet-CGS**
**GRA-1**

| | | | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Statistics | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **DL** | **24-Jun-15** | **29-Jun-16** | **05-Jun-17** | **25-Jun-18** | **25-Jun-19** | **25-Jun-20** | **03-Aug-21** | **Min** | **Max** | **Average** |
| **Alkalinity** | | | | | | | | | | | | |
| Bicarbonate (HCO3) | mg/L | 1.2 | 36.1 | 38.6 | 57.1 | 32.6 | 37.2 | 35.9 | 43.7 | 32.6 | 57.1 | 40.2 |
| Carbonate (CO3) | mg/L | 0.60 | 0.60 | 0.60 | 0.60 | <0.60 | 0.60 | 0.60 | <0.60 | 0.6 | 0.6 | 0.6 |
| Hydroxide (OH) | mg/L | 0.34 | 0.34 | 0.34 | 0.34 | <0.34 | 0.34 | 0.34 | <0.34 | 0.3 | 0.3 | 0.3 |
| Alkalinity, Total (as CaCO3) | mg/L | 1.0 | 29.6 | 31.6 | 46.8 | 26.7 | 30.5 | 29.4 | 35.8 | 26.7 | 46.8 | 32.9 |
| **Ammonia by Colour** | | | | | | | | | | | | |
| Ammonia Total (as N) | mg/L | 0.20 | 0.087 | 0.010 | 0.052 | 0.024 | 0.040 | 0.047 | <0.010 | 0.0 | 0.1 | 0.0 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | | | | | | |
| Biochemical Oxygen Demand | mg/L | 6.0 | 2.9 | 2.1 | 2.0 | <2.0 | 2.0 | 2.0 | <2.0 | 2.0 | 2.9 | 2.2 |
| **Carbonaceous BOD** | | | | | | | | | | | | |
| BOD Carbonaceous | mg/L | 6.0 | 2.5 | 2.0 | 2.0 | <2.0 | 2.0 | 2.0 | <2.0 | 2.0 | 2.5 | 2.1 |
| **Chloride in Water by IC** | | | | | | | | | | | | |
| Chloride (Cl) | mg/L | 10 | 20.7 | 28.2 | 36.9 | 24.0 | 21.9 | 19 | 28.1 | 19.0 | 36.9 | 25.5 |
| **Conductivity ()** | | | | | | | | | | | | |
| Conductivity | umhos/cm | 1.0 | 149 | 189 | 246 | 167 | 157 | 143.0 | 194.0 | 143.0 | 246.0 | 177.9 |
| **Fecal Coliforms ()** | | | | | | | | | | | | |
| Fecal Coliforms | MPN/100mL | 3 | 3 | 3 | 10 | 30 | 10 | 10 | 30 | 3.0 | 30.0 | 13.7 |
| **Hardness Calculated** | | | | | | | | | | | | |
| Hardness (as CaCO3) | mg/L | 0.30 | 40.8 | 54.3 | 72.5 | 49.7 | 45.2 | 42.4 | 48.3 | 40.8 | 72.5 | 50.5 |
| **Mercury Total** | | | | | | | | | | | | |
| Mercury (Hg) | mg/L | 0.00020 | 0.000020 | 0.000020 | 0.0000050 | <0.0000050 | 0.0000050 | 0.0000050 | <0.0000050 | 0.0 | 0.0 | 0.0 |
| **Nitrate in Water by IC** | | | | | | | | | | | | |
| Nitrate (as N) | mg/L | 0.40 | 0.020 | 0.020 | 0.020 | <0.020 | 0.020 | 0.020 | <0.020 | 0.0 | 0.0 | 0.0 |
| **Nitrate + Nitrite** | | | | | | | | | | | | |
| Nitrate and Nitrite as N | mg/L | 0.45 | 0.070 | 0.070 | 0.070 | <0.070 | 0.070 | 0.070 | <0.070 | 0.1 | 0.1 | 0.1 |
| **Nitrite in Water by IC** | | | | | | | | | | | | |
| Nitrite (as N) | mg/L | 0.20 | 0.010 | 0.010 | 0.010 | <0.010 | 0.010 | 0.010 | <0.010 | 0.0 | 0.0 | 0.0 |
| **Oil & Grease - Gravimetric** | | | | | | | | | | | | |
| Oil and Grease | mg/L | 5.0 | 2.0 | 5.0 | 5.0 | <5.0 | 5.0 | 5.0 | <5.0 | 2.0 | 5.0 | 4.4 |
| **Phenol** | | | | | | | | | | | | |
| Phenols | mg/L | 0.0010 | 0.0010 | 0.0010 | 0.0027 | <0.0010 | 0.0010 | 0.0010 | <0.0010 | 0.0 | 0.0 | 0.0 |
| **Phosphorus, Total** | | | | | | | | | | | | |
| Phosphorus (P) | mg/L | 0.010 | 0.014 | 0.014 | 0.012 | 0.0074 | 0.0163 | 0.0123 | 0.0132 | 0.0 | 0.0 | 0.0 |
| **Sulfate in Water by IC** | | | | | | | | | | | | |
| Sulfate (SO4) | mg/L | 6.0 | 10.9 | 14.2 | 20.8 | 16.8 | 14.7 | 10.1 | 13.9 | 10.1 | 20.8 | 14.5 |
| **Total Metals by ICP-MS** | | | | | | | | | | | | |
| Aluminium (Al) | mg/L | 0.0050 | 0.0491 | 0.0126 | 0.0135 | 0.0606 | 0.0352 | 0.0301 | 0.0217 | 0.0 | 0.1 | 0.0 |
| Arsenic (As) | mg/L | 0.00020 | 0.00048 | 0.00046 | 0.00052 | 0.00062 | 0.00061 | 0.00086 | 0.00065 | 0.0 | 0.0 | 0.0 |
| Cadmium (Cd) | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000053 | 0.0000050 | 0.0000050 | <0.0000050 | 0.0 | 0.0 | 0.0 |
| Calcium (Ca) | mg/L | 0.10 | 11.8 | 15.9 | 21 | 14.1 | 12.7 | 13.1 | 13.8 | 11.8 | 21.0 | 14.6 |
| Chromium (Cr) | mg/L | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.00064 | 0.00044 | 0.00016 | 0.00016 | 0.0 | 0.0 | 0.0 |
| Cobalt (Co) | mg/L | 0.00020 | 0.00020 | 0.00020 | 0.00020 | 0.00021 | 0.00012 | 0.00012 | <0.00010 | 0.0 | 0.0 | 0.0 |
| Copper (Cu) | mg/L | 0.00020 | 0.00085 | 0.00073 | 0.00087 | 0.00148 | 0.00098 | 0.00096 | 0.00109 | 0.0 | 0.0 | 0.0 |
| Iron (Fe) | mg/L | 0.010 | 0.10 | 0.029 | 0.029 | 0.118 | 0.071 | 0.062 | 0.062 | 0.0 | 0.1 | 0.1 |
| Lead (Pb) | mg/L | 0.000090 | 0.000090 | 0.000090 | 0.000090 | 0.000062 | 0.000050 | 0.000105 | <0.000050 | 0.0 | 0.0 | 0.0 |
| Magnesium (Mg) | mg/L | 0.010 | 2.72 | 3.53 | 4.9 | 3.53 | 3.28 | 2.38 | 3.35 | 2.4 | 4.9 | 3.4 |
| Manganese (Mn) | mg/L | 0.00030 | 0.0310 | 0.0112 | 0.0283 | 0.0388 | 0.0446 | 0.0315 | 0.0057 | 0.0 | 0.0 | 0.0 |
| Nickel (Ni) | mg/L | 0.0020 | 0.0020 | 0.0020 | 0.0020 | 0.00208 | 0.00098 | 0.00253 | 0.00085 | 0.0 | 0.0 | 0.0 |
| Potassium (K) | mg/L | 0.020 | 1.57 | 1.96 | 2.61 | 1.88 | 1.58 | 1.370 | 1.850 | 1.4 | 2.6 | 1.8 |
| Sodium (Na) | mg/L | 0.030 | 13.1 | 17.5 | 22.5 | 16.0 | 12.8 | 9.83 | 15.50 | 9.8 | 22.5 | 15.3 |
| Zinc (Zn) | mg/L | 0.0020 | 0.0020 | 0.0020 | 0.0020 | <0.0030 | 0.0030 | 0.0030 | <0.0030 | 0.0 | 0.0 | 0.0 |
| **Total Organic Carbon by Combustion** | | | | | | | | | | | | |
| Total Organic Carbon | mg/L | 0.50 | 4.1 | 3.90 | 4.18 | 3.64 | 3.72 | 4.28 | 4.16 | 3.6 | 4.3 | 4.0 |
| **Total Suspended Solids ()** | | | | | | | | | | | | |
| Total Suspended Solids | mg/L | 13 | 5.0 | 5.0 | 5.0 | 13.2 | 2.0 | 3.0 | <3.0 | 2.0 | 13.2 | 5.5 |
| **pH** | | | | | | | | | | | | |
| pH | pH Units | 0.10 | 7.63 | 7.48 | 7.34 | 7.40 | 7.40 | 7.43 | 7.67 | 7.3 | 7.7 | 7.5 |
| Benzene | mg/L | 0.00050 | 0.00050 | 0.00050 | 0.00050 | <0.00050 | 0.00050 | 0.00050 | <0.00050 | 0.0 | 0.0 | 0.0 |
| Toluene | mg/L | 0.0010 | 0.0010 | 0.0010 | 0.0010 | <0.0010 | 0.00100 | 0.0010 | <0.0010 | 0.0 | 0.0 | 0.0 |
| Ethyl Benzene | mg/L | 0.00050 | 0.00050 | 0.00050 | 0.00050 | <0.00050 | 0.00050 | 0.00050 | <0.00050 | 0.0 | 0.0 | 0.0 |
| o-Xylene | mg/L | 0.00050 | 0.00050 | 0.00050 | 0.00050 | <0.00050 | 0.00050 | 0.00050 | <0.00050 | 0.0 | 0.0 | 0.0 |
| F1 (C6-C10) | mg/L | 0.10 | 0.10 | 0.10 | 0.10 | <0.10 | 0.10 | 0.10 | <0.10 | 0.1 | 0.1 | 0.1 |
| F2 (C10-C16) | mg/L | 0.25 | 0.25 | 0.10 | 0.10 | <0.10 | 0.10 | 0.10 | <0.10 | 0.1 | 0.3 | 0.1 |
| F3 (C16-C34) | mg/L | 0.25 | 0.25 | 0.25 | 0.25 | <0.25 | 0.25 | 0.25 | <0.25 | 0.3 | 0.3 | 0.3 |
| F4 (C34-C50) | mg/L | 0.25 | 0.25 | 0.25 | 0.25 | <0.25 | 0.25 | 0.25 | <0.25 | 0.3 | 0.3 | 0.3 |
| Total Hydrocarbons (C6-C50) | mg/L | 0.44 | 0.44 | 0.38 | 0.38 | <0.38 | 0.38 | N/A | <0.38 | 0.4 | 0.4 | 0.4 |

**Rankin Inlet-CGS**
**GRA-7**

| | | | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Statistics | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Unit** | **DL** | **24-Jun-15** | **29-Jun-16** | **05-Jun-17** | **25-Jun-18** | **25-Jun-19** | **25-Jun-20** | **03-Aug-21** | **Min** | **Max** | **Average** |
| **Alkalinity** | | | | | | | | | | | | |
| Bicarbonate (HCO3) | mg/L | 1.2 | 16.5 | 30.0 | 24.9 | 17.9 | 15.6 | 13.4 | 34.2 | 13.4 | 34.2 | 21.78571429 |
| Carbonate (CO3) | mg/L | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | <0.60 | 0.6 | 0.6 | 0.6 |
| Hydroxide (OH) | mg/L | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 | <0.34 | 0.34 | 0.34 | 0.34 |
| Alkalinity, Total (as CaCO3) | mg/L | 1.0 | 13.5 | 24.6 | 20.4 | 14.7 | 12.8 | 11.0 | 28.0 | 11 | 28 | 17.85714286 |
| **Ammonia by Colour** | | | | | | | | | | | | |
| Ammonia Total (as N) | mg/L | 0.20 | 0.12 | 0.011 | 0.010 | 0.100 | 0.001 | 0.010 | <0.010 | 0.001 | 0.12 | 0.042 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | | | | | | |
| Biochemical Oxygen Demand | mg/L | 6.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | <2.0 | 2 | 2 | 2 |
| **Carbonaceous BOD** | | | | | | | | | | | | |
| BOD Carbonaceous | mg/L | 6.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | <2.0 | 2 | 2 | 2 |
| **Chloride in Water by IC** | | | | | | | | | | | | |
| Chloride (Cl) | mg/L | 10 | 11.4 | 23.5 | 12.6 | 12.2 | 14.9 | 6.04 | 23 | 6.04 | 23.5 | 14.80571429 |
| **Conductivity ()** | | | | | | | | | | | | |
| Conductivity | umhos/cm | 1.0 | 77.1 | 143 | 88.2 | 83.4 | 96.0 | 48.2 | 145.0 | 48.2 | 145 | 97.27142857 |
| **Fecal Coliforms ()** | | | | | | | | | | | | |
| Fecal Coliforms | MPN/100mL | 3 | 3 | 3 | 10 | 10 | 10 | 10 | <10 | 3 | 10 | 7.666666667 |
| **Hardness Calculated** | | | | | | | | | | | | |
| Hardness (as CaCO3) | mg/L | 0.30 | 19.6 | 41.4 | 25.6 | 20.5 | 24.5 | 13.9 | 33.9 | 13.9 | 41.4 | 25.62857143 |
| **Mercury Total** | | | | | | | | | | | | |
| Mercury (Hg) | mg/L | 0.00020 | 0.000020 | 0.000020 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | <0.0000050 | 0.000005 | 0.00002 | 0.00001 |
| **Nitrate in Water by IC** | | | | | | | | | | | | |
| Nitrate (as N) | mg/L | 0.40 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | <0.020 | 0.02 | 0.02 | 0.02 |
| **Nitrate + Nitrite** | | | | | | | | | | | | |
| Nitrate and Nitrite as N | mg/L | 0.45 | 0.070 | 0.070 | 0.070 | 0.070 | 0.070 | 0.070 | <0.070 | 0.07 | 0.07 | 0.07 |
| **Nitrite in Water by IC** | | | | | | | | | | | | |
| Nitrite (as N) | mg/L | 0.20 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | <0.010 | 0.01 | 0.01 | 0.01 |
| **Oil & Grease - Gravimetric** | | | | | | | | | | | | |
| Oil and Grease | mg/L | 5.0 | 2.0 | 5.0 | 5.0 | 5.6 | 5.0 | 5.0 | <5.0 | 2 | 5.6 | 4.6 |
| **Phenol** | | | | | | | | | | | | |
| Phenols | mg/L | 0.0010 | 0.0010 | 0.0015 | 0.0021 | 0.001 | 0.0011 | 0.0010 | <0.0010 | 0.001 | 0.0021 | 0.001283333 |
| **Phosphorus, Total** | | | | | | | | | | | | |
| Phosphorus (P) | mg/L | 0.010 | 0.010 | 0.010 | 0.011 | 0.0040 | 0.0081 | 0.0100 | 0.0069 | 0.004 | 0.011 | 0.008571429 |
| **Sulfate in Water by IC** | | | | | | | | | | | | |
| Sulfate (SO4) | mg/L | 6.0 | 3.99 | 6.31 | 3.94 | 3.91 | 4.03 | 1.83 | 6.72 | 1.83 | 6.72 | 4.39 |
| **Total Metals by ICP-MS** | | | | | | | | | | | | |
| Aluminium (Al) | mg/L | 0.0050 | 0.0139 | 0.0167 | 0.0469 | 0.0396 | 0.0143 | 0.0198 | 0.0118 | 0.0118 | 0.0469 | 0.023285714 |
| Arsenic (As) | mg/L | 0.00020 | 0.00021 | 0.00031 | 0.00029 | 0.00028 | 0.00034 | 0.00041 | 0.00047 | 0.00021 | 0.00047 | 0.00033 |
| Cadmium (Cd) | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000005 | 0.000005 | 0.0000050 | <0.0000050 | 0.000005 | 0.00001 | 0.0000075 |
| Calcium (Ca) | mg/L | 0.10 | 5.68 | 12.5 | 7.64 | 6.02 | 7.17 | 4.26 | 9.65 | 4.26 | 12.5 | 7.56 |
| Chromium (Cr) | mg/L | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0002 | 0.00040 | 0.00010 | 0.00011 | 0.0001 | 0.001 | 0.00054 |
| Cobalt (Co) | mg/L | 0.00020 | 0.00020 | 0.00020 | 0.00020 | 0.00010 | 0.00010 | 0.00010 | <0.00010 | 0.0001 | 0.0002 | 0.00015 |
| Copper (Cu) | mg/L | 0.00020 | 0.00068 | 0.00082 | 0.00074 | 0.00087 | 0.00106 | 0.00066 | 0.00085 | 0.00066 | 0.00106 | 0.000811429 |
| Iron (Fe) | mg/L | 0.010 | 0.10 | 0.140 | 0.19 | 0.116 | 0.069 | 0.082 | 0.075 | 0.069 | 0.19 | 0.110285714 |
| Lead (Pb) | mg/L | 0.000090 | 0.000090 | 0.000090 | 0.000090 | 0.000058 | 0.000050 | 0.000050 | <0.000050 | 0.00005 | 0.00009 | 7.13333E-05 |
| Magnesium (Mg) | mg/L | 0.010 | 1.32 | 2.46 | 1.58 | 1.34 | 1.59 | 0.779 | 2.38 | 0.779 | 2.46 | 1.635571429 |
| Manganese (Mn) | mg/L | 0.00030 | 0.00312 | 0.0290 | 0.0156 | 0.00754 | 0.00362 | 0.00686 | 0.00464 | 0.00312 | 0.029 | 0.010054286 |
| Nickel (Ni) | mg/L | 0.0020 | 0.0020 | 0.0020 | 0.0020 | 0.00064 | 0.00064 | 0.00050 | 0.00060 | 0.0005 | 0.002 | 0.001197143 |
| Potassium (K) | mg/L | 0.020 | 1.02 | 1.68 | 1.33 | 1.08 | 1.20 | 0.738 | 1.470 | 0.738 | 1.68 | 1.216857143 |
| Sodium (Na) | mg/L | 0.030 | 6.71 | 12.0 | 6.65 | 6.00 | 7.81 | 3.13 | 11.70 | 3.13 | 12 | 7.714285714 |
| Zinc (Zn) | mg/L | 0.0020 | 0.0020 | 0.0020 | 0.0020 | 0.0030 | 0.0030 | 0.0030 | <0.0030 | 0.002 | 0.003 | 0.0025 |
| **Total Organic Carbon by Combustion** | | | | | | | | | | | | |
| Total Organic Carbon | mg/L | 0.50 | 4.1 | 3.93 | 4.76 | 3.65 | 4.37 | 3.03 | 4.48 | 3.03 | 4.76 | 4.045714286 |
| **Total Suspended Solids ()** | | | | | | | | | | | | |
| Total Suspended Solids | mg/L | 13 | 5.0 | 5.0 | 5.0 | 2.0 | 2.0 | 3.0 | <3.0 | 2 | 5 | 3.666666667 |
| **pH** | | | | | | | | | | | | |
| pH | pH Units | 0.10 | 7.35 | 7.38 | 7.31 | 7.08 | 6.78 | 7.33 | 7.56 | 6.78 | 7.56 | 7.255714286 |
| Benzene | mg/L | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | <0.00050 | 0.0005 | 0.0005 | 0.0005 |
| Toluene | mg/L | 0.0010 | 0.0010 | 0.0010 | 0.0010 | 0.0001 | 0.00100 | 0.0010 | <0.0010 | 0.0001 | 0.001 | 0.00085 |
| Ethyl Benzene | mg/L | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | <0.00050 | 0.0005 | 0.0005 | 0.0005 |
| o-Xylene | mg/L | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | <0.00050 | 0.0005 | 0.0005 | 0.0005 |
| F1 (C6-C10) | mg/L | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | <0.10 | 0.1 | 0.1 | 0.1 |
| F2 (C10-C16) | mg/L | 0.25 | 0.25 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | <0.10 | 0.1 | 0.25 | 0.125 |
| F3 (C16-C34) | mg/L | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.41 | 0.25 | 0.41 | 0.272857143 |
| F4 (C34-C50) | mg/L | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | <0.25 | 0.25 | 0.25 | 0.25 |
| Total Hydrocarbons (C6-C50) | mg/L | 0.44 | 0.44 | 0.38 | 0.38 | 0.38 | 0.38 | N/A | 0.41 | 0.38 | 0.44 | 0.395 |

# Appendix D

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

Date Received: 13-JAN-21
Report Date: 25-JAN-21 14:50 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2547773

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2547773-1 RANKIN INLET WWTP - EFFLUENT | | | | | | | |
| Sampled By: SD on 12-JAN-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **BTEX plus F1-F4** | | | | | | | |
| **BTX plus F1 by GCMS** | | | | | | | |
| Benzene | <0.00050 | | 0.00050 | mg/L | | 15-JAN-21 | R5351216 |
| Toluene | <0.0010 | | 0.0010 | mg/L | | 15-JAN-21 | R5351216 |
| Ethyl benzene | <0.00050 | | 0.00050 | mg/L | | 15-JAN-21 | R5351216 |
| o-Xylene | <0.00050 | | 0.00050 | mg/L | | 15-JAN-21 | R5351216 |
| m+p-Xylenes | <0.00040 | | 0.00040 | mg/L | | 15-JAN-21 | R5351216 |
| F1 (C6-C10) | <0.10 | | 0.10 | mg/L | | 15-JAN-21 | R5351216 |
| Surrogate: 4-Bromofluorobenzene (SS) | 83.0 | | 70-130 | % | | 15-JAN-21 | R5351216 |
| **CCME PHC F2-F4 in Water** | | | | | | | |
| F2 (C10-C16) | 0.20 | | 0.10 | mg/L | 15-JAN-21 | 15-JAN-21 | R5349478 |
| F3 (C16-C34) | 3.77 | | 0.25 | mg/L | 15-JAN-21 | 15-JAN-21 | R5349478 |
| F4 (C34-C50) | 1.83 | | 0.25 | mg/L | 15-JAN-21 | 15-JAN-21 | R5349478 |
| Surrogate: 2-Bromobenzotrifluoride | 95.0 | | 60-140 | % | 15-JAN-21 | 15-JAN-21 | R5349478 |
| **CCME Total Hydrocarbons** | | | | | | | |
| F1-BTEX | <0.10 | | 0.10 | mg/L | | 25-JAN-21 | |
| F2-Naphth | 0.20 | | 0.10 | mg/L | | 25-JAN-21 | |
| F3-PAH | 3.77 | | 0.25 | mg/L | | 25-JAN-21 | |
| Total Hydrocarbons (C6-C50) | 5.81 | | 0.38 | mg/L | | 25-JAN-21 | |
| **Sum of Xylene Isomer Concentrations** | | | | | | | |
| Xylenes (Total) | <0.00064 | | 0.00064 | mg/L | | 18-JAN-21 | |
| **Miscellaneous Parameters** | | | | | | | |
| Fluoride (F) | 0.195 | | 0.020 | mg/L | | 13-JAN-21 | R5346457 |
| **Total and E. coli, 1:10 dilution by QT97** | | | | | | | |
| Total Coliforms | >24200 | | 10 | MPN/100mL | | 13-JAN-21 | R5346036 |
| Escherichia Coli | >24200 | | 10 | MPN/100mL | | 13-JAN-21 | R5346036 |
| **CCME PAHs in mg/L** | | | | | | | |
| 1-Methyl Naphthalene | <0.000020 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| 2-Methyl Naphthalene | <0.000020 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Acenaphthene | <0.000020 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Acenaphthylene | <0.000020 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Anthracene | <0.000010 | | 0.000010 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Acridine | <0.000020 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Benzo(a)anthracene | <0.000010 | | 0.000010 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Benzo(a)pyrene | <0.0000050 | | 0.0000050 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Benzo(b&j)fluoranthene | <0.000010 | | 0.000010 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Benzo(g,h,i)perylene | <0.000020 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Benzo(k)fluoranthene | <0.000010 | | 0.000010 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Chrysene | <0.000020 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Dibenzo(a,h)anthracene | 0.0000092 | | 0.0000050 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Fluoranthene | <0.000020 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Fluorene | <0.000020 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Indeno(1,2,3-cd)pyrene | <0.000010 | | 0.000010 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Naphthalene | <0.000050 | | 0.000050 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Phenanthrene | <0.000050 | | 0.000050 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Pyrene | <0.000010 | | 0.000010 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Quinoline | 0.000024 | | 0.000020 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| B(a)P Total Potency Equivalent | <0.000030 | | 0.000030 | mg/L | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Surrogate: Naphthalene d8 | 105.9 | | 50-150 | % | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Surrogate: Phenanthrene d10 | 98.7 | | 50-150 | % | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Surrogate: Chrysene d12 | 105.4 | | 50-150 | % | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Surrogate: Acenaphthene d10 | 92.5 | | 50-150 | % | 22-JAN-21 | 25-JAN-21 | R5357554 |
| Surrogate: Acridine d9 | 133.2 | | 50-150 | % | 22-JAN-21 | 25-JAN-21 | R5357554 |

* 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 |
|---|---|---|---|---|---|---|---|
| L2547773-1 RANKIN INLET WWTP - EFFLUENT | | | | | | | |
| Sampled By: SD on 12-JAN-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **Nunavut WW Group 1** | | | | | | | |
| **Alkalinity, Bicarbonate** | | | | | | | |
| Bicarbonate (HCO3) | 101 | | 1.2 | mg/L | | 15-JAN-21 | |
| **Alkalinity, Carbonate** | | | | | | | |
| Carbonate (CO3) | <0.60 | | 0.60 | mg/L | | 15-JAN-21 | |
| **Alkalinity, Hydroxide** | | | | | | | |
| Hydroxide (OH) | <0.34 | | 0.34 | mg/L | | 15-JAN-21 | |
| **Alkalinity, Total (as CaCO3)** | | | | | | | |
| Alkalinity, Total (as CaCO3) | 83.1 | | 1.0 | mg/L | | 14-JAN-21 | R5348059 |
| **Ammonia by colour** | | | | | | | |
| Ammonia, Total (as N) | 4.75 | | 0.20 | mg/L | | 15-JAN-21 | R5351176 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | |
| Biochemical Oxygen Demand | 72 | | 20 | mg/L | | 14-JAN-21 | R5353176 |
| **Carbonaceous BOD** | | | | | | | |
| BOD Carbonaceous | 54 | | 20 | mg/L | | 14-JAN-21 | R5353176 |
| **Chloride in Water by IC** | | | | | | | |
| Chloride (Cl) | 54.0 | | 0.50 | mg/L | | 13-JAN-21 | R5346457 |
| **Conductivity** | | | | | | | |
| Conductivity | 420 | | 1.0 | umhos/cm | | 14-JAN-21 | R5348059 |
| **Fecal coliforms, 1:10 dilution by QT97** | | | | | | | |
| Fecal Coliforms | >24200 | | 10 | MPN/100mL | | 13-JAN-21 | R5346430 |
| **Hardness Calculated** | | | | | | | |
| Hardness (as CaCO3) | 82.1 | HTC | 0.20 | mg/L | | 19-JAN-21 | |
| **Mercury Total** | | | | | | | |
| Mercury (Hg)-Total | 0.0000763 | | 0.0000050 | mg/L | 20-JAN-21 | 20-JAN-21 | R5356142 |
| **Nitrate in Water by IC** | | | | | | | |
| Nitrate (as N) | 0.046 | | 0.020 | mg/L | | 13-JAN-21 | R5346457 |
| **Nitrate+Nitrite** | | | | | | | |
| Nitrate and Nitrite as N | <0.070 | | 0.070 | mg/L | | 14-JAN-21 | |
| **Nitrite in Water by IC** | | | | | | | |
| Nitrite (as N) | 0.011 | | 0.010 | mg/L | | 13-JAN-21 | R5346457 |
| **Oil & Grease - Gravimetric** | | | | | | | |
| Oil and Grease | 14.5 | | 5.0 | mg/L | | 19-JAN-21 | R5354837 |
| **Phenol (4AAP)** | | | | | | | |
| Phenols (4AAP) | 0.0056 | DLM | 0.0050 | mg/L | | 15-JAN-21 | R5351898 |
| **Phosphorus, Total** | | | | | | | |
| Phosphorus (P)-Total | 1.54 | | 0.0060 | mg/L | | 15-JAN-21 | R5348137 |
| **Sulfate in Water by IC** | | | | | | | |
| Sulfate (SO4) | 28.1 | | 0.30 | mg/L | | 13-JAN-21 | R5346457 |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Aluminum (Al)-Total | 0.0463 | | 0.0030 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Antimony (Sb)-Total | 0.00016 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Arsenic (As)-Total | 0.00085 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Barium (Ba)-Total | 0.0285 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Beryllium (Be)-Total | <0.00010 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Bismuth (Bi)-Total | 0.000720 | | 0.000050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Boron (B)-Total | 0.049 | | 0.010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Cadmium (Cd)-Total | 0.0000303 | | 0.0000050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Calcium (Ca)-Total | 23.4 | | 0.050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Cesium (Cs)-Total | 0.000044 | | 0.000010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Chromium (Cr)-Total | 0.00043 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Cobalt (Co)-Total | 0.00013 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Copper (Cu)-Total | 0.132 | | 0.00050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |

* 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 |
|---|---|---|---|---|---|---|---|
| L2547773-1 RANKIN INLET WWTP - EFFLUENT | | | | | | | |
| Sampled By: SD on 12-JAN-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Iron (Fe)-Total | 0.413 | | 0.010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Lead (Pb)-Total | 0.000952 | | 0.000050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Lithium (Li)-Total | 0.0031 | | 0.0010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Magnesium (Mg)-Total | 5.76 | | 0.0050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Manganese (Mn)-Total | 0.0228 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Molybdenum (Mo)-Total | 0.000944 | | 0.000050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Nickel (Ni)-Total | 0.00237 | | 0.00050 | mg/L | 15-JAN-21 | 18-JAN-21 | R5353237 |
| Potassium (K)-Total | 6.36 | | 0.050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Phosphorus (P)-Total | 1.68 | | 0.030 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Rubidium (Rb)-Total | 0.00644 | | 0.00020 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Selenium (Se)-Total | 0.000175 | | 0.000050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Silicon (Si)-Total | 0.29 | | 0.10 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Silver (Ag)-Total | 0.000014 | | 0.000010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Sodium (Na)-Total | 29.0 | | 0.050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Strontium (Sr)-Total | 0.117 | | 0.00020 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Sulfur (S)-Total | 10.2 | | 0.50 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Tellurium (Te)-Total | <0.00020 | | 0.00020 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Thallium (Tl)-Total | <0.000010 | | 0.000010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Thorium (Th)-Total | <0.00010 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Tin (Sn)-Total | 0.00080 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Titanium (Ti)-Total | 0.00119 | | 0.00030 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Tungsten (W)-Total | <0.00010 | | 0.00010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Uranium (U)-Total | 0.000141 | | 0.000010 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Vanadium (V)-Total | <0.00050 | | 0.00050 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Zinc (Zn)-Total | 0.0717 | | 0.0030 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| Zirconium (Zr)-Total | 0.00040 | | 0.00020 | mg/L | 15-JAN-21 | 15-JAN-21 | R5351286 |
| **Total Organic Carbon by Combustion** | | | | | | | |
| Total Organic Carbon | 44.2 | | 0.50 | mg/L | | 18-JAN-21 | R5353241 |
| **Total Suspended Solids** | | | | | | | |
| Total Suspended Solids | 54.6 | | 3.0 | mg/L | | 15-JAN-21 | R5351376 |
| **pH** | | | | | | | |
| pH | 7.18 | | 0.10 | pH units | | 14-JAN-21 | R5348059 |

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

# Reference Information

**Sample Parameter Qualifier Key:**

| Qualifier | Description |
|---|---|
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| 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-SCREEN-WP | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |

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

| | | | |
|---|---|---|---|
| EC-WP | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

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

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

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

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

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

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

| | | | |
|---|---|---|---|
| HARDNESS-CALC-WP | Water | Hardness Calculated | APHA 2340B |

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

| | | | |
|---|---|---|---|
| NO2+NO3-CALC-WP | Water | Nitrate+Nitrite | CALCULATION |
| NO2-IC-N-WP | Water | Nitrite in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| NO3-IC-N-WP | Water | Nitrate in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| OG-GRAV-WP | Water | Oil & Grease - Gravimetric | EPA 1664 (modified) |

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

| | | | |
|---|---|---|---|
| PAH-CCME-PPM-WT | Water | CCME PAHs in mg/L | EPA 3511/8270D (mod) |

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

| | | | |
|---|---|---|---|
| PH-WP | Water | pH | APHA 4500H |

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| PHENOLS-4AAP-WT | Water | Phenol (4AAP) | EPA 9066 |
| An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically. | | | |
| SO4-IC-N-WP | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| SOLIDS-TOTSUS-WP | Water | Total Suspended Solids | APHA 2540 D (modified) |
| Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C. | | | |
| TC,EC10-QT97-WP | Water | Total and E. coli, 1:10 dilution by QT97 | APHA 9223B QT97 |
| Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table. | | | |
| XYLENES-SUM-CALC-WP | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |
| Total xylenes represents the sum of o-xylene and m&p-xylene. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA |
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

**Chain of Custody Numbers:**

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5348059** | | | | | | | | |
| **WG3473993-14 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 99.6 | | % | | 85-115 | 14-JAN-21 |
| **WG3473993-11 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 14-JAN-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5353176** | | | | | | | | |
| **WG3473349-3 DUP** | | **L2547773-1** | | | | | | |
| BOD Carbonaceous | | 54 | 53 | | mg/L | 0.4 | 30 | 14-JAN-21 |
| **WG3473349-2 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 105.7 | | % | | 85-115 | 14-JAN-21 |
| **WG3473349-1 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 14-JAN-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5353176** | | | | | | | | |
| **WG3473349-2 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 103.2 | | % | | 85-115 | 14-JAN-21 |
| **WG3473349-1 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 14-JAN-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5351216** | | | | | | | | |
| **WG3473473-2 LCS** | | | | | | | | |
| Benzene | | | 97.9 | | % | | 70-130 | 14-JAN-21 |
| Toluene | | | 103.4 | | % | | 70-130 | 14-JAN-21 |
| Ethyl benzene | | | 101.7 | | % | | 70-130 | 14-JAN-21 |
| o-Xylene | | | 111.2 | | % | | 70-130 | 14-JAN-21 |
| m+p-Xylenes | | | 104.2 | | % | | 70-130 | 14-JAN-21 |
| **WG3473473-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 110.3 | | % | | 70-130 | 14-JAN-21 |
| **WG3473473-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 14-JAN-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 14-JAN-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 14-JAN-21 |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 14-JAN-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 14-JAN-21 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 14-JAN-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 92.1 | | % | | 70-130 | 14-JAN-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5353241** | | | | | | | | |
| **WG3475375-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 103.3 | | % | | 80-120 | 18-JAN-21 |
| **WG3475375-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 18-JAN-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5346457** | | | | | | | | |
| **WG3472946-6 LCS** | | | | | | | | |
| Chloride (Cl) | | | 98.9 | | % | | 90-110 | 13-JAN-21 |
| **WG3472946-5 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 13-JAN-21 |
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5348059** | | | | | | | | |
| **WG3473993-13 LCS** | | | | | | | | |
| Conductivity | | | 100.7 | | % | | 90-110 | 14-JAN-21 |
| **WG3473993-11 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 14-JAN-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5346457** | | | | | | | | |
| **WG3472946-6 LCS** | | | | | | | | |
| Fluoride (F) | | | 100.6 | | % | | 90-110 | 13-JAN-21 |
| **WG3472946-5 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 13-JAN-21 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5349478** | | | | | | | | |
| **WG3473927-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 107.0 | | % | | 70-130 | 15-JAN-21 |
| F3 (C16-C34) | | | 102.4 | | % | | 70-130 | 15-JAN-21 |
| F4 (C34-C50) | | | 116.6 | | % | | 70-130 | 15-JAN-21 |
| **WG3473927-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 15-JAN-21 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 15-JAN-21 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 15-JAN-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 94.1 | | % | | 60-140 | 15-JAN-21 |
| **FC10-QT97-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **FC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5346430** | | | | | | | | |
| **WG3473078-1 MB** | | | | | | | | |
| Fecal Coliforms | | | <1 | | MPN/100mL | | 1 | 13-JAN-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5356142** | | | | | | | | |
| **WG3476763-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 107.1 | | % | | 80-120 | 20-JAN-21 |
| **WG3476763-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005( | | mg/L | | 0.000005 | 20-JAN-21 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5351286** | | | | | | | | |
| **WG3473710-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 97.1 | | % | | 80-120 | 15-JAN-21 |
| Antimony (Sb)-Total | | | 97.0 | | % | | 80-120 | 15-JAN-21 |
| Arsenic (As)-Total | | | 98.3 | | % | | 80-120 | 15-JAN-21 |
| Barium (Ba)-Total | | | 98.7 | | % | | 80-120 | 15-JAN-21 |
| Beryllium (Be)-Total | | | 94.8 | | % | | 80-120 | 15-JAN-21 |
| Bismuth (Bi)-Total | | | 95.7 | | % | | 80-120 | 15-JAN-21 |
| Boron (B)-Total | | | 94.4 | | % | | 80-120 | 15-JAN-21 |
| Cadmium (Cd)-Total | | | 96.7 | | % | | 80-120 | 15-JAN-21 |
| Calcium (Ca)-Total | | | 93.5 | | % | | 80-120 | 15-JAN-21 |
| Cesium (Cs)-Total | | | 92.7 | | % | | 80-120 | 15-JAN-21 |
| Chromium (Cr)-Total | | | 95.5 | | % | | 80-120 | 15-JAN-21 |
| Cobalt (Co)-Total | | | 93.5 | | % | | 80-120 | 15-JAN-21 |
| Copper (Cu)-Total | | | 93.9 | | % | | 80-120 | 15-JAN-21 |
| Iron (Fe)-Total | | | 94.0 | | % | | 80-120 | 15-JAN-21 |
| Lead (Pb)-Total | | | 96.3 | | % | | 80-120 | 15-JAN-21 |
| Lithium (Li)-Total | | | 98.8 | | % | | 80-120 | 15-JAN-21 |
| Magnesium (Mg)-Total | | | 99.6 | | % | | 80-120 | 15-JAN-21 |
| Manganese (Mn)-Total | | | 97.0 | | % | | 80-120 | 15-JAN-21 |
| Molybdenum (Mo)-Total | | | 94.5 | | % | | 80-120 | 15-JAN-21 |
| Potassium (K)-Total | | | 95.3 | | % | | 80-120 | 15-JAN-21 |
| Phosphorus (P)-Total | | | 103.0 | | % | | 80-120 | 15-JAN-21 |
| Rubidium (Rb)-Total | | | 100.1 | | % | | 80-120 | 15-JAN-21 |
| Selenium (Se)-Total | | | 97.9 | | % | | 80-120 | 15-JAN-21 |
| Silicon (Si)-Total | | | 102.0 | | % | | 80-120 | 15-JAN-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5351286** | | | | | | | | |
| **WG3473710-2 LCS** | | | | | | | | |
| Silver (Ag)-Total | | | 93.1 | | % | | 80-120 | 15-JAN-21 |
| Sodium (Na)-Total | | | 95.7 | | % | | 80-120 | 15-JAN-21 |
| Strontium (Sr)-Total | | | 94.5 | | % | | 80-120 | 15-JAN-21 |
| Sulfur (S)-Total | | | 99.4 | | % | | 80-120 | 15-JAN-21 |
| Tellurium (Te)-Total | | | 92.1 | | % | | 80-120 | 15-JAN-21 |
| Thallium (Tl)-Total | | | 96.4 | | % | | 80-120 | 15-JAN-21 |
| Thorium (Th)-Total | | | 96.7 | | % | | 80-120 | 15-JAN-21 |
| Tin (Sn)-Total | | | 94.7 | | % | | 80-120 | 15-JAN-21 |
| Titanium (Ti)-Total | | | 94.4 | | % | | 80-120 | 15-JAN-21 |
| Tungsten (W)-Total | | | 96.0 | | % | | 80-120 | 15-JAN-21 |
| Uranium (U)-Total | | | 100.6 | | % | | 80-120 | 15-JAN-21 |
| Vanadium (V)-Total | | | 95.1 | | % | | 80-120 | 15-JAN-21 |
| Zinc (Zn)-Total | | | 97.0 | | % | | 80-120 | 15-JAN-21 |
| Zirconium (Zr)-Total | | | 91.6 | | % | | 80-120 | 15-JAN-21 |
| **WG3473710-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 15-JAN-21 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Beryllium (Be)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 15-JAN-21 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 15-JAN-21 |
| Cadmium (Cd)-Total | | | <0.000005C | | mg/L | | 0.000005 | 15-JAN-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 15-JAN-21 |
| Cesium (Cs)-Total | | | <0.000010 | | mg/L | | 0.00001 | 15-JAN-21 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 15-JAN-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 15-JAN-21 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 15-JAN-21 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 15-JAN-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 15-JAN-21 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 15-JAN-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5351286** | | | | | | | | |
| **WG3473710-1 MB** | | | | | | | | |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 15-JAN-21 |
| Phosphorus (P)-Total | | | <0.030 | | mg/L | | 0.03 | 15-JAN-21 |
| Rubidium (Rb)-Total | | | <0.00020 | | mg/L | | 0.0002 | 15-JAN-21 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 15-JAN-21 |
| Silicon (Si)-Total | | | <0.10 | | mg/L | | 0.1 | 15-JAN-21 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 15-JAN-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 15-JAN-21 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 15-JAN-21 |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 15-JAN-21 |
| Tellurium (Te)-Total | | | <0.00020 | | mg/L | | 0.0002 | 15-JAN-21 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 15-JAN-21 |
| Thorium (Th)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 15-JAN-21 |
| Tungsten (W)-Total | | | <0.00010 | | mg/L | | 0.0001 | 15-JAN-21 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 15-JAN-21 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 15-JAN-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 15-JAN-21 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 15-JAN-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5351176** | | | | | | | | |
| **WG3474776-6 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 102.6 | | % | | 85-115 | 15-JAN-21 |
| **WG3474776-5 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 15-JAN-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5346457** | | | | | | | | |
| **WG3472946-6 LCS** | | | | | | | | |
| Nitrite (as N) | | | 100.8 | | % | | 90-110 | 13-JAN-21 |
| **WG3472946-5 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 13-JAN-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5346457** | | | | | | | | |
| **WG3472946-6 LCS** | | | | | | | | |
| Nitrate (as N) | | | 98.8 | | % | | 90-110 | 13-JAN-21 |
| **WG3472946-5 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 13-JAN-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5354837** | | | | | | | | |
| **WG3475167-2 LCS** | | | | | | | | |
| Oil and Grease | | | 97.9 | | % | | 70-130 | 19-JAN-21 |
| **WG3475167-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 19-JAN-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5348137** | | | | | | | | |
| **WG3473605-6 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 99.1 | | % | | 80-120 | 15-JAN-21 |
| **WG3473605-5 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 15-JAN-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5357554** | | | | | | | | |
| **WG3477425-2 LCS** | | | | | | | | |
| 1-Methyl Naphthalene | | | 91.7 | | % | | 50-150 | 25-JAN-21 |
| 2-Methyl Naphthalene | | | 89.0 | | % | | 50-150 | 25-JAN-21 |
| Acenaphthene | | | 91.4 | | % | | 50-150 | 25-JAN-21 |
| Acenaphthylene | | | 86.2 | | % | | 50-150 | 25-JAN-21 |
| Anthracene | | | 83.6 | | % | | 50-150 | 25-JAN-21 |
| Acridine | | | 100.6 | | % | | 50-150 | 25-JAN-21 |
| Benzo(a)anthracene | | | 86.1 | | % | | 50-150 | 25-JAN-21 |
| Benzo(a)pyrene | | | 73.8 | | % | | 50-150 | 25-JAN-21 |
| Benzo(b&j)fluoranthene | | | 71.6 | | % | | 50-150 | 25-JAN-21 |
| Benzo(g,h,i)perylene | | | 69.9 | | % | | 50-150 | 25-JAN-21 |
| Benzo(k)fluoranthene | | | 71.4 | | % | | 50-150 | 25-JAN-21 |
| Chrysene | | | 79.6 | | % | | 50-150 | 25-JAN-21 |
| Dibenzo(a,h)anthracene | | | 70.8 | | % | | 50-150 | 25-JAN-21 |
| Fluoranthene | | | 89.3 | | % | | 50-150 | 25-JAN-21 |
| Fluorene | | | 90.3 | | % | | 50-150 | 25-JAN-21 |
| Indeno(1,2,3-cd)pyrene | | | 74.1 | | % | | 50-150 | 25-JAN-21 |
| Naphthalene | | | 90.2 | | % | | 50-150 | 25-JAN-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5357554** | | | | | | | | |
| **WG3477425-2 LCS** | | | | | | | | |
| Phenanthrene | | | 92.0 | | % | | 50-150 | 25-JAN-21 |
| Pyrene | | | 89.0 | | % | | 50-150 | 25-JAN-21 |
| Quinoline | | | 108.6 | | % | | 50-150 | 25-JAN-21 |
| **WG3477425-1 MB** | | | | | | | | |
| 1-Methyl Naphthalene | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| 2-Methyl Naphthalene | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 25-JAN-21 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 25-JAN-21 |
| Benzo(a)pyrene | | | <0.000005( | | mg/L | | 0.000005 | 25-JAN-21 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 25-JAN-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 25-JAN-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| Dibenzo(a,h)anthracene | | | <0.000005( | | mg/L | | 0.000005 | 25-JAN-21 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 25-JAN-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 25-JAN-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 25-JAN-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 25-JAN-21 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 25-JAN-21 |
| Surrogate: Naphthalene d8 | | | 101.1 | | % | | 50-150 | 25-JAN-21 |
| Surrogate: Phenanthrene d10 | | | 93.7 | | % | | 50-150 | 25-JAN-21 |
| Surrogate: Chrysene d12 | | | 86.3 | | % | | 50-150 | 25-JAN-21 |
| Surrogate: Acenaphthene d10 | | | 95.2 | | % | | 50-150 | 25-JAN-21 |
| Surrogate: Acridine d9 | | | 100.0 | | % | | 50-150 | 25-JAN-21 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5348059** | | | | | | | | |
| **WG3473993-12 LCS** | | | | | | | | |
| pH | | | 7.00 | | pH units | | 6.9-7.1 | 14-JAN-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5351898** | | | | | | | | |
| **WG3473632-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 101.4 | | % | | 85-115 | 15-JAN-21 |
| **WG3473632-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 15-JAN-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5346457** | | | | | | | | |
| **WG3472946-6 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 100.4 | | % | | 90-110 | 13-JAN-21 |
| **WG3472946-5 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 13-JAN-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5351376** | | | | | | | | |
| **WG3473755-2 LCS** | | | | | | | | |
| Total Suspended Solids | | | 95.3 | | % | | 85-115 | 15-JAN-21 |
| **WG3473755-1 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 15-JAN-21 |
| **TC,EC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5346036** | | | | | | | | |
| **WG3473072-2 DUP** | | **L2547773-1** | | | | | | |
| Total Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 13-JAN-21 |
| Escherichia Coli | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 13-JAN-21 |
| **WG3473072-1 MB** | | | | | | | | |
| Total Coliforms | | | <1 | | MPN/100mL | | 1 | 13-JAN-21 |
| Escherichia Coli | | | <1 | | MPN/100mL | | 1 | 13-JAN-21 |

**Legend:**

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

# Quality Control Report



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 12-JAN-21 10:30 | 14-JAN-21 12:00 | 0.25 | 49 | hours | EHTR-FM |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2547773 were received on 13-JAN-21 11:30.

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

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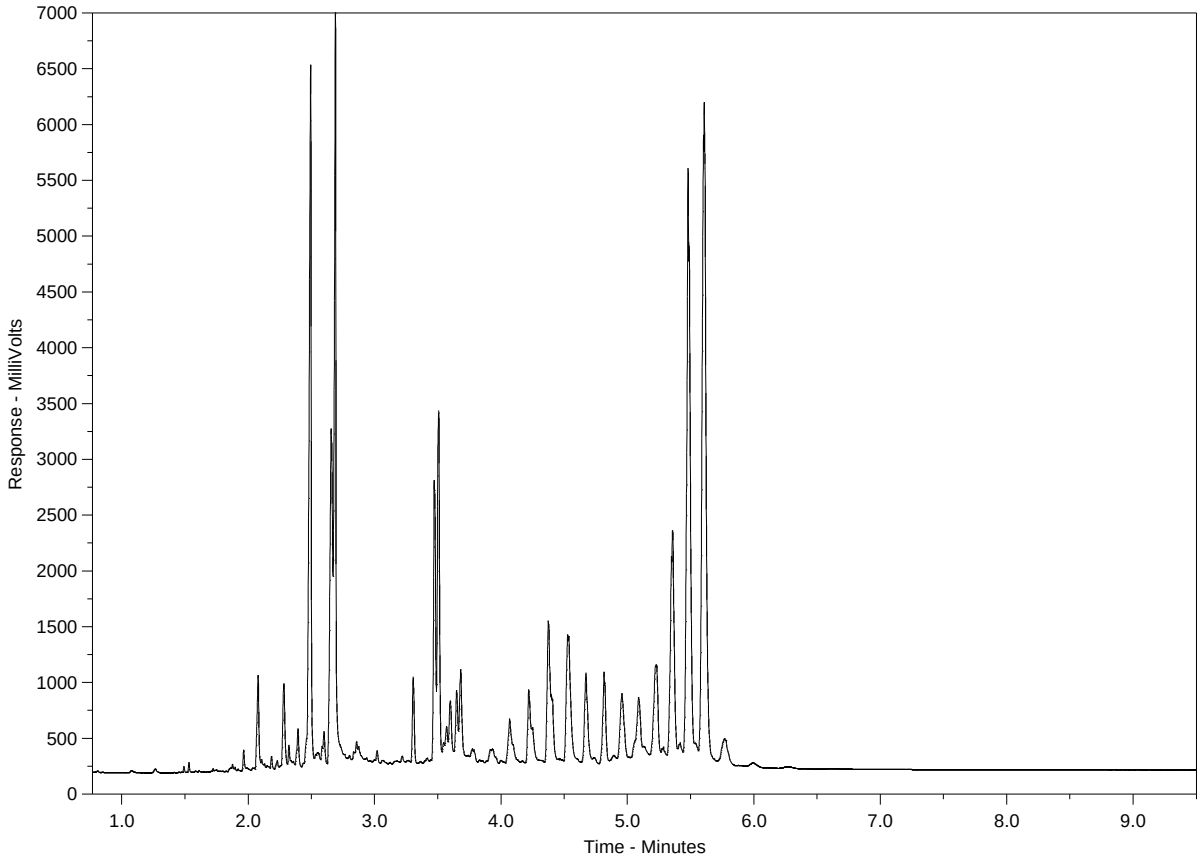
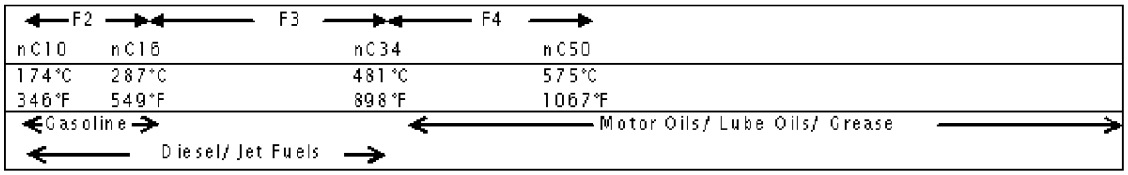
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2547773-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT




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

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

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

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

ALS Environmental

L2547773-COFC

COC #

Page ___ of ___

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

**Service Requested** (Rush for routine analysis subject to availability)

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

**Analysis Request**

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

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH,PANH-WP | NUNAVUT-WW-GRP1-WP | F-IC-N-WP | TC,EC-QT97-WP | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | 12/01/21 | 10:30 Am | Waste | X | X | X | X | X | 15 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | |
| | So all ICP-MS metals report | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No If Yes add SIF |
| Bill Ross | 12/01/21 | 10:30 Am | GW | 1/13/2021 | 11:30 | 5.4 °C | | Jun 13/21 | 1150 | |

GENF 18.01 Front

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

Date Received: 12-FEB-21
Report Date: 23-FEB-21 12:52 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2557226

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2557226-1 RANKIN INLET WWTP - EFFLUENT | | | | | | | |
| Sampled By: SD on 09-FEB-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **BTEX plus F1-F4** | | | | | | | |
| **BTX plus F1 by GCMS** | | | | | | | |
| Benzene | <0.00050 | | 0.00050 | mg/L | | 18-FEB-21 | R5384018 |
| Toluene | <0.0010 | | 0.0010 | mg/L | | 18-FEB-21 | R5384018 |
| Ethyl benzene | <0.00050 | | 0.00050 | mg/L | | 18-FEB-21 | R5384018 |
| o-Xylene | <0.00050 | | 0.00050 | mg/L | | 18-FEB-21 | R5384018 |
| m+p-Xylenes | <0.00040 | | 0.00040 | mg/L | | 18-FEB-21 | R5384018 |
| F1 (C6-C10) | <0.10 | | 0.10 | mg/L | | 18-FEB-21 | R5384018 |
| Surrogate: 4-Bromofluorobenzene (SS) | 73.9 | | 70-130 | % | | 18-FEB-21 | R5384018 |
| **CCME PHC F2-F4 in Water** | | | | | | | |
| F2 (C10-C16) | 0.48 | | 0.10 | mg/L | 13-FEB-21 | 13-FEB-21 | R5377559 |
| F3 (C16-C34) | 6.56 | | 0.25 | mg/L | 13-FEB-21 | 13-FEB-21 | R5377559 |
| F4 (C34-C50) | 2.93 | | 0.25 | mg/L | 13-FEB-21 | 13-FEB-21 | R5377559 |
| Surrogate: 2-Bromobenzotrifluoride | 94.8 | | 60-140 | % | 13-FEB-21 | 13-FEB-21 | R5377559 |
| **CCME Total Hydrocarbons** | | | | | | | |
| F1-BTEX | <0.10 | | 0.10 | mg/L | | 23-FEB-21 | |
| F2-Naphth | 0.48 | | 0.10 | mg/L | | 23-FEB-21 | |
| F3-PAH | 6.56 | | 0.25 | mg/L | | 23-FEB-21 | |
| Total Hydrocarbons (C6-C50) | 9.97 | | 0.38 | mg/L | | 23-FEB-21 | |
| **Sum of Xylene Isomer Concentrations** | | | | | | | |
| Xylenes (Total) | <0.00064 | | 0.00064 | mg/L | | 23-FEB-21 | |
| **Miscellaneous Parameters** | | | | | | | |
| Fluoride (F) | 0.166 | | 0.020 | mg/L | | 12-FEB-21 | R5374519 |
| **Total and E. coli, 1:10 dilution by QT97** | | | | | | | |
| Total Coliforms | >24200 | PEHR | 10 | MPN/100mL | | 12-FEB-21 | R5374381 |
| Escherichia Coli | >24200 | PEHR | 10 | MPN/100mL | | 12-FEB-21 | R5374381 |
| **CCME PAHs in mg/L** | | | | | | | |
| 1-Methyl Naphthalene | 0.000023 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| 2-Methyl Naphthalene | 0.000042 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Acenaphthene | <0.000020 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Acenaphthylene | <0.000020 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Anthracene | <0.000010 | | 0.000010 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Acridine | <0.000020 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Benzo(a)anthracene | <0.000010 | | 0.000010 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Benzo(a)pyrene | <0.0000050 | | 0.0000050 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Benzo(b&j)fluoranthene | <0.000010 | | 0.000010 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Benzo(g,h,i)perylene | <0.000020 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Benzo(k)fluoranthene | <0.000010 | | 0.000010 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Chrysene | <0.000020 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Dibenzo(a,h)anthracene | 0.0000150 | | 0.0000050 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Fluoranthene | <0.000020 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Fluorene | <0.000020 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Indeno(1,2,3-cd)pyrene | <0.000010 | | 0.000010 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Naphthalene | <0.000050 | | 0.000050 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Phenanthrene | <0.000050 | | 0.000050 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Pyrene | <0.000010 | | 0.000010 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Quinoline | 0.000040 | | 0.000020 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| B(a)P Total Potency Equivalent | <0.000030 | | 0.000030 | mg/L | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Surrogate: Naphthalene d8 | 120.0 | | 50-150 | % | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Surrogate: Phenanthrene d10 | 102.9 | | 50-150 | % | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Surrogate: Chrysene d12 | 115.9 | | 50-150 | % | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Surrogate: Acenaphthene d10 | 86.5 | | 50-150 | % | 16-FEB-21 | 18-FEB-21 | R5379984 |
| Surrogate: Acridine d9 | 139.1 | | 50-150 | % | 16-FEB-21 | 18-FEB-21 | R5379984 |

* 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 |
|---|---|---|---|---|---|---|---|
| L2557226-1 RANKIN INLET WWTP - EFFLUENT | | | | | | | |
| Sampled By: SD on 09-FEB-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **Nunavut WW Group 1** | | | | | | | |
| **Alkalinity, Bicarbonate** | | | | | | | |
| Bicarbonate (HCO3) | 139 | | 1.2 | mg/L | | 18-FEB-21 | |
| **Alkalinity, Carbonate** | | | | | | | |
| Carbonate (CO3) | <0.60 | | 0.60 | mg/L | | 18-FEB-21 | |
| **Alkalinity, Hydroxide** | | | | | | | |
| Hydroxide (OH) | <0.34 | | 0.34 | mg/L | | 18-FEB-21 | |
| **Alkalinity, Total (as CaCO3)** | | | | | | | |
| Alkalinity, Total (as CaCO3) | 114 | | 1.0 | mg/L | | 17-FEB-21 | R5379559 |
| **Ammonia by colour** | | | | | | | |
| Ammonia, Total (as N) | 5.9 | | 1.0 | mg/L | | 17-FEB-21 | R5380036 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | |
| Biochemical Oxygen Demand | 92 | | 20 | mg/L | | 12-FEB-21 | R5379604 |
| **Carbonaceous BOD** | | | | | | | |
| BOD Carbonaceous | 99 | BODP | 50 | mg/L | | 12-FEB-21 | R5379604 |
| **Chloride in Water by IC** | | | | | | | |
| Chloride (Cl) | 59.7 | | 0.50 | mg/L | | 12-FEB-21 | R5374519 |
| **Conductivity** | | | | | | | |
| Conductivity | 509 | | 1.0 | umhos/cm | | 17-FEB-21 | R5379559 |
| **Fecal coliforms, 1:10 dilution by QT97** | | | | | | | |
| Fecal Coliforms | >24200 | PEHR | 10 | MPN/100mL | | 12-FEB-21 | R5374380 |
| **Hardness Calculated** | | | | | | | |
| Hardness (as CaCO3) | 98.1 | HTC | 0.20 | mg/L | | 18-FEB-21 | |
| **Mercury Total** | | | | | | | |
| Mercury (Hg)-Total | 0.0000105 | | 0.0000050 | mg/L | 18-FEB-21 | 18-FEB-21 | R5384700 |
| **Nitrate in Water by IC** | | | | | | | |
| Nitrate (as N) | <0.020 | | 0.020 | mg/L | | 12-FEB-21 | R5374519 |
| **Nitrate+Nitrite** | | | | | | | |
| Nitrate and Nitrite as N | <0.070 | | 0.070 | mg/L | | 16-FEB-21 | |
| **Nitrite in Water by IC** | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 12-FEB-21 | R5374519 |
| **Oil & Grease - Gravimetric** | | | | | | | |
| Oil and Grease | 19.7 | | 5.0 | mg/L | | 19-FEB-21 | R5384121 |
| **Phenol (4AAP)** | | | | | | | |
| Phenols (4AAP) | 0.015 | DLM | 0.010 | mg/L | | 17-FEB-21 | R5379598 |
| **Phosphorus, Total** | | | | | | | |
| Phosphorus (P)-Total | 2.61 | | 0.030 | mg/L | | 19-FEB-21 | R5381916 |
| **Sulfate in Water by IC** | | | | | | | |
| Sulfate (SO4) | 29.8 | | 0.30 | mg/L | | 12-FEB-21 | R5374519 |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Aluminum (Al)-Total | 0.0884 | | 0.0030 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Antimony (Sb)-Total | 0.00019 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Arsenic (As)-Total | 0.00108 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Barium (Ba)-Total | 0.0320 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Beryllium (Be)-Total | <0.00010 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Bismuth (Bi)-Total | 0.00294 | | 0.000050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Boron (B)-Total | 0.072 | | 0.010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Cadmium (Cd)-Total | 0.0000722 | | 0.0000050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Calcium (Ca)-Total | 27.9 | | 0.050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Cesium (Cs)-Total | 0.000058 | | 0.000010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Chromium (Cr)-Total | 0.00069 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Cobalt (Co)-Total | 0.00018 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Copper (Cu)-Total | 0.179 | | 0.00050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |

* 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 |
|---|---|---|---|---|---|---|---|
| L2557226-1 RANKIN INLET WWTP - EFFLUENT | | | | | | | |
| Sampled By: SD on 09-FEB-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Iron (Fe)-Total | 0.568 | | 0.010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Lead (Pb)-Total | 0.00999 | | 0.000050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Lithium (Li)-Total | 0.0032 | | 0.0010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Magnesium (Mg)-Total | 6.89 | | 0.0050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Manganese (Mn)-Total | 0.0244 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Molybdenum (Mo)-Total | 0.00118 | | 0.000050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Nickel (Ni)-Total | 0.00255 | | 0.00050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Potassium (K)-Total | 8.19 | | 0.050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Phosphorus (P)-Total | 3.00 | | 0.030 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Rubidium (Rb)-Total | 0.00792 | | 0.00020 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Selenium (Se)-Total | 0.000277 | | 0.000050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Silicon (Si)-Total | 0.25 | | 0.10 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Silver (Ag)-Total | 0.000059 | | 0.000010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Sodium (Na)-Total | 34.4 | | 0.050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Strontium (Sr)-Total | 0.133 | | 0.00020 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Sulfur (S)-Total | 12.1 | | 0.50 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Tellurium (Te)-Total | <0.00020 | | 0.00020 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Thallium (Tl)-Total | <0.000010 | | 0.000010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Thorium (Th)-Total | <0.00010 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Tin (Sn)-Total | 0.00095 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Titanium (Ti)-Total | 0.00131 | | 0.00030 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Tungsten (W)-Total | <0.00010 | | 0.00010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Uranium (U)-Total | 0.000159 | | 0.000010 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Vanadium (V)-Total | <0.00050 | | 0.00050 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Zinc (Zn)-Total | 0.0815 | | 0.0030 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| Zirconium (Zr)-Total | 0.00080 | | 0.00020 | mg/L | 17-FEB-21 | 17-FEB-21 | R5379844 |
| **Total Organic Carbon by Combustion** | | | | | | | |
| Total Organic Carbon | 56.8 | | 5.0 | mg/L | | 18-FEB-21 | R5381337 |
| **Total Suspended Solids** | | | | | | | |
| Total Suspended Solids | 74.2 | | 3.0 | mg/L | | 16-FEB-21 | R5379605 |
| **pH** | | | | | | | |
| pH | 7.45 | | 0.10 | pH units | | 17-FEB-21 | R5379559 |

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

# Reference Information

## Qualifiers for Individual Samples Listed:

| Lab Sample ID | Client Sample ID | Qualifier | Description |
|---|---|---|---|
| L2557226-1 | RANKIN INLET WWTP - EFFI | PEHR | Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested. |

## Sample Parameter Qualifier Key:

| Qualifier | Description |
|---|---|
| BODP | BOD dilution results differed by more than 30% RPD. Precision of reported BOD result may be less than usual. |
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| DUPM | MPN duplicate results were outside default ALS Data Quality Objective, but within 95% confidence interval for MPN reference method. Sample results are reliable. |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| PEHR | Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested. |

## Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| ALK-CO3CO3-CALC-WP | Water | Alkalinity, Carbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

| | | | |
|---|---|---|---|
| ALK-HCO3HCO3-CALC-WP | Water | Alkalinity, Bicarbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

| | | | |
|---|---|---|---|
| ALK-OHOH-CALC-WP | Water | Alkalinity, Hydroxide | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

| | | | |
|---|---|---|---|
| ALK-TITR-WP | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

| | | | |
|---|---|---|---|
| BOD-CBOD-WP | Water | Carbonaceous BOD | APHA 5210 B |

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| BOD-WP | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

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

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

| | | | |
|---|---|---|---|
| C-TOC-HTC-WP | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

| | | | |
|---|---|---|---|
| CL-IC-N-WP | Water | Chloride in Water by IC | EPA 300.1 (mod) |

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

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

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

| | | | |
|---|---|---|---|
| EC-WP | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| F-IC-N-WP | Water | Fluoride in Water by IC | EPA 300.1 (mod) |

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

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

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

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

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

| | | | |
|---|---|---|---|
| HARDNESS-CALC-WP | Water | Hardness Calculated | APHA 2340B |

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

| | | | |
|---|---|---|---|
| NO2+NO3-CALC-WP | Water | Nitrate+Nitrite | CALCULATION |
| NO2-IC-N-WP | Water | Nitrite in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| NO3-IC-N-WP | Water | Nitrate in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| OG-GRAV-WP | Water | Oil & Grease - Gravimetric | EPA 1664 (modified) |

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| after persulphate digestion of the sample. | | | |
| PAH-CCME-PPM-WT | Water | CCME PAHs in mg/L | EPA 3511/8270D (mod) |
| PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter. | | | |
| PH-WP | Water | pH | APHA 4500H |
| The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode. | | | |
| PHENOLS-4AAP-WT | Water | Phenol (4AAP) | EPA 9066 |
| An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically. | | | |
| SO4-IC-N-WP | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| SOLIDS-TOTSUS-WP | Water | Total Suspended Solids | APHA 2540 D (modified) |
| Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C. | | | |
| TC,EC10-QT97-WP | Water | Total and E. coli, 1:10 dilution by QT97 | APHA 9223B QT97 |
| Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table. | | | |
| XYLENES-SUM-CALC-WP | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |
| Total xylenes represents the sum of o-xylene and m&p-xylene. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA |
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

**Chain of Custody Numbers:**

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

# Quality Control Report

Workorder: L2557226 Report Date: 23-FEB-21 

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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5379559** | | | | | | | | |
| **WG3489586-9 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 101.2 | | % | | 85-115 | 17-FEB-21 |
| **WG3489586-6 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 17-FEB-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5379604** | | | | | | | | |
| **WG3487179-13 DUP** | | **L2557226-1** | | | | | | |
| BOD Carbonaceous | | 99 | 103 | | mg/L | 4.3 | 30 | 12-FEB-21 |
| **WG3487179-12 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 99.3 | | % | | 85-115 | 12-FEB-21 |
| **WG3487179-11 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 12-FEB-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5379604** | | | | | | | | |
| **WG3487179-12 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 107.1 | | % | | 85-115 | 12-FEB-21 |
| **WG3487179-11 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 12-FEB-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5384018** | | | | | | | | |
| **WG3489108-2 LCS** | | | | | | | | |
| Benzene | | | 96.9 | | % | | 70-130 | 17-FEB-21 |
| Toluene | | | 99.6 | | % | | 70-130 | 17-FEB-21 |
| Ethyl benzene | | | 100.0 | | % | | 70-130 | 17-FEB-21 |
| o-Xylene | | | 107.6 | | % | | 70-130 | 17-FEB-21 |
| m+p-Xylenes | | | 107.5 | | % | | 70-130 | 17-FEB-21 |
| **WG3489108-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 106.5 | | % | | 70-130 | 17-FEB-21 |
| **WG3489108-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 17-FEB-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 17-FEB-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 17-FEB-21 |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 17-FEB-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 17-FEB-21 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 17-FEB-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 80.2 | | % | | 70-130 | 17-FEB-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5381337** | | | | | | | | |
| **WG3490252-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 106.0 | | % | | 80-120 | 18-FEB-21 |
| **WG3490252-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 18-FEB-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5374519** | | | | | | | | |
| **WG3487570-6 LCS** | | | | | | | | |
| Chloride (Cl) | | | 101.1 | | % | | 90-110 | 12-FEB-21 |
| **WG3487570-5 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 12-FEB-21 |
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5379559** | | | | | | | | |
| **WG3489586-8 LCS** | | | | | | | | |
| Conductivity | | | 100.6 | | % | | 90-110 | 17-FEB-21 |
| **WG3489586-6 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 17-FEB-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5374519** | | | | | | | | |
| **WG3487570-6 LCS** | | | | | | | | |
| Fluoride (F) | | | 103.8 | | % | | 90-110 | 12-FEB-21 |
| **WG3487570-5 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 12-FEB-21 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5377559** | | | | | | | | |
| **WG3487930-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 107.2 | | % | | 70-130 | 13-FEB-21 |
| F3 (C16-C34) | | | 94.8 | | % | | 70-130 | 13-FEB-21 |
| F4 (C34-C50) | | | 101.4 | | % | | 70-130 | 13-FEB-21 |
| **WG3487930-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 13-FEB-21 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 13-FEB-21 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 13-FEB-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 95.8 | | % | | 60-140 | 13-FEB-21 |
| **FC10-QT97-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **FC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5374380** | | | | | | | | |
| **WG3487742-1 MB** | | | | | | | | |
| Fecal Coliforms | | | <1 | | MPN/100mL | | 1 | 12-FEB-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5384700** | | | | | | | | |
| **WG3491216-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 101.7 | | % | | 80-120 | 18-FEB-21 |
| **WG3491216-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005C | | mg/L | | 0.000005 | 18-FEB-21 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5379844** | | | | | | | | |
| **WG3488917-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 101.8 | | % | | 80-120 | 17-FEB-21 |
| Antimony (Sb)-Total | | | 100.8 | | % | | 80-120 | 17-FEB-21 |
| Arsenic (As)-Total | | | 99.3 | | % | | 80-120 | 17-FEB-21 |
| Barium (Ba)-Total | | | 102.4 | | % | | 80-120 | 17-FEB-21 |
| Beryllium (Be)-Total | | | 103.0 | | % | | 80-120 | 17-FEB-21 |
| Bismuth (Bi)-Total | | | 99.6 | | % | | 80-120 | 17-FEB-21 |
| Boron (B)-Total | | | 110.4 | | % | | 80-120 | 17-FEB-21 |
| Cadmium (Cd)-Total | | | 100.6 | | % | | 80-120 | 17-FEB-21 |
| Calcium (Ca)-Total | | | 101.2 | | % | | 80-120 | 17-FEB-21 |
| Cesium (Cs)-Total | | | 98.1 | | % | | 80-120 | 17-FEB-21 |
| Chromium (Cr)-Total | | | 100.7 | | % | | 80-120 | 17-FEB-21 |
| Cobalt (Co)-Total | | | 100.1 | | % | | 80-120 | 17-FEB-21 |
| Copper (Cu)-Total | | | 99.4 | | % | | 80-120 | 17-FEB-21 |
| Iron (Fe)-Total | | | 92.6 | | % | | 80-120 | 17-FEB-21 |
| Lead (Pb)-Total | | | 98.8 | | % | | 80-120 | 17-FEB-21 |
| Lithium (Li)-Total | | | 105.1 | | % | | 80-120 | 17-FEB-21 |
| Magnesium (Mg)-Total | | | 103.2 | | % | | 80-120 | 17-FEB-21 |
| Manganese (Mn)-Total | | | 100.7 | | % | | 80-120 | 17-FEB-21 |
| Molybdenum (Mo)-Total | | | 100.7 | | % | | 80-120 | 17-FEB-21 |
| Nickel (Ni)-Total | | | 96.3 | | % | | 80-120 | 17-FEB-21 |
| Potassium (K)-Total | | | 98.1 | | % | | 80-120 | 17-FEB-21 |
| Phosphorus (P)-Total | | | 107.8 | | % | | 80-120 | 17-FEB-21 |
| Rubidium (Rb)-Total | | | 99.7 | | % | | 80-120 | 17-FEB-21 |
| Selenium (Se)-Total | | | 95.7 | | % | | 80-120 | 17-FEB-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5379844** | | | | | | | | |
| **WG3488917-2 LCS** | | | | | | | | |
| Silicon (Si)-Total | | | 102.8 | | % | | 80-120 | 17-FEB-21 |
| Silver (Ag)-Total | | | 98.3 | | % | | 80-120 | 17-FEB-21 |
| Sodium (Na)-Total | | | 98.6 | | % | | 80-120 | 17-FEB-21 |
| Strontium (Sr)-Total | | | 101.4 | | % | | 80-120 | 17-FEB-21 |
| Sulfur (S)-Total | | | 89.2 | | % | | 80-120 | 17-FEB-21 |
| Tellurium (Te)-Total | | | 94.5 | | % | | 80-120 | 17-FEB-21 |
| Thallium (Tl)-Total | | | 100.4 | | % | | 80-120 | 17-FEB-21 |
| Thorium (Th)-Total | | | 96.2 | | % | | 80-120 | 17-FEB-21 |
| Tin (Sn)-Total | | | 96.8 | | % | | 80-120 | 17-FEB-21 |
| Titanium (Ti)-Total | | | 96.5 | | % | | 80-120 | 17-FEB-21 |
| Tungsten (W)-Total | | | 100.8 | | % | | 80-120 | 17-FEB-21 |
| Uranium (U)-Total | | | 97.6 | | % | | 80-120 | 17-FEB-21 |
| Vanadium (V)-Total | | | 100.1 | | % | | 80-120 | 17-FEB-21 |
| Zinc (Zn)-Total | | | 100.1 | | % | | 80-120 | 17-FEB-21 |
| Zirconium (Zr)-Total | | | 94.6 | | % | | 80-120 | 17-FEB-21 |
| **WG3488917-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 17-FEB-21 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |
| Beryllium (Be)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 17-FEB-21 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 17-FEB-21 |
| Cadmium (Cd)-Total | | | <0.000005C | | mg/L | | 0.000005 | 17-FEB-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 17-FEB-21 |
| Cesium (Cs)-Total | | | <0.000010 | | mg/L | | 0.00001 | 17-FEB-21 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 17-FEB-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 17-FEB-21 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 17-FEB-21 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 17-FEB-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 17-FEB-21 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5379844** | | | | | | | | |
| **WG3488917-1 MB** | | | | | | | | |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 17-FEB-21 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 17-FEB-21 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 17-FEB-21 |
| Phosphorus (P)-Total | | | <0.030 | | mg/L | | 0.03 | 17-FEB-21 |
| Rubidium (Rb)-Total | | | <0.00020 | | mg/L | | 0.0002 | 17-FEB-21 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 17-FEB-21 |
| Silicon (Si)-Total | | | <0.10 | | mg/L | | 0.1 | 17-FEB-21 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 17-FEB-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 17-FEB-21 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 17-FEB-21 |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 17-FEB-21 |
| Tellurium (Te)-Total | | | <0.00020 | | mg/L | | 0.0002 | 17-FEB-21 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 17-FEB-21 |
| Thorium (Th)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 17-FEB-21 |
| Tungsten (W)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-FEB-21 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 17-FEB-21 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 17-FEB-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 17-FEB-21 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 17-FEB-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5380036** | | | | | | | | |
| **WG3489855-2 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 98.7 | | % | | 85-115 | 17-FEB-21 |
| **WG3489855-1 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 17-FEB-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5374519** | | | | | | | | |
| **WG3487570-6 LCS** | | | | | | | | |
| Nitrite (as N) | | | 100.7 | | % | | 90-110 | 12-FEB-21 |
| **WG3487570-5 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 12-FEB-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5374519** | | | | | | | | |
| **WG3487570-6 LCS** | | | | | | | | |
| Nitrate (as N) | | | 101.2 | | % | | 90-110 | 12-FEB-21 |
| **WG3487570-5 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 12-FEB-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5384121** | | | | | | | | |
| **WG3490231-2 LCS** | | | | | | | | |
| Oil and Grease | | | 97.1 | | % | | 70-130 | 19-FEB-21 |
| **WG3490231-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 19-FEB-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5381916** | | | | | | | | |
| **WG3490384-6 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 95.7 | | % | | 80-120 | 19-FEB-21 |
| **WG3490384-5 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 19-FEB-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5379984** | | | | | | | | |
| **WG3488557-2 LCS** | | | | | | | | |
| 1-Methyl Naphthalene | | | 104.1 | | % | | 50-150 | 18-FEB-21 |
| 2-Methyl Naphthalene | | | 102.2 | | % | | 50-150 | 18-FEB-21 |
| Acenaphthene | | | 109.4 | | % | | 50-150 | 18-FEB-21 |
| Acenaphthylene | | | 108.6 | | % | | 50-150 | 18-FEB-21 |
| Anthracene | | | 121.4 | | % | | 50-150 | 18-FEB-21 |
| Acridine | | | 135.0 | | % | | 50-150 | 18-FEB-21 |
| Benzo(a)anthracene | | | 136.4 | | % | | 50-150 | 18-FEB-21 |
| Benzo(a)pyrene | | | 129.8 | | % | | 50-150 | 18-FEB-21 |
| Benzo(b&j)fluoranthene | | | 115.9 | | % | | 50-150 | 18-FEB-21 |
| Benzo(g,h,i)perylene | | | 120.2 | | % | | 50-150 | 18-FEB-21 |
| Benzo(k)fluoranthene | | | 114.2 | | % | | 50-150 | 18-FEB-21 |
| Chrysene | | | 118.7 | | % | | 50-150 | 18-FEB-21 |
| Dibenzo(a,h)anthracene | | | 128.7 | | % | | 50-150 | 18-FEB-21 |
| Fluoranthene | | | 130.5 | | % | | 50-150 | 18-FEB-21 |
| Fluorene | | | 119.0 | | % | | 50-150 | 18-FEB-21 |
| Indeno(1,2,3-cd)pyrene | | | 123.7 | | % | | 50-150 | 18-FEB-21 |
| Naphthalene | | | 103.2 | | % | | 50-150 | 18-FEB-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5379984** | | | | | | | | |
| **WG3488557-2 LCS** | | | | | | | | |
| Phenanthrene | | | 134.8 | | % | | 50-150 | 18-FEB-21 |
| Pyrene | | | 130.9 | | % | | 50-150 | 18-FEB-21 |
| Quinoline | | | 125.7 | | % | | 50-150 | 18-FEB-21 |
| **WG3488557-1 MB** | | | | | | | | |
| 1-Methyl Naphthalene | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| 2-Methyl Naphthalene | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 18-FEB-21 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 18-FEB-21 |
| Benzo(a)pyrene | | | <0.000005C | | mg/L | | 0.000005 | 18-FEB-21 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 18-FEB-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 18-FEB-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| Dibenzo(a,h)anthracene | | | <0.000005C | | mg/L | | 0.000005 | 18-FEB-21 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 18-FEB-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 18-FEB-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 18-FEB-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 18-FEB-21 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 18-FEB-21 |
| Surrogate: Naphthalene d8 | | | 111.6 | | % | | 50-150 | 18-FEB-21 |
| Surrogate: Phenanthrene d10 | | | 101.3 | | % | | 50-150 | 18-FEB-21 |
| Surrogate: Chrysene d12 | | | 101.3 | | % | | 50-150 | 18-FEB-21 |
| Surrogate: Acenaphthene d10 | | | 95.9 | | % | | 50-150 | 18-FEB-21 |
| Surrogate: Acridine d9 | | | 98.0 | | % | | 50-150 | 18-FEB-21 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5379559** | | | | | | | | |
| **WG3489586-7 LCS** | | | | | | | | |
| pH | | | 6.97 | | pH units | | 6.9-7.1 | 17-FEB-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5379598** | | | | | | | | |
| **WG3489086-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 99.7 | | % | | 85-115 | 17-FEB-21 |
| **WG3489086-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 17-FEB-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5374519** | | | | | | | | |
| **WG3487570-6 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 102.3 | | % | | 90-110 | 12-FEB-21 |
| **WG3487570-5 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 12-FEB-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5379605** | | | | | | | | |
| **WG3488376-2 LCS** | | | | | | | | |
| Total Suspended Solids | | | 94.9 | | % | | 85-115 | 16-FEB-21 |
| **WG3488376-1 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 16-FEB-21 |
| **TC,EC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5374381** | | | | | | | | |
| **WG3487743-2 DUP** | | **L2557226-1** | | | | | | |
| Total Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 12-FEB-21 |
| Escherichia Coli | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 12-FEB-21 |
| **WG3487743-1 MB** | | | | | | | | |
| Total Coliforms | | | <1 | | MPN/100mL | | 1 | 12-FEB-21 |
| Escherichia Coli | | | <1 | | MPN/100mL | | 1 | 12-FEB-21 |

# Quality Control Report



**Legend:**

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

# Quality Control Report



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 09-FEB-21 10:30 | 17-FEB-21 12:00 | 0.25 | 193 | hours | EHTR-FM |
| **Bacteriological Tests** | | | | | | | |
| Fecal coliforms, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 09-FEB-21 10:30 | 12-FEB-21 15:20 | 30 | 77 | hours | EHTR |
| Total and E. coli, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 09-FEB-21 10:30 | 12-FEB-21 15:20 | 30 | 77 | hours | EHTR |
| **Aggregate Organics** | | | | | | | |
| Biochemical Oxygen Demand (BOD) | | | | | | | |
| | 1 | 09-FEB-21 10:30 | 12-FEB-21 07:00 | 48 | 68 | hours | EHTR |
| Carbonaceous BOD | | | | | | | |
| | 1 | 09-FEB-21 10:30 | 12-FEB-21 07:00 | 48 | 68 | hours | EHTR |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2557226 were received on 12-FEB-21 12:00.

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

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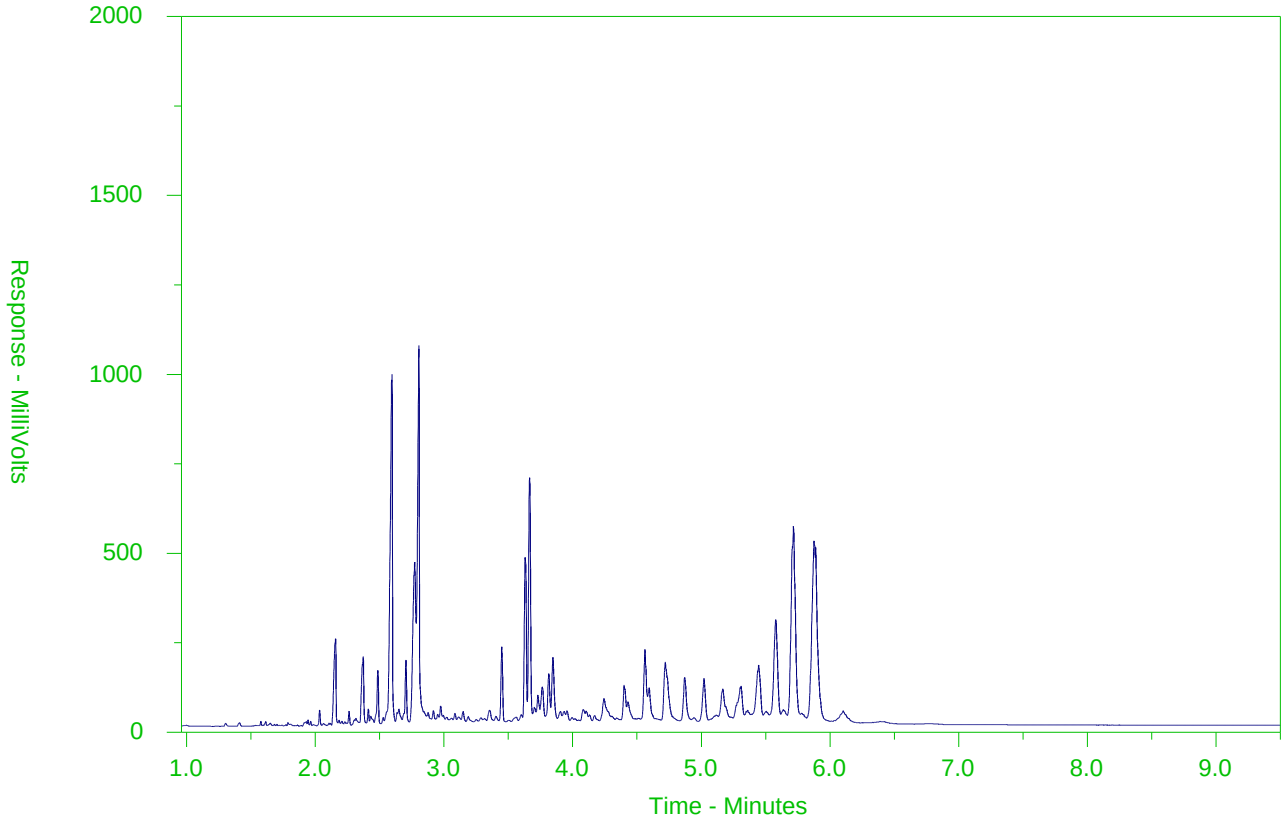
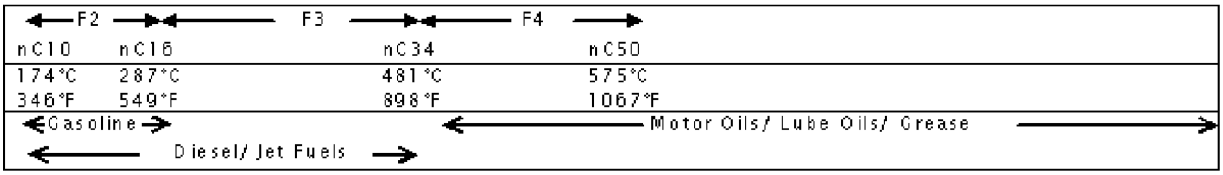
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2557226-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT




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

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

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

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

ALS Environmental

# Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

L2557226-COFC

| Report To | | Report Format / Distribution | | Service R |
|---|---|---|---|---|
| Company: | Nunavut CGS - Rankin Inlet (WB133) | ☑ Standard ☐ Other | | ◉ Regular (Standard Turnaround Times - Business Days) |
| Contact: | SIMON DOIRON | ☑ PDF ☐ Excel ☐ Digital ☐ Fax | | ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT |
| Address: | Box 490 | Email 1: sdoiron@gov.nu.ca | | ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT |
| | Rankin Inlet , NU, X0C 0G0 | Email 2: mlusty@gov.nu.ca | | ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT |
| Phone: | 867-645-8155 Cell# : | Email 3: | | Analysis Request |
| Invoice To | Same as Report ? ☑ Yes ☐ No | Client / Project Information | | Please indicate below Filtered, Preserved or both (F, P, F/P) |
| Hardcopy of Invoice with Report? | ☐ Yes ☐ No | Job #: Rankin Inlet WWTP- Monthly Effluent | | |
| Company: | | PO / AFE: | | |
| Contact: | | LSD: | | |
| Address: | | | | |
| Phone: | Fax: | Quote #: | | |
| Lab Work Order # (lab use only) | | ALS Contact: Craig Riddell | Sampled By: Simon Doiron | |

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH,PANH-WP | NUNAVUT-WW-GRP1-WP | F-IC-N-WP | TC,EC-QT97-WP | | | | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | 09/02/21 | 10:30 AM | Waste | x | x | x | x | x | | | | | | | 15 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | | | | | | | |
| | So all ICP-MS metals report. | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No If Yes add SIF |
| Bill Ross | 09/02/21 | 10:30 AM | MN | 12-Feb | 12pm | 1-6 °C | | Feb 12/21 | 1215 | |

GENF 18.01 Front

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

Date Received: 09-MAR-21
Report Date: 17-MAR-21 10:50 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2564998

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2564998-1 RANKIN INLET WWTP EFFLUENT | | | | | | | |
| Sampled By: CLIENT on 08-MAR-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **BTEX plus F1-F4** | | | | | | | |
| **BTX plus F1 by GCMS** | | | | | | | |
| Benzene | <0.00050 | | 0.00050 | mg/L | | 11-MAR-21 | R5401178 |
| Toluene | <0.0010 | | 0.0010 | mg/L | | 11-MAR-21 | R5401178 |
| Ethyl benzene | <0.00050 | | 0.00050 | mg/L | | 11-MAR-21 | R5401178 |
| o-Xylene | <0.00050 | | 0.00050 | mg/L | | 11-MAR-21 | R5401178 |
| m+p-Xylenes | <0.00040 | | 0.00040 | mg/L | | 11-MAR-21 | R5401178 |
| F1 (C6-C10) | <0.10 | | 0.10 | mg/L | | 11-MAR-21 | R5401178 |
| Surrogate: 4-Bromofluorobenzene (SS) | 96.5 | | 70-130 | % | | 11-MAR-21 | R5401178 |
| **CCME PHC F2-F4 in Water** | | | | | | | |
| F2 (C10-C16) | 0.32 | | 0.10 | mg/L | 10-MAR-21 | 11-MAR-21 | R5399910 |
| F3 (C16-C34) | 6.40 | | 0.25 | mg/L | 10-MAR-21 | 11-MAR-21 | R5399910 |
| F4 (C34-C50) | 2.27 | | 0.25 | mg/L | 10-MAR-21 | 11-MAR-21 | R5399910 |
| Surrogate: 2-Bromobenzotrifluoride | 104.9 | | 60-140 | % | 10-MAR-21 | 11-MAR-21 | R5399910 |
| **CCME Total Hydrocarbons** | | | | | | | |
| F1-BTEX | <0.10 | | 0.10 | mg/L | | 15-MAR-21 | |
| F2-Naphth | 0.32 | | 0.10 | mg/L | | 15-MAR-21 | |
| F3-PAH | 6.40 | | 0.25 | mg/L | | 15-MAR-21 | |
| Total Hydrocarbons (C6-C50) | 9.00 | | 0.38 | mg/L | | 15-MAR-21 | |
| **Sum of Xylene Isomer Concentrations** | | | | | | | |
| Xylenes (Total) | <0.00064 | | 0.00064 | mg/L | | 15-MAR-21 | |
| **Miscellaneous Parameters** | | | | | | | |
| Fluoride (F) | 0.148 | | 0.020 | mg/L | | 09-MAR-21 | R5399647 |
| **Total and E. coli, 1:10 dilution by QT97** | | | | | | | |
| Total Coliforms | >24200 | | 10 | MPN/100mL | | 09-MAR-21 | R5399085 |
| Escherichia Coli | >24200 | | 10 | MPN/100mL | | 09-MAR-21 | R5399085 |
| **CCME PAHs in mg/L** | | | | | | | |
| 1-Methylnaphthalene | <0.000020 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| 2-Methylnaphthalene | 0.000022 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Acenaphthene | <0.000020 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Acenaphthylene | <0.000020 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Anthracene | <0.000010 | | 0.000010 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Acridine | <0.000020 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Benzo(a)anthracene | <0.000010 | | 0.000010 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Benzo(a)pyrene | <0.0000050 | | 0.0000050 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Benzo(b&j)fluoranthene | <0.000010 | | 0.000010 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Benzo(g,h,i)perylene | <0.000020 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Benzo(k)fluoranthene | <0.000010 | | 0.000010 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Chrysene | <0.000020 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Dibenz(a,h)anthracene | 0.0000129 | | 0.0000050 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Fluoranthene | <0.000020 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Fluorene | <0.000020 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Indeno(1,2,3-cd)pyrene | <0.000015 | DLQ | 0.000015 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Naphthalene | <0.000050 | | 0.000050 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Phenanthrene | <0.000050 | | 0.000050 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Pyrene | <0.000010 | | 0.000010 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Quinoline | <0.000020 | | 0.000020 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| B(a)P Total Potency Equivalent | <0.000030 | | 0.000030 | mg/L | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Surrogate: Naphthalene d8 | 123.0 | | 50-150 | % | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Surrogate: Phenanthrene d10 | 96.8 | | 50-150 | % | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Surrogate: Chrysene d12 | 87.8 | | 50-150 | % | 12-MAR-21 | 15-MAR-21 | R5401414 |
| Surrogate: Acridine d9 | 111.2 | | 50-150 | % | 12-MAR-21 | 15-MAR-21 | R5401414 |
| **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 |
|---|---|---|---|---|---|---|---|
| L2564998-1 RANKIN INLET WWTP EFFLUENT | | | | | | | |
| Sampled By: CLIENT on 08-MAR-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **Alkalinity, Bicarbonate** | | | | | | | |
| Bicarbonate (HCO3) | 121 | | 1.2 | mg/L | | 11-MAR-21 | |
| **Alkalinity, Carbonate** | | | | | | | |
| Carbonate (CO3) | <0.60 | | 0.60 | mg/L | | 11-MAR-21 | |
| **Alkalinity, Hydroxide** | | | | | | | |
| Hydroxide (OH) | <0.34 | | 0.34 | mg/L | | 11-MAR-21 | |
| **Alkalinity, Total (as CaCO3)** | | | | | | | |
| Alkalinity, Total (as CaCO3) | 98.8 | | 1.0 | mg/L | | 11-MAR-21 | R5399874 |
| **Ammonia by colour** | | | | | | | |
| Ammonia, Total (as N) | 4.06 | | 0.10 | mg/L | | 11-MAR-21 | R5400399 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | |
| Biochemical Oxygen Demand | 85 | | 20 | mg/L | | 10-MAR-21 | R5401607 |
| **Carbonaceous BOD** | | | | | | | |
| BOD Carbonaceous | 73 | | 20 | mg/L | | 10-MAR-21 | R5401607 |
| **Chloride in Water by IC** | | | | | | | |
| Chloride (Cl) | 63.0 | | 0.50 | mg/L | | 09-MAR-21 | R5399647 |
| **Conductivity** | | | | | | | |
| Conductivity | 484 | | 1.0 | umhos/cm | | 11-MAR-21 | R5399874 |
| **Fecal coliforms, 1:10 dilution by QT97** | | | | | | | |
| Fecal Coliforms | >24200 | | 10 | MPN/100mL | | 09-MAR-21 | R5399088 |
| **Hardness Calculated** | | | | | | | |
| Hardness (as CaCO3) | 107 | HTC | 0.20 | mg/L | | 12-MAR-21 | |
| **Mercury Total** | | | | | | | |
| Mercury (Hg)-Total | 0.0000099 | | 0.0000050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5399997 |
| **Nitrate in Water by IC** | | | | | | | |
| Nitrate (as N) | 0.073 | | 0.020 | mg/L | | 09-MAR-21 | R5399647 |
| **Nitrate+Nitrite** | | | | | | | |
| Nitrate and Nitrite as N | 0.086 | | 0.070 | mg/L | | 11-MAR-21 | |
| **Nitrite in Water by IC** | | | | | | | |
| Nitrite (as N) | 0.013 | | 0.010 | mg/L | | 09-MAR-21 | R5399647 |
| **Oil & Grease - Gravimetric** | | | | | | | |
| Oil and Grease | 12.9 | | 5.0 | mg/L | | 15-MAR-21 | R5402196 |
| **Phenol (4AAP)** | | | | | | | |
| Phenols (4AAP) | 0.0107 | DLM | 0.0010 | mg/L | | 15-MAR-21 | R5401765 |
| **Phosphorus, Total** | | | | | | | |
| Phosphorus (P)-Total | 1.98 | | 0.0060 | mg/L | | 12-MAR-21 | R5400356 |
| **Sulfate in Water by IC** | | | | | | | |
| Sulfate (SO4) | 31.3 | | 0.30 | mg/L | | 09-MAR-21 | R5399647 |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Aluminum (Al)-Total | 0.0732 | | 0.0030 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Antimony (Sb)-Total | 0.00025 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Arsenic (As)-Total | 0.00099 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Barium (Ba)-Total | 0.0335 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Beryllium (Be)-Total | <0.00010 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Bismuth (Bi)-Total | 0.000580 | | 0.000050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Boron (B)-Total | 0.091 | | 0.010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Cadmium (Cd)-Total | 0.0000452 | | 0.0000050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Calcium (Ca)-Total | 30.3 | | 0.050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Cesium (Cs)-Total | 0.000054 | | 0.000010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Chromium (Cr)-Total | 0.00100 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Cobalt (Co)-Total | 0.00015 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Copper (Cu)-Total | 0.175 | | 0.00050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Iron (Fe)-Total | 0.724 | | 0.010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |

* 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 |
|---|---|---|---|---|---|---|---|
| L2564998-1 RANKIN INLET WWTP EFFLUENT | | | | | | | |
| Sampled By: CLIENT on 08-MAR-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Lead (Pb)-Total | 0.00132 | | 0.000050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Lithium (Li)-Total | 0.0035 | | 0.0010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Magnesium (Mg)-Total | 7.61 | | 0.0050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Manganese (Mn)-Total | 0.0290 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Molybdenum (Mo)-Total | 0.00110 | | 0.000050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Nickel (Ni)-Total | 0.00266 | | 0.00050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Potassium (K)-Total | 7.82 | | 0.050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Phosphorus (P)-Total | 2.42 | | 0.030 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Rubidium (Rb)-Total | 0.00872 | | 0.00020 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Selenium (Se)-Total | 0.000197 | | 0.000050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Silicon (Si)-Total | 0.27 | | 0.10 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Silver (Ag)-Total | 0.000024 | | 0.000010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Sodium (Na)-Total | 36.5 | | 0.050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Strontium (Sr)-Total | 0.140 | | 0.00020 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Sulfur (S)-Total | 12.5 | | 0.50 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Tellurium (Te)-Total | <0.00020 | | 0.00020 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Thallium (Tl)-Total | <0.000010 | | 0.000010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Thorium (Th)-Total | <0.00010 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Tin (Sn)-Total | 0.00080 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Titanium (Ti)-Total | 0.00337 | | 0.00030 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Tungsten (W)-Total | <0.00010 | | 0.00010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Uranium (U)-Total | 0.000146 | | 0.000010 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Vanadium (V)-Total | <0.00050 | | 0.00050 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Zinc (Zn)-Total | 0.0954 | | 0.0030 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| Zirconium (Zr)-Total | 0.00067 | | 0.00020 | mg/L | 11-MAR-21 | 11-MAR-21 | R5400169 |
| **Total Organic Carbon by Combustion** | | | | | | | |
| Total Organic Carbon | 51.9 | | 5.0 | mg/L | | 11-MAR-21 | R5400192 |
| **Total Suspended Solids** | | | | | | | |
| Total Suspended Solids | 98.6 | | 3.0 | mg/L | | 10-MAR-21 | R5401311 |
| **pH** | | | | | | | |
| pH | 7.08 | | 0.10 | pH units | | 11-MAR-21 | R5399874 |

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

# Reference Information

**Sample Parameter Qualifier Key:**

| Qualifier | Description |
|---|---|
| B | Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable. |
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| DLQ | Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria. |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| ALK-CO3CO3-CALC-WP | Water | Alkalinity, Carbonate | CALCULATION |
| The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L. | | | |
| ALK-HCO3HCO3-CALC-WP | Water | Alkalinity, Bicarbonate | CALCULATION |
| The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L | | | |
| ALK-OHOH-CALC-WP | Water | Alkalinity, Hydroxide | CALCULATION |
| The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L. | | | |
| ALK-TITR-WP | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |
| The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically. | | | |
| BOD-CBOD-WP | Water | Carbonaceous BOD | APHA 5210 B |
| Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO. | | | |
| BOD-WP | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |
| Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO. | | | |
| BTEXS+F1-HSMS-WP | Water | BTX plus F1 by GCMS | EPA 8260C / EPA 5021A |
| The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection. | | | |
| C-TOC-HTC-WP | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |
| Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer. | | | |
| CL-IC-N-WP | Water | Chloride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| EC-SCREEN-WP | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |
| Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc | | | |
| EC-WP | Water | Conductivity | APHA 2510B |
| Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes. | | | |
| F-IC-N-WP | Water | Fluoride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| F1-F4-CALC-WP | Water | CCME Total Hydrocarbons | CCME CWS-PHC, Pub #1310, Dec 2001-L |
| Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC. | | | |

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

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

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

| | | | |
|---|---|---|---|
| HARDNESS-CALC-WP | Water | Hardness Calculated | APHA 2340B |

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

| | | | |
|---|---|---|---|
| NO2+NO3-CALC-WP | Water | Nitrate+Nitrite | CALCULATION |
| NO2-IC-N-WP | Water | Nitrite in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| NO3-IC-N-WP | Water | Nitrate in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| OG-GRAV-WP | Water | Oil & Grease - Gravimetric | EPA 1664 (modified) |

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

| | | | |
|---|---|---|---|
| PAH-CCME-PPM-WT | Water | CCME PAHs in mg/L | EPA 3511/8270D (mod) |

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

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| PH-WP | Water | pH | APHA 4500H |
| The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode. | | | |
| PHENOLS-4AAP-WT | Water | Phenol (4AAP) | EPA 9066 |
| An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically. | | | |
| SO4-IC-N-WP | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| SOLIDS-TOTSUS-WP | Water | Total Suspended Solids | APHA 2540 D (modified) |
| Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C. | | | |
| TC,EC10-QT97-WP | Water | Total and E. coli, 1:10 dilution by QT97 | APHA 9223B QT97 |
| Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table. | | | |
| XYLENES-SUM-CALC-WP | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |
| Total xylenes represents the sum of o-xylene and m&p-xylene. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA |
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

**Chain of Custody Numbers:**

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

# Quality Control Report

Workorder: L2564998 Report Date: 17-MAR-21 

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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5399874** | | | | | | | | |
| **WG3500783-9 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 100.4 | | % | | 85-115 | 11-MAR-21 |
| **WG3500783-6 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 11-MAR-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5401607** | | | | | | | | |
| **WG3499759-7 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 96.6 | | % | | 85-115 | 10-MAR-21 |
| **WG3499759-6 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 10-MAR-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5401607** | | | | | | | | |
| **WG3499759-7 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 95.8 | | % | | 85-115 | 10-MAR-21 |
| **WG3499759-6 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 10-MAR-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5401178** | | | | | | | | |
| **WG3500750-2 LCS** | | | | | | | | |
| Benzene | | | 92.5 | | % | | 70-130 | 12-MAR-21 |
| Toluene | | | 89.2 | | % | | 70-130 | 12-MAR-21 |
| Ethyl benzene | | | 93.0 | | % | | 70-130 | 12-MAR-21 |
| o-Xylene | | | 99.7 | | % | | 70-130 | 12-MAR-21 |
| m+p-Xylenes | | | 96.8 | | % | | 70-130 | 12-MAR-21 |
| **WG3500750-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 95.8 | | % | | 70-130 | 12-MAR-21 |
| **WG3500750-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 11-MAR-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 11-MAR-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 11-MAR-21 |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 11-MAR-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 11-MAR-21 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 11-MAR-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 100.9 | | % | | 70-130 | 11-MAR-21 |
| **WG3500750-6 MS** | | **L2564998-1** | | | | | | |
| F1 (C6-C10) | | | 86.2 | | % | | 50-150 | 11-MAR-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5400192** | | | | | | | | |
| **WG3501190-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 99.5 | | % | | 80-120 | 11-MAR-21 |
| **WG3501190-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 11-MAR-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5399647** | | | | | | | | |
| **WG3499480-2 LCS** | | | | | | | | |
| Chloride (Cl) | | | 99.0 | | % | | 90-110 | 09-MAR-21 |
| **WG3499480-1 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 09-MAR-21 |
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5399874** | | | | | | | | |
| **WG3500783-8 LCS** | | | | | | | | |
| Conductivity | | | 101.0 | | % | | 90-110 | 11-MAR-21 |
| **WG3500783-6 MB** | | | | | | | | |
| Conductivity | | | 1.1 | B | umhos/cm | | 1 | 11-MAR-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5399647** | | | | | | | | |
| **WG3499480-2 LCS** | | | | | | | | |
| Fluoride (F) | | | 103.0 | | % | | 90-110 | 09-MAR-21 |
| **WG3499480-1 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 09-MAR-21 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5399910** | | | | | | | | |
| **WG3499787-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 94.1 | | % | | 70-130 | 11-MAR-21 |
| F3 (C16-C34) | | | 90.1 | | % | | 70-130 | 11-MAR-21 |
| F4 (C34-C50) | | | 95.2 | | % | | 70-130 | 11-MAR-21 |
| **WG3499787-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 11-MAR-21 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 11-MAR-21 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 11-MAR-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 106.1 | | % | | 60-140 | 11-MAR-21 |
| **FC10-QT97-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **FC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5399088** | | | | | | | | |
| **WG3499425-2 DUP** | | **L2564998-1** | | | | | | |
| Fecal Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 09-MAR-21 |
| **WG3499425-1 MB** | | | | | | | | |
| Fecal Coliforms | | | <1 | | MPN/100mL | | 1 | 09-MAR-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5399997** | | | | | | | | |
| **WG3500943-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 99.5 | | % | | 80-120 | 11-MAR-21 |
| **WG3500943-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005( | | mg/L | | 0.000005 | 11-MAR-21 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5400169** | | | | | | | | |
| **WG3500238-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 100.6 | | % | | 80-120 | 11-MAR-21 |
| Antimony (Sb)-Total | | | 100.4 | | % | | 80-120 | 11-MAR-21 |
| Arsenic (As)-Total | | | 98.6 | | % | | 80-120 | 11-MAR-21 |
| Barium (Ba)-Total | | | 98.1 | | % | | 80-120 | 11-MAR-21 |
| Beryllium (Be)-Total | | | 95.3 | | % | | 80-120 | 11-MAR-21 |
| Bismuth (Bi)-Total | | | 93.7 | | % | | 80-120 | 11-MAR-21 |
| Boron (B)-Total | | | 93.3 | | % | | 80-120 | 11-MAR-21 |
| Cadmium (Cd)-Total | | | 97.3 | | % | | 80-120 | 11-MAR-21 |
| Calcium (Ca)-Total | | | 95.3 | | % | | 80-120 | 11-MAR-21 |
| Cesium (Cs)-Total | | | 98.6 | | % | | 80-120 | 11-MAR-21 |
| Chromium (Cr)-Total | | | 100.5 | | % | | 80-120 | 11-MAR-21 |
| Cobalt (Co)-Total | | | 97.1 | | % | | 80-120 | 11-MAR-21 |
| Copper (Cu)-Total | | | 98.5 | | % | | 80-120 | 11-MAR-21 |
| Iron (Fe)-Total | | | 95.2 | | % | | 80-120 | 11-MAR-21 |
| Lead (Pb)-Total | | | 96.4 | | % | | 80-120 | 11-MAR-21 |
| Lithium (Li)-Total | | | 99.1 | | % | | 80-120 | 11-MAR-21 |
| Magnesium (Mg)-Total | | | 103.2 | | % | | 80-120 | 11-MAR-21 |
| Manganese (Mn)-Total | | | 99.0 | | % | | 80-120 | 11-MAR-21 |
| Molybdenum (Mo)-Total | | | 96.8 | | % | | 80-120 | 11-MAR-21 |
| Nickel (Ni)-Total | | | 97.6 | | % | | 80-120 | 11-MAR-21 |
| Potassium (K)-Total | | | 100.0 | | % | | 80-120 | 11-MAR-21 |
| Phosphorus (P)-Total | | | 107.4 | | % | | 80-120 | 11-MAR-21 |
| Rubidium (Rb)-Total | | | 96.7 | | % | | 80-120 | 11-MAR-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5400169** | | | | | | | | |
| **WG3500238-2 LCS** | | | | | | | | |
| Selenium (Se)-Total | | | 96.1 | | % | | 80-120 | 11-MAR-21 |
| Silicon (Si)-Total | | | 99.6 | | % | | 80-120 | 11-MAR-21 |
| Silver (Ag)-Total | | | 95.8 | | % | | 80-120 | 11-MAR-21 |
| Sodium (Na)-Total | | | 102.2 | | % | | 80-120 | 11-MAR-21 |
| Strontium (Sr)-Total | | | 98.2 | | % | | 80-120 | 11-MAR-21 |
| Sulfur (S)-Total | | | 94.6 | | % | | 80-120 | 11-MAR-21 |
| Tellurium (Te)-Total | | | 96.9 | | % | | 80-120 | 11-MAR-21 |
| Thallium (Tl)-Total | | | 96.7 | | % | | 80-120 | 11-MAR-21 |
| Thorium (Th)-Total | | | 94.2 | | % | | 80-120 | 11-MAR-21 |
| Tin (Sn)-Total | | | 96.1 | | % | | 80-120 | 11-MAR-21 |
| Titanium (Ti)-Total | | | 96.7 | | % | | 80-120 | 11-MAR-21 |
| Tungsten (W)-Total | | | 97.1 | | % | | 80-120 | 11-MAR-21 |
| Uranium (U)-Total | | | 96.3 | | % | | 80-120 | 11-MAR-21 |
| Vanadium (V)-Total | | | 98.4 | | % | | 80-120 | 11-MAR-21 |
| Zinc (Zn)-Total | | | 95.6 | | % | | 80-120 | 11-MAR-21 |
| Zirconium (Zr)-Total | | | 91.8 | | % | | 80-120 | 11-MAR-21 |
| **WG3500238-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 11-MAR-21 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Beryllium (Be)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 11-MAR-21 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 11-MAR-21 |
| Cadmium (Cd)-Total | | | <0.0000050 | | mg/L | | 0.000005 | 11-MAR-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 11-MAR-21 |
| Cesium (Cs)-Total | | | <0.000010 | | mg/L | | 0.00001 | 11-MAR-21 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 11-MAR-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 11-MAR-21 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 11-MAR-21 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 11-MAR-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 11-MAR-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5400169** | | | | | | | | |
| **WG3500238-1 MB** | | | | | | | | |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 11-MAR-21 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 11-MAR-21 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 11-MAR-21 |
| Phosphorus (P)-Total | | | <0.030 | | mg/L | | 0.03 | 11-MAR-21 |
| Rubidium (Rb)-Total | | | <0.00020 | | mg/L | | 0.0002 | 11-MAR-21 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 11-MAR-21 |
| Silicon (Si)-Total | | | <0.10 | | mg/L | | 0.1 | 11-MAR-21 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 11-MAR-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 11-MAR-21 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 11-MAR-21 |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 11-MAR-21 |
| Tellurium (Te)-Total | | | <0.00020 | | mg/L | | 0.0002 | 11-MAR-21 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 11-MAR-21 |
| Thorium (Th)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 11-MAR-21 |
| Tungsten (W)-Total | | | <0.00010 | | mg/L | | 0.0001 | 11-MAR-21 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 11-MAR-21 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 11-MAR-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 11-MAR-21 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 11-MAR-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5400399** | | | | | | | | |
| **WG3501345-6 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 100.2 | | % | | 85-115 | 11-MAR-21 |
| **WG3501345-5 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 11-MAR-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5399647** | | | | | | | | |
| **WG3499480-2 LCS** | | | | | | | | |
| Nitrite (as N) | | | 99.9 | | % | | 90-110 | 09-MAR-21 |
| **WG3499480-1 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 09-MAR-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5399647** | | | | | | | | |
| **WG3499480-2 LCS** | | | | | | | | |
| Nitrate (as N) | | | 98.6 | | % | | 90-110 | 09-MAR-21 |
| **WG3499480-1 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 09-MAR-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5402196** | | | | | | | | |
| **WG3502284-2 LCS** | | | | | | | | |
| Oil and Grease | | | 94.6 | | % | | 70-130 | 15-MAR-21 |
| **WG3502284-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 15-MAR-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5400356** | | | | | | | | |
| **WG3501138-10 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 92.0 | | % | | 80-120 | 12-MAR-21 |
| **WG3501138-9 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 12-MAR-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5401414** | | | | | | | | |
| **WG3501145-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 96.6 | | % | | 50-150 | 15-MAR-21 |
| 2-Methylnaphthalene | | | 93.3 | | % | | 50-150 | 15-MAR-21 |
| Acenaphthene | | | 97.2 | | % | | 50-150 | 15-MAR-21 |
| Acenaphthylene | | | 95.7 | | % | | 50-150 | 15-MAR-21 |
| Anthracene | | | 101.8 | | % | | 50-150 | 15-MAR-21 |
| Acridine | | | 114.4 | | % | | 50-150 | 15-MAR-21 |
| Benzo(a)anthracene | | | 98.9 | | % | | 50-150 | 15-MAR-21 |
| Benzo(a)pyrene | | | 93.7 | | % | | 50-150 | 15-MAR-21 |
| Benzo(b&j)fluoranthene | | | 89.2 | | % | | 50-150 | 15-MAR-21 |
| Benzo(g,h,i)perylene | | | 105.8 | | % | | 50-150 | 15-MAR-21 |
| Benzo(k)fluoranthene | | | 82.3 | | % | | 50-150 | 15-MAR-21 |
| Chrysene | | | 105.1 | | % | | 50-150 | 15-MAR-21 |
| Dibenz(a,h)anthracene | | | 103.7 | | % | | 50-150 | 15-MAR-21 |
| Fluoranthene | | | 100.6 | | % | | 50-150 | 15-MAR-21 |
| Fluorene | | | 101.9 | | % | | 50-150 | 15-MAR-21 |
| Indeno(1,2,3-cd)pyrene | | | 110.1 | | % | | 50-150 | 15-MAR-21 |
| Naphthalene | | | 97.8 | | % | | 50-150 | 15-MAR-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5401414** | | | | | | | | |
| **WG3501145-2 LCS** | | | | | | | | |
| Phenanthrene | | | 104.7 | | % | | 50-150 | 15-MAR-21 |
| Pyrene | | | 101.3 | | % | | 50-150 | 15-MAR-21 |
| Quinoline | | | 110.2 | | % | | 50-150 | 15-MAR-21 |
| **WG3501145-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| 2-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 15-MAR-21 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 15-MAR-21 |
| Benzo(a)pyrene | | | <0.000005C | | mg/L | | 0.000005 | 15-MAR-21 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 15-MAR-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 15-MAR-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| Dibenz(a,h)anthracene | | | <0.000005C | | mg/L | | 0.000005 | 15-MAR-21 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 15-MAR-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 15-MAR-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 15-MAR-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 15-MAR-21 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 15-MAR-21 |
| Surrogate: Naphthalene d8 | | | 98.0 | | % | | 50-150 | 15-MAR-21 |
| Surrogate: Phenanthrene d10 | | | 96.5 | | % | | 50-150 | 15-MAR-21 |
| Surrogate: Chrysene d12 | | | 87.6 | | % | | 50-150 | 15-MAR-21 |
| Surrogate: Acridine d9 | | | 98.2 | | % | | 50-150 | 15-MAR-21 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5399874** | | | | | | | | |
| **WG3500783-7 LCS** | | | | | | | | |
| pH | | | 6.99 | | pH units | | 6.9-7.1 | 11-MAR-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5401765** | | | | | | | | |
| **WG3502520-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 94.3 | | % | | 85-115 | 15-MAR-21 |
| **WG3502520-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 15-MAR-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5399647** | | | | | | | | |
| **WG3499480-2 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 100.3 | | % | | 90-110 | 09-MAR-21 |
| **WG3499480-1 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 09-MAR-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5401311** | | | | | | | | |
| **WG3499907-2 LCS** | | | | | | | | |
| Total Suspended Solids | | | 99.9 | | % | | 85-115 | 10-MAR-21 |
| **WG3499907-1 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 10-MAR-21 |
| **TC,EC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5399085** | | | | | | | | |
| **WG3499431-2 DUP** | | **L2564998-1** | | | | | | |
| Total Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 09-MAR-21 |
| Escherichia Coli | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 09-MAR-21 |
| **WG3499431-1 MB** | | | | | | | | |
| Total Coliforms | | | <1 | | MPN/100mL | | 1 | 09-MAR-21 |
| Escherichia Coli | | | <1 | | MPN/100mL | | 1 | 09-MAR-21 |

**Legend:**

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

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| B | Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable. |

**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 08-MAR-21 10:30 | 11-MAR-21 12:00 | 0.25 | 73 | hours | EHTR-FM |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2564998 were received on 09-MAR-21 11:30.

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

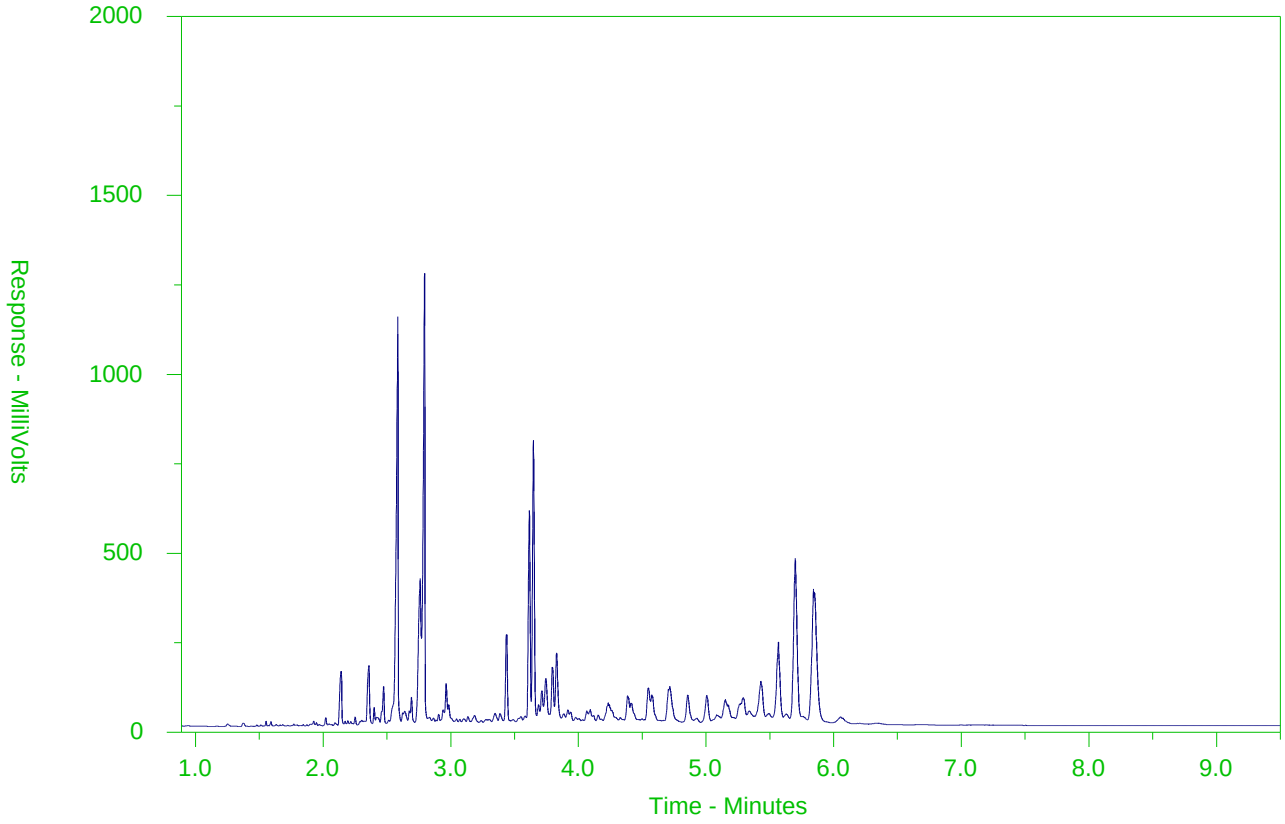
---

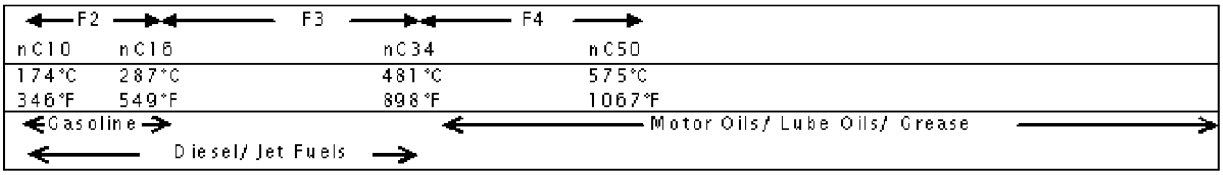
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2564998-1
Client Sample ID: RANKIN INLET WWTP EFFLUENT




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

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

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

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

ALS Environmental

L2564998-COFC

...Form

COC #

Page ___ of ___

| Report To | | | |
|---|---|---|---|
| Company: | Nunavut CGS - Rankin Inlet (WB133) | | |
| Contact: | SIMON DOLFON | ☑ PDF ☐ Excel ☐ Digital ☐ Fax | |
| Address: | Box 490 | Email 1: sdojron@gov.nu.ca | |
| | Rankin Inlet , NU, X0C 0G0 | Email 2: mlusty@gov.nu.ca | |
| Phone: | 867-645-8155 Cell#: | Email 3: | |
| Invoice To | Same as Report ? ☑ Yes ☐ No | Client / Project Information | |
| Hardcopy of Invoice with Report? | ☐ Yes ☐ No | Job #: Rankin Inlet WWTP- Monthly Effluent | |
| Company: | | PO / AFE: | |
| Contact: | | LSD: | |
| Address: | | | |
| Phone: | Fax: | Quote #: | |
| Lab Work Order # (lab use only) | | ALS Contact: Craig Riddell | Sampled By: Simon Dolfon |

**Service Requested** (Rush for routine analysis subject to availability)

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

**Analysis Request**

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

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH,PANH-WP | NUNAVUT-WW-GRP1-WP | F-IC-N-WP | TC,EC-QT97-WP | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | 03/08/21 | 10:30 AM | Waste | x | x | x | x | x | 15 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | |
| | So all ICP-MS metals report. | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No? If Yes add SIF |
| Bill Ross | 03/08/21 | 10:30 AM | | March 9, 2021 | 11:30 | 9.6 °C | | March | | |

GENF 18.01 Front

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

Date Received: 08-APR-21
Report Date: 19-APR-21 14:32 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2574525

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2574525-1 RANKIN INLET WWTP - EFFLUENT | | | | | | | |
| Sampled By: CLIENT on 06-APR-21 @ 10:30 | | | | | | | |
| Matrix: WASTE WATER | | | | | | | |
| **BTEX plus F1-F4** | | | | | | | |
| **BTX plus F1 by GCMS** | | | | | | | |
| Benzene | <0.00050 | | 0.00050 | mg/L | | 14-APR-21 | R5432036 |
| Toluene | <0.0010 | | 0.0010 | mg/L | | 14-APR-21 | R5432036 |
| Ethyl benzene | <0.00050 | | 0.00050 | mg/L | | 14-APR-21 | R5432036 |
| o-Xylene | <0.00050 | | 0.00050 | mg/L | | 14-APR-21 | R5432036 |
| m+p-Xylenes | <0.00040 | | 0.00040 | mg/L | | 14-APR-21 | R5432036 |
| F1 (C6-C10) | <0.10 | | 0.10 | mg/L | | 14-APR-21 | R5432036 |
| Surrogate: 4-Bromofluorobenzene (SS) | 89.3 | | 70-130 | % | | 14-APR-21 | R5432036 |
| **CCME PHC F2-F4 in Water** | | | | | | | |
| F2 (C10-C16) | 0.31 | | 0.10 | mg/L | 10-APR-21 | 10-APR-21 | R5422715 |
| F3 (C16-C34) | 6.97 | | 0.25 | mg/L | 10-APR-21 | 10-APR-21 | R5422715 |
| F4 (C34-C50) | 2.88 | | 0.25 | mg/L | 10-APR-21 | 10-APR-21 | R5422715 |
| Surrogate: 2-Bromobenzotrifluoride | 99.5 | | 60-140 | % | 10-APR-21 | 10-APR-21 | R5422715 |
| **CCME Total Hydrocarbons** | | | | | | | |
| F1-BTEX | <0.10 | | 0.10 | mg/L | | 19-APR-21 | |
| F2-Naphth | 0.31 | | 0.10 | mg/L | | 19-APR-21 | |
| F3-PAH | 6.97 | | 0.25 | mg/L | | 19-APR-21 | |
| Total Hydrocarbons (C6-C50) | 10.2 | | 0.38 | mg/L | | 19-APR-21 | |
| **Sum of Xylene Isomer Concentrations** | | | | | | | |
| Xylenes (Total) | <0.00064 | | 0.00064 | mg/L | | 19-APR-21 | |
| **Miscellaneous Parameters** | | | | | | | |
| Fluoride (F) | 0.247 | | 0.020 | mg/L | | 08-APR-21 | R5421966 |
| **Total and E. coli, 1:10 dilution by QT97** | | | | | | | |
| Total Coliforms | >24200 | PEHR | 10 | MPN/100mL | | 08-APR-21 | R5421707 |
| Escherichia Coli | >24200 | PEHR | 10 | MPN/100mL | | 08-APR-21 | R5421707 |
| **CCME PAHs in mg/L** | | | | | | | |
| 1-Methylnaphthalene | 0.000032 | | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| 2-Methylnaphthalene | 0.000058 | | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Acenaphthene | <0.000020 | | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Acenaphthylene | <0.000020 | | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Anthracene | <0.000014 | DLM | 0.000014 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Acridine | <0.000020 | | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Benzo(a)anthracene | <0.000010 | | 0.000010 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Benzo(a)pyrene | <0.0000050 | | 0.0000050 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Benzo(b&j)fluoranthene | <0.000010 | | 0.000010 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Benzo(g,h,i)perylene | <0.000020 | | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Benzo(k)fluoranthene | <0.000010 | | 0.000010 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Chrysene | <0.000020 | | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Dibenz(a,h)anthracene | 0.0000100 | | 0.0000050 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Fluoranthene | <0.000020 | | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Fluorene | 0.000023 | R | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Indeno(1,2,3-cd)pyrene | <0.00014 | DLM | 0.00014 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Naphthalene | <0.000050 | | 0.000050 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Phenanthrene | <0.000050 | | 0.000050 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Pyrene | <0.00002 | DLM | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Quinoline | 0.000041 | | 0.000020 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| B(a)P Total Potency Equivalent | <0.000030 | | 0.000030 | mg/L | 14-APR-21 | 16-APR-21 | R5431417 |
| Surrogate: Naphthalene d8 | 115.6 | | 50-150 | % | 14-APR-21 | 16-APR-21 | R5431417 |
| Surrogate: Phenanthrene d10 | 96.9 | | 50-150 | % | 14-APR-21 | 16-APR-21 | R5431417 |
| Surrogate: Chrysene d12 | 89.2 | | 50-150 | % | 14-APR-21 | 16-APR-21 | R5431417 |
| Surrogate: Acenaphthene d10 | 86.3 | | 50-150 | % | 14-APR-21 | 16-APR-21 | R5431417 |
| Surrogate: Acridine d9 | 107.2 | | 50-150 | % | 14-APR-21 | 16-APR-21 | R5431417 |

* 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 |
|---|---|---|---|---|---|---|---|
| L2574525-1 RANKIN INLET WWTP - EFFLUENT | | | | | | | |
| Sampled By: CLIENT on 06-APR-21 @ 10:30 | | | | | | | |
| Matrix: WASTE WATER | | | | | | | |
| **Nunavut WW Group 1** | | | | | | | |
| **Alkalinity, Bicarbonate** | | | | | | | |
| Bicarbonate (HCO3) | 143 | | 1.2 | mg/L | | 12-APR-21 | |
| **Alkalinity, Carbonate** | | | | | | | |
| Carbonate (CO3) | <0.60 | | 0.60 | mg/L | | 12-APR-21 | |
| **Alkalinity, Hydroxide** | | | | | | | |
| Hydroxide (OH) | <0.34 | | 0.34 | mg/L | | 12-APR-21 | |
| **Alkalinity, Total (as CaCO3)** | | | | | | | |
| Alkalinity, Total (as CaCO3) | 117 | | 1.0 | mg/L | | 09-APR-21 | R5422179 |
| **Ammonia by colour** | | | | | | | |
| Ammonia, Total (as N) | 6.5 | | 1.0 | mg/L | | 13-APR-21 | R5423517 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | |
| Biochemical Oxygen Demand | 9.9 | | 6.0 | mg/L | | 09-APR-21 | R5425484 |
| **Carbonaceous BOD** | | | | | | | |
| BOD Carbonaceous | 7.8 | | 2.0 | mg/L | | 09-APR-21 | R5425484 |
| **Chloride in Water by IC** | | | | | | | |
| Chloride (Cl) | 69.0 | | 0.50 | mg/L | | 08-APR-21 | R5421966 |
| **Conductivity** | | | | | | | |
| Conductivity | 543 | | 1.0 | umhos/cm | | 09-APR-21 | R5422179 |
| **Fecal coliforms, 1:10 dilution by QT97** | | | | | | | |
| Fecal Coliforms | >24200 | PEHR | 10 | MPN/100mL | | 08-APR-21 | R5421706 |
| **Hardness Calculated** | | | | | | | |
| Hardness (as CaCO3) | 122 | HTC | 0.20 | mg/L | | 13-APR-21 | |
| **Mercury Total** | | | | | | | |
| Mercury (Hg)-Total | 0.0000138 | | 0.0000050 | mg/L | 13-APR-21 | 13-APR-21 | R5425777 |
| **Nitrate in Water by IC** | | | | | | | |
| Nitrate (as N) | 0.074 | | 0.020 | mg/L | | 08-APR-21 | R5421966 |
| **Nitrate+Nitrite** | | | | | | | |
| Nitrate and Nitrite as N | 0.074 | | 0.070 | mg/L | | 12-APR-21 | |
| **Nitrite in Water by IC** | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 08-APR-21 | R5421966 |
| **Oil & Grease - Gravimetric** | | | | | | | |
| Oil and Grease | 18.3 | | 5.0 | mg/L | | 13-APR-21 | R5423287 |
| **Phenol (4AAP)** | | | | | | | |
| Phenols (4AAP) | 0.0081 | DLM | 0.0050 | mg/L | | 14-APR-21 | R5424383 |
| **Phosphorus, Total** | | | | | | | |
| Phosphorus (P)-Total | 2.26 | | 0.030 | mg/L | | 15-APR-21 | R5426464 |
| **Sulfate in Water by IC** | | | | | | | |
| Sulfate (SO4) | 33.9 | | 0.30 | mg/L | | 08-APR-21 | R5421966 |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Aluminum (Al)-Total | 0.159 | | 0.0030 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Antimony (Sb)-Total | 0.00019 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Arsenic (As)-Total | 0.00115 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Barium (Ba)-Total | 0.0393 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Beryllium (Be)-Total | <0.00010 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Bismuth (Bi)-Total | 0.00400 | | 0.000050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Boron (B)-Total | 0.081 | | 0.010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Cadmium (Cd)-Total | 0.0000584 | | 0.0000050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Calcium (Ca)-Total | 34.3 | | 0.050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Cesium (Cs)-Total | 0.000056 | | 0.000010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Chromium (Cr)-Total | 0.00088 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Cobalt (Co)-Total | 0.00020 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Copper (Cu)-Total | 0.186 | | 0.00050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |

* 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 |
|---|---|---|---|---|---|---|---|
| L2574525-1 RANKIN INLET WWTP - EFFLUENT | | | | | | | |
| Sampled By: CLIENT on 06-APR-21 @ 10:30 | | | | | | | |
| Matrix: WASTE WATER | | | | | | | |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Iron (Fe)-Total | 0.941 | | 0.010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Lead (Pb)-Total | 0.00177 | | 0.000050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Lithium (Li)-Total | 0.0038 | | 0.0010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Magnesium (Mg)-Total | 8.87 | | 0.0050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Manganese (Mn)-Total | 0.0306 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Molybdenum (Mo)-Total | 0.00131 | | 0.000050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Nickel (Ni)-Total | 0.00309 | | 0.00050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Potassium (K)-Total | 9.08 | | 0.050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Phosphorus (P)-Total | 2.96 | | 0.030 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Rubidium (Rb)-Total | 0.00839 | | 0.00020 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Selenium (Se)-Total | 0.000283 | | 0.000050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Silicon (Si)-Total | 0.34 | | 0.10 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Silver (Ag)-Total | 0.000030 | | 0.000010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Sodium (Na)-Total | 42.6 | | 0.050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Strontium (Sr)-Total | 0.169 | | 0.00020 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Sulfur (S)-Total | 14.2 | | 0.50 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Tellurium (Te)-Total | <0.00020 | | 0.00020 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Thallium (Tl)-Total | <0.000010 | | 0.000010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Thorium (Th)-Total | <0.00010 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Tin (Sn)-Total | 0.00068 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Titanium (Ti)-Total | 0.00247 | | 0.00030 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Tungsten (W)-Total | <0.00010 | | 0.00010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Uranium (U)-Total | 0.000178 | | 0.000010 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Vanadium (V)-Total | <0.00050 | | 0.00050 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Zinc (Zn)-Total | 0.106 | | 0.0030 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| Zirconium (Zr)-Total | 0.00079 | | 0.00020 | mg/L | 12-APR-21 | 12-APR-21 | R5422707 |
| **Total Organic Carbon by Combustion** | | | | | | | |
| Total Organic Carbon | 59.3 | | 0.50 | mg/L | | 10-APR-21 | R5422287 |
| **Total Suspended Solids** | | | | | | | |
| Total Suspended Solids | 87.5 | | 3.0 | mg/L | | 09-APR-21 | R5423420 |
| **pH** | | | | | | | |
| pH | 7.17 | | 0.10 | pH units | | 09-APR-21 | R5422179 |

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

# Reference Information

**Sample Parameter Qualifier Key:**

| Qualifier | Description |
|---|---|
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| PEHR | Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested. |
| R | The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum. |

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| ALK-CO3CO3-CALC-WP | Water | Alkalinity, Carbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

| | | | |
|---|---|---|---|
| ALK-HCO3HCO3-CALC-WP | Water | Alkalinity, Bicarbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

| | | | |
|---|---|---|---|
| ALK-OHOH-CALC-WP | Water | Alkalinity, Hydroxide | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

| | | | |
|---|---|---|---|
| ALK-TITR-WP | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

| | | | |
|---|---|---|---|
| BOD-CBOD-WP | Water | Carbonaceous BOD | APHA 5210 B |

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| BOD-WP | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

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

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

| | | | |
|---|---|---|---|
| C-TOC-HTC-WP | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

| | | | |
|---|---|---|---|
| CL-IC-N-WP | Water | Chloride in Water by IC | EPA 300.1 (mod) |

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

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

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

| | | | |
|---|---|---|---|
| EC-WP | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

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

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

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

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

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

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

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

| | | | |
|---|---|---|---|
| HARDNESS-CALC-WP | Water | Hardness Calculated | APHA 2340B |

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

| | | | |
|---|---|---|---|
| NO2+NO3-CALC-WP | Water | Nitrate+Nitrite | CALCULATION |
| NO2-IC-N-WP | Water | Nitrite in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| NO3-IC-N-WP | Water | Nitrate in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| OG-GRAV-WP | Water | Oil & Grease - Gravimetric | EPA 1664 (modified) |

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

| | | | |
|---|---|---|---|
| PAH-CCME-PPM-WT | Water | CCME PAHs in mg/L | EPA 3511/8270D (mod) |

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

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| PH-WP | Water | pH | APHA 4500H |
| The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode. | | | |
| PHENOLS-4AAP-WT | Water | Phenol (4AAP) | EPA 9066 |
| An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically. | | | |
| SO4-IC-N-WP | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| SOLIDS-TOTSUS-WP | Water | Total Suspended Solids | APHA 2540 D (modified) |
| Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C. | | | |
| TC,EC10-QT97-WP | Water | Total and E. coli, 1:10 dilution by QT97 | APHA 9223B QT97 |
| Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table. | | | |
| XYLENES-SUM-CALC-WP | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |
| Total xylenes represents the sum of o-xylene and m&p-xylene. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA |
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

**Chain of Custody Numbers:**

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5422179** | | | | | | | | |
| **WG3516396-9 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 100.4 | | % | | 85-115 | 09-APR-21 |
| **WG3516396-6 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 09-APR-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5425484** | | | | | | | | |
| **WG3515407-7 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 108.0 | | % | | 85-115 | 09-APR-21 |
| **WG3515407-6 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 09-APR-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5425484** | | | | | | | | |
| **WG3515407-7 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 112.8 | | % | | 85-115 | 09-APR-21 |
| **WG3515407-6 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 09-APR-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5432036** | | | | | | | | |
| **WG3518091-4 DUP** | | **L2574525-1** | | | | | | |
| Benzene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 14-APR-21 |
| Toluene | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 30 | 14-APR-21 |
| Ethyl benzene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 14-APR-21 |
| o-Xylene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 14-APR-21 |
| m+p-Xylenes | | <0.00040 | <0.00040 | RPD-NA | mg/L | N/A | 30 | 14-APR-21 |
| F1 (C6-C10) | | <0.10 | <0.10 | RPD-NA | mg/L | N/A | 30 | 14-APR-21 |
| **WG3518091-2 LCS** | | | | | | | | |
| Benzene | | | 82.3 | | % | | 70-130 | 14-APR-21 |
| Toluene | | | 79.3 | | % | | 70-130 | 14-APR-21 |
| Ethyl benzene | | | 79.2 | | % | | 70-130 | 14-APR-21 |
| o-Xylene | | | 81.3 | | % | | 70-130 | 14-APR-21 |
| m+p-Xylenes | | | 83.6 | | % | | 70-130 | 14-APR-21 |
| **WG3518091-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 93.4 | | % | | 70-130 | 14-APR-21 |
| **WG3518091-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 14-APR-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 14-APR-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 14-APR-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5432036** | | | | | | | | |
| **WG3518091-1 MB** | | | | | | | | |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 14-APR-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 14-APR-21 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 14-APR-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 88.2 | | % | | 70-130 | 14-APR-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5422287** | | | | | | | | |
| **WG3516482-6 LCS** | | | | | | | | |
| Total Organic Carbon | | | 99.7 | | % | | 80-120 | 10-APR-21 |
| **WG3516482-5 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 10-APR-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5421966** | | | | | | | | |
| **WG3515153-2 LCS** | | | | | | | | |
| Chloride (Cl) | | | 100.9 | | % | | 90-110 | 08-APR-21 |
| **WG3515153-1 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 08-APR-21 |
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5422179** | | | | | | | | |
| **WG3516396-8 LCS** | | | | | | | | |
| Conductivity | | | 100.1 | | % | | 90-110 | 09-APR-21 |
| **WG3516396-6 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 09-APR-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5421966** | | | | | | | | |
| **WG3515153-2 LCS** | | | | | | | | |
| Fluoride (F) | | | 104.2 | | % | | 90-110 | 08-APR-21 |
| **WG3515153-1 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 08-APR-21 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5422715** | | | | | | | | |
| **WG3516098-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 90.8 | | % | | 70-130 | 10-APR-21 |
| F3 (C16-C34) | | | 85.1 | | % | | 70-130 | 10-APR-21 |
| F4 (C34-C50) | | | 87.4 | | % | | 70-130 | 10-APR-21 |
| **WG3516098-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 10-APR-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5422715** | | | | | | | | |
| **WG3516098-1 MB** | | | | | | | | |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 10-APR-21 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 10-APR-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 100.7 | | % | | 60-140 | 10-APR-21 |
| **FC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5421706** | | | | | | | | |
| **WG3515229-1 MB** | | | | | | | | |
| Fecal Coliforms | | | <1 | | MPN/100mL | | 1 | 08-APR-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5425777** | | | | | | | | |
| **WG3517821-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 100.3 | | % | | 80-120 | 13-APR-21 |
| **WG3517821-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005 | | mg/L | | 0.000005 | 13-APR-21 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5422707** | | | | | | | | |
| **WG3515902-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 106.1 | | % | | 80-120 | 12-APR-21 |
| Antimony (Sb)-Total | | | 107.6 | | % | | 80-120 | 12-APR-21 |
| Arsenic (As)-Total | | | 102.7 | | % | | 80-120 | 12-APR-21 |
| Barium (Ba)-Total | | | 102.7 | | % | | 80-120 | 12-APR-21 |
| Beryllium (Be)-Total | | | 99.9 | | % | | 80-120 | 12-APR-21 |
| Bismuth (Bi)-Total | | | 102.7 | | % | | 80-120 | 12-APR-21 |
| Boron (B)-Total | | | 98.5 | | % | | 80-120 | 12-APR-21 |
| Cadmium (Cd)-Total | | | 103.8 | | % | | 80-120 | 12-APR-21 |
| Calcium (Ca)-Total | | | 98.8 | | % | | 80-120 | 12-APR-21 |
| Cesium (Cs)-Total | | | 99.3 | | % | | 80-120 | 12-APR-21 |
| Chromium (Cr)-Total | | | 103.5 | | % | | 80-120 | 12-APR-21 |
| Cobalt (Co)-Total | | | 103.0 | | % | | 80-120 | 12-APR-21 |
| Copper (Cu)-Total | | | 104.5 | | % | | 80-120 | 12-APR-21 |
| Iron (Fe)-Total | | | 98.0 | | % | | 80-120 | 12-APR-21 |
| Lead (Pb)-Total | | | 102.2 | | % | | 80-120 | 12-APR-21 |
| Lithium (Li)-Total | | | 98.9 | | % | | 80-120 | 12-APR-21 |
| Magnesium (Mg)-Total | | | 116.1 | | % | | 80-120 | 12-APR-21 |
| Manganese (Mn)-Total | | | 103.1 | | % | | 80-120 | 12-APR-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5422707** | | | | | | | | |
| **WG3515902-2 LCS** | | | | | | | | |
| Molybdenum (Mo)-Total | | | 100.9 | | % | | 80-120 | 12-APR-21 |
| Nickel (Ni)-Total | | | 102.1 | | % | | 80-120 | 12-APR-21 |
| Potassium (K)-Total | | | 99.9 | | % | | 80-120 | 12-APR-21 |
| Phosphorus (P)-Total | | | 107.8 | | % | | 80-120 | 12-APR-21 |
| Rubidium (Rb)-Total | | | 99.3 | | % | | 80-120 | 12-APR-21 |
| Selenium (Se)-Total | | | 102.9 | | % | | 80-120 | 12-APR-21 |
| Silicon (Si)-Total | | | 104.0 | | % | | 80-120 | 12-APR-21 |
| Silver (Ag)-Total | | | 99.2 | | % | | 80-120 | 12-APR-21 |
| Sodium (Na)-Total | | | 107.5 | | % | | 80-120 | 12-APR-21 |
| Strontium (Sr)-Total | | | 99.5 | | % | | 80-120 | 12-APR-21 |
| Sulfur (S)-Total | | | 99.0 | | % | | 80-120 | 12-APR-21 |
| Tellurium (Te)-Total | | | 99.7 | | % | | 80-120 | 12-APR-21 |
| Thallium (Tl)-Total | | | 103.4 | | % | | 80-120 | 12-APR-21 |
| Thorium (Th)-Total | | | 97.4 | | % | | 80-120 | 12-APR-21 |
| Tin (Sn)-Total | | | 100.6 | | % | | 80-120 | 12-APR-21 |
| Titanium (Ti)-Total | | | 100.2 | | % | | 80-120 | 12-APR-21 |
| Tungsten (W)-Total | | | 99.3 | | % | | 80-120 | 12-APR-21 |
| Uranium (U)-Total | | | 98.9 | | % | | 80-120 | 12-APR-21 |
| Vanadium (V)-Total | | | 104.7 | | % | | 80-120 | 12-APR-21 |
| Zinc (Zn)-Total | | | 103.2 | | % | | 80-120 | 12-APR-21 |
| Zirconium (Zr)-Total | | | 92.9 | | % | | 80-120 | 12-APR-21 |
| **WG3515902-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 12-APR-21 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |
| Beryllium (Be)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 12-APR-21 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 12-APR-21 |
| Cadmium (Cd)-Total | | | <0.000005C | | mg/L | | 0.000005 | 12-APR-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 12-APR-21 |
| Cesium (Cs)-Total | | | <0.000010 | | mg/L | | 0.00001 | 12-APR-21 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5422707** | | | | | | | | |
| **WG3515902-1 MB** | | | | | | | | |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 12-APR-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 12-APR-21 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 12-APR-21 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 12-APR-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 12-APR-21 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 12-APR-21 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 12-APR-21 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 12-APR-21 |
| Phosphorus (P)-Total | | | <0.030 | | mg/L | | 0.03 | 12-APR-21 |
| Rubidium (Rb)-Total | | | <0.00020 | | mg/L | | 0.0002 | 12-APR-21 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 12-APR-21 |
| Silicon (Si)-Total | | | <0.10 | | mg/L | | 0.1 | 12-APR-21 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 12-APR-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 12-APR-21 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 12-APR-21 |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 12-APR-21 |
| Tellurium (Te)-Total | | | <0.00020 | | mg/L | | 0.0002 | 12-APR-21 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 12-APR-21 |
| Thorium (Th)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 12-APR-21 |
| Tungsten (W)-Total | | | <0.00010 | | mg/L | | 0.0001 | 12-APR-21 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 12-APR-21 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 12-APR-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 12-APR-21 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 12-APR-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5423517** | | | | | | | | |
| **WG3517438-2 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 99.8 | | % | | 85-115 | 13-APR-21 |
| **WG3517438-1 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 13-APR-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5421966** | | | | | | | | |
| **WG3515153-2 LCS** | | | | | | | | |
| Nitrite (as N) | | | 100.2 | | % | | 90-110 | 08-APR-21 |
| **WG3515153-1 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 08-APR-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5421966** | | | | | | | | |
| **WG3515153-2 LCS** | | | | | | | | |
| Nitrate (as N) | | | 100.9 | | % | | 90-110 | 08-APR-21 |
| **WG3515153-1 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 08-APR-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5423287** | | | | | | | | |
| **WG3517641-2 LCS** | | | | | | | | |
| Oil and Grease | | | 86.3 | | % | | 70-130 | 13-APR-21 |
| **WG3517641-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 13-APR-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5426464** | | | | | | | | |
| **WG3518337-10 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 97.7 | | % | | 80-120 | 15-APR-21 |
| **WG3518337-9 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 15-APR-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5431417** | | | | | | | | |
| **WG3517635-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 105.3 | | % | | 50-150 | 16-APR-21 |
| 2-Methylnaphthalene | | | 102.4 | | % | | 50-150 | 16-APR-21 |
| Acenaphthene | | | 105.0 | | % | | 50-150 | 16-APR-21 |
| Acenaphthylene | | | 101.9 | | % | | 50-150 | 16-APR-21 |
| Anthracene | | | 108.8 | | % | | 50-150 | 16-APR-21 |
| Acridine | | | 101.7 | | % | | 50-150 | 16-APR-21 |
| Benzo(a)anthracene | | | 116.7 | | % | | 50-150 | 16-APR-21 |
| Benzo(a)pyrene | | | 113.0 | | % | | 50-150 | 16-APR-21 |
| Benzo(b&j)fluoranthene | | | 105.7 | | % | | 50-150 | 16-APR-21 |
| Benzo(g,h,i)perylene | | | 84.0 | | % | | 50-150 | 16-APR-21 |
| Benzo(k)fluoranthene | | | 108.5 | | % | | 50-150 | 16-APR-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5431417** | | | | | | | | |
| **WG3517635-2 LCS** | | | | | | | | |
| Chrysene | | | 117.2 | | % | | 50-150 | 16-APR-21 |
| Dibenz(a,h)anthracene | | | 83.8 | | % | | 50-150 | 16-APR-21 |
| Fluoranthene | | | 113.5 | | % | | 50-150 | 16-APR-21 |
| Fluorene | | | 108.6 | | % | | 50-150 | 16-APR-21 |
| Indeno(1,2,3-cd)pyrene | | | 92.8 | | % | | 50-150 | 16-APR-21 |
| Naphthalene | | | 103.6 | | % | | 50-150 | 16-APR-21 |
| Phenanthrene | | | 115.5 | | % | | 50-150 | 16-APR-21 |
| Pyrene | | | 113.4 | | % | | 50-150 | 16-APR-21 |
| Quinoline | | | 112.6 | | % | | 50-150 | 16-APR-21 |
| **WG3517635-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| 2-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 16-APR-21 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 16-APR-21 |
| Benzo(a)pyrene | | | <0.000005 | | mg/L | | 0.000005 | 16-APR-21 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 16-APR-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 16-APR-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| Dibenz(a,h)anthracene | | | <0.000005 | | mg/L | | 0.000005 | 16-APR-21 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 16-APR-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 16-APR-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 16-APR-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 16-APR-21 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 16-APR-21 |
| Surrogate: Naphthalene d8 | | | 100.3 | | % | | 50-150 | 16-APR-21 |
| Surrogate: Phenanthrene d10 | | | 93.7 | | % | | 50-150 | 16-APR-21 |
| Surrogate: Chrysene d12 | | | 88.1 | | % | | 50-150 | 16-APR-21 |
| Surrogate: Acenaphthene d10 | | | 91.4 | | % | | 50-150 | 16-APR-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5431417** | | | | | | | | |
| **WG3517635-1 MB** | | | | | | | | |
| Surrogate: Acridine d9 | | | 81.3 | | % | | 50-150 | 16-APR-21 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5422179** | | | | | | | | |
| **WG3516396-7 LCS** | | | | | | | | |
| pH | | | 7.02 | | pH units | | 6.9-7.1 | 09-APR-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5424383** | | | | | | | | |
| **WG3518141-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 88.6 | | % | | 85-115 | 14-APR-21 |
| **WG3518141-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 14-APR-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5421966** | | | | | | | | |
| **WG3515153-2 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 102.1 | | % | | 90-110 | 08-APR-21 |
| **WG3515153-1 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 08-APR-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5423420** | | | | | | | | |
| **WG3515212-5 LCS** | | | | | | | | |
| Total Suspended Solids | | | 89.8 | | % | | 85-115 | 09-APR-21 |
| **WG3515212-4 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 09-APR-21 |
| **TC,EC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5421707** | | | | | | | | |
| **WG3515236-2 DUP** | | **L2574525-1** | | | | | | |
| Total Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 08-APR-21 |
| Escherichia Coli | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 08-APR-21 |
| **WG3515236-1 MB** | | | | | | | | |
| Total Coliforms | | | <1 | | MPN/100mL | | 1 | 08-APR-21 |
| Escherichia Coli | | | <1 | | MPN/100mL | | 1 | 08-APR-21 |

**Legend:**

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

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

# Quality Control Report



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 06-APR-21 10:30 | 09-APR-21 12:00 | 0.25 | 73 | hours | EHTR-FM |
| **Bacteriological Tests** | | | | | | | |
| Fecal coliforms, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 06-APR-21 10:30 | 08-APR-21 18:35 | 30 | 56 | hours | EHTR |
| Total and E. coli, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 06-APR-21 10:30 | 08-APR-21 18:35 | 30 | 56 | hours | EHTR |
| **Aggregate Organics** | | | | | | | |
| Biochemical Oxygen Demand (BOD) | | | | | | | |
| | 1 | 06-APR-21 10:30 | 09-APR-21 07:00 | 48 | 68 | hours | EHTR |
| Carbonaceous BOD | | | | | | | |
| | 1 | 06-APR-21 10:30 | 09-APR-21 07:00 | 48 | 68 | hours | EHTR |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2574525 were received on 08-APR-21 11:55.

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

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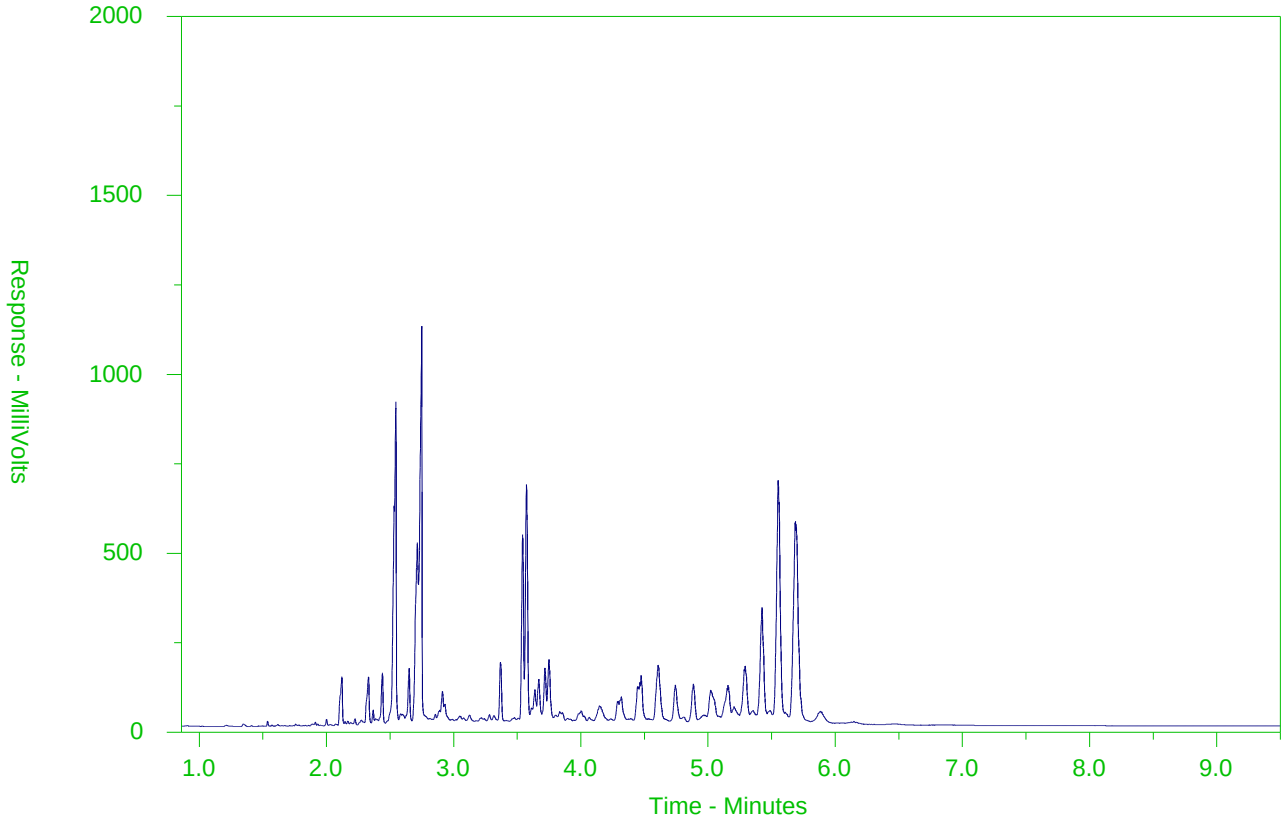
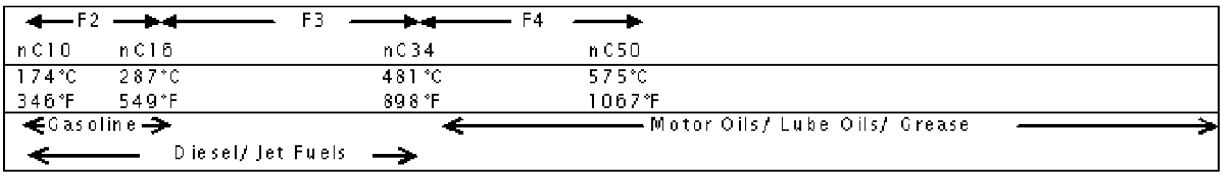
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2574525-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT




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

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

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

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

ALS Environmental

# Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

L2574525-COFC

| Report To | | Report Format / Distribution | | Service Requested (Rush for routine analysis subject to availability) |
|---|---|---|---|---|
| Company: | Nunavut CGS - Rankin Inlet (WB133) | ☑ Standard ☐ Other | | ◉ Regular (Standard Turnaround Times - Business Days) |
| Contact: | SIMON DOIRON | ☑ PDF ☐ Excel ☐ Digital ☐ Fax | | ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT |
| Address: | Box 490 | Email 1: | sdoiron@gov.nu.ca | ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT |
| | Rankin Inlet , NU, X0C 0G0 | Email 2: | mlusty@gov.nu.ca | ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT |
| Phone: | 867-645-8155 Cell#: | Email 3: | | Analysis Request |
| Invoice To | Same as Report ? ☑ Yes ☐ No | Client / Project Information | | Please indicate below Filtered, Preserved or both (F, P, F/P) |
| Hardcopy of Invoice with Report? | ☐ Yes ☐ No | Job #: | Rankin Inlet WWTP- Monthly Effluent | |
| Company: | | PO / AFE: | | |
| Contact: | | LSD: | | |
| Address: | | | | |
| Phone: | Fax: | Quote #: | | |
| Lab Work Order # (lab use only) | | ALS Contact: | Craig Riddell | Sampled By: Simon Doiron |

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH,PANH-WP | NUNAVUT-WW-GRP1-WP | F-IC-N-WP | TC,EC-QT97-WP | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | Apr. 6/21 | 10:30 AM | Waste | X | X | X | X | X | 15 |
| | - RECEIVED 16 BOTTLES | | | | | | | | | |
| | NMX APR 8/21 | | | | | | | | | |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | |
| | So all ICP-MS metals report. | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No? If Yes add SIF |
| Bill Ross | 06/04/21 | 10:30 AM | NMX | APR 8/21 | ~~1130~~ | 9.5 °C | | Apr 08/21 | | |

1(55

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

Date Received: 12-MAY-21
Report Date: 25-MAY-21 12:03 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2586954

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample Details/Parameters | Result | Qualifier* | D.L. | Units | Extracted | Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| L2586954-1 RANKIN INLET WWTP EFFLUENT | | | | | | | |
| Sampled By: CLIENT on 11-MAY-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **BTEX plus F1-F4** | | | | | | | |
| **BTX plus F1 by GCMS** | | | | | | | |
| Benzene | <0.00050 | | 0.00050 | mg/L | | 18-MAY-21 | R5460673 |
| Toluene | <0.0010 | | 0.0010 | mg/L | | 18-MAY-21 | R5460673 |
| Ethyl benzene | <0.00050 | | 0.00050 | mg/L | | 18-MAY-21 | R5460673 |
| o-Xylene | <0.00050 | | 0.00050 | mg/L | | 18-MAY-21 | R5460673 |
| m+p-Xylenes | <0.00040 | | 0.00040 | mg/L | | 18-MAY-21 | R5460673 |
| F1 (C6-C10) | <0.10 | | 0.10 | mg/L | | 18-MAY-21 | R5460673 |
| Surrogate: 4-Bromofluorobenzene (SS) | 84.0 | | 70-130 | % | | 18-MAY-21 | R5460673 |
| **CCME PHC F2-F4 in Water** | | | | | | | |
| F2 (C10-C16) | 0.40 | | 0.10 | mg/L | 14-MAY-21 | 14-MAY-21 | R5458192 |
| F3 (C16-C34) | 8.76 | | 0.25 | mg/L | 14-MAY-21 | 14-MAY-21 | R5458192 |
| F4 (C34-C50) | 3.34 | | 0.25 | mg/L | 14-MAY-21 | 14-MAY-21 | R5458192 |
| Surrogate: 2-Bromobenzotrifluoride | 103.8 | | 60-140 | % | 14-MAY-21 | 14-MAY-21 | R5458192 |
| **CCME Total Hydrocarbons** | | | | | | | |
| F1-BTEX | <0.10 | | 0.10 | mg/L | | 20-MAY-21 | |
| F2-Naphth | 0.40 | | 0.10 | mg/L | | 20-MAY-21 | |
| F3-PAH | 8.76 | | 0.25 | mg/L | | 20-MAY-21 | |
| Total Hydrocarbons (C6-C50) | 12.5 | | 0.38 | mg/L | | 20-MAY-21 | |
| **Sum of Xylene Isomer Concentrations** | | | | | | | |
| Xylenes (Total) | <0.00064 | | 0.00064 | mg/L | | 20-MAY-21 | |
| **Miscellaneous Parameters** | | | | | | | |
| Fluoride (F) | 0.084 | | 0.020 | mg/L | | 13-MAY-21 | R5458088 |
| **Total and E. coli, 1:10 dilution by QT97** | | | | | | | |
| Total Coliforms | >24200 | | 10 | MPN/100mL | | 12-MAY-21 | R5457642 |
| Escherichia Coli | >24200 | | 10 | MPN/100mL | | 12-MAY-21 | R5457642 |
| **CCME PAHs in mg/L** | | | | | | | |
| 1-Methylnaphthalene | 0.000043 | | 0.000020 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| 2-Methylnaphthalene | 0.000065 | | 0.000020 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Acenaphthene | <0.000020 | | 0.000020 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Acenaphthylene | <0.000020 | | 0.000020 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Anthracene | 0.000013 | | 0.000010 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Acridine | <0.000020 | | 0.000020 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Benzo(a)anthracene | <0.000010 | | 0.000010 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Benzo(a)pyrene | <0.0000050 | | 0.0000050 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Benzo(b&j)fluoranthene | <0.000010 | | 0.000010 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Benzo(g,h,i)perylene | <0.000020 | | 0.000020 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Benzo(k)fluoranthene | <0.000010 | | 0.000010 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Chrysene | <0.000020 | | 0.000020 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Dibenz(a,h)anthracene | <0.0000050 | | 0.0000050 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Fluoranthene | <0.000020 | | 0.000020 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Fluorene | 0.000060 | R | 0.000020 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Indeno(1,2,3-cd)pyrene | 0.000116 | | 0.000010 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Naphthalene | <0.000110 | RRR | 0.00011 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Phenanthrene | <0.000050 | | 0.000050 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Pyrene | <0.000032 | DLM | 0.000032 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Quinoline | <0.000060 | RRR | 0.000060 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| B(a)P Total Potency Equivalent | <0.000030 | | 0.000030 | mg/L | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Surrogate: Naphthalene d8 | 153.3 | SHMI | 50-150 | % | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Surrogate: Phenanthrene d10 | 92.2 | | 50-150 | % | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Surrogate: Chrysene d12 | 92.0 | | 50-150 | % | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Surrogate: Acridine d9 | 99.5 | | 50-150 | % | 19-MAY-21 | 20-MAY-21 | R5459844 |
| Note: RRR: Surrogate recovery is outside ALS | | | | | | | |

* 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 |
|---|---|---|---|---|---|---|---|
| L2586954-1 RANKIN INLET WWTP EFFLUENT | | | | | | | |
| Sampled By: CLIENT on 11-MAY-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| DQO limits. Detection limits for affected compounds have been raised accordingly. RRR: Detection limit raised due to high analyte recovery in the method blank. | | | | | | | |
| **Nunavut WW Group 1** | | | | | | | |
| **Alkalinity, Bicarbonate** | | | | | | | |
| Bicarbonate (HCO3) | 149 | | 1.2 | mg/L | | 19-MAY-21 | |
| **Alkalinity, Carbonate** | | | | | | | |
| Carbonate (CO3) | <0.60 | | 0.60 | mg/L | | 19-MAY-21 | |
| **Alkalinity, Hydroxide** | | | | | | | |
| Hydroxide (OH) | <0.34 | | 0.34 | mg/L | | 19-MAY-21 | |
| **Alkalinity, Total (as CaCO3)** | | | | | | | |
| Alkalinity, Total (as CaCO3) | 123 | | 1.0 | mg/L | | 18-MAY-21 | R5459698 |
| **Ammonia by colour** | | | | | | | |
| Ammonia, Total (as N) | 8.7 | | 1.0 | mg/L | | 14-MAY-21 | R5458492 |
| **Biochemical Oxygen Demand (BOD)** | | | | | | | |
| Biochemical Oxygen Demand | 109 | | 20 | mg/L | | 13-MAY-21 | R5459176 |
| **Carbonaceous BOD** | | | | | | | |
| BOD Carbonaceous | 90 | | 20 | mg/L | | 13-MAY-21 | R5459176 |
| **Chloride in Water by IC** | | | | | | | |
| Chloride (Cl) | 73.3 | | 0.50 | mg/L | | 13-MAY-21 | R5458088 |
| **Conductivity** | | | | | | | |
| Conductivity | 553 | | 1.0 | umhos/cm | | 18-MAY-21 | R5459698 |
| **Fecal coliforms, 1:10 dilution by QT97** | | | | | | | |
| Fecal Coliforms | >24200 | | 10 | MPN/100mL | | 13-MAY-21 | R5457647 |
| **Hardness Calculated** | | | | | | | |
| Hardness (as CaCO3) | 121 | HTC | 0.20 | mg/L | | 18-MAY-21 | |
| **Mercury Total** | | | | | | | |
| Mercury (Hg)-Total | 0.0000115 | | 0.0000050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5458828 |
| **Nitrate in Water by IC** | | | | | | | |
| Nitrate (as N) | <0.020 | | 0.020 | mg/L | | 13-MAY-21 | R5458088 |
| **Nitrate+Nitrite** | | | | | | | |
| Nitrate and Nitrite as N | <0.070 | | 0.070 | mg/L | | 17-MAY-21 | |
| **Nitrite in Water by IC** | | | | | | | |
| Nitrite (as N) | <0.010 | | 0.010 | mg/L | | 13-MAY-21 | R5458088 |
| **Oil & Grease - Gravimetric** | | | | | | | |
| Oil and Grease | 22.3 | | 5.0 | mg/L | | 18-MAY-21 | R5460091 |
| **Phenol (4AAP)** | | | | | | | |
| Phenols (4AAP) | <0.010 | DLM | 0.010 | mg/L | | 18-MAY-21 | R5459498 |
| **Phosphorus, Total** | | | | | | | |
| Phosphorus (P)-Total | 2.73 | | 0.030 | mg/L | | 25-MAY-21 | R5465976 |
| **Sulfate in Water by IC** | | | | | | | |
| Sulfate (SO4) | 34.3 | | 0.30 | mg/L | | 13-MAY-21 | R5458088 |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Aluminum (Al)-Total | 0.529 | | 0.0030 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Antimony (Sb)-Total | 0.00033 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Arsenic (As)-Total | 0.00161 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Barium (Ba)-Total | 0.0440 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Beryllium (Be)-Total | <0.00010 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Bismuth (Bi)-Total | 0.00197 | | 0.000050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Boron (B)-Total | 0.080 | | 0.010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Cadmium (Cd)-Total | 0.0000854 | | 0.0000050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Calcium (Ca)-Total | 34.0 | | 0.050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Cesium (Cs)-Total | 0.000188 | | 0.000010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |

* 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 |
|---|---|---|---|---|---|---|---|
| L2586954-1 RANKIN INLET WWTP EFFLUENT | | | | | | | |
| Sampled By: CLIENT on 11-MAY-21 @ 10:30 | | | | | | | |
| Matrix: WASTE | | | | | | | |
| **Total Metals in Water by CRC ICPMS** | | | | | | | |
| Chromium (Cr)-Total | 0.00283 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Cobalt (Co)-Total | 0.00055 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Copper (Cu)-Total | 0.246 | | 0.00050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Iron (Fe)-Total | 2.41 | | 0.010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Lead (Pb)-Total | 0.00121 | | 0.000050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Lithium (Li)-Total | 0.0040 | | 0.0010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Magnesium (Mg)-Total | 8.79 | | 0.0050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Manganese (Mn)-Total | 0.0365 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Molybdenum (Mo)-Total | 0.00120 | | 0.000050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Nickel (Ni)-Total | 0.00421 | | 0.00050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Potassium (K)-Total | 9.69 | | 0.050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Phosphorus (P)-Total | 3.07 | | 0.030 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Rubidium (Rb)-Total | 0.0111 | | 0.00020 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Selenium (Se)-Total | 0.000335 | | 0.000050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Silicon (Si)-Total | 0.85 | | 0.10 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Silver (Ag)-Total | 0.000056 | | 0.000010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Sodium (Na)-Total | 40.8 | | 0.050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Strontium (Sr)-Total | 0.163 | | 0.00020 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Sulfur (S)-Total | 13.8 | | 0.50 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Tellurium (Te)-Total | <0.00020 | | 0.00020 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Thallium (Tl)-Total | 0.000010 | | 0.000010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Thorium (Th)-Total | <0.00010 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Tin (Sn)-Total | 0.00106 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Titanium (Ti)-Total | 0.0190 | | 0.00030 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Tungsten (W)-Total | <0.00010 | | 0.00010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Uranium (U)-Total | 0.000193 | | 0.000010 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Vanadium (V)-Total | 0.00143 | | 0.00050 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Zinc (Zn)-Total | 0.136 | | 0.0030 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| Zirconium (Zr)-Total | 0.00066 | | 0.00020 | mg/L | 17-MAY-21 | 17-MAY-21 | R5459012 |
| **Total Organic Carbon by Combustion** | | | | | | | |
| Total Organic Carbon | 62.3 | | 5.0 | mg/L | | 14-MAY-21 | R5458764 |
| **Total Suspended Solids** | | | | | | | |
| Total Suspended Solids | 122 | | 3.0 | mg/L | | 17-MAY-21 | R5459111 |
| **pH** | | | | | | | |
| pH | 7.15 | | 0.10 | pH units | | 14-MAY-21 | R5458424 |

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

# Reference Information

**Sample Parameter Qualifier Key:**

| Qualifier | Description |
|---|---|
| B | Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable. |
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| R | The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum. |
| RRR | Refer to Report Remarks for issues regarding this analysis |
| SHMI | Surrogate recovery was outside ALS DQO (High) due to Matrix Interference. |

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| ALK-CO3CO3-CALC-WP | Water | Alkalinity, Carbonate | CALCULATION |
| The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L. | | | |
| ALK-HCO3HCO3-CALC-WP | Water | Alkalinity, Bicarbonate | CALCULATION |
| The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L | | | |
| ALK-OHOH-CALC-WP | Water | Alkalinity, Hydroxide | CALCULATION |
| The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L. | | | |
| ALK-TITR-WP | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |
| The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically. | | | |
| BOD-CBOD-WP | Water | Carbonaceous BOD | APHA 5210 B |
| Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO. | | | |
| BOD-WP | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |
| Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO. | | | |
| BTEXS+F1-HSMS-WP | Water | BTX plus F1 by GCMS | EPA 8260C / EPA 5021A |
| The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection. | | | |
| C-TOC-HTC-WP | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |
| Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer. | | | |
| CL-IC-N-WP | Water | Chloride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| EC-SCREEN-WP | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |
| Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc | | | |
| EC-WP | Water | Conductivity | APHA 2510B |
| Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes. | | | |
| F-IC-N-WP | Water | Fluoride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| F1-F4-CALC-WP | Water | CCME Total Hydrocarbons | CCME CWS-PHC, Pub #1310, Dec 2001-L |

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

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

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

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

| | | | |
|---|---|---|---|
| HARDNESS-CALC-WP | Water | Hardness Calculated | APHA 2340B |

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

| | | | |
|---|---|---|---|
| NO2+NO3-CALC-WP | Water | Nitrate+Nitrite | CALCULATION |
| NO2-IC-N-WP | Water | Nitrite in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| NO3-IC-N-WP | Water | Nitrate in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| OG-GRAV-WP | Water | Oil & Grease - Gravimetric | EPA 1664 (modified) |

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

| | | | |
|---|---|---|---|
| PAH-CCME-PPM-WT | Water | CCME PAHs in mg/L | EPA 3511/8270D (mod) |

# Reference Information

**Test Method References:**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| | | PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter. | |
| PH-WP | Water | pH | APHA 4500H |
| | | The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode. | |
| PHENOLS-4AAP-WT | Water | Phenol (4AAP) | EPA 9066 |
| | | An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically. | |
| SO4-IC-N-WP | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| | | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | |
| SOLIDS-TOTSUS-WP | Water | Total Suspended Solids | APHA 2540 D (modified) |
| | | Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C. | |
| TC,EC10-QT97-WP | Water | Total and E. coli, 1:10 dilution by QT97 | APHA 9223B QT97 |
| | | Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table. | |
| XYLENES-SUM-CALC-WP | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |
| | | Total xylenes represents the sum of o-xylene and m&p-xylene. | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location |
|---|---|
| WP | ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA |
| WT | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA |

**Chain of Custody Numbers:**

**GLOSSARY OF REPORT TERMS**

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*
*mg/kg - milligrams per kilogram based on dry weight of sample*
*mg/kg wwt - milligrams per kilogram based on wet weight of sample*
*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*
*mg/L - unit of concentration based on volume, parts per million.*
*< - Less than.*
*D.L. - The reporting limit.*
*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*
*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*
*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*

# Quality Control Report

Workorder: L2586954 Report Date: 25-MAY-21 

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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5459698** | | | | | | | | |
| **WG3537444-4 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 102.2 | | % | | 85-115 | 18-MAY-21 |
| **WG3537444-1 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 18-MAY-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5459176** | | | | | | | | |
| **WG3533853-2 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 99.7 | | % | | 85-115 | 13-MAY-21 |
| **WG3533853-1 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 13-MAY-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5459176** | | | | | | | | |
| **WG3533853-2 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 105.6 | | % | | 85-115 | 13-MAY-21 |
| **WG3533853-1 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 13-MAY-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5460673** | | | | | | | | |
| **WG3537105-2 LCS** | | | | | | | | |
| Benzene | | | 85.4 | | % | | 70-130 | 18-MAY-21 |
| Toluene | | | 86.2 | | % | | 70-130 | 18-MAY-21 |
| Ethyl benzene | | | 93.6 | | % | | 70-130 | 18-MAY-21 |
| o-Xylene | | | 92.5 | | % | | 70-130 | 18-MAY-21 |
| m+p-Xylenes | | | 89.1 | | % | | 70-130 | 18-MAY-21 |
| **WG3537105-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 88.5 | | % | | 70-130 | 18-MAY-21 |
| **WG3537105-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 18-MAY-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 18-MAY-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 18-MAY-21 |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 18-MAY-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 18-MAY-21 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 18-MAY-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 85.1 | | % | | 70-130 | 18-MAY-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5458764** | | | | | | | | |
| **WG3536181-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 101.2 | | % | | 80-120 | 14-MAY-21 |
| **WG3536181-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 14-MAY-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5458088** | | | | | | | | |
| **WG3534177-3 DUP** | | **L2586954-1** | | | | | | |
| Chloride (Cl) | | 73.3 | 72.8 | | mg/L | 0.6 | 20 | 13-MAY-21 |
| **WG3534177-2 LCS** | | | | | | | | |
| Chloride (Cl) | | | 99.4 | | % | | 90-110 | 13-MAY-21 |
| **WG3534177-1 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 13-MAY-21 |
| **WG3534177-4 MS** | | **L2586954-1** | | | | | | |
| Chloride (Cl) | | | 106.2 | | % | | 75-125 | 13-MAY-21 |
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5459698** | | | | | | | | |
| **WG3537444-3 LCS** | | | | | | | | |
| Conductivity | | | 99.9 | | % | | 90-110 | 18-MAY-21 |
| **WG3537444-1 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 18-MAY-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5458088** | | | | | | | | |
| **WG3534177-3 DUP** | | **L2586954-1** | | | | | | |
| Fluoride (F) | | 0.084 | 0.083 | | mg/L | 0.9 | 20 | 13-MAY-21 |
| **WG3534177-2 LCS** | | | | | | | | |
| Fluoride (F) | | | 100.6 | | % | | 90-110 | 13-MAY-21 |
| **WG3534177-1 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 13-MAY-21 |
| **WG3534177-4 MS** | | **L2586954-1** | | | | | | |
| Fluoride (F) | | | 108.0 | | % | | 75-125 | 13-MAY-21 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5458192** | | | | | | | | |
| **WG3534997-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 101.3 | | % | | 70-130 | 14-MAY-21 |
| F3 (C16-C34) | | | 95.0 | | % | | 70-130 | 14-MAY-21 |
| F4 (C34-C50) | | | 103.2 | | % | | 70-130 | 14-MAY-21 |
| **WG3534997-1 MB** | | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5458192** | | | | | | | | |
| **WG3534997-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 14-MAY-21 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 14-MAY-21 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 14-MAY-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 101.5 | | % | | 60-140 | 14-MAY-21 |
| **FC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5457647** | | | | | | | | |
| **WG3533656-2 DUP** | | **L2586954-1** | | | | | | |
| Fecal Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 13-MAY-21 |
| **WG3533656-1 MB** | | | | | | | | |
| Fecal Coliforms | | | <1 | | MPN/100mL | | 1 | 13-MAY-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5458828** | | | | | | | | |
| **WG3537035-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 100.3 | | % | | 80-120 | 17-MAY-21 |
| **WG3537035-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005 | | mg/L | | 0.000005 | 17-MAY-21 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5459012** | | | | | | | | |
| **WG3535278-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 103.5 | | % | | 80-120 | 17-MAY-21 |
| Antimony (Sb)-Total | | | 109.7 | | % | | 80-120 | 17-MAY-21 |
| Arsenic (As)-Total | | | 106.6 | | % | | 80-120 | 17-MAY-21 |
| Barium (Ba)-Total | | | 104.6 | | % | | 80-120 | 17-MAY-21 |
| Beryllium (Be)-Total | | | 98.9 | | % | | 80-120 | 17-MAY-21 |
| Bismuth (Bi)-Total | | | 104.3 | | % | | 80-120 | 17-MAY-21 |
| Boron (B)-Total | | | 96.2 | | % | | 80-120 | 17-MAY-21 |
| Cadmium (Cd)-Total | | | 102.6 | | % | | 80-120 | 17-MAY-21 |
| Calcium (Ca)-Total | | | 102.7 | | % | | 80-120 | 17-MAY-21 |
| Cesium (Cs)-Total | | | 107.6 | | % | | 80-120 | 17-MAY-21 |
| Chromium (Cr)-Total | | | 103.1 | | % | | 80-120 | 17-MAY-21 |
| Cobalt (Co)-Total | | | 103.2 | | % | | 80-120 | 17-MAY-21 |
| Copper (Cu)-Total | | | 105.2 | | % | | 80-120 | 17-MAY-21 |
| Iron (Fe)-Total | | | 97.4 | | % | | 80-120 | 17-MAY-21 |
| Lead (Pb)-Total | | | 106.2 | | % | | 80-120 | 17-MAY-21 |
| Lithium (Li)-Total | | | 91.7 | | % | | 80-120 | 17-MAY-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5459012** | | | | | | | | |
| **WG3535278-2 LCS** | | | | | | | | |
| Magnesium (Mg)-Total | | | 108.2 | | % | | 80-120 | 17-MAY-21 |
| Manganese (Mn)-Total | | | 104.1 | | % | | 80-120 | 17-MAY-21 |
| Molybdenum (Mo)-Total | | | 107.5 | | % | | 80-120 | 17-MAY-21 |
| Nickel (Ni)-Total | | | 103.5 | | % | | 80-120 | 17-MAY-21 |
| Potassium (K)-Total | | | 103.7 | | % | | 80-120 | 17-MAY-21 |
| Phosphorus (P)-Total | | | 105.5 | | % | | 80-120 | 17-MAY-21 |
| Rubidium (Rb)-Total | | | 104.9 | | % | | 80-120 | 17-MAY-21 |
| Selenium (Se)-Total | | | 103.2 | | % | | 80-120 | 17-MAY-21 |
| Silicon (Si)-Total | | | 96.7 | | % | | 80-120 | 17-MAY-21 |
| Silver (Ag)-Total | | | 106.5 | | % | | 80-120 | 17-MAY-21 |
| Sodium (Na)-Total | | | 99.4 | | % | | 80-120 | 17-MAY-21 |
| Strontium (Sr)-Total | | | 105.4 | | % | | 80-120 | 17-MAY-21 |
| Sulfur (S)-Total | | | 87.3 | | % | | 80-120 | 17-MAY-21 |
| Tellurium (Te)-Total | | | 104.4 | | % | | 80-120 | 17-MAY-21 |
| Thallium (Tl)-Total | | | 104.8 | | % | | 80-120 | 17-MAY-21 |
| Thorium (Th)-Total | | | 103.5 | | % | | 80-120 | 17-MAY-21 |
| Tin (Sn)-Total | | | 103.2 | | % | | 80-120 | 17-MAY-21 |
| Titanium (Ti)-Total | | | 99.0 | | % | | 80-120 | 17-MAY-21 |
| Tungsten (W)-Total | | | 104.7 | | % | | 80-120 | 17-MAY-21 |
| Uranium (U)-Total | | | 109.1 | | % | | 80-120 | 17-MAY-21 |
| Vanadium (V)-Total | | | 104.8 | | % | | 80-120 | 17-MAY-21 |
| Zinc (Zn)-Total | | | 106.1 | | % | | 80-120 | 17-MAY-21 |
| Zirconium (Zr)-Total | | | 100.6 | | % | | 80-120 | 17-MAY-21 |
| **WG3535278-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 17-MAY-21 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Beryllium (Be)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 17-MAY-21 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 17-MAY-21 |
| Cadmium (Cd)-Total | | | <0.000005( | | mg/L | | 0.000005 | 17-MAY-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 17-MAY-21 |
| Cesium (Cs)-Total | | | <0.000010 | | mg/L | | 0.00001 | 17-MAY-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5459012** | | | | | | | | |
| **WG3535278-1 MB** | | | | | | | | |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 17-MAY-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 17-MAY-21 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 17-MAY-21 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 17-MAY-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 17-MAY-21 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 17-MAY-21 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 17-MAY-21 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 17-MAY-21 |
| Phosphorus (P)-Total | | | <0.030 | | mg/L | | 0.03 | 17-MAY-21 |
| Rubidium (Rb)-Total | | | <0.00020 | | mg/L | | 0.0002 | 17-MAY-21 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 17-MAY-21 |
| Silicon (Si)-Total | | | <0.10 | | mg/L | | 0.1 | 17-MAY-21 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 17-MAY-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 17-MAY-21 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 17-MAY-21 |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 17-MAY-21 |
| Tellurium (Te)-Total | | | <0.00020 | | mg/L | | 0.0002 | 17-MAY-21 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 17-MAY-21 |
| Thorium (Th)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 17-MAY-21 |
| Tungsten (W)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-MAY-21 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 17-MAY-21 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 17-MAY-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 17-MAY-21 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 17-MAY-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5458492** | | | | | | | | |
| **WG3535881-2 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 100.8 | | % | | 85-115 | 14-MAY-21 |
| **WG3535881-1 MB** | | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5458492** | | | | | | | | |
| **WG3535881-1 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 14-MAY-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5458088** | | | | | | | | |
| **WG3534177-3 DUP** | | **L2586954-1** | | | | | | |
| Nitrite (as N) | | <0.010 | <0.010 | RPD-NA | mg/L | N/A | 20 | 13-MAY-21 |
| **WG3534177-2 LCS** | | | | | | | | |
| Nitrite (as N) | | | 103.6 | | % | | 90-110 | 13-MAY-21 |
| **WG3534177-1 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 13-MAY-21 |
| **WG3534177-4 MS** | | **L2586954-1** | | | | | | |
| Nitrite (as N) | | | 104.7 | | % | | 75-125 | 13-MAY-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5458088** | | | | | | | | |
| **WG3534177-3 DUP** | | **L2586954-1** | | | | | | |
| Nitrate (as N) | | <0.020 | <0.020 | RPD-NA | mg/L | N/A | 20 | 13-MAY-21 |
| **WG3534177-2 LCS** | | | | | | | | |
| Nitrate (as N) | | | 100.5 | | % | | 90-110 | 13-MAY-21 |
| **WG3534177-1 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 13-MAY-21 |
| **WG3534177-4 MS** | | **L2586954-1** | | | | | | |
| Nitrate (as N) | | | 109.0 | | % | | 75-125 | 13-MAY-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5460091** | | | | | | | | |
| **WG3537811-2 LCS** | | | | | | | | |
| Oil and Grease | | | 102.3 | | % | | 70-130 | 18-MAY-21 |
| **WG3537811-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 18-MAY-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5465976** | | | | | | | | |
| **WG3539620-10 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 95.8 | | % | | 80-120 | 25-MAY-21 |
| **WG3539620-9 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 25-MAY-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5459844** | | | | | | | | |
| **WG3537282-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 97.1 | | % | | 50-150 | 19-MAY-21 |
| 2-Methylnaphthalene | | | 93.2 | | % | | 50-150 | 19-MAY-21 |
| Acenaphthene | | | 102.2 | | % | | 50-150 | 19-MAY-21 |
| Acenaphthylene | | | 101.7 | | % | | 50-150 | 19-MAY-21 |
| Anthracene | | | 108.1 | | % | | 50-150 | 19-MAY-21 |
| Acridine | | | 110.3 | | % | | 50-150 | 19-MAY-21 |
| Benzo(a)anthracene | | | 117.1 | | % | | 50-150 | 19-MAY-21 |
| Benzo(a)pyrene | | | 106.2 | | % | | 50-150 | 19-MAY-21 |
| Benzo(b&j)fluoranthene | | | 96.8 | | % | | 50-150 | 19-MAY-21 |
| Benzo(g,h,i)perylene | | | 119.5 | | % | | 50-150 | 19-MAY-21 |
| Benzo(k)fluoranthene | | | 103.7 | | % | | 50-150 | 19-MAY-21 |
| Chrysene | | | 117.2 | | % | | 50-150 | 19-MAY-21 |
| Dibenz(a,h)anthracene | | | 119.9 | | % | | 50-150 | 19-MAY-21 |
| Fluoranthene | | | 114.3 | | % | | 50-150 | 19-MAY-21 |
| Fluorene | | | 106.7 | | % | | 50-150 | 19-MAY-21 |
| Indeno(1,2,3-cd)pyrene | | | 132.8 | | % | | 50-150 | 19-MAY-21 |
| Naphthalene | | | 93.5 | | % | | 50-150 | 19-MAY-21 |
| Phenanthrene | | | 115.0 | | % | | 50-150 | 19-MAY-21 |
| Pyrene | | | 112.5 | | % | | 50-150 | 19-MAY-21 |
| Quinoline | | | 132.1 | | % | | 50-150 | 19-MAY-21 |
| **WG3537282-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 19-MAY-21 |
| 2-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 19-MAY-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 19-MAY-21 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 19-MAY-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 19-MAY-21 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 19-MAY-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 19-MAY-21 |
| Benzo(a)pyrene | | | <0.000005( | | mg/L | | 0.000005 | 19-MAY-21 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 19-MAY-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 19-MAY-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 19-MAY-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 19-MAY-21 |
| Dibenz(a,h)anthracene | | | <0.000005( | | mg/L | | 0.000005 | 19-MAY-21 |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5459844** | | | | | | | | |
| **WG3537282-1 MB** | | | | | | | | |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 19-MAY-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 19-MAY-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 19-MAY-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 19-MAY-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 19-MAY-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 19-MAY-21 |
| Quinoline | | | 0.000020 | B | mg/L | | 0.00002 | 19-MAY-21 |
| Surrogate: Naphthalene d8 | | | 70.8 | | % | | 50-150 | 19-MAY-21 |
| Surrogate: Phenanthrene d10 | | | 75.7 | | % | | 50-150 | 19-MAY-21 |
| Surrogate: Chrysene d12 | | | 72.0 | | % | | 50-150 | 19-MAY-21 |
| Surrogate: Acridine d9 | | | 72.7 | | % | | 50-150 | 19-MAY-21 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5458424** | | | | | | | | |
| **WG3535807-12 LCS** | | | | | | | | |
| pH | | | 7.00 | | pH units | | 6.9-7.1 | 14-MAY-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5459498** | | | | | | | | |
| **WG3536339-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 99.1 | | % | | 85-115 | 18-MAY-21 |
| **WG3536339-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 18-MAY-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5458088** | | | | | | | | |
| **WG3534177-3 DUP** | | **L2586954-1** | | | | | | |
| Sulfate (SO4) | | 34.3 | 34.3 | | mg/L | 0.2 | 20 | 13-MAY-21 |
| **WG3534177-2 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 100.8 | | % | | 90-110 | 13-MAY-21 |
| **WG3534177-1 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 13-MAY-21 |
| **WG3534177-4 MS** | | **L2586954-1** | | | | | | |
| Sulfate (SO4) | | | 106.0 | | % | | 75-125 | 13-MAY-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |

# Quality Control Report



| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5459111** | | | | | | | | |
| **WG3535868-2 LCS** | | | | | | | | |
| Total Suspended Solids | | | 109.3 | | % | | 85-115 | 17-MAY-21 |
| **WG3535868-1 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 17-MAY-21 |
| **TC,EC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5457642** | | | | | | | | |
| **WG3533653-2 DUP** | | **L2586954-1** | | | | | | |
| Total Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 12-MAY-21 |
| Escherichia Coli | | >24200 | 24200 | | MPN/100mL | 0.1 | 65 | 12-MAY-21 |
| **WG3533653-1 MB** | | | | | | | | |
| Total Coliforms | | | <1 | | MPN/100mL | | 1 | 12-MAY-21 |
| Escherichia Coli | | | <1 | | MPN/100mL | | 1 | 12-MAY-21 |

**Legend:**

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

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| B | Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

# Quality Control Report



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 11-MAY-21 10:30 | 14-MAY-21 12:00 | 0.25 | 73 | hours | EHTR-FM |
| **Bacteriological Tests** | | | | | | | |
| Fecal coliforms, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 11-MAY-21 10:30 | 13-MAY-21 17:35 | 30 | 55 | hours | EHTL |
| Total and E. coli, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 11-MAY-21 10:30 | 12-MAY-21 17:35 | 30 | 31 | hours | EHTL |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2586954 were received on 12-MAY-21 10:00.

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

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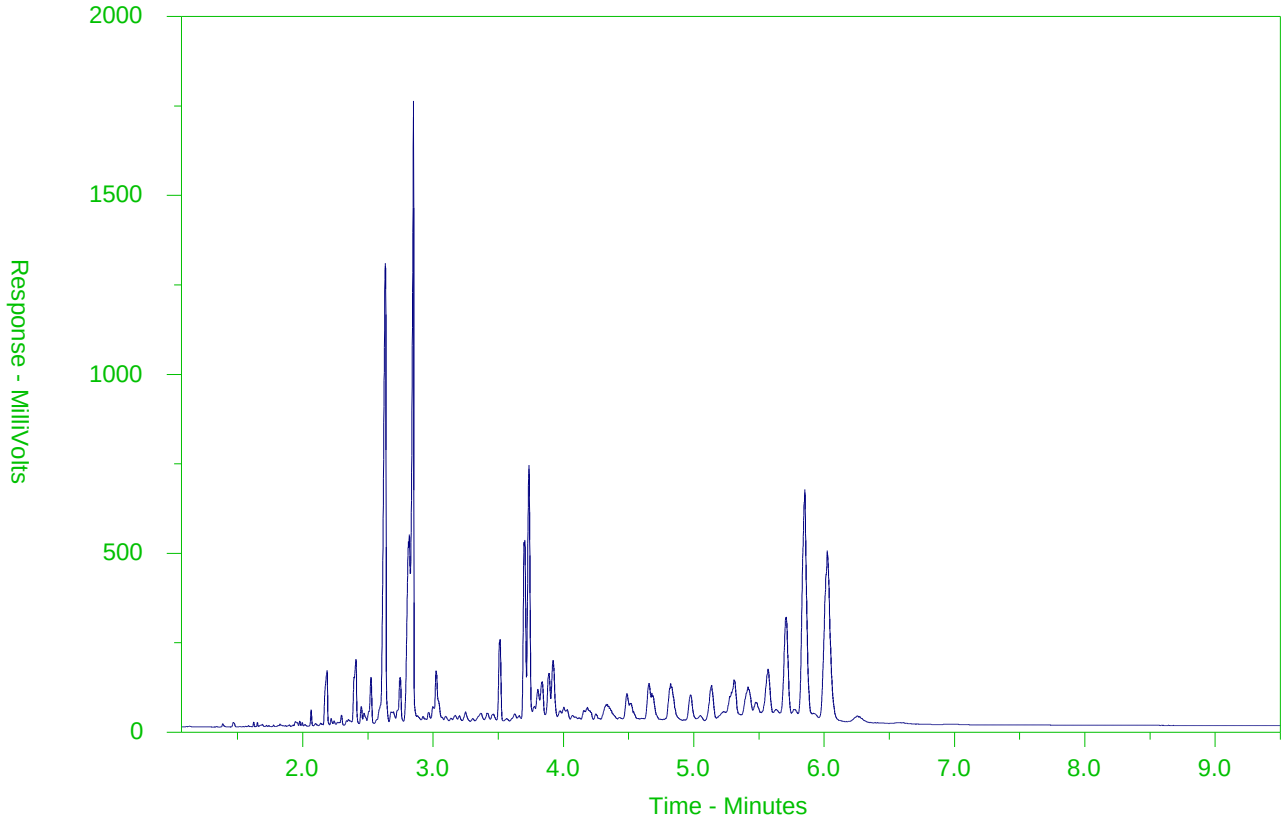
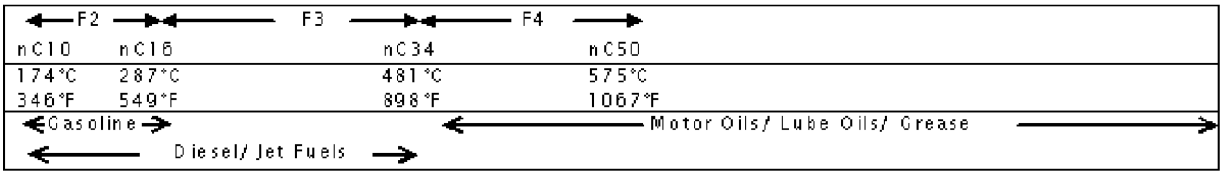
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2586954-1
Client Sample ID: RANKIN INLET WWTP EFFLUENT




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

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

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

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

ALS Environmental

L2586954-COFC

COC #

Page ___ of ___

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

**Service Requested** (Rush for routine analysis subject to availability)

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

**Analysis Request**

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

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH,PANH-WP | NUNAVUT-WW-GRP1-WP | F-IC-N-WP | TC,EC-QT97-WP | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | 11/05/21 | 10:30 Am | Waste | x | x | x | x | x | 15 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | |
| | So all ICP-MS metals report. | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses:**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No? If Yes add SIF |
| Bill Ross | 11/05/21 | 10:30 Am | CL | 05/12/21 | 10am | 10 °C | | May | 2/21 | |

GENF 18.01 Front

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

Date Received: 16-JUN-21
Report Date: 30-JUN-21 12:37 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2602102

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Physical Tests (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2602102-1<br>Sampled Date: 15-JUN-21<br>Sampled Time: 10:30<br>Sample ID: **RANKIN INLET WWTP - EFFLUENT** | |
|---|---|---|---|---|---|
| Conductivity | umhos/cm | - | - | 563 | |
| Hardness (as CaCO3) | mg/L | - | - | 114 | HTC |
| pH | pH units | 7.00-10.5 | - | 7.24 | |
| Total Suspended Solids | mg/L | - | - | 79.6 | |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Anions and Nutrients (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2602102-1<br>Sampled Date: 15-JUN-21<br>Sampled Time: 10:30<br>Sample ID: **RANKIN INLET WWTP - EFFLUENT** |
|---|---|---|---|---|
| Alkalinity, Total (as CaCO3) | mg/L | - | - | 137 |
| Ammonia, Total (as N) | mg/L | - | - | 15.4 |
| Bicarbonate (HCO3) | mg/L | - | - | 167 |
| Carbonate (CO3) | mg/L | - | - | <0.60 |
| Chloride (Cl) | mg/L | 250 | - | 66.8 |
| Fluoride (F) | mg/L | - | 1.5 | 0.167 |
| Hydroxide (OH) | mg/L | - | - | <0.34 |
| Nitrate and Nitrite as N | mg/L | - | 10 | <0.070 |
| Nitrate (as N) | mg/L | - | 10 | <0.020 |
| Nitrite (as N) | mg/L | - | 1 | <0.010 |
| Phosphorus (P)-Total | mg/L | - | - | 3.03 |
| Sulfate (SO4) | mg/L | 500 | - | 30.4 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Organic / Inorganic Carbon (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2602102-1<br>Sampled Date: 15-JUN-21<br>Sampled Time: 10:30<br>Sample ID: **RANKIN INLET WWTP - EFFLUENT** |
|---|---|---|---|---|
| Total Organic Carbon | mg/L | - | - | 72.5 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
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Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Bacteriological Tests (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2602102-1<br>Sampled Date: 15-JUN-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Escherichia Coli | MPN/100mL | - | 0 | >24200 |
| Fecal Coliforms | MPN/100mL | - | - | >24200 |
| Total Coliforms | MPN/100mL | - | 0 | >24200 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Total Metals (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2602102-1<br>Sampled Date: 15-JUN-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | 0.1 | 2.9 | 0.207 |
| Arsenic (As)-Total | mg/L | - | 0.01 | 0.00138 |
| Cadmium (Cd)-Total | mg/L | - | 0.005 | 0.000383 |
| Calcium (Ca)-Total | mg/L | - | - | 32.5 |
| Chromium (Cr)-Total | mg/L | - | 0.05 | 0.00161 |
| Cobalt (Co)-Total | mg/L | - | - | 0.00048 |
| Copper (Cu)-Total | mg/L | 1 | 2 | 0.197 |
| Iron (Fe)-Total | mg/L | 0.3 | - | 0.954 |
| Lead (Pb)-Total | mg/L | - | 0.005 | 0.00137 |
| Magnesium (Mg)-Total | mg/L | - | - | 7.90 |
| Manganese (Mn)-Total | mg/L | 0.02 | 0.12 | 0.0393 |
| Mercury (Hg)-Total | mg/L | - | 0.001 | 0.0000183 |
| Nickel (Ni)-Total | mg/L | - | - | 0.00551 |
| Potassium (K)-Total | mg/L | - | - | 10.9 |
| Sodium (Na)-Total | mg/L | 200 | - | 44.3 |
| Zinc (Zn)-Total | mg/L | 5 | - | 0.123 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
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Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Aggregate Organics (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2602102-1<br>Sampled Date: 15-JUN-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Biochemical Oxygen Demand | mg/L | - | - | 105 |
| BOD Carbonaceous | mg/L | - | - | 85 |
| Oil and Grease | mg/L | - | - | 25.0 |
| Phenols (4AAP) | mg/L | - | - | 0.0275 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Volatile Organic Compounds (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2602102-1<br>Sampled Date: 15-JUN-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Benzene | mg/L | - | 0.005 | 0.00344 |
| Ethyl benzene | mg/L | 0.0016 | 0.14 | 0.00390 |
| Toluene | mg/L | 0.024 | 0.06 | 0.0722 |
| o-Xylene | mg/L | - | - | 0.0185 |
| m+p-Xylenes | mg/L | - | - | 0.0202 |
| Xylenes (Total) | mg/L | 0.02 | 0.09 | 0.0387 |
| F1 (C6-C10) | mg/L | - | - | 0.32 |
| F1-BTEX | mg/L | - | - | 0.20 |
| F2-Naphth | mg/L | - | - | 1.26 |
| F3-PAH | mg/L | - | - | 11.7 |
| Total Hydrocarbons (C6-C50) | mg/L | - | - | 15.9 |
| Surrogate: 4-Bromofluorobenzene (SS) | % | - | - | 106.2 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Hydrocarbons (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2602102-1<br>Sampled Date: 15-JUN-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| F2 (C10-C16) | mg/L | - | - | 1.28 |
| F3 (C16-C34) | mg/L | - | - | 11.7 |
| F4 (C34-C50) | mg/L | - | - | 2.67 |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 78.2 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2602102-1<br>Sampled Date: 15-JUN-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Acenaphthene | mg/L | - | - | 0.000097 |
| Acenaphthylene | mg/L | - | - | 0.000064 R |
| Acridine | mg/L | - | - | 0.000967 |
| Anthracene | mg/L | - | - | 0.000314 |
| Benzo(a)anthracene | mg/L | - | - | 0.000081 |
| Benzo(a)pyrene | mg/L | - | 0.00004 | 0.0000934 |
| Benzo(b&j)fluoranthene | mg/L | - | - | 0.000104 |
| Benzo(g,h,i)perylene | mg/L | - | - | 0.000103 |
| Benzo(k)fluoranthene | mg/L | - | - | 0.000020 |
| Chrysene | mg/L | - | - | 0.000193 |
| Dibenz(a,h)anthracene | mg/L | - | - | 0.0000144 |
| Fluoranthene | mg/L | - | - | 0.000427 |
| Fluorene | mg/L | - | - | 0.000470 |
| Indeno(1,2,3-cd)pyrene | mg/L | - | - | 0.000029 |
| 1-Methylnaphthalene | mg/L | - | - | 0.00606 |
| 2-Methylnaphthalene | mg/L | - | - | 0.0127 DLHC |
| Naphthalene | mg/L | - | - | 0.0193 DLHC |
| Phenanthrene | mg/L | - | - | 0.00114 |
| Pyrene | mg/L | - | - | 0.000753 |
| Quinoline | mg/L | - | - | <0.000830 DLQ |
| Surrogate: Acridine d9 | % | - | - | 112.6 |
| Surrogate: Chrysene d12 | % | - | - | 82.0 |
| Surrogate: Naphthalene d8 | % | - | - | 138.9 |
| Surrogate: Phenanthrene d10 | % | - | - | 89.0 |
| B(a)P Total Potency Equivalent | mg/L | - | - | 0.000134 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| R | The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum. |
| DLQ | Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria. |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| DLHC | Detection Limit Raised: Dilution required due to high concentration of test analyte(s). |

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **ALK-CO3CO3-CALC-WP** | Water | Alkalinity, Carbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

| | | | |
|---|---|---|---|
| **ALK-HCO3HCO3-CALC-WP** | Water | Alkalinity, Bicarbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

| | | | |
|---|---|---|---|
| **ALK-OHOH-CALC-WP** | Water | Alkalinity, Hydroxide | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

| | | | |
|---|---|---|---|
| **ALK-TITR-WP** | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

| | | | |
|---|---|---|---|
| **BOD-CBOD-WP** | Water | Carbonaceous BOD | APHA 5210 B |

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| **BOD-WP** | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

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

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

| | | | |
|---|---|---|---|
| **C-TOC-HTC-WP** | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

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

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

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

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

| | | | |
|---|---|---|---|
| **EC-WP** | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

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

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

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

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

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

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

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

**HARDNESS-CALC-WP** Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

**NO2+NO3-CALC-WP** Water Nitrate+Nitrite CALCULATION

**NO2-IC-N-WP** Water Nitrite in Water by IC EPA 300.1 (mod)

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

**NO3-IC-N-WP** Water Nitrate in Water by IC EPA 300.1 (mod)

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

**OG-GRAV-WP** Water Oil & Grease - Gravimetric EPA 1664 (modified)

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

**PAH-CCME-PPM-WT** Water CCME PAHs in mg/L EPA 3511/8270D (mod)

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

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **PH-WP** | Water | pH | APHA 4500H |

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

| | | | |
|---|---|---|---|
| **PHENOLS-4AAP-WT** | Water | Phenol (4AAP) | EPA 9066 |

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

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

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

| | | | |
|---|---|---|---|
| **SOLIDS-TOTSUS-WP** | Water | Total Suspended Solids | APHA 2540 D (modified) |

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.

| | | | |
|---|---|---|---|
| **TC,EC10-QT97-WP** | Water | Total and E. coli, 1:10 dilution by QT97 | APHA 9223B QT97 |

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WP** | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*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 |

**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.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2602102 Report Date: 30-JUN-21 

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

Contact: SIMON DOIRON (Rankin Inlet)

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5494159** | | | | | | | | |
| **WG3559264-5 DUP** | | **L2602472-1** | | | | | | |
| Alkalinity, Total (as CaCO3) | | 161 | 158 | | mg/L | 1.7 | 20 | 18-JUN-21 |
| **WG3559264-4 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 99.7 | | % | | 85-115 | 18-JUN-21 |
| **WG3559264-1 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 18-JUN-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5495050** | | | | | | | | |
| **WG3556940-7 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 98.6 | | % | | 85-115 | 17-JUN-21 |
| **WG3556940-6 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 17-JUN-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5495050** | | | | | | | | |
| **WG3556940-8 DUP** | | **L2602149-1** | | | | | | |
| Biochemical Oxygen Demand | | 5800 | 6100 | | mg/L | 4.4 | 30 | 17-JUN-21 |
| **WG3556940-7 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 105.0 | | % | | 85-115 | 17-JUN-21 |
| **WG3556940-6 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 17-JUN-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5496856** | | | | | | | | |
| **WG3559724-4 DUP** | | **L2601092-9** | | | | | | |
| Benzene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 21-JUN-21 |
| Toluene | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 30 | 21-JUN-21 |
| Ethyl benzene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 21-JUN-21 |
| o-Xylene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 21-JUN-21 |
| m+p-Xylenes | | <0.00040 | <0.00040 | RPD-NA | mg/L | N/A | 30 | 21-JUN-21 |
| F1 (C6-C10) | | <0.10 | <0.10 | RPD-NA | mg/L | N/A | 30 | 21-JUN-21 |
| **WG3559724-2 LCS** | | | | | | | | |
| Benzene | | | 73.2 | | % | | 70-130 | 21-JUN-21 |
| Toluene | | | 86.6 | | % | | 70-130 | 21-JUN-21 |
| Ethyl benzene | | | 91.4 | | % | | 70-130 | 21-JUN-21 |
| o-Xylene | | | 91.2 | | % | | 70-130 | 21-JUN-21 |
| m+p-Xylenes | | | 91.5 | | % | | 70-130 | 21-JUN-21 |
| **WG3559724-3 LCS** | | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5496856** | | | | | | | | |
| **WG3559724-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 84.1 | | % | | 70-130 | 21-JUN-21 |
| **WG3559724-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 21-JUN-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 21-JUN-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 21-JUN-21 |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 21-JUN-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 21-JUN-21 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 21-JUN-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 94.2 | | % | | 70-130 | 21-JUN-21 |
| **WG3559724-5 MS** | | **L2601092-11** | | | | | | |
| Benzene | | | 82.0 | | % | | 50-150 | 21-JUN-21 |
| Toluene | | | 93.2 | | % | | 50-150 | 21-JUN-21 |
| Ethyl benzene | | | 97.7 | | % | | 50-150 | 21-JUN-21 |
| o-Xylene | | | 97.8 | | % | | 50-150 | 21-JUN-21 |
| m+p-Xylenes | | | 98.1 | | % | | 50-150 | 21-JUN-21 |
| **WG3559724-6 MS** | | **L2601143-1** | | | | | | |
| F1 (C6-C10) | | | 103.9 | | % | | 50-150 | 21-JUN-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5506566** | | | | | | | | |
| **WG3566788-3 DUP** | | **L2603252-1** | | | | | | |
| Total Organic Carbon | | 5.04 | 5.28 | | mg/L | 4.8 | 20 | 29-JUN-21 |
| **WG3566788-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 99.6 | | % | | 80-120 | 29-JUN-21 |
| **WG3566788-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 29-JUN-21 |
| **WG3566788-4 MS** | | **L2603252-2** | | | | | | |
| Total Organic Carbon | | | 96.5 | | % | | 70-130 | 29-JUN-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5493052** | | | | | | | | |
| **WG3556200-14 LCS** | | | | | | | | |
| Chloride (Cl) | | | 102.6 | | % | | 90-110 | 16-JUN-21 |
| **WG3556200-13 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 16-JUN-21 |
| **EC-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5494159** | | | | | | | | |
| **WG3559264-5 DUP** | | **L2602472-1** | | | | | | |
| Conductivity | | 1170 | 1180 | | umhos/cm | 0.5 | 10 | 18-JUN-21 |
| **WG3559264-3 LCS** | | | | | | | | |
| Conductivity | | | 98.7 | | % | | 90-110 | 18-JUN-21 |
| **WG3559264-1 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 18-JUN-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5493052** | | | | | | | | |
| **WG3556200-14 LCS** | | | | | | | | |
| Fluoride (F) | | | 104.5 | | % | | 90-110 | 16-JUN-21 |
| **WG3556200-13 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 16-JUN-21 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5495263** | | | | | | | | |
| **WG3558690-6 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 101.4 | | % | | 70-130 | 20-JUN-21 |
| F3 (C16-C34) | | | 90.8 | | % | | 70-130 | 20-JUN-21 |
| F4 (C34-C50) | | | 100.9 | | % | | 70-130 | 20-JUN-21 |
| **WG3558690-5 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 20-JUN-21 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 20-JUN-21 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 20-JUN-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 78.7 | | % | | 60-140 | 20-JUN-21 |
| **FC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5492283** | | | | | | | | |
| **WG3556539-1 DUP** | | **L2602019-1** | | | | | | |
| Fecal Coliforms | | 60 | 30 | DUPM | MPN/100mL | 68 | 65 | 16-JUN-21 |
| **WG3556539-2 MB** | | | | | | | | |
| Fecal Coliforms | | | <1 | | MPN/100mL | | 1 | 16-JUN-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5503097** | | | | | | | | |
| **WG3563447-3 DUP** | | **L2601862-2** | | | | | | |
| Mercury (Hg)-Total | | <0.0000050 | <0.000005( | RPD-NA | mg/L | N/A | 20 | 24-JUN-21 |
| **WG3563447-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 102.6 | | % | | 80-120 | 24-JUN-21 |
| **WG3563447-1 MB** | | | | | | | | |
| | | | | | | | 0.000005 | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5503097** | | | | | | | | |
| **WG3563447-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005( | | mg/L | | 0.000005 | 24-JUN-21 |
| **WG3563447-4 MS** | | **L2601285-1** | | | | | | |
| Mercury (Hg)-Total | | | 102.4 | | % | | 70-130 | 24-JUN-21 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5493770** | | | | | | | | |
| **WG3557654-4 DUP** | | **WG3557654-3** | | | | | | |
| Aluminum (Al)-Total | | 0.0740 | 0.0730 | | mg/L | 1.4 | 20 | 18-JUN-21 |
| Arsenic (As)-Total | | 0.00800 | 0.00783 | | mg/L | 2.1 | 20 | 18-JUN-21 |
| Cadmium (Cd)-Total | | 0.0000317 | 0.0000341 | | mg/L | 7.4 | 20 | 18-JUN-21 |
| Calcium (Ca)-Total | | 175 | 181 | | mg/L | 3.3 | 20 | 18-JUN-21 |
| Chromium (Cr)-Total | | <0.00010 | 0.00026 | G | mg/L | N/A | 20 | 18-JUN-21 |
| Cobalt (Co)-Total | | 0.00069 | 0.00071 | | mg/L | 2.9 | 20 | 18-JUN-21 |
| Copper (Cu)-Total | | 0.00342 | 0.00341 | | mg/L | 0.2 | 20 | 18-JUN-21 |
| Iron (Fe)-Total | | 0.013 | 0.014 | | mg/L | 5.8 | 20 | 18-JUN-21 |
| Lead (Pb)-Total | | <0.000050 | <0.000050 | RPD-NA | mg/L | N/A | 20 | 18-JUN-21 |
| Magnesium (Mg)-Total | | 100 | 101 | | mg/L | 0.4 | 20 | 18-JUN-21 |
| Manganese (Mn)-Total | | 0.170 | 0.169 | | mg/L | 0.5 | 20 | 18-JUN-21 |
| Nickel (Ni)-Total | | 0.00666 | 0.00685 | | mg/L | 2.8 | 20 | 18-JUN-21 |
| Potassium (K)-Total | | 19.2 | 18.8 | | mg/L | 2.2 | 20 | 18-JUN-21 |
| Sodium (Na)-Total | | 109 | 108 | | mg/L | 1.0 | 20 | 18-JUN-21 |
| Zinc (Zn)-Total | | <0.0030 | <0.0030 | RPD-NA | mg/L | N/A | 20 | 18-JUN-21 |
| **WG3557654-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 101.1 | | % | | 80-120 | 18-JUN-21 |
| Arsenic (As)-Total | | | 99.4 | | % | | 80-120 | 18-JUN-21 |
| Cadmium (Cd)-Total | | | 100.0 | | % | | 80-120 | 18-JUN-21 |
| Calcium (Ca)-Total | | | 98.3 | | % | | 80-120 | 18-JUN-21 |
| Chromium (Cr)-Total | | | 100.7 | | % | | 80-120 | 18-JUN-21 |
| Cobalt (Co)-Total | | | 98.9 | | % | | 80-120 | 18-JUN-21 |
| Copper (Cu)-Total | | | 100.1 | | % | | 80-120 | 18-JUN-21 |
| Iron (Fe)-Total | | | 96.1 | | % | | 80-120 | 18-JUN-21 |
| Lead (Pb)-Total | | | 99.8 | | % | | 80-120 | 18-JUN-21 |
| Magnesium (Mg)-Total | | | 101.4 | | % | | 80-120 | 18-JUN-21 |
| Manganese (Mn)-Total | | | 100.3 | | % | | 80-120 | 18-JUN-21 |
| Nickel (Ni)-Total | | | 99.3 | | % | | 80-120 | 18-JUN-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5493770** | | | | | | | | |
| **WG3557654-2 LCS** | | | | | | | | |
| Potassium (K)-Total | | | 99.9 | | % | | 80-120 | 18-JUN-21 |
| Sodium (Na)-Total | | | 100.9 | | % | | 80-120 | 18-JUN-21 |
| Zinc (Zn)-Total | | | 103.0 | | % | | 80-120 | 18-JUN-21 |
| **WG3557654-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 18-JUN-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 18-JUN-21 |
| Cadmium (Cd)-Total | | | <0.000005C | | mg/L | | 0.000005 | 18-JUN-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 18-JUN-21 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 18-JUN-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 18-JUN-21 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 18-JUN-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 18-JUN-21 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 18-JUN-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 18-JUN-21 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 18-JUN-21 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 18-JUN-21 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 18-JUN-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 18-JUN-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 18-JUN-21 |
| **WG3557654-5 MS** | | **WG3557654-3** | | | | | | |
| Aluminum (Al)-Total | | | 101.1 | | % | | 70-130 | 18-JUN-21 |
| Arsenic (As)-Total | | | 102.9 | | % | | 70-130 | 18-JUN-21 |
| Cadmium (Cd)-Total | | | 95.2 | | % | | 70-130 | 18-JUN-21 |
| Calcium (Ca)-Total | | | N/A | MS-B | % | | - | 18-JUN-21 |
| Chromium (Cr)-Total | | | 103.4 | | % | | 70-130 | 18-JUN-21 |
| Cobalt (Co)-Total | | | 98.5 | | % | | 70-130 | 18-JUN-21 |
| Copper (Cu)-Total | | | 93.9 | | % | | 70-130 | 18-JUN-21 |
| Iron (Fe)-Total | | | 99.99 | | % | | 70-130 | 18-JUN-21 |
| Lead (Pb)-Total | | | 90.0 | | % | | 70-130 | 18-JUN-21 |
| Magnesium (Mg)-Total | | | N/A | MS-B | % | | - | 18-JUN-21 |
| Manganese (Mn)-Total | | | N/A | MS-B | % | | - | 18-JUN-21 |
| Nickel (Ni)-Total | | | 96.0 | | % | | 70-130 | 18-JUN-21 |
| Potassium (K)-Total | | | N/A | MS-B | % | | - | 18-JUN-21 |
| Sodium (Na)-Total | | | N/A | MS-B | % | | - | 18-JUN-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5493770** | | | | | | | | |
| **WG3557654-5 MS** | | **WG3557654-3** | | | | | | |
| Zinc (Zn)-Total | | | 90.8 | | % | | 70-130 | 18-JUN-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5495060** | | | | | | | | |
| **WG3560439-23 DUP** | | **L2602080-1** | | | | | | |
| Ammonia, Total (as N) | | 0.42 | 0.40 | | mg/L | 3.6 | 20 | 21-JUN-21 |
| **WG3560439-22 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 103.2 | | % | | 85-115 | 21-JUN-21 |
| **WG3560439-21 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 21-JUN-21 |
| **WG3560439-24 MS** | | **L2602080-1** | | | | | | |
| Ammonia, Total (as N) | | | N/A | MS-B | % | | - | 21-JUN-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5493052** | | | | | | | | |
| **WG3556200-14 LCS** | | | | | | | | |
| Nitrite (as N) | | | 104.1 | | % | | 90-110 | 16-JUN-21 |
| **WG3556200-13 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 16-JUN-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5493052** | | | | | | | | |
| **WG3556200-14 LCS** | | | | | | | | |
| Nitrate (as N) | | | 101.6 | | % | | 90-110 | 16-JUN-21 |
| **WG3556200-13 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 16-JUN-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5493448** | | | | | | | | |
| **WG3558489-2 LCS** | | | | | | | | |
| Oil and Grease | | | 90.8 | | % | | 70-130 | 18-JUN-21 |
| **WG3558489-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 18-JUN-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5496981** | | | | | | | | |
| **WG3561172-15 DUP** | | **L2602080-2** | | | | | | |
| Phosphorus (P)-Total | | 0.0071 | 0.0069 | | mg/L | 2.4 | 20 | 23-JUN-21 |
| **WG3561172-14 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 95.1 | | % | | 80-120 | 23-JUN-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5496981** | | | | | | | | |
| **WG3561172-13 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 23-JUN-21 |
| **WG3561172-16 MS** | | **L2602080-2** | | | | | | |
| Phosphorus (P)-Total | | | 101.7 | | % | | 70-130 | 23-JUN-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5499600** | | | | | | | | |
| **WG3560080-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 93.2 | | % | | 50-150 | 24-JUN-21 |
| 2-Methylnaphthalene | | | 94.7 | | % | | 50-150 | 24-JUN-21 |
| Acenaphthene | | | 96.6 | | % | | 50-150 | 24-JUN-21 |
| Acenaphthylene | | | 101.4 | | % | | 50-150 | 24-JUN-21 |
| Anthracene | | | 107.9 | | % | | 50-150 | 24-JUN-21 |
| Acridine | | | 123.4 | | % | | 50-150 | 24-JUN-21 |
| Benzo(a)anthracene | | | 131.8 | | % | | 50-150 | 24-JUN-21 |
| Benzo(a)pyrene | | | 99.7 | | % | | 50-150 | 24-JUN-21 |
| Benzo(b&j)fluoranthene | | | 104.7 | | % | | 50-150 | 24-JUN-21 |
| Benzo(g,h,i)perylene | | | 116.1 | | % | | 50-150 | 24-JUN-21 |
| Benzo(k)fluoranthene | | | 92.8 | | % | | 50-150 | 24-JUN-21 |
| Chrysene | | | 117.2 | | % | | 50-150 | 24-JUN-21 |
| Dibenz(a,h)anthracene | | | 115.8 | | % | | 50-150 | 24-JUN-21 |
| Fluoranthene | | | 105.9 | | % | | 50-150 | 24-JUN-21 |
| Fluorene | | | 109.4 | | % | | 50-150 | 24-JUN-21 |
| Indeno(1,2,3-cd)pyrene | | | 131.3 | | % | | 50-150 | 24-JUN-21 |
| Naphthalene | | | 87.6 | | % | | 50-150 | 24-JUN-21 |
| Phenanthrene | | | 117.9 | | % | | 50-150 | 24-JUN-21 |
| Pyrene | | | 112.8 | | % | | 50-150 | 24-JUN-21 |
| Quinoline | | | 116.4 | | % | | 50-150 | 24-JUN-21 |
| **WG3560080-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| 2-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 24-JUN-21 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 24-JUN-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5499600** | | | | | | | | |
| **WG3560080-1 MB** | | | | | | | | |
| Benzo(a)pyrene | | | <0.000005( | | mg/L | | 0.000005 | 24-JUN-21 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 24-JUN-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 24-JUN-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| Dibenz(a,h)anthracene | | | <0.000005( | | mg/L | | 0.000005 | 24-JUN-21 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 24-JUN-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 24-JUN-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 24-JUN-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 24-JUN-21 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 24-JUN-21 |
| Surrogate: Naphthalene d8 | | | 96.3 | | % | | 50-150 | 24-JUN-21 |
| Surrogate: Phenanthrene d10 | | | 107.4 | | % | | 50-150 | 24-JUN-21 |
| Surrogate: Chrysene d12 | | | 105.2 | | % | | 50-150 | 24-JUN-21 |
| Surrogate: Acridine d9 | | | 115.2 | | % | | 50-150 | 24-JUN-21 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5494159** | | | | | | | | |
| **WG3559264-5 DUP** | | **L2602472-1** | | | | | | |
| pH | | 8.80 | 8.79 | J | pH units | 0.01 | 0.2 | 18-JUN-21 |
| **WG3559264-2 LCS** | | | | | | | | |
| pH | | | 7.00 | | pH units | | 6.9-7.1 | 18-JUN-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5496796** | | | | | | | | |
| **WG3558807-3 DUP** | | **L2603460-1** | | | | | | |
| Phenols (4AAP) | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 20 | 22-JUN-21 |
| **WG3558807-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 93.8 | | % | | 85-115 | 22-JUN-21 |
| **WG3558807-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 22-JUN-21 |
| **WG3558807-4 MS** | | **L2603460-1** | | | | | | |
| Phenols (4AAP) | | | 102.3 | | % | | 75-125 | 22-JUN-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5493052** | | | | | | | | |
| **WG3556200-14 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 103.3 | | % | | 90-110 | 16-JUN-21 |
| **WG3556200-13 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 16-JUN-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5496382** | | | | | | | | |
| **WG3559363-3 DUP** | | **L2601746-1** | | | | | | |
| Total Suspended Solids | | 139 | 142 | | mg/L | 2.1 | 20 | 21-JUN-21 |
| **WG3559363-2 LCS** | | | | | | | | |
| Total Suspended Solids | | | 94.3 | | % | | 85-115 | 21-JUN-21 |
| **WG3559363-1 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 21-JUN-21 |
| **TC,EC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5492285** | | | | | | | | |
| **WG3556546-1 DUP** | | **L2602102-1** | | | | | | |
| Total Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 16-JUN-21 |
| Escherichia Coli | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 16-JUN-21 |
| **WG3556546-2 MB** | | | | | | | | |
| Total Coliforms | | | <1 | | MPN/100mL | | 1 | 16-JUN-21 |
| Escherichia Coli | | | <1 | | MPN/100mL | | 1 | 16-JUN-21 |

# Quality Control Report

Workorder: L2602102 Report Date: 30-JUN-21

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



**Legend:**

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

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| DUPM | MPN duplicate results were outside default ALS Data Quality Objective, but within 95% confidence interval for MPN reference method. Sample results are reliable. |
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

# Quality Control Report

Workorder: L2602102 Report Date: 30-JUN-21

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



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 15-JUN-21 10:30 | 18-JUN-21 12:00 | 0.25 | 73 | hours | EHTR-FM |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2602102 were received on 16-JUN-21 13:07.

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

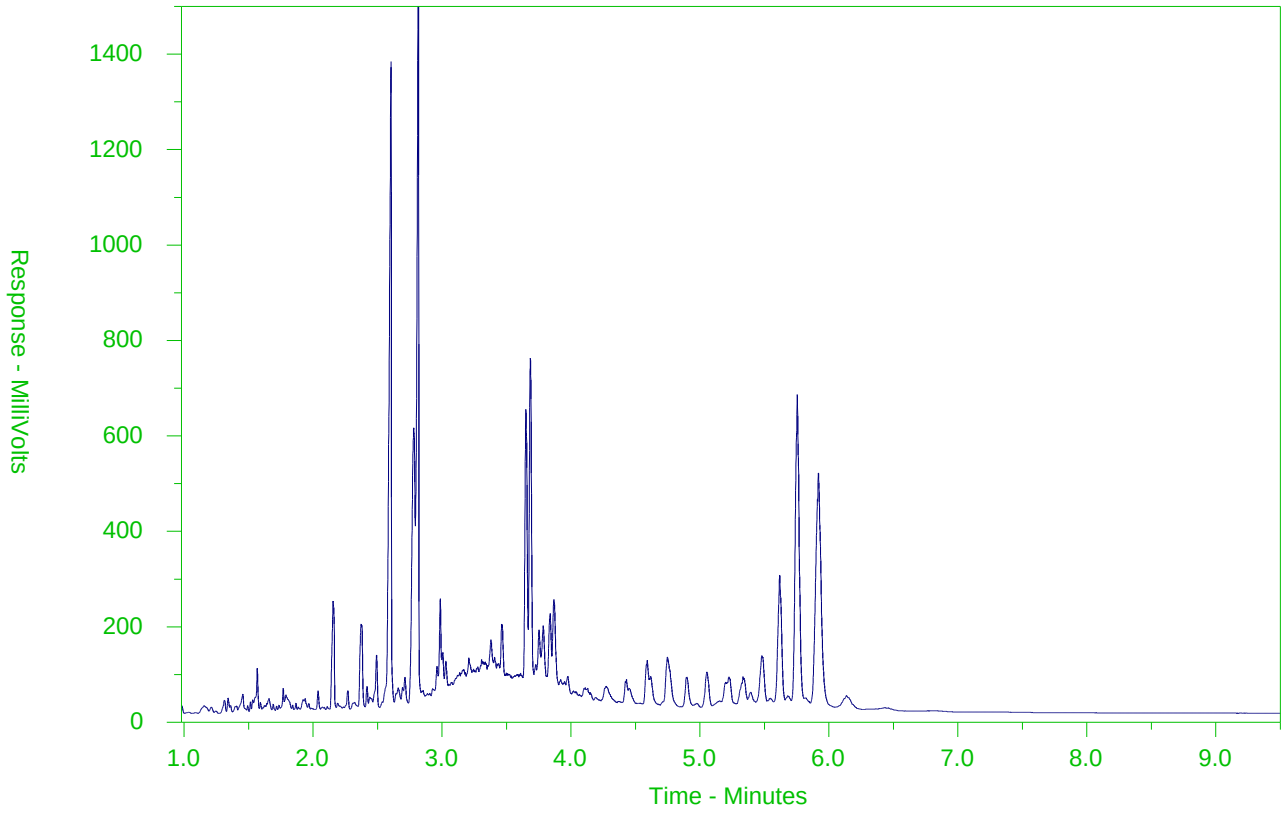
---

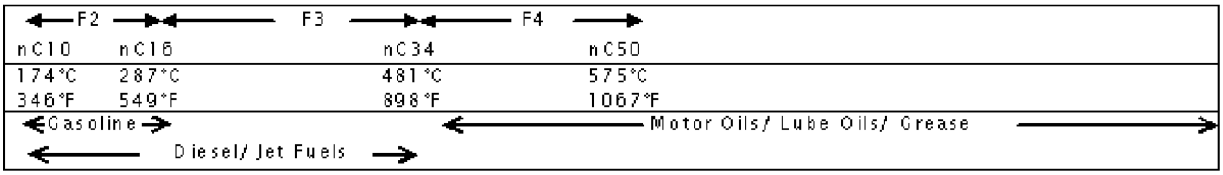
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2602102-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT




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

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

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

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

ALS Environmental

L2602102-COFC

COC #

Page ___ of ___

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

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH,PANH-WP | NUNAVUT-WW-GRP1-WP | FF-IC-N-WP | TC,EC-QT97-WP | | | | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | 06/15/21 | 10:30 AM | Waste | x | x | x | x | x | | | | | | | 15 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | | | | | | | |
| | So all ICP-MS metals report. | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No? If Yes add SIF |
| Bill Ross | 06/15/21 | 10:30 AM | O.A. | 16/6/2021 | 1201pm | 11.7 °C | | June 16 | 2 | |

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GENF 18.01 Front

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

Date Received: 07-JUL-21
Report Date: 26-JUL-21 07:50 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2610544

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Physical Tests (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2610544-1<br>Sampled Date: 06-JUL-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT | |
|---|---|---|---|---|---|
| Conductivity | umhos/cm | - | - | 471 | |
| Hardness (as CaCO3) | mg/L | - | - | 65.8 | HTC |
| pH | pH units | 7.00-10.5 | - | 7.44 | |
| Total Suspended Solids | mg/L | - | - | 140 | |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Anions and Nutrients (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2610544-1<br>Sampled Date: 06-JUL-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Alkalinity, Total (as CaCO3) | mg/L | - | - | 139 |
| Ammonia, Total (as N) | mg/L | - | - | 16.8 |
| Bicarbonate (HCO3) | mg/L | - | - | 169 |
| Carbonate (CO3) | mg/L | - | - | <0.60 |
| Chloride (Cl) | mg/L | 250 | - | 41.8 |
| Fluoride (F) | mg/L | - | 1.5 | 0.052 |
| Hydroxide (OH) | mg/L | - | - | <0.34 |
| Nitrate and Nitrite as N | mg/L | - | 10 | <0.070 |
| Nitrate (as N) | mg/L | - | 10 | <0.020 |
| Nitrite (as N) | mg/L | - | 1 | <0.010 |
| Phosphorus (P)-Total | mg/L | - | - | 4.40 |
| Sulfate (SO4) | mg/L | 500 | - | 20.3 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Organic / Inorganic Carbon (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2610544-1<br>Sampled Date: 06-JUL-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Total Organic Carbon | mg/L | - | - | 74.3 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Bacteriological Tests (WATER)

| | | | | |
|---|---|---|---|---|
| | | | ALS ID | L2610544-1 |
| | | | Sampled Date | 06-JUL-21 |
| | | | Sampled Time | 10:30 |
| | | | Sample ID | **RANKIN INLET WWTP - EFFLUENT** |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | |
| Escherichia Coli | MPN/100mL | - | 0 | >2420 |
| Fecal Coliforms | MPN/100mL | - | - | >24200 |
| Total Coliforms | MPN/100mL | - | 0 | >2420 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Total Metals (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2610544-1<br>Sampled Date: 06-JUL-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | 0.1 | 2.9 | 0.166 |
| Antimony (Sb)-Total | mg/L | - | 0.006 | 0.00020 |
| Arsenic (As)-Total | mg/L | - | 0.01 | 0.00088 |
| Barium (Ba)-Total | mg/L | - | 2 | 0.0201 |
| Beryllium (Be)-Total | mg/L | - | - | <0.00010 |
| Bismuth (Bi)-Total | mg/L | - | - | 0.00188 |
| Boron (B)-Total | mg/L | - | 5 | 0.047 |
| Cadmium (Cd)-Total | mg/L | - | 0.005 | 0.0000985 |
| Calcium (Ca)-Total | mg/L | - | - | 18.4 |
| Cesium (Cs)-Total | mg/L | - | - | 0.000067 |
| Chromium (Cr)-Total | mg/L | - | 0.05 | 0.00104 |
| Cobalt (Co)-Total | mg/L | - | - | 0.00027 |
| Copper (Cu)-Total | mg/L | 1 | 2 | 0.173 |
| Iron (Fe)-Total | mg/L | 0.3 | - | 0.545 |
| Lead (Pb)-Total | mg/L | - | 0.005 | 0.00119 |
| Lithium (Li)-Total | mg/L | - | - | 0.0024 |
| Magnesium (Mg)-Total | mg/L | - | - | 4.82 |
| Manganese (Mn)-Total | mg/L | 0.02 | 0.12 | 0.0320 |
| Mercury (Hg)-Total | mg/L | - | 0.001 | <0.0000050 |
| Molybdenum (Mo)-Total | mg/L | - | - | 0.000797 |
| Nickel (Ni)-Total | mg/L | - | - | 0.00334 |
| Phosphorus (P)-Total | mg/L | - | - | 5.33 |
| Potassium (K)-Total | mg/L | - | - | 9.26 |
| Rubidium (Rb)-Total | mg/L | - | - | 0.00963 |
| Selenium (Se)-Total | mg/L | - | 0.05 | 0.000364 |
| Silicon (Si)-Total | mg/L | - | - | 0.35 |
| Silver (Ag)-Total | mg/L | - | - | 0.000069 |
| Sodium (Na)-Total | mg/L | 200 | - | 25.6 |
| Strontium (Sr)-Total | mg/L | - | 7 | 0.0812 |
| Sulfur (S)-Total | mg/L | - | - | 9.33 |
| Tellurium (Te)-Total | mg/L | - | - | <0.00020 |
| Thallium (Tl)-Total | mg/L | - | - | <0.000010 |
| Thorium (Th)-Total | mg/L | - | - | <0.00010 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Total Metals (WATER)

| | | | | ALS ID | L2610544-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-21 |
| | | | | Sampled Time | 10:30 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Tin (Sn)-Total | mg/L | - | - | | 0.00144 |
| Titanium (Ti)-Total | mg/L | - | - | | 0.00607 |
| Tungsten (W)-Total | mg/L | - | - | | <0.00010 |
| Uranium (U)-Total | mg/L | - | 0.02 | | 0.000186 |
| Vanadium (V)-Total | mg/L | - | - | | 0.00080 |
| Zinc (Zn)-Total | mg/L | 5 | - | | 0.112 |
| Zirconium (Zr)-Total | mg/L | - | - | | 0.00081 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Aggregate Organics (WATER)

| | | | | ALS ID | L2610544-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-21 |
| | | | | Sampled Time | 10:30 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Biochemical Oxygen Demand | mg/L | - | - | | 17.1 |
| BOD Carbonaceous | mg/L | - | - | | 13.0 |
| Oil and Grease | mg/L | - | - | | 30.5 |
| Phenols (4AAP) | mg/L | - | - | | 0.0167 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Volatile Organic Compounds (WATER)

| | | | | ALS ID | L2610544-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-21 |
| | | | | Sampled Time | 10:30 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Benzene | mg/L | - | 0.005 | | <0.00050 |
| Ethyl benzene | mg/L | 0.0016 | 0.14 | | <0.00050 |
| Toluene | mg/L | 0.024 | 0.06 | | <0.0010 |
| o-Xylene | mg/L | - | - | | <0.00050 |
| m+p-Xylenes | mg/L | - | - | | <0.00040 |
| Xylenes (Total) | mg/L | 0.02 | 0.09 | | <0.00064 |
| F1 (C6-C10) | mg/L | - | - | | <0.10 |
| F1-BTEX | mg/L | - | - | | <0.10 |
| F2-Naphth | mg/L | - | - | | 0.51 |
| F3-PAH | mg/L | - | - | | 12.5 |
| Total Hydrocarbons (C6-C50) | mg/L | - | - | | 16.7 |
| Surrogate: 4-Bromofluorobenzene (SS) | % | - | - | | 92.7 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
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Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Hydrocarbons (WATER)

| | | | | ALS ID | L2610544-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-21 |
| | | | | Sampled Time | 10:30 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| F2 (C10-C16) | mg/L | - | - | | 0.51 |
| F3 (C16-C34) | mg/L | - | - | | 12.5 |
| F4 (C34-C50) | mg/L | - | - | | 3.69 |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | | 90.0 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Polycyclic Aromatic Hydrocarbons (WATER)

| | | | | ALS ID | L2610544-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-21 |
| | | | | Sampled Time | 10:30 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Acenaphthene | mg/L | - | - | | <0.000020 |
| Acenaphthylene | mg/L | - | - | | <0.000020 |
| Acridine | mg/L | - | - | | <0.000020 |
| Anthracene | mg/L | - | - | | <0.000010 |
| Benzo(a)anthracene | mg/L | - | - | | 0.000010 |
| Benzo(a)pyrene | mg/L | - | 0.00004 | | <0.000010 DLM |
| Benzo(b&j)fluoranthene | mg/L | - | - | | <0.000010 |
| Benzo(g,h,i)perylene | mg/L | - | - | | <0.000020 |
| Benzo(k)fluoranthene | mg/L | - | - | | <0.000010 |
| Chrysene | mg/L | - | - | | <0.000020 |
| Dibenz(a,h)anthracene | mg/L | - | - | | 0.0000088 |
| Fluoranthene | mg/L | - | - | | <0.000020 |
| Fluorene | mg/L | - | - | | <0.000060 DLM |
| Indeno(1,2,3-cd)pyrene | mg/L | - | - | | 0.000283 |
| 1-Methylnaphthalene | mg/L | - | - | | 0.000037 |
| 2-Methylnaphthalene | mg/L | - | - | | 0.000046 |
| Naphthalene | mg/L | - | - | | 0.000054 |
| Phenanthrene | mg/L | - | - | | <0.000050 |
| Pyrene | mg/L | - | - | | <0.000240 DLM |
| Quinoline | mg/L | - | - | | <0.000070 DLM |
| Surrogate: Acridine d9 | % | - | - | | 113.6 |
| Surrogate: Chrysene d12 | % | - | - | | 110 |
| Surrogate: Naphthalene d8 | % | - | - | | 136.8 |
| Surrogate: Phenanthrene d10 | % | - | - | | 107.7 |
| B(a)P Total Potency Equivalent | mg/L | - | - | | <0.000030 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **ALK-CO3CO3-CALC-WP** | Water | Alkalinity, Carbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

| | | | |
|---|---|---|---|
| **ALK-HCO3HCO3-CALC-WP** | Water | Alkalinity, Bicarbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

| | | | |
|---|---|---|---|
| **ALK-OHOH-CALC-WP** | Water | Alkalinity, Hydroxide | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

| | | | |
|---|---|---|---|
| **ALK-TITR-WP** | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

| | | | |
|---|---|---|---|
| **BOD-CBOD-WP** | Water | Carbonaceous BOD | APHA 5210 B |

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| **BOD-WP** | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

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

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

| | | | |
|---|---|---|---|
| **C-TOC-HTC-WP** | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

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

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

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

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

| | | | |
|---|---|---|---|
| **EC-WP** | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

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

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

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

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

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

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

Xylenes has been subtracted from F1.

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

| | | | |
|---|---|---|---|
| **HARDNESS-CALC-WP** | Water | Hardness Calculated | APHA 2340B |

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

| | | | |
|---|---|---|---|
| **HG-T-CVAA-WP** | Water | Mercury Total | EPA 1631E (mod) |

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

| | | | |
|---|---|---|---|
| **NO2+NO3-CALC-WP** | Water | Nitrate+Nitrite | CALCULATION |
| **NO2-IC-N-WP** | Water | Nitrite in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| **NO3-IC-N-WP** | Water | Nitrate in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| **OG-GRAV-WP** | Water | Oil & Grease - Gravimetric | EPA 1664 (modified) |

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

| | | | |
|---|---|---|---|
| **PAH-CCME-PPM-WT** | Water | CCME PAHs in mg/L | EPA 3511/8270D (mod) |

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

| | | | |
|---|---|---|---|
| **PH-WP** | Water | pH | APHA 4500H |

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| | | The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode. | |
| **PHENOLS-4AAP-WT** | Water | Phenol (4AAP) | EPA 9066 |
| | | An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically. | |
| **SO4-IC-N-WP** | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| | | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | |
| **SOLIDS-TOTSUS-WP** | Water | Total Suspended Solids | APHA 2540 D (modified) |
| | | Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C. | |
| **TC,EC-QT97-WP** | Water | Total Coliform and E.coli by MPN QT97 | APHA 9223B QT97 |
| | | This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table. | |
| **XYLENES-SUM-CALC-WP** | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |
| | | Total xylenes represents the sum of o-xylene and m&p-xylene. | |

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*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 |

**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.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2610544 Report Date: 26-JUL-21 

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

Contact: SIMON DOIRON (Rankin Inlet)

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5514416** | | | | | | | | |
| **WG3571429-20 DUP** | | **L2610252-1** | | | | | | |
| Alkalinity, Total (as CaCO3) | | 385 | 383 | | mg/L | 0.6 | 20 | 07-JUL-21 |
| **WG3571429-19 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 101.6 | | % | | 85-115 | 07-JUL-21 |
| **WG3571429-16 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 07-JUL-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5517673** | | | | | | | | |
| **WG3570052-8 DUP** | | **L2610023-1** | | | | | | |
| BOD Carbonaceous | | 1640 | 1680 | | mg/L | 2.4 | 30 | 07-JUL-21 |
| **WG3570052-7 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 99.4 | | % | | 85-115 | 07-JUL-21 |
| **WG3570052-6 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 07-JUL-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5517673** | | | | | | | | |
| **WG3570052-7 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 102.5 | | % | | 85-115 | 07-JUL-21 |
| **WG3570052-6 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 07-JUL-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5524860** | | | | | | | | |
| **WG3574248-4 DUP** | | **L2610074-4** | | | | | | |
| Benzene | | 2.06 | 2.20 | | mg/L | 6.6 | 30 | 13-JUL-21 |
| Toluene | | 0.0084 | 0.0069 | | mg/L | 18 | 30 | 13-JUL-21 |
| Ethyl benzene | | 0.724 | 0.750 | | mg/L | 3.4 | 30 | 13-JUL-21 |
| o-Xylene | | 0.00104 | 0.00104 | | mg/L | 0.6 | 30 | 13-JUL-21 |
| m+p-Xylenes | | 0.105 | 0.0894 | | mg/L | 16 | 30 | 13-JUL-21 |
| F1 (C6-C10) | | 6.2 | 7.3 | | mg/L | 16 | 30 | 13-JUL-21 |
| **WG3574248-2 LCS** | | | | | | | | |
| Benzene | | | 83.7 | | % | | 70-130 | 12-JUL-21 |
| Toluene | | | 95.0 | | % | | 70-130 | 12-JUL-21 |
| Ethyl benzene | | | 99.5 | | % | | 70-130 | 12-JUL-21 |
| o-Xylene | | | 99.4 | | % | | 70-130 | 12-JUL-21 |
| m+p-Xylenes | | | 100.9 | | % | | 70-130 | 12-JUL-21 |
| **WG3574248-3 LCS** | | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5524860** | | | | | | | | |
| **WG3574248-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 104.0 | | % | | 70-130 | 12-JUL-21 |
| **WG3574248-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 13-JUL-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 13-JUL-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 13-JUL-21 |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 13-JUL-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 13-JUL-21 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 13-JUL-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 90.9 | | % | | 70-130 | 13-JUL-21 |
| **WG3574248-5 MS** | | **L2610449-1** | | | | | | |
| Benzene | | | 81.3 | | % | | 50-150 | 13-JUL-21 |
| Toluene | | | 73.9 | | % | | 50-150 | 13-JUL-21 |
| Ethyl benzene | | | 78.9 | | % | | 50-150 | 13-JUL-21 |
| o-Xylene | | | 76.3 | | % | | 50-150 | 13-JUL-21 |
| m+p-Xylenes | | | 76.4 | | % | | 50-150 | 13-JUL-21 |
| **WG3574248-6 MS** | | **L2610544-1** | | | | | | |
| F1 (C6-C10) | | | 94.0 | | % | | 50-150 | 13-JUL-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5517371** | | | | | | | | |
| **WG3573795-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 101.6 | | % | | 80-120 | 10-JUL-21 |
| **WG3573795-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 10-JUL-21 |
| **WG3573795-4 MS** | | **L2611569-1** | | | | | | |
| Total Organic Carbon | | | 99.5 | | % | | 70-130 | 10-JUL-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5516998** | | | | | | | | |
| **WG3571678-2 LCS** | | | | | | | | |
| Chloride (Cl) | | | 102.0 | | % | | 90-110 | 08-JUL-21 |
| **WG3571678-1 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 08-JUL-21 |
| **EC-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5514416** | | | | | | | | |
| **WG3571429-20 DUP** | | **L2610252-1** | | | | | | |
| Conductivity | | 655 | 653 | | umhos/cm | 0.3 | 10 | 07-JUL-21 |
| **WG3571429-18 LCS** | | | | | | | | |
| Conductivity | | | 99.1 | | % | | 90-110 | 07-JUL-21 |
| **WG3571429-16 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 07-JUL-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5516998** | | | | | | | | |
| **WG3571678-2 LCS** | | | | | | | | |
| Fluoride (F) | | | 102.6 | | % | | 90-110 | 08-JUL-21 |
| **WG3571678-1 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 08-JUL-21 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5523970** | | | | | | | | |
| **WG3576669-4 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 93.7 | | % | | 70-130 | 15-JUL-21 |
| F3 (C16-C34) | | | 81.3 | | % | | 70-130 | 15-JUL-21 |
| F4 (C34-C50) | | | 90.9 | | % | | 70-130 | 15-JUL-21 |
| **WG3576669-3 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 15-JUL-21 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 15-JUL-21 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 15-JUL-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 89.7 | | % | | 60-140 | 15-JUL-21 |
| **FC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5515224** | | | | | | | | |
| **WG3571159-2 DUP** | | **L2610496-1** | | | | | | |
| Fecal Coliforms | | <10 | <10 | RPD-NA | MPN/100mL | N/A | 65 | 07-JUL-21 |
| **WG3571159-1 MB** | | | | | | | | |
| Fecal Coliforms | | | <1 | | MPN/100mL | | 1 | 07-JUL-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5515973** | | | | | | | | |
| **WG3572058-7 DUP** | | **L2609119-1** | | | | | | |
| Mercury (Hg)-Total | | 0.0000548 | 0.0000569 | | mg/L | 3.9 | 20 | 08-JUL-21 |
| **WG3572058-6 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 93.9 | | % | | 80-120 | 08-JUL-21 |
| **WG3572058-5 MB** | | | | | | | | |
| | | | | | | | 0.000005 | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5515973** | | | | | | | | |
| **WG3572058-5 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005( | | mg/L | | 0.000005 | 08-JUL-21 |
| **WG3572058-8 MS** | | **L2609119-2** | | | | | | |
| Mercury (Hg)-Total | | | 84.4 | | % | | 70-130 | 08-JUL-21 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5517556** | | | | | | | | |
| **WG3571664-4 DUP** | | **WG3571664-3** | | | | | | |
| Aluminum (Al)-Total | | 0.0136 | 0.0125 | | mg/L | 8.3 | 20 | 08-JUL-21 |
| Antimony (Sb)-Total | | 0.114 | 0.113 | | mg/L | 0.8 | 20 | 08-JUL-21 |
| Arsenic (As)-Total | | 0.400 | 0.391 | | mg/L | 2.4 | 20 | 08-JUL-21 |
| Barium (Ba)-Total | | 0.0531 | 0.0535 | | mg/L | 0.8 | 20 | 08-JUL-21 |
| Beryllium (Be)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 08-JUL-21 |
| Bismuth (Bi)-Total | | <0.000050 | <0.000050 | RPD-NA | mg/L | N/A | 20 | 08-JUL-21 |
| Boron (B)-Total | | 0.111 | 0.107 | | mg/L | 3.0 | 20 | 08-JUL-21 |
| Cadmium (Cd)-Total | | 0.0000122 | 0.0000110 | | mg/L | 10 | 20 | 08-JUL-21 |
| Calcium (Ca)-Total | | 307 | 302 | | mg/L | 1.8 | 20 | 08-JUL-21 |
| Cesium (Cs)-Total | | 0.000264 | 0.000256 | | mg/L | 3.0 | 20 | 08-JUL-21 |
| Chromium (Cr)-Total | | 0.00018 | 0.00019 | | mg/L | 6.3 | 20 | 08-JUL-21 |
| Cobalt (Co)-Total | | 0.0247 | 0.0246 | | mg/L | 0.5 | 20 | 08-JUL-21 |
| Copper (Cu)-Total | | 0.00377 | 0.00376 | | mg/L | 0.3 | 20 | 08-JUL-21 |
| Iron (Fe)-Total | | 0.027 | 0.028 | | mg/L | 2.9 | 20 | 08-JUL-21 |
| Lead (Pb)-Total | | 0.000069 | 0.000068 | | mg/L | 1.8 | 20 | 08-JUL-21 |
| Lithium (Li)-Total | | 0.0223 | 0.0212 | | mg/L | 5.1 | 20 | 08-JUL-21 |
| Magnesium (Mg)-Total | | 53.8 | 54.5 | | mg/L | 1.2 | 20 | 08-JUL-21 |
| Manganese (Mn)-Total | | 0.0179 | 0.0176 | | mg/L | 1.9 | 20 | 08-JUL-21 |
| Molybdenum (Mo)-Total | | 0.0278 | 0.0275 | | mg/L | 0.8 | 20 | 08-JUL-21 |
| Nickel (Ni)-Total | | 0.00609 | 0.00613 | | mg/L | 0.7 | 20 | 08-JUL-21 |
| Potassium (K)-Total | | 52.1 | 51.2 | | mg/L | 1.8 | 20 | 08-JUL-21 |
| Phosphorus (P)-Total | | <0.030 | 0.033 | RPD-NA | mg/L | N/A | 20 | 08-JUL-21 |
| Rubidium (Rb)-Total | | 0.0271 | 0.0268 | | mg/L | 1.1 | 20 | 08-JUL-21 |
| Selenium (Se)-Total | | 0.00116 | 0.00122 | | mg/L | 5.4 | 20 | 08-JUL-21 |
| Silicon (Si)-Total | | 0.27 | 0.27 | | mg/L | 0.2 | 20 | 08-JUL-21 |
| Silver (Ag)-Total | | <0.000010 | <0.000010 | RPD-NA | mg/L | N/A | 20 | 08-JUL-21 |
| Sodium (Na)-Total | | 208 | 209 | | mg/L | 0.6 | 20 | 08-JUL-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5517556** | | | | | | | | |
| **WG3571664-4 DUP** | | **WG3571664-3** | | | | | | |
| Strontium (Sr)-Total | | 2.75 | 2.71 | | mg/L | 1.4 | 20 | 08-JUL-21 |
| Sulfur (S)-Total | | 329 | 331 | | mg/L | 0.6 | 20 | 08-JUL-21 |
| Tellurium (Te)-Total | | 0.00035 | 0.00044 | J | mg/L | 0.00010 | 0.0004 | 08-JUL-21 |
| Thallium (Tl)-Total | | 0.000013 | 0.000013 | | mg/L | 1.1 | 20 | 08-JUL-21 |
| Thorium (Th)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 08-JUL-21 |
| Tin (Sn)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 08-JUL-21 |
| Titanium (Ti)-Total | | 0.00041 | 0.00055 | J | mg/L | 0.00014 | 0.0006 | 08-JUL-21 |
| Tungsten (W)-Total | | 0.00443 | 0.00461 | | mg/L | 3.9 | 20 | 08-JUL-21 |
| Uranium (U)-Total | | 0.000709 | 0.000709 | | mg/L | 0.1 | 20 | 08-JUL-21 |
| Vanadium (V)-Total | | 0.00096 | 0.00095 | | mg/L | 1.3 | 20 | 08-JUL-21 |
| Zinc (Zn)-Total | | <0.0030 | <0.0030 | RPD-NA | mg/L | N/A | 20 | 08-JUL-21 |
| Zirconium (Zr)-Total | | <0.00020 | <0.00020 | RPD-NA | mg/L | N/A | 20 | 08-JUL-21 |
| **WG3571664-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 97.0 | | % | | 80-120 | 08-JUL-21 |
| Antimony (Sb)-Total | | | 101.8 | | % | | 80-120 | 08-JUL-21 |
| Arsenic (As)-Total | | | 96.1 | | % | | 80-120 | 08-JUL-21 |
| Barium (Ba)-Total | | | 99.1 | | % | | 80-120 | 08-JUL-21 |
| Beryllium (Be)-Total | | | 95.9 | | % | | 80-120 | 08-JUL-21 |
| Bismuth (Bi)-Total | | | 98.8 | | % | | 80-120 | 08-JUL-21 |
| Boron (B)-Total | | | 97.8 | | % | | 80-120 | 08-JUL-21 |
| Cadmium (Cd)-Total | | | 99.3 | | % | | 80-120 | 08-JUL-21 |
| Calcium (Ca)-Total | | | 95.5 | | % | | 80-120 | 08-JUL-21 |
| Cesium (Cs)-Total | | | 96.9 | | % | | 80-120 | 08-JUL-21 |
| Chromium (Cr)-Total | | | 95.8 | | % | | 80-120 | 08-JUL-21 |
| Cobalt (Co)-Total | | | 96.1 | | % | | 80-120 | 08-JUL-21 |
| Copper (Cu)-Total | | | 96.9 | | % | | 80-120 | 08-JUL-21 |
| Iron (Fe)-Total | | | 94.5 | | % | | 80-120 | 08-JUL-21 |
| Lead (Pb)-Total | | | 99.0 | | % | | 80-120 | 08-JUL-21 |
| Lithium (Li)-Total | | | 92.9 | | % | | 80-120 | 08-JUL-21 |
| Magnesium (Mg)-Total | | | 97.4 | | % | | 80-120 | 08-JUL-21 |
| Manganese (Mn)-Total | | | 97.4 | | % | | 80-120 | 08-JUL-21 |
| Molybdenum (Mo)-Total | | | 96.7 | | % | | 80-120 | 08-JUL-21 |
| Nickel (Ni)-Total | | | 95.7 | | % | | 80-120 | 08-JUL-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5517556** | | | | | | | | |
| **WG3571664-2 LCS** | | | | | | | | |
| Potassium (K)-Total | | | 92.9 | | % | | 80-120 | 08-JUL-21 |
| Phosphorus (P)-Total | | | 101.7 | | % | | 80-120 | 08-JUL-21 |
| Rubidium (Rb)-Total | | | 96.2 | | % | | 80-120 | 08-JUL-21 |
| Selenium (Se)-Total | | | 97.7 | | % | | 80-120 | 08-JUL-21 |
| Silicon (Si)-Total | | | 95.7 | | % | | 80-120 | 08-JUL-21 |
| Silver (Ag)-Total | | | 98.8 | | % | | 80-120 | 08-JUL-21 |
| Sodium (Na)-Total | | | 96.6 | | % | | 80-120 | 08-JUL-21 |
| Strontium (Sr)-Total | | | 96.2 | | % | | 80-120 | 08-JUL-21 |
| Sulfur (S)-Total | | | 89.8 | | % | | 80-120 | 08-JUL-21 |
| Tellurium (Te)-Total | | | 89.4 | | % | | 80-120 | 08-JUL-21 |
| Thallium (Tl)-Total | | | 97.5 | | % | | 80-120 | 08-JUL-21 |
| Thorium (Th)-Total | | | 97.2 | | % | | 80-120 | 08-JUL-21 |
| Tin (Sn)-Total | | | 97.4 | | % | | 80-120 | 08-JUL-21 |
| Titanium (Ti)-Total | | | 93.4 | | % | | 80-120 | 08-JUL-21 |
| Tungsten (W)-Total | | | 98.0 | | % | | 80-120 | 08-JUL-21 |
| Uranium (U)-Total | | | 97.2 | | % | | 80-120 | 08-JUL-21 |
| Vanadium (V)-Total | | | 95.8 | | % | | 80-120 | 08-JUL-21 |
| Zinc (Zn)-Total | | | 98.9 | | % | | 80-120 | 08-JUL-21 |
| Zirconium (Zr)-Total | | | 92.4 | | % | | 80-120 | 08-JUL-21 |
| **WG3571664-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 08-JUL-21 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Beryllium (Be)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 08-JUL-21 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 08-JUL-21 |
| Cadmium (Cd)-Total | | | <0.000005( | | mg/L | | 0.000005 | 08-JUL-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 08-JUL-21 |
| Cesium (Cs)-Total | | | <0.000010 | | mg/L | | 0.00001 | 08-JUL-21 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 08-JUL-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 08-JUL-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5517556** | | | | | | | | |
| **WG3571664-1 MB** | | | | | | | | |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 08-JUL-21 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 08-JUL-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 08-JUL-21 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 08-JUL-21 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 08-JUL-21 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 08-JUL-21 |
| Phosphorus (P)-Total | | | <0.030 | | mg/L | | 0.03 | 08-JUL-21 |
| Rubidium (Rb)-Total | | | <0.00020 | | mg/L | | 0.0002 | 08-JUL-21 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 08-JUL-21 |
| Silicon (Si)-Total | | | <0.10 | | mg/L | | 0.1 | 08-JUL-21 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 08-JUL-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 08-JUL-21 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 08-JUL-21 |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 08-JUL-21 |
| Tellurium (Te)-Total | | | <0.00020 | | mg/L | | 0.0002 | 08-JUL-21 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 08-JUL-21 |
| Thorium (Th)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 08-JUL-21 |
| Tungsten (W)-Total | | | <0.00010 | | mg/L | | 0.0001 | 08-JUL-21 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 08-JUL-21 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 08-JUL-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 08-JUL-21 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 08-JUL-21 |
| **WG3571664-5 MS** | | **WG3571664-3** | | | | | | |
| Aluminum (Al)-Total | | | 124.5 | | % | | 70-130 | 08-JUL-21 |
| Antimony (Sb)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Arsenic (As)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Barium (Ba)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Beryllium (Be)-Total | | | 85.6 | | % | | 70-130 | 08-JUL-21 |
| Bismuth (Bi)-Total | | | 99.9 | | % | | 70-130 | 08-JUL-21 |
| Boron (B)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Cadmium (Cd)-Total | | | 112.8 | | % | | 70-130 | 08-JUL-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5517556** | | | | | | | | |
| **WG3571664-5 MS** | | **WG3571664-3** | | | | | | |
| Calcium (Ca)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Cesium (Cs)-Total | | | 122.1 | | % | | 70-130 | 08-JUL-21 |
| Chromium (Cr)-Total | | | 120.4 | | % | | 70-130 | 08-JUL-21 |
| Cobalt (Co)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Copper (Cu)-Total | | | 109.0 | | % | | 70-130 | 08-JUL-21 |
| Iron (Fe)-Total | | | 115.0 | | % | | 70-130 | 08-JUL-21 |
| Lead (Pb)-Total | | | 103.4 | | % | | 70-130 | 08-JUL-21 |
| Lithium (Li)-Total | | | 74.0 | | % | | 70-130 | 08-JUL-21 |
| Magnesium (Mg)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Manganese (Mn)-Total | | | 113.9 | | % | | 70-130 | 08-JUL-21 |
| Molybdenum (Mo)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Nickel (Ni)-Total | | | 111.0 | | % | | 70-130 | 08-JUL-21 |
| Potassium (K)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Phosphorus (P)-Total | | | 137.2 | MES | % | | 70-130 | 08-JUL-21 |
| Rubidium (Rb)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Selenium (Se)-Total | | | 125.7 | | % | | 70-130 | 08-JUL-21 |
| Silicon (Si)-Total | | | 131.0 | MES | % | | 70-130 | 08-JUL-21 |
| Silver (Ag)-Total | | | 111.4 | | % | | 70-130 | 08-JUL-21 |
| Sodium (Na)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Strontium (Sr)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Sulfur (S)-Total | | | N/A | MS-B | % | | - | 08-JUL-21 |
| Tellurium (Te)-Total | | | 119.7 | | % | | 70-130 | 08-JUL-21 |
| Thallium (Tl)-Total | | | 103.5 | | % | | 70-130 | 08-JUL-21 |
| Thorium (Th)-Total | | | 109.0 | | % | | 70-130 | 08-JUL-21 |
| Tin (Sn)-Total | | | 120.9 | | % | | 70-130 | 08-JUL-21 |
| Titanium (Ti)-Total | | | 127.9 | | % | | 70-130 | 08-JUL-21 |
| Tungsten (W)-Total | | | 117.6 | | % | | 70-130 | 08-JUL-21 |
| Uranium (U)-Total | | | 107.6 | | % | | 70-130 | 08-JUL-21 |
| Vanadium (V)-Total | | | 125.8 | | % | | 70-130 | 08-JUL-21 |
| Zinc (Zn)-Total | | | 104.8 | | % | | 70-130 | 08-JUL-21 |
| Zirconium (Zr)-Total | | | 121.3 | | % | | 70-130 | 08-JUL-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5515954** | | | | | | | | |
| **WG3571666-19 DUP** | | **L2610037-3** | | | | | | |
| Ammonia, Total (as N) | | 0.040 | 0.040 | | mg/L | 0.2 | 20 | 08-JUL-21 |
| **WG3571666-18 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 100.3 | | % | | 85-115 | 08-JUL-21 |
| **WG3571666-17 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 08-JUL-21 |
| **WG3571666-20 MS** | | **L2610037-3** | | | | | | |
| Ammonia, Total (as N) | | | 97.6 | | % | | 75-125 | 08-JUL-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5516998** | | | | | | | | |
| **WG3571678-3 DUP** | | **L2610551-1** | | | | | | |
| Nitrite (as N) | | 0.492 | 0.480 | | mg/L | 2.3 | 20 | 08-JUL-21 |
| **WG3571678-2 LCS** | | | | | | | | |
| Nitrite (as N) | | | 102.0 | | % | | 90-110 | 08-JUL-21 |
| **WG3571678-1 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 08-JUL-21 |
| **WG3571678-4 MS** | | **L2610551-1** | | | | | | |
| Nitrite (as N) | | | 107.9 | | % | | 75-125 | 08-JUL-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5516998** | | | | | | | | |
| **WG3571678-3 DUP** | | **L2610551-1** | | | | | | |
| Nitrate (as N) | | 6.66 | 6.59 | | mg/L | 0.9 | 20 | 08-JUL-21 |
| **WG3571678-2 LCS** | | | | | | | | |
| Nitrate (as N) | | | 101.7 | | % | | 90-110 | 08-JUL-21 |
| **WG3571678-1 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 08-JUL-21 |
| **WG3571678-4 MS** | | **L2610551-1** | | | | | | |
| Nitrate (as N) | | | N/A | MS-B | % | | - | 08-JUL-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5517558** | | | | | | | | |
| **WG3572816-2 LCS** | | | | | | | | |
| Oil and Grease | | | 84.3 | | % | | 70-130 | 09-JUL-21 |
| **WG3572816-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 09-JUL-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5521400** | | | | | | | | |
| **WG3575410-7 DUP** | | **L2608890-1** | | | | | | |
| Phosphorus (P)-Total | | 0.0421 | 0.0411 | | mg/L | 2.3 | 20 | 14-JUL-21 |
| **WG3575410-6 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 94.1 | | % | | 80-120 | 14-JUL-21 |
| **WG3575410-5 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 14-JUL-21 |
| **WG3575410-8 MS** | | **L2609055-1** | | | | | | |
| Phosphorus (P)-Total | | | 94.9 | | % | | 70-130 | 14-JUL-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5517592** | | | | | | | | |
| **WG3572394-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 125.1 | | % | | 50-150 | 12-JUL-21 |
| 2-Methylnaphthalene | | | 120.2 | | % | | 50-150 | 12-JUL-21 |
| Acenaphthene | | | 119.4 | | % | | 50-150 | 12-JUL-21 |
| Acenaphthylene | | | 115.0 | | % | | 50-150 | 12-JUL-21 |
| Anthracene | | | 96.8 | | % | | 50-150 | 12-JUL-21 |
| Acridine | | | 104.7 | | % | | 50-150 | 12-JUL-21 |
| Benzo(a)anthracene | | | 110.4 | | % | | 50-150 | 12-JUL-21 |
| Benzo(a)pyrene | | | 101.0 | | % | | 50-150 | 12-JUL-21 |
| Benzo(b&j)fluoranthene | | | 102.5 | | % | | 50-150 | 12-JUL-21 |
| Benzo(g,h,i)perylene | | | 108.7 | | % | | 50-150 | 12-JUL-21 |
| Benzo(k)fluoranthene | | | 104.8 | | % | | 50-150 | 12-JUL-21 |
| Chrysene | | | 123.3 | | % | | 50-150 | 12-JUL-21 |
| Dibenz(a,h)anthracene | | | 110.4 | | % | | 50-150 | 12-JUL-21 |
| Fluoranthene | | | 119.8 | | % | | 50-150 | 12-JUL-21 |
| Fluorene | | | 116.5 | | % | | 50-150 | 12-JUL-21 |
| Indeno(1,2,3-cd)pyrene | | | 126.8 | | % | | 50-150 | 12-JUL-21 |
| Naphthalene | | | 117.4 | | % | | 50-150 | 12-JUL-21 |
| Phenanthrene | | | 118.0 | | % | | 50-150 | 12-JUL-21 |
| Pyrene | | | 117.5 | | % | | 50-150 | 12-JUL-21 |
| Quinoline | | | 141.9 | | % | | 50-150 | 12-JUL-21 |
| **WG3572394-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |
| 2-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5517592** | | | | | | | | |
| **WG3572394-1 MB** | | | | | | | | |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 12-JUL-21 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 12-JUL-21 |
| Benzo(a)pyrene | | | <0.000005( | | mg/L | | 0.000005 | 12-JUL-21 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 12-JUL-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 12-JUL-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |
| Dibenz(a,h)anthracene | | | <0.000005( | | mg/L | | 0.000005 | 12-JUL-21 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 12-JUL-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 12-JUL-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 12-JUL-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 12-JUL-21 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 12-JUL-21 |
| Surrogate: Naphthalene d8 | | | 98.6 | | % | | 50-150 | 12-JUL-21 |
| Surrogate: Phenanthrene d10 | | | 96.7 | | % | | 50-150 | 12-JUL-21 |
| Surrogate: Chrysene d12 | | | 87.9 | | % | | 50-150 | 12-JUL-21 |
| Surrogate: Acridine d9 | | | 87.3 | | % | | 50-150 | 12-JUL-21 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5514416** | | | | | | | | |
| **WG3571429-20 DUP** | | **L2610252-1** | | | | | | |
| pH | | 8.03 | 8.02 | J | pH units | 0.01 | 0.2 | 07-JUL-21 |
| **WG3571429-17 LCS** | | | | | | | | |
| pH | | | 6.99 | | pH units | | 6.9-7.1 | 07-JUL-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5519501** | | | | | | | | |
| **WG3572924-3 DUP** | | **L2609260-7** | | | | | | |
| Phenols (4AAP) | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 20 | 12-JUL-21 |
| **WG3572924-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 94.5 | | % | | 85-115 | 12-JUL-21 |
| **WG3572924-1 MB** | | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5519501** | | | | | | | | |
| **WG3572924-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 12-JUL-21 |
| **WG3572924-4 MS** | | **L2609260-7** | | | | | | |
| Phenols (4AAP) | | | 96.4 | | % | | 75-125 | 12-JUL-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5516998** | | | | | | | | |
| **WG3571678-2 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 102.8 | | % | | 90-110 | 08-JUL-21 |
| **WG3571678-1 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 08-JUL-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5517388** | | | | | | | | |
| **WG3572112-9 DUP** | | **L2611330-1** | | | | | | |
| Total Suspended Solids | | 11.5 | 12.1 | | mg/L | 5.1 | 20 | 09-JUL-21 |
| **WG3572112-8 LCS** | | | | | | | | |
| Total Suspended Solids | | | 102.2 | | % | | 85-115 | 09-JUL-21 |
| **WG3572112-7 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 09-JUL-21 |
| **TC,EC-QT97-WP** | **Water** | | | | | | | |
| **Batch R5515216** | | | | | | | | |
| **WG3571153-2 DUP** | | **L2610544-1** | | | | | | |
| Total Coliforms | | >2420 | >2420 | | MPN/100mL | 0.0 | 65 | 07-JUL-21 |
| Escherichia Coli | | >2420 | >2420 | | MPN/100mL | 0.0 | 65 | 07-JUL-21 |
| **WG3571153-1 MB** | | | | | | | | |
| Total Coliforms | | | <1 | | MPN/100mL | | 1 | 07-JUL-21 |
| Escherichia Coli | | | <1 | | MPN/100mL | | 1 | 07-JUL-21 |

# Quality Control Report

Workorder: L2610544 Report Date: 26-JUL-21

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



**Legend:**

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

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| DLHC | Detection Limit Raised: Dilution required due to high concentration of test analyte(s). |
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| MES | Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

# Quality Control Report

Workorder: L2610544 Report Date: 26-JUL-21

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



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 06-JUL-21 10:30 | 07-JUL-21 12:00 | 0.25 | 25 | hours | EHTR-FM |
| **Bacteriological Tests** | | | | | | | |
| Fecal coliforms, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 06-JUL-21 10:30 | 07-JUL-21 17:30 | 30 | 31 | hours | EHTL |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2610544 were received on 07-JUL-21 10:00.

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

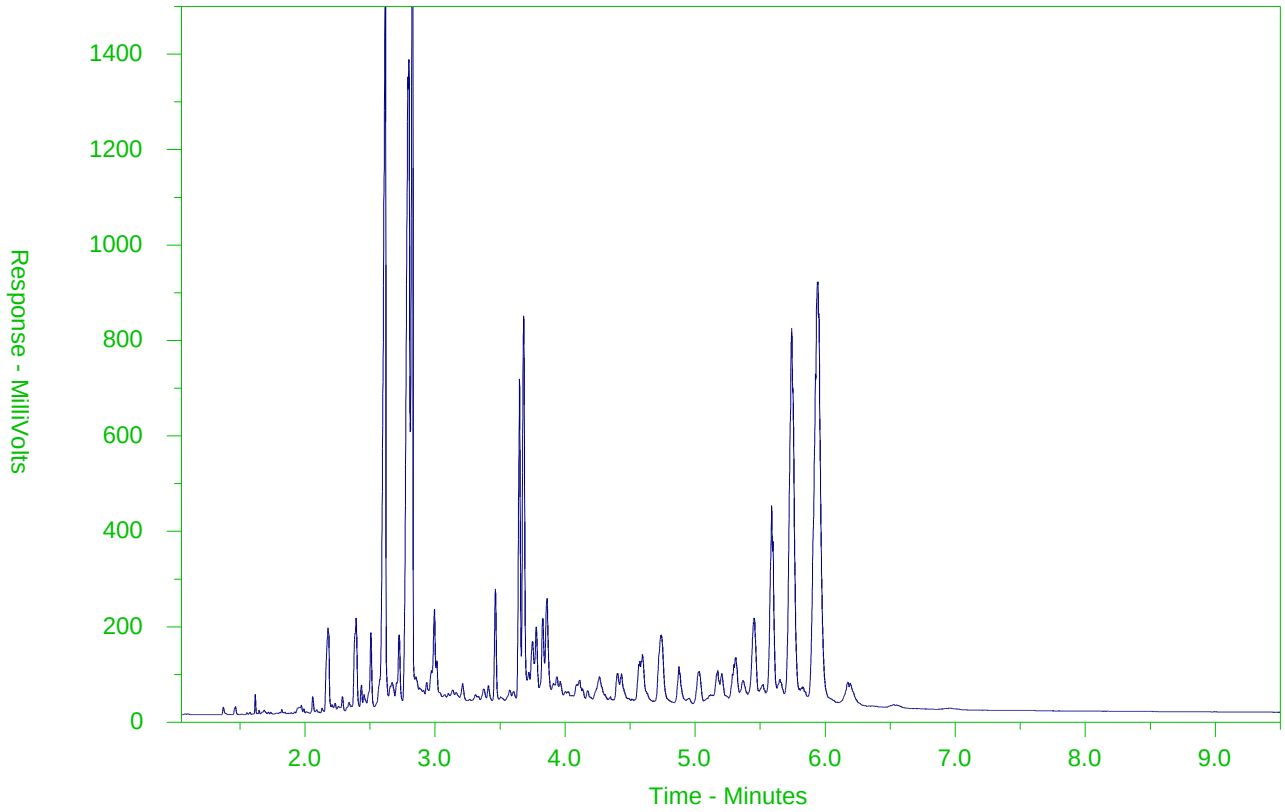
---

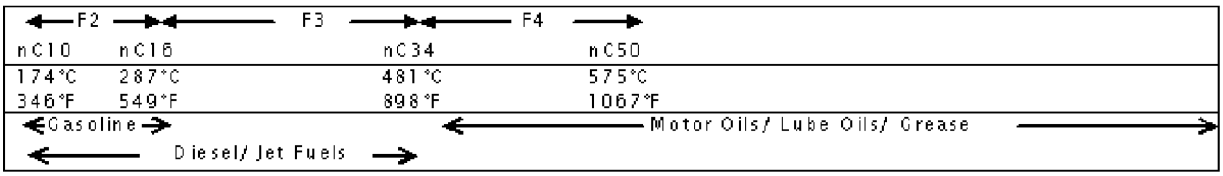
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2610544-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT




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

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

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

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

ALS Environment

L2610544-COFC

COC #

Page of

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

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH,PANH-WP | NUNAVUT-WW-GRP1-WP | F-IC-N-WP | TC,EC-QT97-WP | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | 06/06/21 | 10:30AM | Waste | X | X | X | X | X | 15 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | |
| | So all ICP-MS metals report. | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No ? If Yes add SIF |
| Brll Ross | 06/07/21 | 10:30 | NMX | JUL 07 2021 | 1000 | 17 - 1°C | NMX | JUL 07 2021 | | |

GENF 18.01 Front

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

Date Received: 24-AUG-21
Report Date: 24-SEP-21 11:06 (MT)
Version: FINAL REV. 2

Client Phone: 867-645-8155

# Certificate of Analysis

Lab Work Order #: L2630736

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS Environmental

# ANALYTICAL REPORT



## Physical Tests (WATER)

| | | | | ALS ID | L2630736-1 | |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 23-AUG-21 | |
| | | | | Sampled Time | 10:30 | |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT | |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | |
| Conductivity | umhos/cm | - | - | | 513 | |
| Hardness (as CaCO3) | mg/L | - | - | | 109 | HTC |
| pH | pH units | 7.00-10.5 | - | | 7.19 | |
| Total Suspended Solids | mg/L | - | - | | 288 | |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Anions and Nutrients (WATER)

| | | | | ALS ID | L2630736-1 | |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 23-AUG-21 | |
| | | | | Sampled Time | 10:30 | |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT | |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | |
| Alkalinity, Total (as CaCO3) | mg/L | - | - | | 132 | |
| Ammonia, Total (as N) | mg/L | - | - | | 13.9 | |
| Bicarbonate (HCO3) | mg/L | - | - | | 161 | |
| Carbonate (CO3) | mg/L | - | - | | <0.60 | |
| Chloride (Cl) | mg/L | 250 | - | | 57.9 | |
| Fluoride (F) | mg/L | - | 1.5 | | 0.129 | |
| Hydroxide (OH) | mg/L | - | - | | <0.34 | |
| Nitrate and Nitrite as N | mg/L | - | 10 | | <0.070 | |
| Nitrate (as N) | mg/L | - | 10 | | <0.020 | |
| Nitrite (as N) | mg/L | - | 1 | | <0.010 | |
| Phosphorus (P)-Total | mg/L | - | - | | 0.238 | |
| Sulfate (SO4) | mg/L | 500 | - | | 26.3 | |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Organic / Inorganic Carbon (WATER)

| | | | | ALS ID | L2630736-1 | |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 23-AUG-21 | |
| | | | | Sampled Time | 10:30 | |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT | |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | |
| Total Organic Carbon | mg/L | - | - | | 101 | |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ALS Environmental

# ANALYTICAL REPORT



**Bacteriological Tests (WATER)**

| | | | | ALS ID | L2630736-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 23-AUG-21 |
| | | | | Sampled Time | 10:30 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Escherichia Coli | MPN/100mL | - | 0 | | >24200 MBHT |
| Fecal Coliforms | MPN/100mL | - | - | | >24200 MBHT |
| Total Coliforms | MPN/100mL | - | 0 | | >24200 MBHT |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
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Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ALS Environmental

# ANALYTICAL REPORT



## Total Metals (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2630736-1<br>Sampled Date: 23-AUG-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | 0.1 | 2.9 | 0.367 |
| Antimony (Sb)-Total | mg/L | - | 0.006 | 0.00050 |
| Arsenic (As)-Total | mg/L | - | 0.01 | 0.00139 |
| Barium (Ba)-Total | mg/L | - | 2 | 0.0318 |
| Beryllium (Be)-Total | mg/L | - | - | <0.00010 |
| Bismuth (Bi)-Total | mg/L | - | - | 0.0110 |
| Boron (B)-Total | mg/L | - | 5 | 0.122 |
| Cadmium (Cd)-Total | mg/L | - | 0.005 | 0.000270 |
| Calcium (Ca)-Total | mg/L | - | - | 32.5 |
| Cesium (Cs)-Total | mg/L | - | - | 0.000092 |
| Chromium (Cr)-Total | mg/L | - | 0.05 | 0.00310 |
| Cobalt (Co)-Total | mg/L | - | - | 0.00063 |
| Copper (Cu)-Total | mg/L | 1 | 2 | 0.256 |
| Iron (Fe)-Total | mg/L | 0.3 | - | 1.60 |
| Lead (Pb)-Total | mg/L | - | 0.005 | 0.00342 |
| Lithium (Li)-Total | mg/L | - | - | 0.0034 |
| Magnesium (Mg)-Total | mg/L | - | - | 6.66 |
| Manganese (Mn)-Total | mg/L | 0.02 | 0.12 | 0.0632 |
| Mercury (Hg)-Total | mg/L | - | 0.001 | 0.0000137 |
| Molybdenum (Mo)-Total | mg/L | - | - | 0.00141 |
| Nickel (Ni)-Total | mg/L | - | - | 0.00627 |
| Phosphorus (P)-Total | mg/L | - | - | 4.61 |
| Potassium (K)-Total | mg/L | - | - | 10.1 |
| Rubidium (Rb)-Total | mg/L | - | - | 0.00953 |
| Selenium (Se)-Total | mg/L | - | 0.05 | 0.000635 |
| Silicon (Si)-Total | mg/L | - | - | 1.04 |
| Silver (Ag)-Total | mg/L | - | - | 0.000134 |
| Sodium (Na)-Total | mg/L | 200 | - | 34.9 |
| Strontium (Sr)-Total | mg/L | - | 7 | 0.147 |
| Sulfur (S)-Total | mg/L | - | - | 11.7 |
| Tellurium (Te)-Total | mg/L | - | - | <0.00020 |
| Thallium (Tl)-Total | mg/L | - | - | 0.000016 |
| Thorium (Th)-Total | mg/L | - | - | <0.00010 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
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Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
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# ANALYTICAL REPORT

## Total Metals (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2630736-1<br>Sampled Date: 23-AUG-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Tin (Sn)-Total | mg/L | - | - | 0.00361 |
| Titanium (Ti)-Total | mg/L | - | - | 0.0120 |
| Tungsten (W)-Total | mg/L | - | - | <0.00010 |
| Uranium (U)-Total | mg/L | - | 0.02 | 0.000476 |
| Vanadium (V)-Total | mg/L | - | - | 0.00100 |
| Zinc (Zn)-Total | mg/L | 5 | - | 0.566 |
| Zirconium (Zr)-Total | mg/L | - | - | 0.00106 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Aggregate Organics (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2630736-1<br>Sampled Date: 23-AUG-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Biochemical Oxygen Demand | mg/L | - | - | 292 |
| BOD Carbonaceous | mg/L | - | - | 272 |
| Oil and Grease | mg/L | - | - | 79.7 |
| Phenols (4AAP) | mg/L | - | - | 0.0232 DLM |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Volatile Organic Compounds (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2630736-1<br>Sampled Date: 23-AUG-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Benzene | mg/L | - | 0.005 | <0.00050 |
| Ethyl benzene | mg/L | 0.0016 | 0.14 | <0.00050 |
| Toluene | mg/L | 0.024 | 0.06 | 0.0121 |
| o-Xylene | mg/L | - | - | <0.00050 |
| m+p-Xylenes | mg/L | - | - | 0.00045 |
| Xylenes (Total) | mg/L | 0.02 | 0.09 | <0.00064 |
| F1 (C6-C10) | mg/L | - | - | <0.10 |
| F1-BTEX | mg/L | - | - | <0.10 |
| F2-Naphth | mg/L | - | - | 1.14 |
| F3-PAH | mg/L | - | - | 38.5 |
| Total Hydrocarbons (C6-C50) | mg/L | - | - | 49.2 |
| Surrogate: 4-Bromofluorobenzene (SS) | % | - | - | 97.1 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
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ALS Environmental

# ANALYTICAL REPORT



## Hydrocarbons (WATER)

| | | | | ALS ID | L2630736-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 23-AUG-21 |
| | | | | Sampled Time | 10:30 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| F2 (C10-C16) | mg/L | - | - | | 1.14 |
| F3 (C16-C34) | mg/L | - | - | | 38.5 |
| F4 (C34-C50) | mg/L | - | - | | 9.50 |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | | 93.9 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
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## Polycyclic Aromatic Hydrocarbons (WATER)

| | | | | ALS ID | L2630736-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 23-AUG-21 |
| | | | | Sampled Time | 10:30 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Acenaphthene | mg/L | - | - | | 0.000045 DLM |
| Acenaphthylene | mg/L | - | - | | <0.000040 DLM |
| Acridine | mg/L | - | - | | <0.000020 DLM |
| Anthracene | mg/L | - | - | | <0.000020 DLM |
| Benzo(a)anthracene | mg/L | - | - | | <0.000020 DLM |
| Benzo(a)pyrene | mg/L | - | 0.00004 | | <0.000050 DLM |
| Benzo(b&j)fluoranthene | mg/L | - | - | | <0.000020 DLM |
| Benzo(g,h,i)perylene | mg/L | - | - | | 0.000066 DLM |
| Benzo(k)fluoranthene | mg/L | - | - | | <0.000020 DLM |
| Chrysene | mg/L | - | - | | <0.000040 DLM |
| Dibenz(a,h)anthracene | mg/L | - | - | | 0.000048 DLM |
| Fluoranthene | mg/L | - | - | | <0.000040 DLM |
| Fluorene | mg/L | - | - | | <0.000040 DLM |
| Indeno(1,2,3-cd)pyrene | mg/L | - | - | | 0.000598 DLM |
| 1-Methylnaphthalene | mg/L | - | - | | 0.000155 DLM |
| 2-Methylnaphthalene | mg/L | - | - | | 0.000186 DLM |
| Naphthalene | mg/L | - | - | | 0.00017 DLM |
| Phenanthrene | mg/L | - | - | | <0.00010 DLM |
| Pyrene | mg/L | - | - | | <0.000450 DLM |
| Quinoline | mg/L | - | - | | 0.00222 DLM |
| Surrogate: Acridine d9 | % | - | - | | 91 |
| Surrogate: Chrysene d12 | % | - | - | | 116 |
| Surrogate: Naphthalene d8 | % | - | - | | 127 |
| Surrogate: Phenanthrene d10 | % | - | - | | 91 |
| B(a)P Total Potency Equivalent | mg/L | - | - | | 0.000136 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
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* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| MBHT | The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may |

# Reference Information

be valid in some cases (refer to Health Canada guidance).

HTC Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

DLM Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **ALK-CO3CO3-CALC-WP** | Water | Alkalinity, Carbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

| | | | |
|---|---|---|---|
| **ALK-HCO3HCO3-CALC-WP** | Water | Alkalinity, Bicarbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

| | | | |
|---|---|---|---|
| **ALK-OHOH-CALC-WP** | Water | Alkalinity, Hydroxide | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

| | | | |
|---|---|---|---|
| **ALK-TITR-WP** | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

| | | | |
|---|---|---|---|
| **BOD-CBOD-WP** | Water | Carbonaceous BOD | APHA 5210 B |

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20 C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| **BOD-WP** | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |

Samples are diluted and seeded and then incubated in airtight bottles at 20 C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

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

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

| | | | |
|---|---|---|---|
| **C-TOC-HTC-WP** | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

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

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

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

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

| | | | |
|---|---|---|---|
| **EC-WP** | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

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

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

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

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

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

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

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

**HARDNESS-CALC-WP** Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

**NO2+NO3-CALC-WP** Water Nitrate+Nitrite CALCULATION

**NO2-IC-N-WP** Water Nitrite in Water by IC EPA 300.1 (mod)

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

**NO3-IC-N-WP** Water Nitrate in Water by IC EPA 300.1 (mod)

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

**OG-GRAV-WP** Water Oil & Grease - Gravimetric EPA 1664 (modified)

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

**PAH-CCME-PPM-WT** Water CCME PAHs in mg/L EPA 3511/8270D (mod)

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

**PH-WP** Water APHA 4500H

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

**PHENOLS-4AAP-WT** Water Phenol (4AAP) EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

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

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

**SOLIDS-TOTSUS-WP** Water Total Suspended Solids APHA 2540 D (modified)

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105 C.

**TC,EC10-QT97-WP** Water Total and E. coli, 1:10 dilution by QT97 APHA 9223B QT97

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

**XYLENES-SUM-CALC-WP** Water Sum of Xylene Isomer Concentrations CALCULATED RESULT

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*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 |

**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.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

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

Date Received: 16-SEP-21
Report Date: 01-OCT-21 08:19 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2640439

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

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# ANALYTICAL REPORT

## Physical Tests (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2640439-1<br>Sampled Date: 15-SEP-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT | |
|---|---|---|---|---|---|
| Conductivity | umhos/cm | - | - | 502 | |
| Hardness (as CaCO3) | mg/L | - | - | 109 | HTC |
| pH | pH units | 7.00-10.5 | - | 7.30 | |
| Total Suspended Solids | mg/L | - | - | 89.8 | |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Anions and Nutrients (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2640439-1<br>Sampled Date: 15-SEP-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Alkalinity, Total (as CaCO3) | mg/L | - | - | 125 |
| Ammonia, Total (as N) | mg/L | - | - | 8.60 |
| Bicarbonate (HCO3) | mg/L | - | - | 152 |
| Carbonate (CO3) | mg/L | - | - | <0.60 |
| Chloride (Cl) | mg/L | 250 | - | 58.0 |
| Fluoride (F) | mg/L | - | 1.5 | 0.148 |
| Hydroxide (OH) | mg/L | - | - | <0.34 |
| Nitrate and Nitrite as N | mg/L | - | 10 | <0.070 |
| Nitrate (as N) | mg/L | - | 10 | <0.020 |
| Nitrite (as N) | mg/L | - | 1 | <0.010 |
| Phosphorus (P)-Total | mg/L | - | - | 2.26 |
| Sulfate (SO4) | mg/L | 500 | - | 29.5 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Organic / Inorganic Carbon (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2640439-1<br>Sampled Date: 15-SEP-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Total Organic Carbon | mg/L | - | - | 58.6 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Bacteriological Tests (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2640439-1<br>Sampled Date: 15-SEP-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Escherichia Coli | MPN/100mL | - | 0 | >24200 MBHT |
| Fecal Coliforms | MPN/100mL | - | - | >24200 MBHT |
| Total Coliforms | MPN/100mL | - | 0 | >24200 MBHT |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Total Metals (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2640439-1<br>Sampled Date: 15-SEP-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | 0.1 | 2.9 | 0.148 |
| Arsenic (As)-Total | mg/L | - | 0.01 | 0.00163 |
| Cadmium (Cd)-Total | mg/L | - | 0.005 | 0.000104 |
| Calcium (Ca)-Total | mg/L | - | - | 32.5 |
| Chromium (Cr)-Total | mg/L | - | 0.05 | 0.00106 |
| Cobalt (Co)-Total | mg/L | - | - | 0.00053 |
| Copper (Cu)-Total | mg/L | 1 | 2 | 0.113 |
| Iron (Fe)-Total | mg/L | 0.3 | - | 0.567 |
| Lead (Pb)-Total | mg/L | - | 0.005 | 0.000912 |
| Magnesium (Mg)-Total | mg/L | - | - | 6.74 |
| Manganese (Mn)-Total | mg/L | 0.02 | 0.12 | 0.0634 |
| Mercury (Hg)-Total | mg/L | - | 0.001 | 0.0000135 |
| Nickel (Ni)-Total | mg/L | - | - | 0.00449 |
| Potassium (K)-Total | mg/L | - | - | 8.21 |
| Sodium (Na)-Total | mg/L | 200 | - | 36.6 |
| Zinc (Zn)-Total | mg/L | 5 | - | 0.0875 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
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Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Aggregate Organics (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2640439-1<br>Sampled Date: 15-SEP-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Biochemical Oxygen Demand | mg/L | - | - | 99 |
| BOD Carbonaceous | mg/L | - | - | 88 |
| Oil and Grease | mg/L | - | - | 18.3 |
| Phenols (4AAP) | mg/L | - | - | <0.010 DLM |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Volatile Organic Compounds (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2640439-1<br>Sampled Date: 15-SEP-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Benzene | mg/L | - | 0.005 | <0.00050 |
| Ethyl benzene | mg/L | 0.0016 | 0.14 | <0.00050 |
| Toluene | mg/L | 0.024 | 0.06 | <0.0010 |
| o-Xylene | mg/L | - | - | <0.00050 |
| m+p-Xylenes | mg/L | - | - | <0.00040 |
| Xylenes (Total) | mg/L | 0.02 | 0.09 | <0.00064 |
| F1 (C6-C10) | mg/L | - | - | <0.10 |
| F1-BTEX | mg/L | - | - | <0.10 |
| F2-Naphth | mg/L | - | - | 0.39 |
| F3-PAH | mg/L | - | - | 6.78 |
| Total Hydrocarbons (C6-C50) | mg/L | - | - | 9.83 |
| Surrogate: 4-Bromofluorobenzene (SS) | % | - | - | 89.1 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Hydrocarbons (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2640439-1<br>Sampled Date: 15-SEP-21<br>Sampled Time: 10:30<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| F2 (C10-C16) | mg/L | - | - | 0.39 |
| F3 (C16-C34) | mg/L | - | - | 6.78 |
| F4 (C34-C50) | mg/L | - | - | 2.66 |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 103.7 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Polycyclic Aromatic Hydrocarbons (WATER)

| | | | | ALS ID | L2640439-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 15-SEP-21 |
| | | | | Sampled Time | 10:30 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Acenaphthene | mg/L | - | - | 0.000051 | |
| Acenaphthylene | mg/L | - | - | <0.000020 | |
| Acridine | mg/L | - | - | <0.000020 | |
| Anthracene | mg/L | - | - | 0.000017 | |
| Benzo(a)anthracene | mg/L | - | - | <0.000010 | |
| Benzo(a)pyrene | mg/L | - | 0.00004 | <0.0000050 | |
| Benzo(b&j)fluoranthene | mg/L | - | - | <0.000010 | |
| Benzo(g,h,i)perylene | mg/L | - | - | <0.000020 | |
| Benzo(k)fluoranthene | mg/L | - | - | <0.000010 | |
| Chrysene | mg/L | - | - | <0.000020 | |
| Dibenz(a,h)anthracene | mg/L | - | - | <0.0000050 | |
| Fluoranthene | mg/L | - | - | <0.000020 | |
| Fluorene | mg/L | - | - | <0.000054 DLM | |
| Indeno(1,2,3-cd)pyrene | mg/L | - | - | 0.000190 | |
| 1-Methylnaphthalene | mg/L | - | - | 0.000140 | |
| 2-Methylnaphthalene | mg/L | - | - | 0.000162 | |
| Naphthalene | mg/L | - | - | 0.000158 | |
| Phenanthrene | mg/L | - | - | <0.000050 | |
| Pyrene | mg/L | - | - | <0.000028 DLM | |
| Quinoline | mg/L | - | - | <0.000067 DLM | |
| Surrogate: Acridine d9 | % | - | - | 103.1 | |
| Surrogate: Chrysene d12 | % | - | - | 99.8 | |
| Surrogate: Naphthalene d8 | % | - | - | 104.1 | |
| Surrogate: Phenanthrene d10 | % | - | - | 100.8 | |
| B(a)P Total Potency Equivalent | mg/L | - | - | <0.000030 | |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
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Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| MBHT | The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may |

# Reference Information

| | |
|---|---|
| | be valid in some cases (refer to Health Canada guidance). |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **ALK-CO3CO3-CALC-WP** | Water | Alkalinity, Carbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

| | | | |
|---|---|---|---|
| **ALK-HCO3HCO3-CALC-WP** | Water | Alkalinity, Bicarbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

| | | | |
|---|---|---|---|
| **ALK-OHOH-CALC-WP** | Water | Alkalinity, Hydroxide | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

| | | | |
|---|---|---|---|
| **ALK-TITR-WP** | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

| | | | |
|---|---|---|---|
| **BOD-CBOD-WP** | Water | Carbonaceous BOD | APHA 5210 B |

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| **BOD-WP** | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

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

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

| | | | |
|---|---|---|---|
| **C-TOC-HTC-WP** | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

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

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

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

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

| | | | |
|---|---|---|---|
| **EC-WP** | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

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

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

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

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

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

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

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

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

**HARDNESS-CALC-WP** Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

**NO2+NO3-CALC-WP** Water Nitrate+Nitrite CALCULATION

**NO2-IC-N-WP** Water Nitrite in Water by IC EPA 300.1 (mod)

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

**NO3-IC-N-WP** Water Nitrate in Water by IC EPA 300.1 (mod)

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

**OG-GRAV-WP** Water Oil & Grease - Gravimetric EPA 1664 (modified)

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

**PAH-CCME-PPM-WT** Water CCME PAHs in mg/L EPA 3511/8270D (mod)

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

**PH-WP** Water pH APHA 4500H

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| | | The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode. | |
| **PHENOLS-4AAP-WT** | Water | Phenol (4AAP) | EPA 9066 |
| | | An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically. | |
| **SO4-IC-N-WP** | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| | | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | |
| **SOLIDS-TOTSUS-WP** | Water | Total Suspended Solids | APHA 2540 D (modified) |
| | | Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C. | |
| **TC,EC10-QT97-WP** | Water | Total and E. coli, 1:10 dilution by QT97 | APHA 9223B QT97 |
| | | Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table. | |
| **XYLENES-SUM-CALC-WP** | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |
| | | Total xylenes represents the sum of o-xylene and m&p-xylene. | |

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*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 |

**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.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2640439 Report Date: 01-OCT-21 

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

Contact: SIMON DOIRON (Rankin Inlet)

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5587196** | | | | | | | | |
| **WG3620639-10 DUP** | | **L2640003-4** | | | | | | |
| Alkalinity, Total (as CaCO3) | | 78.8 | 79.4 | | mg/L | 0.8 | 20 | 17-SEP-21 |
| **WG3620639-9 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 101.1 | | % | | 85-115 | 17-SEP-21 |
| **WG3620639-6 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 17-SEP-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5595521** | | | | | | | | |
| **WG3619281-7 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 96.1 | | % | | 85-115 | 17-SEP-21 |
| **WG3619281-6 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 17-SEP-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5595521** | | | | | | | | |
| **WG3619281-8 DUP** | | **L2640397-2** | | | | | | |
| Biochemical Oxygen Demand | | 163 | 157 | | mg/L | 3.4 | 30 | 17-SEP-21 |
| **WG3619281-7 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 111.1 | | % | | 85-115 | 17-SEP-21 |
| **WG3619281-6 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 17-SEP-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5595737** | | | | | | | | |
| **WG3621511-4 DUP** | | **L2640337-1** | | | | | | |
| Benzene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 22-SEP-21 |
| Toluene | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 30 | 22-SEP-21 |
| Ethyl benzene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 22-SEP-21 |
| o-Xylene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 22-SEP-21 |
| m+p-Xylenes | | <0.00040 | <0.00040 | RPD-NA | mg/L | N/A | 30 | 22-SEP-21 |
| F1 (C6-C10) | | <0.10 | <0.10 | RPD-NA | mg/L | N/A | 30 | 22-SEP-21 |
| **WG3621511-2 LCS** | | | | | | | | |
| Benzene | | | 76.3 | | % | | 70-130 | 22-SEP-21 |
| Toluene | | | 85.8 | | % | | 70-130 | 22-SEP-21 |
| Ethyl benzene | | | 79.9 | | % | | 70-130 | 22-SEP-21 |
| o-Xylene | | | 81.7 | | % | | 70-130 | 22-SEP-21 |
| m+p-Xylenes | | | 75.3 | | % | | 70-130 | 22-SEP-21 |
| **WG3621511-3 LCS** | | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5595737** | | | | | | | | |
| **WG3621511-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 75.6 | | % | | 70-130 | 22-SEP-21 |
| **WG3621511-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 22-SEP-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 22-SEP-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 22-SEP-21 |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 22-SEP-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 22-SEP-21 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 22-SEP-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 87.4 | | % | | 70-130 | 22-SEP-21 |
| **WG3621511-5 MS** | | **L2640337-1** | | | | | | |
| Benzene | | | 85.1 | | % | | 50-150 | 23-SEP-21 |
| Toluene | | | 76.4 | | % | | 50-150 | 23-SEP-21 |
| Ethyl benzene | | | 73.1 | | % | | 50-150 | 23-SEP-21 |
| o-Xylene | | | 85.0 | | % | | 50-150 | 23-SEP-21 |
| m+p-Xylenes | | | 72.0 | | % | | 50-150 | 23-SEP-21 |
| **WG3621511-6 MS** | | **L2640337-2** | | | | | | |
| F1 (C6-C10) | | | 79.6 | | % | | 50-150 | 23-SEP-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5594520** | | | | | | | | |
| **WG3623357-3 DUP** | | **L2642349-1** | | | | | | |
| Total Organic Carbon | | 7.05 | 7.07 | | mg/L | 0.2 | 20 | 23-SEP-21 |
| **WG3623357-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 97.9 | | % | | 80-120 | 23-SEP-21 |
| **WG3623357-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 23-SEP-21 |
| **WG3623357-4 MS** | | **L2642349-2** | | | | | | |
| Total Organic Carbon | | | 90.2 | | % | | 70-130 | 23-SEP-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5589762** | | | | | | | | |
| **WG3619461-3 DUP** | | **L2640333-1** | | | | | | |
| Chloride (Cl) | | 10.7 | 10.6 | | mg/L | 0.2 | 20 | 17-SEP-21 |
| **WG3619461-2 LCS** | | | | | | | | |
| Chloride (Cl) | | | 101.8 | | % | | 90-110 | 17-SEP-21 |
| **WG3619461-1 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 17-SEP-21 |
| **WG3619461-4 MS** | | **L2640333-1** | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5589762** | | | | | | | | |
| **WG3619461-4 MS** | | **L2640333-1** | | | | | | |
| Chloride (Cl) | | | 101.5 | | % | | 75-125 | 17-SEP-21 |
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5587196** | | | | | | | | |
| **WG3620639-10 DUP** | | **L2640003-4** | | | | | | |
| Conductivity | | 204 | 204 | | umhos/cm | 0.0 | 10 | 17-SEP-21 |
| **WG3620639-8 LCS** | | | | | | | | |
| Conductivity | | | 98.8 | | % | | 90-110 | 17-SEP-21 |
| **WG3620639-6 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 17-SEP-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5589762** | | | | | | | | |
| **WG3619461-2 LCS** | | | | | | | | |
| Fluoride (F) | | | 102.0 | | % | | 90-110 | 17-SEP-21 |
| **WG3619461-1 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 17-SEP-21 |
| **F2-F4-FID-WP** | **Water** | | | | | | | |
| **Batch R5586713** | | | | | | | | |
| **WG3619638-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 98.4 | | % | | 70-130 | 18-SEP-21 |
| F3 (C16-C34) | | | 94.7 | | % | | 70-130 | 18-SEP-21 |
| F4 (C34-C50) | | | 83.0 | | % | | 70-130 | 18-SEP-21 |
| **WG3619638-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 18-SEP-21 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 18-SEP-21 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 18-SEP-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 101.6 | | % | | 60-140 | 18-SEP-21 |
| **FC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5586325** | | | | | | | | |
| **WG3619061-2 DUP** | | **L2640439-1** | | | | | | |
| Fecal Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 16-SEP-21 |
| **WG3619061-1 MB** | | | | | | | | |
| Fecal Coliforms | | | <1 | | MPN/100mL | | 1 | 16-SEP-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5603002** | | | | | | | | |
| **WG3626474-3 DUP** | | **L2639214-1** | | | | | | |
| Mercury (Hg)-Total | | 0.0000181 | 0.0000133 | J | mg/L | 0.0000047 | 0.00001 | 27-SEP-21 |
| **WG3626474-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 91.2 | | % | | 80-120 | 27-SEP-21 |
| **WG3626474-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005( | | mg/L | | 0.000005 | 27-SEP-21 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5588020** | | | | | | | | |
| **WG3618054-4 DUP** | | **WG3618054-3** | | | | | | |
| Aluminum (Al)-Total | | <0.0030 | <0.0030 | RPD-NA | mg/L | N/A | 20 | 17-SEP-21 |
| Arsenic (As)-Total | | 0.0116 | 0.0115 | | mg/L | 0.2 | 20 | 17-SEP-21 |
| Cadmium (Cd)-Total | | 0.0000050 | 0.0000053 | | mg/L | 5.3 | 20 | 17-SEP-21 |
| Calcium (Ca)-Total | | 69.2 | 69.7 | | mg/L | 0.7 | 20 | 17-SEP-21 |
| Chromium (Cr)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 17-SEP-21 |
| Cobalt (Co)-Total | | 0.00026 | 0.00027 | | mg/L | 1.6 | 20 | 17-SEP-21 |
| Copper (Cu)-Total | | 0.0619 | 0.0623 | | mg/L | 0.6 | 20 | 17-SEP-21 |
| Iron (Fe)-Total | | 0.156 | 0.155 | | mg/L | 0.7 | 20 | 17-SEP-21 |
| Lead (Pb)-Total | | 0.000063 | 0.000061 | | mg/L | 3.4 | 20 | 17-SEP-21 |
| Magnesium (Mg)-Total | | 24.6 | 24.4 | | mg/L | 1.1 | 20 | 17-SEP-21 |
| Manganese (Mn)-Total | | 0.395 | 0.386 | | mg/L | 2.1 | 20 | 17-SEP-21 |
| Nickel (Ni)-Total | | 0.00071 | 0.00260 | J,G | mg/L | 0.00188 | 0.001 | 17-SEP-21 |
| Potassium (K)-Total | | 2.56 | 2.55 | | mg/L | 0.2 | 20 | 17-SEP-21 |
| Sodium (Na)-Total | | 8.18 | 8.06 | | mg/L | 1.4 | 20 | 17-SEP-21 |
| Zinc (Zn)-Total | | 0.0145 | 0.0082 | J,G | mg/L | 0.0063 | 0.006 | 17-SEP-21 |
| **WG3618054-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 102.1 | | % | | 80-120 | 17-SEP-21 |
| Arsenic (As)-Total | | | 100.6 | | % | | 80-120 | 17-SEP-21 |
| Cadmium (Cd)-Total | | | 101.8 | | % | | 80-120 | 17-SEP-21 |
| Calcium (Ca)-Total | | | 101.8 | | % | | 80-120 | 17-SEP-21 |
| Chromium (Cr)-Total | | | 100.0 | | % | | 80-120 | 17-SEP-21 |
| Cobalt (Co)-Total | | | 100.9 | | % | | 80-120 | 17-SEP-21 |
| Copper (Cu)-Total | | | 100.9 | | % | | 80-120 | 17-SEP-21 |
| Iron (Fe)-Total | | | 98.4 | | % | | 80-120 | 17-SEP-21 |
| Lead (Pb)-Total | | | 102.2 | | % | | 80-120 | 17-SEP-21 |
| Magnesium (Mg)-Total | | | 107.5 | | % | | 80-120 | 17-SEP-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5588020** | | | | | | | | |
| **WG3618054-2 LCS** | | | | | | | | |
| Manganese (Mn)-Total | | | 102.2 | | % | | 80-120 | 17-SEP-21 |
| Nickel (Ni)-Total | | | 101.1 | | % | | 80-120 | 17-SEP-21 |
| Potassium (K)-Total | | | 103.3 | | % | | 80-120 | 17-SEP-21 |
| Sodium (Na)-Total | | | 101.8 | | % | | 80-120 | 17-SEP-21 |
| Zinc (Zn)-Total | | | 99.5 | | % | | 80-120 | 17-SEP-21 |
| **WG3618054-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 17-SEP-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-SEP-21 |
| Cadmium (Cd)-Total | | | <0.000005( | | mg/L | | 0.000005 | 17-SEP-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 17-SEP-21 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-SEP-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-SEP-21 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 17-SEP-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 17-SEP-21 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 17-SEP-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 17-SEP-21 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 17-SEP-21 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 17-SEP-21 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 17-SEP-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 17-SEP-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 17-SEP-21 |
| **WG3618054-5 MS** | | **WG3618054-3** | | | | | | |
| Aluminum (Al)-Total | | | 95.6 | | % | | 70-130 | 17-SEP-21 |
| Arsenic (As)-Total | | | 99.8 | | % | | 70-130 | 17-SEP-21 |
| Cadmium (Cd)-Total | | | 100.6 | | % | | 70-130 | 17-SEP-21 |
| Calcium (Ca)-Total | | | N/A | MS-B | % | | - | 17-SEP-21 |
| Chromium (Cr)-Total | | | 97.6 | | % | | 70-130 | 17-SEP-21 |
| Cobalt (Co)-Total | | | 95.9 | | % | | 70-130 | 17-SEP-21 |
| Copper (Cu)-Total | | | N/A | MS-B | % | | - | 17-SEP-21 |
| Iron (Fe)-Total | | | 96.4 | | % | | 70-130 | 17-SEP-21 |
| Lead (Pb)-Total | | | 96.7 | | % | | 70-130 | 17-SEP-21 |
| Magnesium (Mg)-Total | | | N/A | MS-B | % | | - | 17-SEP-21 |
| Manganese (Mn)-Total | | | N/A | MS-B | % | | - | 17-SEP-21 |
| Nickel (Ni)-Total | | | 96.4 | | % | | 70-130 | 17-SEP-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5588020** | | | | | | | | |
| **WG3618054-5 MS** | | **WG3618054-3** | | | | | | |
| Potassium (K)-Total | | | 96.8 | | % | | 70-130 | 17-SEP-21 |
| Sodium (Na)-Total | | | N/A | MS-B | % | | - | 17-SEP-21 |
| Zinc (Zn)-Total | | | 93.0 | | % | | 70-130 | 17-SEP-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5592636** | | | | | | | | |
| **WG3622507-15 DUP** | | **L2640268-3** | | | | | | |
| Ammonia, Total (as N) | | 0.035 | 0.036 | | mg/L | 3.6 | 20 | 21-SEP-21 |
| **WG3622507-14 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 98.7 | | % | | 85-115 | 21-SEP-21 |
| **WG3622507-13 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 21-SEP-21 |
| **WG3622507-16 MS** | | **L2640268-3** | | | | | | |
| Ammonia, Total (as N) | | | 89.5 | | % | | 75-125 | 21-SEP-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5589762** | | | | | | | | |
| **WG3619461-2 LCS** | | | | | | | | |
| Nitrite (as N) | | | 103.5 | | % | | 90-110 | 17-SEP-21 |
| **WG3619461-1 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 17-SEP-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5589762** | | | | | | | | |
| **WG3619461-3 DUP** | | **L2640333-1** | | | | | | |
| Nitrate (as N) | | 0.086 | 0.084 | | mg/L | 1.6 | 20 | 17-SEP-21 |
| **WG3619461-2 LCS** | | | | | | | | |
| Nitrate (as N) | | | 101.7 | | % | | 90-110 | 17-SEP-21 |
| **WG3619461-1 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 17-SEP-21 |
| **WG3619461-4 MS** | | **L2640333-1** | | | | | | |
| Nitrate (as N) | | | 100.8 | | % | | 75-125 | 17-SEP-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5597400** | | | | | | | | |
| **WG3624407-2 LCS** | | | | | | | | |
| Oil and Grease | | | 98.2 | | % | | 70-130 | 22-SEP-21 |
| **WG3624407-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 22-SEP-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5601776** | | | | | | | | |
| **WG3624953-3 DUP** | | **L2640671-1** | | | | | | |
| Phosphorus (P)-Total | | 0.0150 | 0.0178 | | mg/L | 8.5 | 20 | 27-SEP-21 |
| **WG3624953-2 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 95.8 | | % | | 80-120 | 27-SEP-21 |
| **WG3624953-1 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 27-SEP-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5605896** | | | | | | | | |
| **WG3625964-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 96.8 | | % | | 60-130 | 01-OCT-21 |
| 2-Methylnaphthalene | | | 89.8 | | % | | 60-130 | 01-OCT-21 |
| Acenaphthene | | | 92.6 | | % | | 60-130 | 01-OCT-21 |
| Acenaphthylene | | | 91.7 | | % | | 60-130 | 01-OCT-21 |
| Anthracene | | | 88.6 | | % | | 60-130 | 01-OCT-21 |
| Acridine | | | 98.5 | | % | | 60-130 | 01-OCT-21 |
| Benzo(a)anthracene | | | 96.9 | | % | | 60-130 | 01-OCT-21 |
| Benzo(a)pyrene | | | 78.5 | | % | | 60-130 | 01-OCT-21 |
| Benzo(b&j)fluoranthene | | | 94.4 | | % | | 60-130 | 01-OCT-21 |
| Benzo(g,h,i)perylene | | | 88.3 | | % | | 60-130 | 01-OCT-21 |
| Benzo(k)fluoranthene | | | 94.9 | | % | | 60-130 | 01-OCT-21 |
| Chrysene | | | 98.9 | | % | | 60-130 | 01-OCT-21 |
| Dibenz(a,h)anthracene | | | 96.4 | | % | | 60-130 | 01-OCT-21 |
| Fluoranthene | | | 100.9 | | % | | 60-130 | 01-OCT-21 |
| Fluorene | | | 96.4 | | % | | 60-130 | 01-OCT-21 |
| Indeno(1,2,3-cd)pyrene | | | 94.5 | | % | | 60-130 | 01-OCT-21 |
| Naphthalene | | | 78.2 | | % | | 50-130 | 01-OCT-21 |
| Phenanthrene | | | 103.4 | | % | | 60-130 | 01-OCT-21 |
| Pyrene | | | 101.0 | | % | | 60-130 | 01-OCT-21 |
| Quinoline | | | 111.0 | | % | | 60-130 | 01-OCT-21 |
| **WG3625964-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| 2-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 01-OCT-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5605896** | | | | | | | | |
| **WG3625964-1 MB** | | | | | | | | |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 01-OCT-21 |
| Benzo(a)pyrene | | | <0.000005( | | mg/L | | 0.000005 | 01-OCT-21 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 01-OCT-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 01-OCT-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| Dibenz(a,h)anthracene | | | <0.000005( | | mg/L | | 0.000005 | 01-OCT-21 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 01-OCT-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 01-OCT-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 01-OCT-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 01-OCT-21 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 01-OCT-21 |
| Surrogate: Naphthalene d8 | | | 85.7 | | % | | 50-130 | 01-OCT-21 |
| Surrogate: Phenanthrene d10 | | | 96.8 | | % | | 60-130 | 01-OCT-21 |
| Surrogate: Chrysene d12 | | | 90.9 | | % | | 60-130 | 01-OCT-21 |
| Surrogate: Acridine d9 | | | 95.2 | | % | | 60-130 | 01-OCT-21 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5587196** | | | | | | | | |
| **WG3620639-10 DUP** | | **L2640003-4** | | | | | | |
| pH | | 8.02 | 8.03 | J | pH units | 0.01 | 0.2 | 17-SEP-21 |
| **WG3620639-7 LCS** | | | | | | | | |
| pH | | | 7.01 | | pH units | | 6.9-7.1 | 17-SEP-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5595100** | | | | | | | | |
| **WG3621232-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 97.8 | | % | | 85-115 | 22-SEP-21 |
| **WG3621232-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 22-SEP-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5589762** | | | | | | | | |
| **WG3619461-3 DUP** | | **L2640333-1** | | | | | | |
| Sulfate (SO4) | | 11.3 | 11.3 | | mg/L | 0.0 | 20 | 17-SEP-21 |
| **WG3619461-2 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 101.9 | | % | | 90-110 | 17-SEP-21 |
| **WG3619461-1 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 17-SEP-21 |
| **WG3619461-4 MS** | | **L2640333-1** | | | | | | |
| Sulfate (SO4) | | | 100.3 | | % | | 75-125 | 17-SEP-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5592997** | | | | | | | | |
| **WG3621018-6 DUP** | | **L2641130-1** | | | | | | |
| Total Suspended Solids | | <3.0 | <3.0 | RPD-NA | mg/L | N/A | 20 | 21-SEP-21 |
| **WG3621018-5 LCS** | | | | | | | | |
| Total Suspended Solids | | | 89.3 | | % | | 85-115 | 21-SEP-21 |
| **WG3621018-4 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 21-SEP-21 |
| **TC,EC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5586333** | | | | | | | | |
| **WG3619684-2 DUP** | | **L2640439-1** | | | | | | |
| Total Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 16-SEP-21 |
| Escherichia Coli | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 16-SEP-21 |
| **WG3619684-1 MB** | | | | | | | | |
| Total Coliforms | | | <1 | | MPN/100mL | | 1 | 16-SEP-21 |
| Escherichia Coli | | | <1 | | MPN/100mL | | 1 | 16-SEP-21 |

# Quality Control Report

Workorder: L2640439 Report Date: 01-OCT-21

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



**Legend:**

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

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

# Quality Control Report

Workorder: L2640439 Report Date: 01-OCT-21

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



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 15-SEP-21 10:30 | 17-SEP-21 12:00 | 0.25 | 49 | hours | EHTR-FM |
| **Bacteriological Tests** | | | | | | | |
| Fecal coliforms, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 15-SEP-21 10:30 | 16-SEP-21 18:10 | 30 | 32 | hours | EHTL |
| Total and E. coli, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 15-SEP-21 10:30 | 16-SEP-21 18:10 | 30 | 32 | hours | EHTL |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2640439 were received on 16-SEP-21 16:00.

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

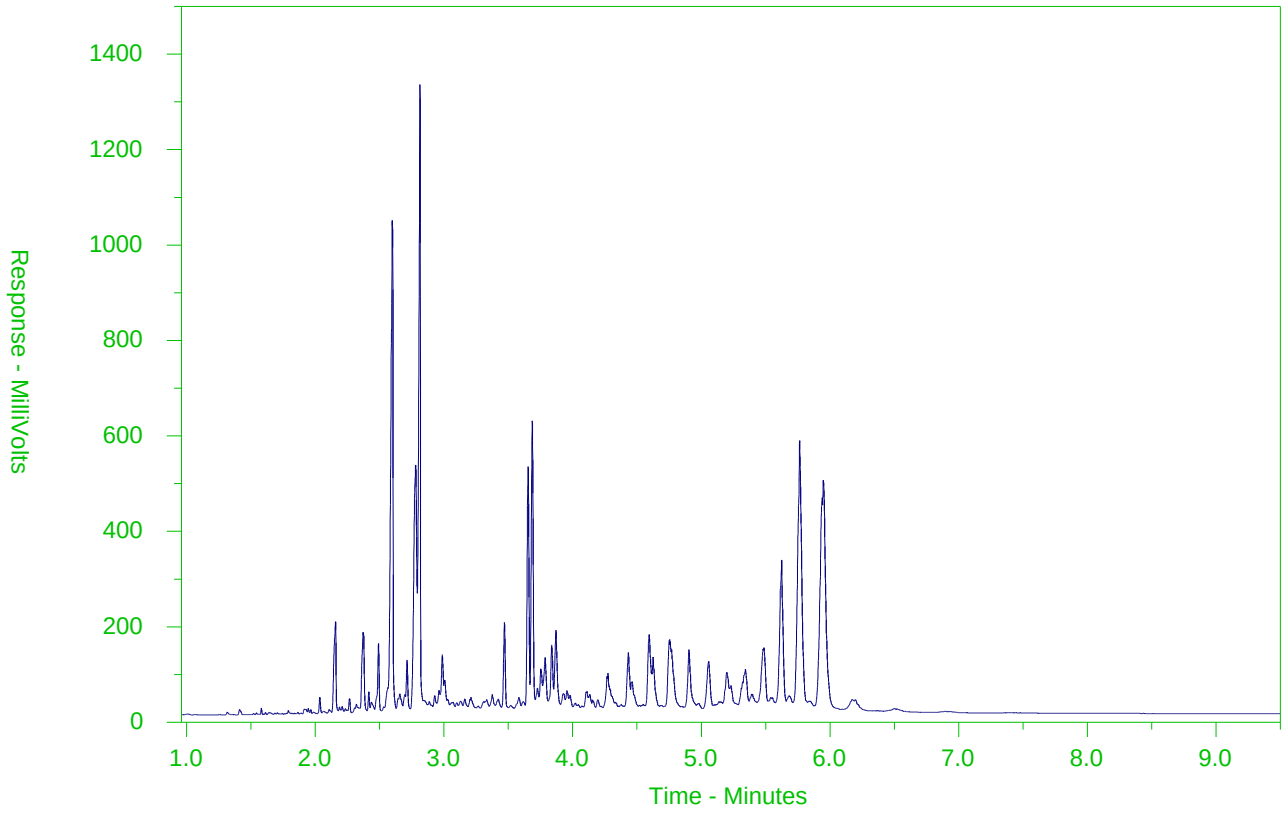
---

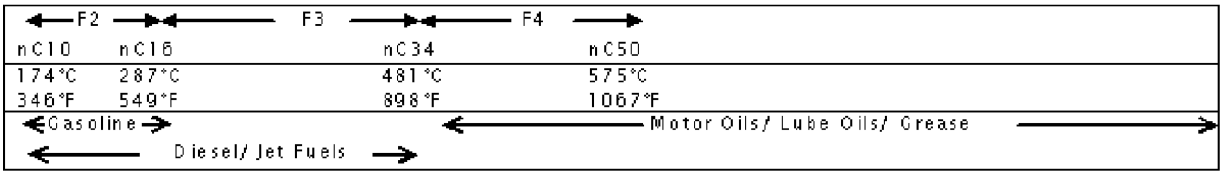
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2640439-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT




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

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

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

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

ALS Environmental

L2640439-COFC

COC # _____

Page ___ of ___

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

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH,PANH-WP | NUNAVUT-WW-GRP1-WP | F-IC-N-WP | TC,EC-QT97-WP | | | | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | 15/09/21 | 10:30 | Waste | x | x | x | x | x | | | | | | | 15 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | | | | | | | |
| | So all ICP-MS metals report. | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No ? If Yes add SIF |
| Bill Ross | 07/09/21 | 10:30 | | SEP 16 2021 | 4:00 | 8.4 °C | | SEP 16 2021 | | |

GENF 18.01 Front

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

Date Received: 20-OCT-21
Report Date: 28-OCT-21 15:59 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2653341

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Comments: LAB ERROR - Unable to report Fecal Coliform (FC10-QT97-WP results. Both Total Coliform and E.coli results were > 24200 MPNQT so Fecal would also have been Overgrown .

Craig Riddell, B.Sc.Ag
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Physical Tests (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2653341-1<br>Sampled Date: 19-OCT-21<br>Sampled Time: 10:00<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Conductivity | umhos/cm | - | - | 440 |
| Hardness (as CaCO3) | No Unit | - | - | 114 |
| pH | pH units | 7.00-10.5 | - | 7.20 |
| Total Suspended Solids | mg/L | - | - | 122 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Anions and Nutrients (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2653341-1<br>Sampled Date: 19-OCT-21<br>Sampled Time: 10:00<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Alkalinity, Total (as CaCO3) | mg/L | - | - | 95.5 |
| Ammonia, Total (as N) | mg/L | - | - | 8.3 |
| Bicarbonate (HCO3) | mg/L | - | - | 117 |
| Carbonate (CO3) | mg/L | - | - | <0.60 |
| Chloride (Cl) | mg/L | 250 | - | 52.5 |
| Fluoride (F) | mg/L | - | 1.5 | 0.113 |
| Hydroxide (OH) | mg/L | - | - | <0.34 |
| Nitrate and Nitrite as N | mg/L | - | 10 | <0.070 |
| Nitrate (as N) | mg/L | - | 10 | <0.020 |
| Nitrite (as N) | mg/L | - | 1 | <0.010 |
| Phosphorus (P)-Total | mg/L | - | - | 2.32 |
| Sulfate (SO4) | mg/L | 500 | - | 27.0 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Organic / Inorganic Carbon (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2653341-1<br>Sampled Date: 19-OCT-21<br>Sampled Time: 10:00<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Total Organic Carbon | mg/L | - | - | 66.1 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
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Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Bacteriological Tests (WATER)

| | | | | |
|---|---|---|---|---|
| | | | ALS ID | L2653341-1 |
| | | | Sampled Date | 19-OCT-21 |
| | | | Sampled Time | 10:00 |
| | | | Sample ID | **RANKIN INLET WWTP - EFFLUENT** |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | |
| Escherichia Coli | MPN/100mL | - | 0 | >24200 MBHT |
| Total Coliforms | MPN/100mL | - | 0 | >24200 MBHT |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Bacteriological Tests (MISC.)

| | | | | |
|---|---|---|---|---|
| | | | ALS ID | L2653341-1 |
| | | | Sampled Date | 19-OCT-21 |
| | | | Sampled Time | 10:00 |
| | | | Sample ID | **RANKIN INLET WWTP - EFFLUENT** |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | |
| Sample Comment | No Unit | - | - | See Referen |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
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# ANALYTICAL REPORT

## Total Metals (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2653341-1<br>Sampled Date: 19-OCT-21<br>Sampled Time: 10:00<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | 0.1 | 2.9 | 0.0989 |
| Antimony (Sb)-Total | mg/L | - | 0.006 | 0.00019 |
| Arsenic (As)-Total | mg/L | - | 0.01 | 0.00124 |
| Barium (Ba)-Total | mg/L | - | 2 | 0.0259 |
| Beryllium (Be)-Total | mg/L | - | - | <0.00010 |
| Bismuth (Bi)-Total | mg/L | - | - | 0.00396 |
| Boron (B)-Total | mg/L | - | 5 | 0.048 |
| Cadmium (Cd)-Total | mg/L | - | 0.005 | 0.0000805 |
| Calcium (Ca)-Total | mg/L | - | - | 35.2 |
| Cesium (Cs)-Total | mg/L | - | - | 0.000054 |
| Chromium (Cr)-Total | mg/L | - | 0.05 | 0.00094 |
| Cobalt (Co)-Total | mg/L | - | - | 0.00049 |
| Copper (Cu)-Total | mg/L | 1 | 2 | 0.0986 |
| Iron (Fe)-Total | mg/L | 0.3 | - | 0.851 |
| Lead (Pb)-Total | mg/L | - | 0.005 | 0.000747 |
| Lithium (Li)-Total | mg/L | - | - | 0.0030 |
| Magnesium (Mg)-Total | mg/L | - | - | 6.26 |
| Manganese (Mn)-Total | mg/L | 0.02 | 0.12 | 0.0566 |
| Mercury (Hg)-Total | mg/L | - | 0.001 | 0.0000103 |
| Molybdenum (Mo)-Total | mg/L | - | - | 0.00104 |
| Nickel (Ni)-Total | mg/L | - | - | 0.00404 |
| Phosphorus (P)-Total | mg/L | - | - | 2.23 |
| Potassium (K)-Total | mg/L | - | - | 6.96 |
| Rubidium (Rb)-Total | mg/L | - | - | 0.00584 |
| Selenium (Se)-Total | mg/L | - | 0.05 | 0.000399 |
| Silicon (Si)-Total | mg/L | - | - | 0.89 |
| Silver (Ag)-Total | mg/L | - | - | 0.000023 |
| Sodium (Na)-Total | mg/L | 200 | - | 29.8 |
| Strontium (Sr)-Total | mg/L | - | 7 | 0.161 |
| Sulfur (S)-Total | mg/L | - | - | 10.9 |
| Tellurium (Te)-Total | mg/L | - | - | <0.00020 |
| Thallium (Tl)-Total | mg/L | - | - | <0.000010 |
| Thorium (Th)-Total | mg/L | - | - | <0.00010 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
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# ANALYTICAL REPORT

## Total Metals (WATER)

| | | | | ALS ID | L2653341-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 19-OCT-21 |
| | | | | Sampled Time | 10:00 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Tin (Sn)-Total | mg/L | - | - | | 0.00060 |
| Titanium (Ti)-Total | mg/L | - | - | | 0.00400 |
| Tungsten (W)-Total | mg/L | - | - | | <0.00010 |
| Uranium (U)-Total | mg/L | - | 0.02 | | 0.000390 |
| Vanadium (V)-Total | mg/L | - | - | | 0.00050 |
| Zinc (Zn)-Total | mg/L | 5 | - | | 0.102 |
| Zirconium (Zr)-Total | mg/L | - | - | | 0.00044 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Aggregate Organics (WATER)

| | | | | ALS ID | L2653341-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 19-OCT-21 |
| | | | | Sampled Time | 10:00 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Biochemical Oxygen Demand | mg/L | - | - | | 91 |
| BOD Carbonaceous | mg/L | - | - | | 81 |
| Oil and Grease | mg/L | - | - | | 14.6 |
| Phenols (4AAP) | mg/L | - | - | | <0.010 DLM |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Volatile Organic Compounds (WATER)

| | | | | ALS ID | L2653341-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 19-OCT-21 |
| | | | | Sampled Time | 10:00 |
| | | | | Sample ID | RANKIN INLET WWTP - EFFLUENT |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Benzene | mg/L | - | 0.005 | | <0.00050 |
| Ethyl benzene | mg/L | 0.0016 | 0.14 | | <0.00050 |
| Toluene | mg/L | 0.024 | 0.06 | | <0.0010 |
| o-Xylene | mg/L | - | - | | <0.00050 |
| m+p-Xylenes | mg/L | - | - | | <0.00040 |
| Xylenes (Total) | mg/L | 0.02 | 0.09 | | <0.00064 |
| F1 (C6-C10) | mg/L | - | - | | <0.10 |
| F1-BTEX | mg/L | - | - | | <0.10 |
| F2-Naphth | mg/L | - | - | | <0.10 |
| F3-PAH | mg/L | - | - | | 0.39 |
| Total Hydrocarbons (C6-C50) | mg/L | - | - | | 0.39 |
| Surrogate: 4-Bromofluorobenzene (SS) | % | - | - | | 93.3 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
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Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Hydrocarbons (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2653341-1<br>Sampled Date: 19-OCT-21<br>Sampled Time: 10:00<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| F2 (C10-C16) | mg/L | - | - | <0.10 |
| F3 (C16-C34) | mg/L | - | - | 0.39 |
| F4 (C34-C50) | mg/L | - | - | <0.25 |
| Chrom. to baseline at nC50 | No Unit | - | - | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 99.5 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Polycyclic Aromatic Hydrocarbons (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2653341-1<br>Sampled Date: 19-OCT-21<br>Sampled Time: 10:00<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Acenaphthene | mg/L | - | - | 0.000042 |
| Acenaphthylene | mg/L | - | - | <0.000020 |
| Acridine | mg/L | - | - | <0.000020 |
| Anthracene | mg/L | - | - | <0.000010 |
| Benzo(a)anthracene | mg/L | - | - | <0.000010 |
| Benzo(a)pyrene | mg/L | - | 0.00004 | <0.0000050 |
| Benzo(b&j)fluoranthene | mg/L | - | - | <0.000024 DLM |
| Benzo(g,h,i)perylene | mg/L | - | - | <0.000046 DLM |
| Benzo(k)fluoranthene | mg/L | - | - | <0.000010 |
| Chrysene | mg/L | - | - | <0.000020 |
| Dibenz(a,h)anthracene | mg/L | - | - | <0.000028 DLM |
| Fluoranthene | mg/L | - | - | <0.000020 |
| Fluorene | mg/L | - | - | 0.000021 |
| Indeno(1,2,3-cd)pyrene | mg/L | - | - | 0.000298 |
| 1-Methylnaphthalene | mg/L | - | - | 0.000161 |
| 2-Methylnaphthalene | mg/L | - | - | 0.000191 |
| Naphthalene | mg/L | - | - | 0.000179 |
| Phenanthrene | mg/L | - | - | <0.000050 |
| Pyrene | mg/L | - | - | <0.000095 DLM |
| Quinoline | mg/L | - | - | <0.000080 DLM |
| Surrogate: Acridine d9 | % | - | - | 100.2 |
| Surrogate: Chrysene d12 | % | - | - | 103.0 |
| Surrogate: Naphthalene d8 | % | - | - | 120.0 |
| Surrogate: Phenanthrene d10 | % | - | - | 105.2 |
| B(a)P Total Potency Equivalent | mg/L | - | - | 0.000065 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| MBHT | The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may |

# Reference Information

be valid in some cases (refer to Health Canada guidance).

DLM Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **ALK-CO3CO3-CALC-WP** | Water | Alkalinity, Carbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

| | | | |
|---|---|---|---|
| **ALK-HCO3HCO3-CALC-WP** | Water | Alkalinity, Bicarbonate | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

| | | | |
|---|---|---|---|
| **ALK-OHOH-CALC-WP** | Water | Alkalinity, Hydroxide | CALCULATION |

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

| | | | |
|---|---|---|---|
| **ALK-TITR-WP** | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

| | | | |
|---|---|---|---|
| **BOD-CBOD-WP** | Water | Carbonaceous BOD | APHA 5210 B |

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

| | | | |
|---|---|---|---|
| **BOD-WP** | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |

Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

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

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

| | | | |
|---|---|---|---|
| **C-TOC-HTC-WP** | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

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

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

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

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

| | | | |
|---|---|---|---|
| **EC-WP** | Water | Conductivity | APHA 2510B |

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

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

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

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

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

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

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

Xylenes has been subtracted from F1.

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

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

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

| | | | |
|---|---|---|---|
| **F2-F4-PPM-WT** | Water | F2-F4 reported in ppm | MOE DECPH-E3421/CCME TIER 1 |

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Tier 1 Method, CCME, 2001.

| | | | |
|---|---|---|---|
| **HARDNESS-CALC-WP** | Water | Hardness Calculated | APHA 2340B |

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

| | | | |
|---|---|---|---|
| **HG-T-CVAA-WP** | Water | Mercury Total | EPA 1631E (mod) |

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

| | | | |
|---|---|---|---|
| **NO2+NO3-CALC-WP** | Water | Nitrate+Nitrite | CALCULATION |
| **NO2-IC-N-WP** | Water | Nitrite in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| **NO3-IC-N-WP** | Water | Nitrate in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| **OG-GRAV-WP** | Water | Oil & Grease - Gravimetric | EPA 1664 (modified) |

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

| | | | |
|---|---|---|---|
| **PAH-CCME-PPM-WT** | Water | CCME PAHs in mg/L | EPA 3511/8270D (mod) |

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

| | | | |
|---|---|---|---|
| **PH-WP** | Water | pH | APHA 4500H |

The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.

| | | | |
|---|---|---|---|
| **PHENOLS-4AAP-WT** | Water | Phenol (4AAP) | EPA 9066 |

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **RESULT-NOT-REP-WP** | Misc. | Result not reported | RESULT NOT REPORTED |
| **SO4-IC-N-WP** | Water | Sulfate in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| **SOLIDS-TOTSUS-WP** | Water | Total Suspended Solids | APHA 2540 D (modified) |

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.

| | | | |
|---|---|---|---|
| **TC,EC10-QT97-WP** | Water | Total and E. coli, 1:10 dilution by QT97 | APHA 9223B QT97 |

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

| | | | |
|---|---|---|---|
| **XYLENES-SUM-CALC-WP** | Water | Sum of Xylene Isomer Concentrations | CALCULATED RESULT |

Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

*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 |

**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.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2653341 Report Date: 28-OCT-21 

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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5626530** | | | | | | | | |
| **WG3643215-15 DUP** | | **L2653826-2** | | | | | | |
| Alkalinity, Total (as CaCO3) | | 33.4 | 32.3 | | mg/L | 3.3 | 20 | 21-OCT-21 |
| **WG3643215-14 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 102.4 | | % | | 85-115 | 21-OCT-21 |
| **WG3643215-11 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 21-OCT-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5628908** | | | | | | | | |
| **WG3642302-2 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 99.9 | | % | | 85-115 | 21-OCT-21 |
| **WG3642302-1 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 21-OCT-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5628908** | | | | | | | | |
| **WG3642302-3 DUP** | | **L2653092-1** | | | | | | |
| Biochemical Oxygen Demand | | 900 | 890 | | mg/L | 1.2 | 30 | 21-OCT-21 |
| **WG3642302-2 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 108.2 | | % | | 85-115 | 21-OCT-21 |
| **WG3642302-1 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 21-OCT-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5626095** | | | | | | | | |
| **WG3642681-4 DUP** | | **L2653341-1** | | | | | | |
| Benzene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 21-OCT-21 |
| Toluene | | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 30 | 21-OCT-21 |
| Ethyl benzene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 21-OCT-21 |
| o-Xylene | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 30 | 21-OCT-21 |
| m+p-Xylenes | | <0.00040 | <0.00040 | RPD-NA | mg/L | N/A | 30 | 21-OCT-21 |
| F1 (C6-C10) | | <0.10 | <0.10 | RPD-NA | mg/L | N/A | 30 | 21-OCT-21 |
| **WG3642681-2 LCS** | | | | | | | | |
| Benzene | | | 75.0 | | % | | 70-130 | 21-OCT-21 |
| Toluene | | | 75.8 | | % | | 70-130 | 21-OCT-21 |
| Ethyl benzene | | | 82.6 | | % | | 70-130 | 21-OCT-21 |
| o-Xylene | | | 89.7 | | % | | 70-130 | 21-OCT-21 |
| m+p-Xylenes | | | 92.6 | | % | | 70-130 | 21-OCT-21 |
| **WG3642681-3 LCS** | | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5626095** | | | | | | | | |
| **WG3642681-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 99.2 | | % | | 70-130 | 21-OCT-21 |
| **WG3642681-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 21-OCT-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 21-OCT-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 21-OCT-21 |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 21-OCT-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 21-OCT-21 |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 21-OCT-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 91.4 | | % | | 70-130 | 21-OCT-21 |
| **WG3642681-5 MS** | | **L2653341-1** | | | | | | |
| Benzene | | | 85.9 | | % | | 70-130 | 21-OCT-21 |
| Toluene | | | 86.6 | | % | | 70-130 | 21-OCT-21 |
| Ethyl benzene | | | 95.4 | | % | | 70-130 | 21-OCT-21 |
| o-Xylene | | | 104.0 | | % | | 70-130 | 21-OCT-21 |
| m+p-Xylenes | | | 107.3 | | % | | 70-130 | 21-OCT-21 |
| **WG3642681-6 MS** | | **L2651140-1** | | | | | | |
| F1 (C6-C10) | | | 94.4 | | % | | 70-130 | 21-OCT-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5629599** | | | | | | | | |
| **WG3646601-3 DUP** | | **L2653330-6** | | | | | | |
| Total Organic Carbon | | 8.73 | 8.74 | | mg/L | 0.1 | 20 | 27-OCT-21 |
| **WG3646601-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 102.1 | | % | | 80-120 | 27-OCT-21 |
| **WG3646601-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 27-OCT-21 |
| **WG3646601-4 MS** | | **L2653330-7** | | | | | | |
| Total Organic Carbon | | | 102.0 | | % | | 70-130 | 27-OCT-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5626086** | | | | | | | | |
| **WG3641784-2 LCS** | | | | | | | | |
| Chloride (Cl) | | | 102.3 | | % | | 90-110 | 20-OCT-21 |
| **WG3641784-1 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 20-OCT-21 |
| **EC-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5626530** | | | | | | | | |
| **WG3643215-15 DUP** | | **L2653826-2** | | | | | | |
| Conductivity | | 103 | 103 | | umhos/cm | 0.3 | 10 | 21-OCT-21 |
| **WG3643215-13 LCS** | | | | | | | | |
| Conductivity | | | 101.1 | | % | | 90-110 | 21-OCT-21 |
| **WG3643215-11 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 21-OCT-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5626086** | | | | | | | | |
| **WG3641784-3 DUP** | | **L2652713-1** | | | | | | |
| Fluoride (F) | | 0.486 | 0.478 | | mg/L | 1.6 | 20 | 20-OCT-21 |
| **WG3641784-2 LCS** | | | | | | | | |
| Fluoride (F) | | | 104.9 | | % | | 90-110 | 20-OCT-21 |
| **WG3641784-1 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 20-OCT-21 |
| **WG3641784-4 MS** | | **L2652713-1** | | | | | | |
| Fluoride (F) | | | 102.5 | | % | | 75-125 | 20-OCT-21 |
| **F2-F4-PPM-WT** | **Water** | | | | | | | |
| **Batch R5630316** | | | | | | | | |
| **WG3646429-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 94.7 | | % | | 70-130 | 28-OCT-21 |
| F3 (C16-C34) | | | 95.2 | | % | | 70-130 | 28-OCT-21 |
| F4 (C34-C50) | | | 104.5 | | % | | 70-130 | 28-OCT-21 |
| **WG3646429-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <0.10 | | mg/L | | 0.1 | 28-OCT-21 |
| F3 (C16-C34) | | | <0.25 | | mg/L | | 0.25 | 28-OCT-21 |
| F4 (C34-C50) | | | <0.25 | | mg/L | | 0.25 | 28-OCT-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 79.5 | | % | | 60-140 | 28-OCT-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5629795** | | | | | | | | |
| **WG3647027-7 DUP** | | **L2652555-2** | | | | | | |
| Mercury (Hg)-Total | | <0.0000050 | <0.000005( | RPD-NA | mg/L | N/A | 20 | 27-OCT-21 |
| **WG3647027-6 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 104.4 | | % | | 80-120 | 27-OCT-21 |
| **WG3647027-5 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005( | | mg/L | | 0.000005 | 27-OCT-21 |
| **WG3647027-8 MS** | | **L2652713-1** | | | | | | |
| Mercury (Hg)-Total | | | 102.3 | | % | | 70-130 | 27-OCT-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5628787** | | | | | | | | |
| **WG3642435-4 DUP** | | **WG3642435-3** | | | | | | |
| Aluminum (Al)-Total | | 0.0519 | 0.0717 | G | mg/L | 32 | 20 | 25-OCT-21 |
| Antimony (Sb)-Total | | 0.00018 | 0.00018 | | mg/L | 0.5 | 20 | 25-OCT-21 |
| Arsenic (As)-Total | | 0.00201 | 0.00213 | | mg/L | 5.7 | 20 | 25-OCT-21 |
| Barium (Ba)-Total | | 0.0430 | 0.0449 | | mg/L | 4.5 | 20 | 25-OCT-21 |
| Beryllium (Be)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Bismuth (Bi)-Total | | <0.000050 | <0.000050 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Boron (B)-Total | | 0.088 | 0.094 | | mg/L | 6.4 | 20 | 25-OCT-21 |
| Cadmium (Cd)-Total | | <0.0000050 | 0.0000060 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Calcium (Ca)-Total | | 40.6 | 42.8 | | mg/L | 5.2 | 20 | 25-OCT-21 |
| Cesium (Cs)-Total | | 0.000010 | 0.000012 | | mg/L | 12 | 20 | 25-OCT-21 |
| Chromium (Cr)-Total | | 0.00014 | 0.00021 | J | mg/L | 0.00006 | 0.0002 | 25-OCT-21 |
| Cobalt (Co)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Copper (Cu)-Total | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Iron (Fe)-Total | | 0.061 | 0.081 | J,G | mg/L | 0.020 | 0.02 | 25-OCT-21 |
| Lead (Pb)-Total | | 0.000192 | 0.000202 | | mg/L | 4.9 | 20 | 25-OCT-21 |
| Lithium (Li)-Total | | 0.0377 | 0.0394 | | mg/L | 4.5 | 20 | 25-OCT-21 |
| Magnesium (Mg)-Total | | 40.8 | 41.2 | | mg/L | 1.0 | 20 | 25-OCT-21 |
| Manganese (Mn)-Total | | 0.00742 | 0.00774 | | mg/L | 4.2 | 20 | 25-OCT-21 |
| Molybdenum (Mo)-Total | | 0.00231 | 0.00244 | | mg/L | 5.4 | 20 | 25-OCT-21 |
| Nickel (Ni)-Total | | 0.00069 | 0.00076 | | mg/L | 8.8 | 20 | 25-OCT-21 |
| Potassium (K)-Total | | 10.4 | 10.7 | | mg/L | 2.9 | 20 | 25-OCT-21 |
| Phosphorus (P)-Total | | <0.030 | <0.030 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Rubidium (Rb)-Total | | 0.00424 | 0.00429 | | mg/L | 1.3 | 20 | 25-OCT-21 |
| Selenium (Se)-Total | | 0.000070 | 0.000070 | | mg/L | 0.2 | 20 | 25-OCT-21 |
| Silicon (Si)-Total | | 3.62 | 3.83 | | mg/L | 5.5 | 20 | 25-OCT-21 |
| Silver (Ag)-Total | | <0.000010 | <0.000010 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Sodium (Na)-Total | | 153 | 158 | | mg/L | 3.0 | 20 | 25-OCT-21 |
| Strontium (Sr)-Total | | 0.281 | 0.296 | | mg/L | 5.0 | 20 | 25-OCT-21 |
| Sulfur (S)-Total | | 35.8 | 37.0 | | mg/L | 3.1 | 20 | 25-OCT-21 |
| Tellurium (Te)-Total | | <0.00020 | <0.00020 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Thallium (Tl)-Total | | <0.000010 | <0.000010 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Thorium (Th)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Tin (Sn)-Total | | <0.00010 | <0.00010 | | mg/L | | | 25-OCT-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5628787** | | | | | | | | |
| **WG3642435-4 DUP** | | **WG3642435-3** | | | | | | |
| Tin (Sn)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Titanium (Ti)-Total | | 0.00206 | 0.00312 | J,G | mg/L | 0.00106 | 0.0006 | 25-OCT-21 |
| Tungsten (W)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Uranium (U)-Total | | 0.00173 | 0.00177 | | mg/L | 2.7 | 20 | 25-OCT-21 |
| Vanadium (V)-Total | | 0.00154 | 0.00162 | | mg/L | 5.2 | 20 | 25-OCT-21 |
| Zinc (Zn)-Total | | <0.0030 | <0.0030 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| Zirconium (Zr)-Total | | <0.00020 | <0.00020 | RPD-NA | mg/L | N/A | 20 | 25-OCT-21 |
| **WG3642435-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 102.0 | | % | | 80-120 | 25-OCT-21 |
| Antimony (Sb)-Total | | | 102.5 | | % | | 80-120 | 25-OCT-21 |
| Arsenic (As)-Total | | | 101.0 | | % | | 80-120 | 25-OCT-21 |
| Barium (Ba)-Total | | | 101.4 | | % | | 80-120 | 25-OCT-21 |
| Beryllium (Be)-Total | | | 100.8 | | % | | 80-120 | 25-OCT-21 |
| Bismuth (Bi)-Total | | | 103.2 | | % | | 80-120 | 25-OCT-21 |
| Boron (B)-Total | | | 72.9 | MES | % | | 80-120 | 25-OCT-21 |
| Cadmium (Cd)-Total | | | 101.5 | | % | | 80-120 | 25-OCT-21 |
| Calcium (Ca)-Total | | | 101.1 | | % | | 80-120 | 25-OCT-21 |
| Cesium (Cs)-Total | | | 99.6 | | % | | 80-120 | 25-OCT-21 |
| Chromium (Cr)-Total | | | 100.1 | | % | | 80-120 | 25-OCT-21 |
| Cobalt (Co)-Total | | | 100.4 | | % | | 80-120 | 25-OCT-21 |
| Copper (Cu)-Total | | | 98.8 | | % | | 80-120 | 25-OCT-21 |
| Iron (Fe)-Total | | | 96.4 | | % | | 80-120 | 25-OCT-21 |
| Lead (Pb)-Total | | | 99.9 | | % | | 80-120 | 25-OCT-21 |
| Lithium (Li)-Total | | | 105.8 | | % | | 80-120 | 25-OCT-21 |
| Magnesium (Mg)-Total | | | 108.9 | | % | | 80-120 | 25-OCT-21 |
| Manganese (Mn)-Total | | | 99.2 | | % | | 80-120 | 25-OCT-21 |
| Molybdenum (Mo)-Total | | | 99.7 | | % | | 80-120 | 25-OCT-21 |
| Nickel (Ni)-Total | | | 99.3 | | % | | 80-120 | 25-OCT-21 |
| Potassium (K)-Total | | | 100.7 | | % | | 80-120 | 25-OCT-21 |
| Phosphorus (P)-Total | | | 102.1 | | % | | 80-120 | 25-OCT-21 |
| Rubidium (Rb)-Total | | | 102.0 | | % | | 80-120 | 25-OCT-21 |
| Selenium (Se)-Total | | | 101.2 | | % | | 80-120 | 25-OCT-21 |
| Silicon (Si)-Total | | | 99.7 | | % | | 80-120 | 25-OCT-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5628787** | | | | | | | | |
| **WG3642435-2 LCS** | | | | | | | | |
| Silver (Ag)-Total | | | 91.3 | | % | | 80-120 | 25-OCT-21 |
| Sodium (Na)-Total | | | 105.0 | | % | | 80-120 | 25-OCT-21 |
| Strontium (Sr)-Total | | | 99.2 | | % | | 80-120 | 25-OCT-21 |
| Sulfur (S)-Total | | | 109.0 | | % | | 80-120 | 25-OCT-21 |
| Tellurium (Te)-Total | | | 95.0 | | % | | 80-120 | 25-OCT-21 |
| Thallium (Tl)-Total | | | 100.6 | | % | | 80-120 | 25-OCT-21 |
| Thorium (Th)-Total | | | 100.1 | | % | | 80-120 | 25-OCT-21 |
| Tin (Sn)-Total | | | 100.1 | | % | | 80-120 | 25-OCT-21 |
| Titanium (Ti)-Total | | | 98.2 | | % | | 80-120 | 25-OCT-21 |
| Tungsten (W)-Total | | | 99.5 | | % | | 80-120 | 25-OCT-21 |
| Uranium (U)-Total | | | 100.7 | | % | | 80-120 | 25-OCT-21 |
| Vanadium (V)-Total | | | 99.95 | | % | | 80-120 | 25-OCT-21 |
| Zinc (Zn)-Total | | | 101.0 | | % | | 80-120 | 25-OCT-21 |
| Zirconium (Zr)-Total | | | 90.1 | | % | | 80-120 | 25-OCT-21 |
| **WG3642435-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 25-OCT-21 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Beryllium (Be)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 25-OCT-21 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 25-OCT-21 |
| Cadmium (Cd)-Total | | | <0.000005( | | mg/L | | 0.000005 | 25-OCT-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 25-OCT-21 |
| Cesium (Cs)-Total | | | <0.000010 | | mg/L | | 0.00001 | 25-OCT-21 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 25-OCT-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 25-OCT-21 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 25-OCT-21 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 25-OCT-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 25-OCT-21 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 25-OCT-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5628787** | | | | | | | | |
| **WG3642435-1 MB** | | | | | | | | |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 25-OCT-21 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 25-OCT-21 |
| Phosphorus (P)-Total | | | <0.030 | | mg/L | | 0.03 | 25-OCT-21 |
| Rubidium (Rb)-Total | | | <0.00020 | | mg/L | | 0.0002 | 25-OCT-21 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 25-OCT-21 |
| Silicon (Si)-Total | | | <0.10 | | mg/L | | 0.1 | 25-OCT-21 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 25-OCT-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 25-OCT-21 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 25-OCT-21 |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 25-OCT-21 |
| Tellurium (Te)-Total | | | <0.00020 | | mg/L | | 0.0002 | 25-OCT-21 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 25-OCT-21 |
| Thorium (Th)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 25-OCT-21 |
| Tungsten (W)-Total | | | <0.00010 | | mg/L | | 0.0001 | 25-OCT-21 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 25-OCT-21 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 25-OCT-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 25-OCT-21 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 25-OCT-21 |
| **WG3642435-5 MS** | | **WG3642435-3** | | | | | | |
| Aluminum (Al)-Total | | | 107.0 | | % | | 70-130 | 25-OCT-21 |
| Antimony (Sb)-Total | | | 101.3 | | % | | 70-130 | 25-OCT-21 |
| Arsenic (As)-Total | | | 98.4 | | % | | 70-130 | 25-OCT-21 |
| Barium (Ba)-Total | | | N/A | MS-B | % | | - | 25-OCT-21 |
| Beryllium (Be)-Total | | | 98.1 | | % | | 70-130 | 25-OCT-21 |
| Bismuth (Bi)-Total | | | 92.5 | | % | | 70-130 | 25-OCT-21 |
| Boron (B)-Total | | | 105.8 | | % | | 70-130 | 25-OCT-21 |
| Cadmium (Cd)-Total | | | 98.2 | | % | | 70-130 | 25-OCT-21 |
| Calcium (Ca)-Total | | | N/A | MS-B | % | | - | 25-OCT-21 |
| Cesium (Cs)-Total | | | 96.9 | | % | | 70-130 | 25-OCT-21 |
| Chromium (Cr)-Total | | | 95.4 | | % | | 70-130 | 25-OCT-21 |
| Cobalt (Co)-Total | | | 93.4 | | % | | 70-130 | 25-OCT-21 |
| Copper (Cu)-Total | | | 88.1 | | % | | 70-130 | 25-OCT-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5628787** | | | | | | | | |
| **WG3642435-5 MS** | | **WG3642435-3** | | | | | | |
| Iron (Fe)-Total | | | 93.9 | | % | | 70-130 | 25-OCT-21 |
| Lead (Pb)-Total | | | 90.0 | | % | | 70-130 | 25-OCT-21 |
| Lithium (Li)-Total | | | 101.5 | | % | | 70-130 | 25-OCT-21 |
| Magnesium (Mg)-Total | | | N/A | MS-B | % | | - | 25-OCT-21 |
| Manganese (Mn)-Total | | | 94.5 | | % | | 70-130 | 25-OCT-21 |
| Molybdenum (Mo)-Total | | | 99.1 | | % | | 70-130 | 25-OCT-21 |
| Nickel (Ni)-Total | | | 91.6 | | % | | 70-130 | 25-OCT-21 |
| Potassium (K)-Total | | | N/A | MS-B | % | | - | 25-OCT-21 |
| Phosphorus (P)-Total | | | 102.5 | | % | | 70-130 | 25-OCT-21 |
| Rubidium (Rb)-Total | | | 93.8 | | % | | 70-130 | 25-OCT-21 |
| Selenium (Se)-Total | | | 101.8 | | % | | 70-130 | 25-OCT-21 |
| Silicon (Si)-Total | | | 100.8 | | % | | 70-130 | 25-OCT-21 |
| Silver (Ag)-Total | | | 93.1 | | % | | 70-130 | 25-OCT-21 |
| Sodium (Na)-Total | | | N/A | MS-B | % | | - | 25-OCT-21 |
| Strontium (Sr)-Total | | | N/A | MS-B | % | | - | 25-OCT-21 |
| Sulfur (S)-Total | | | N/A | MS-B | % | | - | 25-OCT-21 |
| Tellurium (Te)-Total | | | 96.4 | | % | | 70-130 | 25-OCT-21 |
| Thallium (Tl)-Total | | | 88.1 | | % | | 70-130 | 25-OCT-21 |
| Thorium (Th)-Total | | | 98.0 | | % | | 70-130 | 25-OCT-21 |
| Tin (Sn)-Total | | | 99.3 | | % | | 70-130 | 25-OCT-21 |
| Titanium (Ti)-Total | | | 99.1 | | % | | 70-130 | 25-OCT-21 |
| Tungsten (W)-Total | | | 98.2 | | % | | 70-130 | 25-OCT-21 |
| Uranium (U)-Total | | | 95.4 | | % | | 70-130 | 25-OCT-21 |
| Vanadium (V)-Total | | | 98.6 | | % | | 70-130 | 25-OCT-21 |
| Zinc (Zn)-Total | | | 92.3 | | % | | 70-130 | 25-OCT-21 |
| Zirconium (Zr)-Total | | | 98.4 | | % | | 70-130 | 25-OCT-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5628085** | | | | | | | | |
| **WG3644926-32 DUP** | | **L2653330-7** | | | | | | |
| Ammonia, Total (as N) | | 0.039 | 0.039 | | mg/L | 0.9 | 20 | 25-OCT-21 |
| **WG3644926-30 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 102.2 | | % | | 85-115 | 26-OCT-21 |
| **WG3644926-29 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 26-OCT-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5628085** | | | | | | | | |
| **WG3644926-31 MS** | | **L2653330-7** | | | | | | |
| Ammonia, Total (as N) | | | 93.1 | | % | | 75-125 | 25-OCT-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5626086** | | | | | | | | |
| **WG3641784-3 DUP** | | **L2652713-1** | | | | | | |
| Nitrite (as N) | | <0.010 | <0.010 | RPD-NA | mg/L | N/A | 20 | 20-OCT-21 |
| **WG3641784-2 LCS** | | | | | | | | |
| Nitrite (as N) | | | 99.6 | | % | | 90-110 | 20-OCT-21 |
| **WG3641784-1 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 20-OCT-21 |
| **WG3641784-4 MS** | | **L2652713-1** | | | | | | |
| Nitrite (as N) | | | 100.0 | | % | | 75-125 | 20-OCT-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5626086** | | | | | | | | |
| **WG3641784-3 DUP** | | **L2652713-1** | | | | | | |
| Nitrate (as N) | | <0.020 | <0.020 | RPD-NA | mg/L | N/A | 20 | 20-OCT-21 |
| **WG3641784-2 LCS** | | | | | | | | |
| Nitrate (as N) | | | 102.1 | | % | | 90-110 | 20-OCT-21 |
| **WG3641784-1 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 20-OCT-21 |
| **WG3641784-4 MS** | | **L2652713-1** | | | | | | |
| Nitrate (as N) | | | 103.2 | | % | | 75-125 | 20-OCT-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5628959** | | | | | | | | |
| **WG3643638-2 LCS** | | | | | | | | |
| Oil and Grease | | | 99.5 | | % | | 70-130 | 25-OCT-21 |
| **WG3643638-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 25-OCT-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5631597** | | | | | | | | |
| **WG3647001-7 DUP** | | **L2649374-4** | | | | | | |
| Phosphorus (P)-Total | | 0.0146 | 0.0154 | | mg/L | 4.9 | 20 | 28-OCT-21 |
| **WG3647001-6 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 101.8 | | % | | 80-120 | 28-OCT-21 |
| **WG3647001-5 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 28-OCT-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5631597** | | | | | | | | |
| **WG3647001-8 MS** | | **L2649374-4** | | | | | | |
| Phosphorus (P)-Total | | | 101.3 | | % | | 70-130 | 28-OCT-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5631042** | | | | | | | | |
| **WG3646429-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 95.3 | | % | | 60-130 | 28-OCT-21 |
| 2-Methylnaphthalene | | | 93.1 | | % | | 60-130 | 28-OCT-21 |
| Acenaphthene | | | 93.8 | | % | | 60-130 | 28-OCT-21 |
| Acenaphthylene | | | 88.4 | | % | | 60-130 | 28-OCT-21 |
| Anthracene | | | 83.8 | | % | | 60-130 | 28-OCT-21 |
| Acridine | | | 84.8 | | % | | 60-130 | 28-OCT-21 |
| Benzo(a)anthracene | | | 91.1 | | % | | 60-130 | 28-OCT-21 |
| Benzo(a)pyrene | | | 76.9 | | % | | 60-130 | 28-OCT-21 |
| Benzo(b&j)fluoranthene | | | 76.1 | | % | | 60-130 | 28-OCT-21 |
| Benzo(g,h,i)perylene | | | 74.4 | | % | | 60-130 | 28-OCT-21 |
| Benzo(k)fluoranthene | | | 84.8 | | % | | 60-130 | 28-OCT-21 |
| Chrysene | | | 93.2 | | % | | 60-130 | 28-OCT-21 |
| Dibenz(a,h)anthracene | | | 76.9 | | % | | 60-130 | 28-OCT-21 |
| Fluoranthene | | | 90.8 | | % | | 60-130 | 28-OCT-21 |
| Fluorene | | | 95.0 | | % | | 60-130 | 28-OCT-21 |
| Indeno(1,2,3-cd)pyrene | | | 74.1 | | % | | 60-130 | 28-OCT-21 |
| Naphthalene | | | 89.3 | | % | | 50-130 | 28-OCT-21 |
| Phenanthrene | | | 95.7 | | % | | 60-130 | 28-OCT-21 |
| Pyrene | | | 91.9 | | % | | 60-130 | 28-OCT-21 |
| Quinoline | | | 135.2 | LCS-H | % | | 60-130 | 28-OCT-21 |
| **WG3646429-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| 2-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 28-OCT-21 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 28-OCT-21 |
| Benzo(a)pyrene | | | <0.000005( | | mg/L | | 0.000005 | 28-OCT-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5631042** | | | | | | | | |
| **WG3646429-1 MB** | | | | | | | | |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 28-OCT-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 28-OCT-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| Dibenz(a,h)anthracene | | | <0.000005( | | mg/L | | 0.000005 | 28-OCT-21 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 28-OCT-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 28-OCT-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 28-OCT-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 28-OCT-21 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 28-OCT-21 |
| Surrogate: Naphthalene d8 | | | 96.7 | | % | | 50-130 | 28-OCT-21 |
| Surrogate: Phenanthrene d10 | | | 103.5 | | % | | 60-130 | 28-OCT-21 |
| Surrogate: Chrysene d12 | | | 100.8 | | % | | 60-130 | 28-OCT-21 |
| Surrogate: Acridine d9 | | | 87.2 | | % | | 60-130 | 28-OCT-21 |
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5626530** | | | | | | | | |
| **WG3643215-15 DUP** | | **L2653826-2** | | | | | | |
| pH | | 7.59 | 7.60 | J | pH units | 0.01 | 0.2 | 21-OCT-21 |
| **WG3643215-12 LCS** | | | | | | | | |
| pH | | | 7.00 | | pH units | | 6.9-7.1 | 21-OCT-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5627971** | | | | | | | | |
| **WG3643760-3 DUP** | | **WG3643760-5** | | | | | | |
| Phenols (4AAP) | | 0.0021 | 0.0021 | | mg/L | 1.7 | 20 | 25-OCT-21 |
| **WG3643760-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 94.8 | | % | | 85-115 | 22-OCT-21 |
| **WG3643760-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 22-OCT-21 |
| **WG3643760-4 MS** | | **WG3643760-5** | | | | | | |
| Phenols (4AAP) | | | 97.0 | | % | | 75-125 | 25-OCT-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5626086** | | | | | | | | |
| **WG3641784-3 DUP** | | **L2652713-1** | | | | | | |
| Sulfate (SO4) | | 97.2 | 96.2 | | mg/L | 1.0 | 20 | 20-OCT-21 |
| **WG3641784-2 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 103.3 | | % | | 90-110 | 20-OCT-21 |
| **WG3641784-1 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 20-OCT-21 |
| **WG3641784-4 MS** | | **L2652713-1** | | | | | | |
| Sulfate (SO4) | | | 99.9 | | % | | 75-125 | 20-OCT-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5626631** | | | | | | | | |
| **WG3642068-5 LCS** | | | | | | | | |
| Total Suspended Solids | | | 103.4 | | % | | 85-115 | 21-OCT-21 |
| **WG3642068-4 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 21-OCT-21 |
| **TC,EC10-QT97-WP** | **Water** | | | | | | | |
| **Batch R5626063** | | | | | | | | |
| **WG3642028-2 DUP** | | **L2653341-1** | | | | | | |
| Total Coliforms | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 20-OCT-21 |
| Escherichia Coli | | >24200 | >24200 | | MPN/100mL | 0.0 | 65 | 20-OCT-21 |
| **WG3642028-1 MB** | | | | | | | | |
| Total Coliforms | | | <1 | | MPN/100mL | | 1 | 20-OCT-21 |
| Escherichia Coli | | | <1 | | MPN/100mL | | 1 | 20-OCT-21 |

# Quality Control Report

Workorder: L2653341 Report Date: 28-OCT-21

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



**Legend:**

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

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| LCS-H | Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified. |
| MES | Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |

# Quality Control Report

Workorder: L2653341 Report Date: 28-OCT-21

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



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 19-OCT-21 10:00 | 21-OCT-21 12:00 | 0.25 | 50 | hours | EHTR-FM |
| **Bacteriological Tests** | | | | | | | |
| Total and E. coli, 1:10 dilution by QT97 | | | | | | | |
| | 1 | 19-OCT-21 10:00 | 20-OCT-21 17:10 | 30 | 31 | hours | EHTL |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2653341 were received on 20-OCT-21 12:40.

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

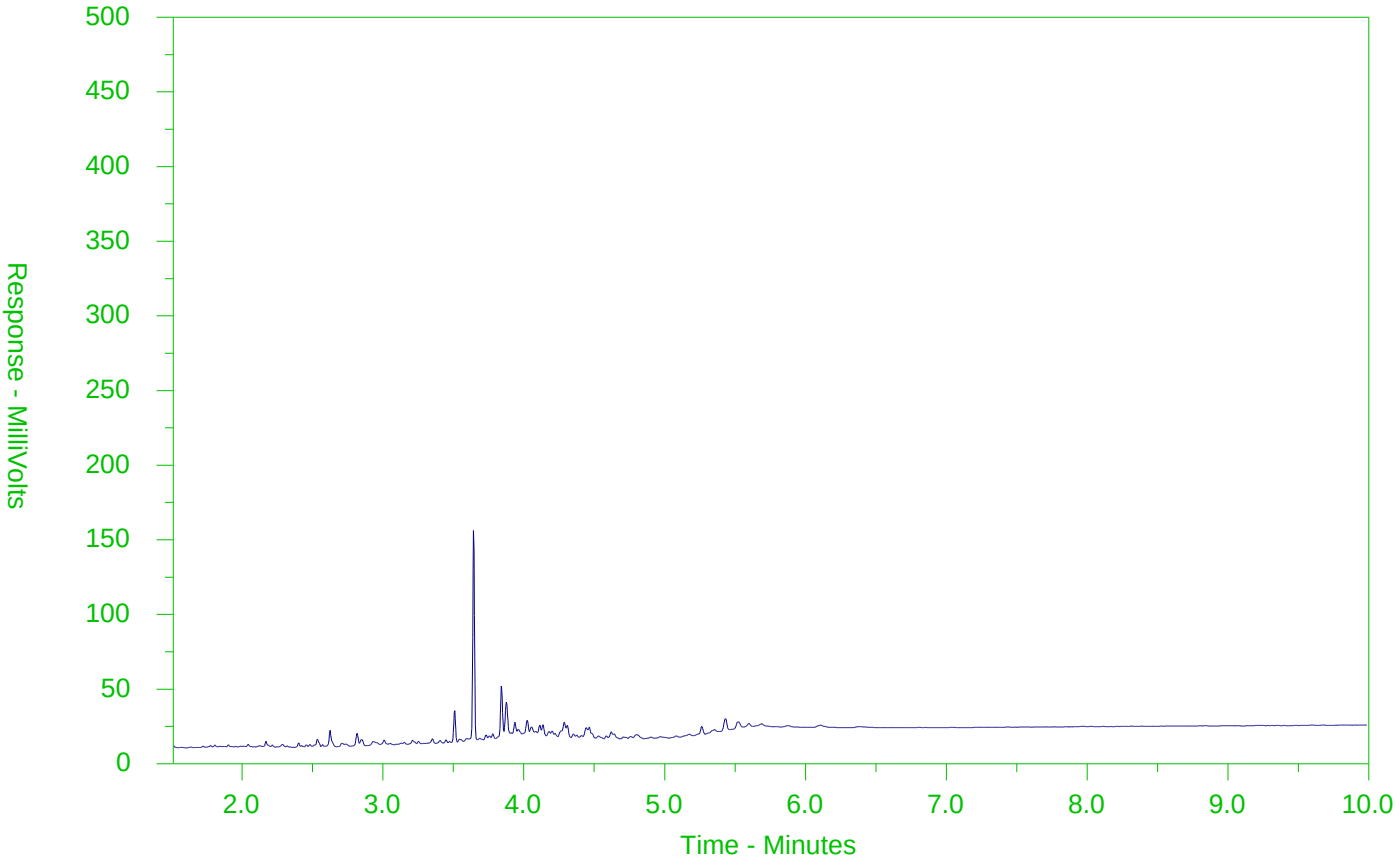
---

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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2653341-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT




| ←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 the 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

L2653341-COFC

COC #

Page ___ of ___

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

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH-WP | NUNAVUT-WW-GRP1-WP | F-IC-N-WP | TC,EC-QT97-WP | | | | | | | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | 19/10/21 | 10:00Am | Waste | x | x | x | x | x | | | | | | | 15 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | | | | | | | |
| | So all ICP-MS metals report. | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No ? If Yes add SIF |
| Bill Ross | 19/10/21 | 10:00Am | JL | 10/20/21 | 12:40 | 5.1 °C | | | | |

GENF 18.01 Front

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

Date Received: 08-DEC-21
Report Date: 16-DEC-21 11:08 (MT)
Version: FINAL

Client Phone: 867-645-8155

# Certificate of Analysis

## Lab Work Order #: L2670520

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET WWTP MONTHLY EFFLUENT
C of C Numbers:
Legal Site Desc:

Comments: NOTE: No 250 ml Sterile bacti bottle was received - unable to run Total Coliform , E.coli and Fecal Coliform analysis.

Craig Riddell, B.Sc.Ag
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

# ANALYTICAL REPORT

## Physical Tests (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2670520-1<br>Sampled Date: 07-DEC-21<br>Sampled Time: -<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Conductivity | umhos/cm | - | - | 420 |
| Hardness (as CaCO3) | mg/L | - | - | 87.5 HTC |
| pH | pH units | 7.00-10.5 | - | 7.05 |
| Total Suspended Solids | mg/L | - | - | 118 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Anions and Nutrients (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2670520-1<br>Sampled Date: 07-DEC-21<br>Sampled Time: -<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Alkalinity, Total (as CaCO3) | mg/L | - | - | 95.8 |
| Ammonia, Total (as N) | mg/L | - | - | 6.37 |
| Bicarbonate (HCO3) | mg/L | - | - | 117 |
| Carbonate (CO3) | mg/L | - | - | <0.60 |
| Chloride (Cl) | mg/L | 250 | - | 50.5 |
| Fluoride (F) | mg/L | - | 1.5 | 0.213 |
| Hydroxide (OH) | mg/L | - | - | <0.34 |
| Nitrate and Nitrite as N | mg/L | - | 10 | <0.070 |
| Nitrate (as N) | mg/L | - | 10 | 0.037 |
| Nitrite (as N) | mg/L | - | 1 | 0.012 |
| Phosphorus (P)-Total | mg/L | - | - | 2.29 |
| Sulfate (SO4) | mg/L | 500 | - | 23.4 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Organic / Inorganic Carbon (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2670520-1<br>Sampled Date: 07-DEC-21<br>Sampled Time: -<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Total Organic Carbon | mg/L | - | - | 64.2 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Total Metals (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2670520-1<br>Sampled Date: 07-DEC-21<br>Sampled Time: -<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | 0.1 | 2.9 | 0.0662 |
| Arsenic (As)-Total | mg/L | - | 0.01 | 0.00083 |
| Cadmium (Cd)-Total | mg/L | - | 0.005 | 0.0000495 |
| Calcium (Ca)-Total | mg/L | - | - | 24.9 |
| Chromium (Cr)-Total | mg/L | - | 0.05 | 0.00064 |
| Cobalt (Co)-Total | mg/L | - | - | 0.00018 |
| Copper (Cu)-Total | mg/L | 1 | 2 | 0.126 |
| Iron (Fe)-Total | mg/L | 0.3 | - | 0.958 |
| Lead (Pb)-Total | mg/L | - | 0.005 | 0.000795 |
| Magnesium (Mg)-Total | mg/L | - | - | 6.18 |
| Manganese (Mn)-Total | mg/L | 0.02 | 0.12 | 0.0332 |
| Mercury (Hg)-Total | mg/L | - | 0.001 | 0.0000122 |
| Nickel (Ni)-Total | mg/L | - | - | 0.00254 |
| Potassium (K)-Total | mg/L | - | - | 7.46 |
| Sodium (Na)-Total | mg/L | 200 | - | 29.7 |
| Zinc (Zn)-Total | mg/L | 5 | - | 0.0980 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Aggregate Organics (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2670520-1<br>Sampled Date: 07-DEC-21<br>Sampled Time: -<br>Sample ID: RANKIN INLET WWTP - EFFLUENT |
|---|---|---|---|---|
| Biochemical Oxygen Demand | mg/L | - | - | 99 |
| BOD Carbonaceous | mg/L | - | - | 83 |
| Oil and Grease | mg/L | - | - | 17.0 |
| Phenols (4AAP) | mg/L | - | - | 0.0094 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Volatile Organic Compounds (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2670520-1<br>Sampled Date: 07-DEC-21<br>Sampled Time: -<br>Sample ID: **RANKIN INLET WWTP - EFFLUENT** |
|---|---|---|---|---|
| Benzene | mg/L | - | 0.005 | <0.00050 |
| Ethyl benzene | mg/L | 0.0016 | 0.14 | <0.00050 |
| Toluene | mg/L | 0.024 | 0.06 | <0.0010 |
| o-Xylene | mg/L | - | - | <0.00050 |
| m+p-Xylenes | mg/L | - | - | <0.00040 |
| Xylenes (Total) | mg/L | 0.02 | 0.09 | <0.00064 |
| F1 (C6-C10) | mg/L | - | - | <0.10 |
| F1-BTEX | mg/L | - | - | <0.10 |
| F2-Naphth | mg/L | - | - | <0.10 |
| F3-PAH | mg/L | - | - | 0.67 |
| Total Hydrocarbons (C6-C50) | mg/L | - | - | 1.08 |
| Surrogate: 4-Bromofluorobenzene (SS) | % | - | - | 75.7 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Hydrocarbons (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2670520-1<br>Sampled Date: 07-DEC-21<br>Sampled Time: -<br>Sample ID: **RANKIN INLET WWTP - EFFLUENT** |
|---|---|---|---|---|
| F2 (C10-C16) | ug/L | - | - | <100 |
| F3 (C16-C34) | ug/L | - | - | 670 |
| F4 (C34-C50) | ug/L | - | - | 410 |
| Chrom. to baseline at nC50 | No Unit | - | - | YES |
| Surrogate: 2-Bromobenzotrifluoride | % | - | - | 106.4 |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# ANALYTICAL REPORT

## Polycyclic Aromatic Hydrocarbons (WATER)

| | | | | ALS ID | L2670520-1 | |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 07-DEC-21 | |
| | | | | Sampled Time | - | |
| | | | | Sample ID | **RANKIN INLET WWTP - EFFLUENT** | |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | |
| Acenaphthene | mg/L | - | - | | <0.000020 | |
| Acenaphthylene | mg/L | - | - | | <0.000020 | |
| Acridine | mg/L | - | - | | <0.000020 | |
| Anthracene | mg/L | - | - | | <0.000023 | DLM |
| Benzo(a)anthracene | mg/L | - | - | | <0.000010 | |
| Benzo(a)pyrene | mg/L | - | 0.00004 | | <0.0000063 | DLM |
| Benzo(b&j)fluoranthene | mg/L | - | - | | <0.000010 | |
| Benzo(g,h,i)perylene | mg/L | - | - | | <0.000040 | RRR |
| Benzo(k)fluoranthene | mg/L | - | - | | <0.000010 | |
| Chrysene | mg/L | - | - | | <0.000020 | |
| Dibenz(a,h)anthracene | mg/L | - | - | | <0.000030 | RRR |
| Fluoranthene | mg/L | - | - | | <0.000020 | |
| Fluorene | mg/L | - | - | | 0.000035 | R |
| Indeno(1,2,3-cd)pyrene | mg/L | - | - | | 0.000358 | RRR |
| 1-Methylnaphthalene | mg/L | - | - | | 0.000037 | |
| 2-Methylnaphthalene | mg/L | - | - | | 0.000047 | |
| Naphthalene | mg/L | - | - | | <0.000058 | RRR |
| Phenanthrene | mg/L | - | - | | <0.000050 | |
| Pyrene | mg/L | - | - | | <0.000010 | |
| Quinoline | mg/L | - | - | | <0.000099 | DLM |
| Surrogate: Acridine d9 | % | - | - | | 133.7 | SURR-ND |
| Surrogate: Chrysene d12 | % | - | - | | 116.5 | |
| Surrogate: Naphthalene d8 | % | - | - | | 139.2 | SHMI |
| Surrogate: Phenanthrene d10 | % | - | - | | 111.2 | |
| B(a)P Total Potency Equivalent | mg/L | - | - | | 0.000073 | |

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

# Reference Information

**Additional Comments for Sample Listed:**

| Samplenum | Matrix | Report Remarks | Sample Comments |
|---|---|---|---|
| L2670520-1 | Water | | |

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description |
|---|---|
| SURR-ND | Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be |

# Reference Information

| | |
|---|---|
| | unaffected. |
| R | The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum. |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| SHMI | Surrogate recovery was outside ALS DQO (High) due to Matrix Interference. |
| DLM | Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity). |
| RRR | Refer to Report Remarks for issues regarding this analysis |

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| **ALK-CO3CO3-CALC-WP** | Water | Alkalinity, Carbonate | CALCULATION |
| The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L. | | | |
| **ALK-HCO3HCO3-CALC-WP** | Water | Alkalinity, Bicarbonate | CALCULATION |
| The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L | | | |
| **ALK-OHOH-CALC-WP** | Water | Alkalinity, Hydroxide | CALCULATION |
| The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L. | | | |
| **ALK-TITR-WP** | Water | Alkalinity, Total (as CaCO3) | APHA 2320B |
| The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically. | | | |
| **BOD-CBOD-WP** | Water | Carbonaceous BOD | APHA 5210 B |
| Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO. | | | |
| **BOD-WP** | Water | Biochemical Oxygen Demand (BOD) | APHA 5210 B |
| Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO. | | | |
| **BTEXS+F1-HSMS-WP** | Water | BTX plus F1 by GCMS | EPA 8260C / EPA 5021A |
| The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection. | | | |
| **C-TOC-HTC-WP** | Water | Total Organic Carbon by Combustion | APHA 5310 B-WP |
| Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer. | | | |
| **CL-IC-N-WP** | Water | Chloride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| **EC-SCREEN-WP** | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |
| Qualitative analysis of conductivity where required during preparation of other test eg. IC, TDS, TSS, etc | | | |
| **EC-WP** | Water | Conductivity | APHA 2510B |
| Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes. | | | |
| **F-IC-N-WP** | Water | Fluoride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| **F1-F4-CALC-WP** | Water | CCME Total Hydrocarbons | CCME CWS-PHC, Pub #1310, Dec 2001-L |

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|

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

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

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

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

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

| | | | |
|---|---|---|---|
| **F2-F4-WT** | Water | F2-F4 (O.Reg.153/04) | MOE DECPH-E3421/CCME TIER 1 |

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

| | | | |
|---|---|---|---|
| **HARDNESS-CALC-WP** | Water | Hardness Calculated | APHA 2340B |

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

| | | | |
|---|---|---|---|
| **HG-T-CVAA-WP** | Water | Mercury Total | EPA 1631E (mod) |

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

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

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

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

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

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

| | | | |
|---|---|---|---|
| **NO2+NO3-CALC-WP** | Water | Nitrate+Nitrite | CALCULATION |
| **NO2-IC-N-WP** | Water | Nitrite in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| **NO3-IC-N-WP** | Water | Nitrate in Water by IC | EPA 300.1 (mod) |

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

| | | | |
|---|---|---|---|
| **OG-GRAV-WP** | Water | Oil & Grease - Gravimetric | EPA 1664 (modified) |

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

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

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

| | | | |
|---|---|---|---|
| **PAH-CCME-PPM-WT** | Water | CCME PAHs in mg/L | EPA 3511/8270D (mod) |

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

| | | | |
|---|---|---|---|
| **PH-WP** | Water | pH | APHA 4500H |

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---|---|---|---|
| | | The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode. | |
| **PHENOLS-4AAP-WT** | Water | Phenol (4AAP) | EPA 9066 |
| | | An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically. | |
| **SO4-IC-N-WP** | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| | | Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | |
| **SOLIDS-TOTSUS-WP** | Water | Total Suspended Solids | APHA 2540 D (modified) |
| | | Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C. | |
| **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.

Chain of Custody Numbers:

*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 |

**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.*

*Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.*

# Quality Control Report

Workorder: L2670520 Report Date: 16-DEC-21 

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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **ALK-TITR-WP** | **Water** | | | | | | | |
| **Batch R5676196** | | | | | | | | |
| **WG3673790-10 DUP** | | **L2670421-1** | | | | | | |
| Alkalinity, Total (as CaCO3) | | 263 | 264 | | mg/L | 0.4 | 20 | 10-DEC-21 |
| **WG3673790-9 LCS** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | 96.5 | | % | | 85-115 | 10-DEC-21 |
| **WG3673790-6 MB** | | | | | | | | |
| Alkalinity, Total (as CaCO3) | | | <1.0 | | mg/L | | 1 | 10-DEC-21 |
| **BOD-CBOD-WP** | **Water** | | | | | | | |
| **Batch R5678484** | | | | | | | | |
| **WG3672312-2 LCS** | | | | | | | | |
| BOD Carbonaceous | | | 103.1 | | % | | 85-115 | 09-DEC-21 |
| **WG3672312-1 MB** | | | | | | | | |
| BOD Carbonaceous | | | <2.0 | | mg/L | | 2 | 09-DEC-21 |
| **BOD-WP** | **Water** | | | | | | | |
| **Batch R5678484** | | | | | | | | |
| **WG3672312-3 DUP** | | **L2670476-1** | | | | | | |
| Biochemical Oxygen Demand | | 130 | 130 | | mg/L | 4.6 | 30 | 09-DEC-21 |
| **WG3672312-2 LCS** | | | | | | | | |
| Biochemical Oxygen Demand | | | 102.4 | | % | | 85-115 | 09-DEC-21 |
| **WG3672312-1 MB** | | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 09-DEC-21 |
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5676637** | | | | | | | | |
| **WG3671088-2 LCS** | | | | | | | | |
| Benzene | | | 99.5 | | % | | 70-130 | 09-DEC-21 |
| Toluene | | | 88.7 | | % | | 70-130 | 09-DEC-21 |
| Ethyl benzene | | | 88.0 | | % | | 70-130 | 09-DEC-21 |
| o-Xylene | | | 91.8 | | % | | 70-130 | 09-DEC-21 |
| m+p-Xylenes | | | 96.5 | | % | | 70-130 | 09-DEC-21 |
| **WG3671088-3 LCS** | | | | | | | | |
| F1 (C6-C10) | | | 104.0 | | % | | 70-130 | 09-DEC-21 |
| **WG3671088-1 MB** | | | | | | | | |
| Benzene | | | <0.00050 | | mg/L | | 0.0005 | 09-DEC-21 |
| Toluene | | | <0.0010 | | mg/L | | 0.001 | 09-DEC-21 |
| Ethyl benzene | | | <0.00050 | | mg/L | | 0.0005 | 09-DEC-21 |
| o-Xylene | | | <0.00050 | | mg/L | | 0.0005 | 09-DEC-21 |
| m+p-Xylenes | | | <0.00040 | | mg/L | | 0.0004 | 09-DEC-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **BTEXS+F1-HSMS-WP** | **Water** | | | | | | | |
| **Batch R5676637** | | | | | | | | |
| **WG3671088-1 MB** | | | | | | | | |
| F1 (C6-C10) | | | <0.10 | | mg/L | | 0.1 | 09-DEC-21 |
| Surrogate: 4-Bromofluorobenzene (SS) | | | 83.9 | | % | | 70-130 | 09-DEC-21 |
| **C-TOC-HTC-WP** | **Water** | | | | | | | |
| **Batch R5678348** | | | | | | | | |
| **WG3674461-3 DUP** | | **L2671194-3** | | | | | | |
| Total Organic Carbon | | 13.2 | 12.7 | | mg/L | 4.4 | 20 | 13-DEC-21 |
| **WG3674461-2 LCS** | | | | | | | | |
| Total Organic Carbon | | | 99.97 | | % | | 80-120 | 13-DEC-21 |
| **WG3674461-1 MB** | | | | | | | | |
| Total Organic Carbon | | | <0.50 | | mg/L | | 0.5 | 13-DEC-21 |
| **WG3674461-4 MS** | | **L2671194-4** | | | | | | |
| Total Organic Carbon | | | N/A | MS-B | % | | - | 13-DEC-21 |
| **CL-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5672496** | | | | | | | | |
| **WG3672031-10 LCS** | | | | | | | | |
| Chloride (Cl) | | | 96.6 | | % | | 90-110 | 08-DEC-21 |
| **WG3672031-9 MB** | | | | | | | | |
| Chloride (Cl) | | | <0.50 | | mg/L | | 0.5 | 08-DEC-21 |
| **EC-WP** | **Water** | | | | | | | |
| **Batch R5676196** | | | | | | | | |
| **WG3673790-10 DUP** | | **L2670421-1** | | | | | | |
| Conductivity | | 1040 | 1040 | | umhos/cm | 0.1 | 10 | 10-DEC-21 |
| **WG3673790-8 LCS** | | | | | | | | |
| Conductivity | | | 99.8 | | % | | 90-110 | 10-DEC-21 |
| **WG3673790-6 MB** | | | | | | | | |
| Conductivity | | | <1.0 | | umhos/cm | | 1 | 10-DEC-21 |
| **F-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5672496** | | | | | | | | |
| **WG3672031-10 LCS** | | | | | | | | |
| Fluoride (F) | | | 99.2 | | % | | 90-110 | 08-DEC-21 |
| **WG3672031-9 MB** | | | | | | | | |
| Fluoride (F) | | | <0.020 | | mg/L | | 0.02 | 08-DEC-21 |
| **F2-F4-WT** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **F2-F4-WT** | **Water** | | | | | | | |
| **Batch R5677107** | | | | | | | | |
| **WG3673737-2 LCS** | | | | | | | | |
| F2 (C10-C16) | | | 106.6 | | % | | 70-130 | 13-DEC-21 |
| F3 (C16-C34) | | | 104.5 | | % | | 70-130 | 13-DEC-21 |
| F4 (C34-C50) | | | 113.2 | | % | | 70-130 | 13-DEC-21 |
| **WG3673737-1 MB** | | | | | | | | |
| F2 (C10-C16) | | | <100 | | ug/L | | 100 | 13-DEC-21 |
| F3 (C16-C34) | | | <250 | | ug/L | | 250 | 13-DEC-21 |
| F4 (C34-C50) | | | <250 | | ug/L | | 250 | 13-DEC-21 |
| Surrogate: 2-Bromobenzotrifluoride | | | 121.9 | | % | | 60-140 | 13-DEC-21 |
| **HG-T-CVAA-WP** | **Water** | | | | | | | |
| **Batch R5677065** | | | | | | | | |
| **WG3674053-2 LCS** | | | | | | | | |
| Mercury (Hg)-Total | | | 102.7 | | % | | 80-120 | 13-DEC-21 |
| **WG3674053-1 MB** | | | | | | | | |
| Mercury (Hg)-Total | | | <0.000005( | | mg/L | | 0.000005 | 13-DEC-21 |
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5674735** | | | | | | | | |
| **WG3672048-4 DUP** | | **WG3672048-3** | | | | | | |
| Aluminum (Al)-Total | | <0.0030 | <0.0030 | RPD-NA | mg/L | N/A | 20 | 09-DEC-21 |
| Arsenic (As)-Total | | 0.00013 | 0.00012 | | mg/L | 12 | 20 | 09-DEC-21 |
| Cadmium (Cd)-Total | | <0.0000050 | <0.000005( | RPD-NA | mg/L | N/A | 20 | 09-DEC-21 |
| Calcium (Ca)-Total | | 63.7 | 64.8 | | mg/L | 1.8 | 20 | 09-DEC-21 |
| Chromium (Cr)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 09-DEC-21 |
| Cobalt (Co)-Total | | <0.00010 | <0.00010 | RPD-NA | mg/L | N/A | 20 | 09-DEC-21 |
| Copper (Cu)-Total | | 0.0173 | 0.0179 | | mg/L | 3.0 | 20 | 09-DEC-21 |
| Iron (Fe)-Total | | 0.018 | 0.020 | | mg/L | 7.6 | 20 | 09-DEC-21 |
| Lead (Pb)-Total | | 0.000050 | 0.000062 | J | mg/L | 0.000012 | 0.0001 | 09-DEC-21 |
| Magnesium (Mg)-Total | | 44.0 | 43.4 | | mg/L | 1.5 | 20 | 09-DEC-21 |
| Manganese (Mn)-Total | | 0.00046 | 0.00060 | J | mg/L | 0.00014 | 0.0002 | 09-DEC-21 |
| Nickel (Ni)-Total | | <0.00050 | <0.00050 | RPD-NA | mg/L | N/A | 20 | 09-DEC-21 |
| Potassium (K)-Total | | 1.39 | 1.39 | | mg/L | 0.2 | 20 | 09-DEC-21 |
| Sodium (Na)-Total | | 3.67 | 3.68 | | mg/L | 0.1 | 20 | 09-DEC-21 |
| Zinc (Zn)-Total | | 0.0084 | 0.0094 | | mg/L | 10 | 20 | 09-DEC-21 |
| **WG3672048-2 LCS** | | | | | | | | |
| Aluminum (Al)-Total | | | 103.9 | | % | | 80-120 | 09-DEC-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5674735** | | | | | | | | |
| **WG3672048-2 LCS** | | | | | | | | |
| Arsenic (As)-Total | | | 100.4 | | % | | 80-120 | 09-DEC-21 |
| Cadmium (Cd)-Total | | | 103.2 | | % | | 80-120 | 09-DEC-21 |
| Calcium (Ca)-Total | | | 100.0 | | % | | 80-120 | 09-DEC-21 |
| Chromium (Cr)-Total | | | 101.3 | | % | | 80-120 | 09-DEC-21 |
| Cobalt (Co)-Total | | | 100.2 | | % | | 80-120 | 09-DEC-21 |
| Copper (Cu)-Total | | | 100.7 | | % | | 80-120 | 09-DEC-21 |
| Iron (Fe)-Total | | | 100.5 | | % | | 80-120 | 09-DEC-21 |
| Lead (Pb)-Total | | | 101.9 | | % | | 80-120 | 09-DEC-21 |
| Magnesium (Mg)-Total | | | 110.3 | | % | | 80-120 | 09-DEC-21 |
| Manganese (Mn)-Total | | | 100.7 | | % | | 80-120 | 09-DEC-21 |
| Nickel (Ni)-Total | | | 100.8 | | % | | 80-120 | 09-DEC-21 |
| Potassium (K)-Total | | | 97.5 | | % | | 80-120 | 09-DEC-21 |
| Sodium (Na)-Total | | | 104.6 | | % | | 80-120 | 09-DEC-21 |
| Zinc (Zn)-Total | | | 103.3 | | % | | 80-120 | 09-DEC-21 |
| **WG3672048-1 MB** | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 09-DEC-21 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 09-DEC-21 |
| Cadmium (Cd)-Total | | | <0.000005( | | mg/L | | 0.000005 | 09-DEC-21 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 09-DEC-21 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 09-DEC-21 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 09-DEC-21 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 09-DEC-21 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 09-DEC-21 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 09-DEC-21 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 09-DEC-21 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 09-DEC-21 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 09-DEC-21 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 09-DEC-21 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 09-DEC-21 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 09-DEC-21 |
| **WG3672048-5 MS** | | **WG3672048-3** | | | | | | |
| Aluminum (Al)-Total | | | 94.0 | | % | | 70-130 | 09-DEC-21 |
| Arsenic (As)-Total | | | 94.8 | | % | | 70-130 | 09-DEC-21 |
| Cadmium (Cd)-Total | | | 94.6 | | % | | 70-130 | 09-DEC-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **MET-T-CCMS-WP** | **Water** | | | | | | | |
| **Batch R5674735** | | | | | | | | |
| **WG3672048-5 MS** | | **WG3672048-3** | | | | | | |
| Calcium (Ca)-Total | | | N/A | MS-B | % | | - | 09-DEC-21 |
| Chromium (Cr)-Total | | | 96.3 | | % | | 70-130 | 09-DEC-21 |
| Cobalt (Co)-Total | | | 93.0 | | % | | 70-130 | 09-DEC-21 |
| Copper (Cu)-Total | | | 87.9 | | % | | 70-130 | 09-DEC-21 |
| Iron (Fe)-Total | | | 96.1 | | % | | 70-130 | 09-DEC-21 |
| Lead (Pb)-Total | | | 91.4 | | % | | 70-130 | 09-DEC-21 |
| Magnesium (Mg)-Total | | | N/A | MS-B | % | | - | 09-DEC-21 |
| Manganese (Mn)-Total | | | 93.0 | | % | | 70-130 | 09-DEC-21 |
| Nickel (Ni)-Total | | | 90.2 | | % | | 70-130 | 09-DEC-21 |
| Potassium (K)-Total | | | 92.7 | | % | | 70-130 | 09-DEC-21 |
| Sodium (Na)-Total | | | N/A | MS-B | % | | - | 09-DEC-21 |
| Zinc (Zn)-Total | | | 91.1 | | % | | 70-130 | 09-DEC-21 |
| **NH3-COL-WP** | **Water** | | | | | | | |
| **Batch R5678657** | | | | | | | | |
| **WG3674541-7 DUP** | | **L2670437-1** | | | | | | |
| Ammonia, Total (as N) | | 0.409 | 0.433 | | mg/L | 5.8 | 20 | 13-DEC-21 |
| **WG3674541-6 LCS** | | | | | | | | |
| Ammonia, Total (as N) | | | 102.0 | | % | | 85-115 | 13-DEC-21 |
| **WG3674541-5 MB** | | | | | | | | |
| Ammonia, Total (as N) | | | <0.010 | | mg/L | | 0.01 | 13-DEC-21 |
| **WG3674541-8 MS** | | **L2670437-1** | | | | | | |
| Ammonia, Total (as N) | | | N/A | MS-B | % | | - | 13-DEC-21 |
| **NO2-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5672496** | | | | | | | | |
| **WG3672031-10 LCS** | | | | | | | | |
| Nitrite (as N) | | | 97.9 | | % | | 90-110 | 08-DEC-21 |
| **WG3672031-9 MB** | | | | | | | | |
| Nitrite (as N) | | | <0.010 | | mg/L | | 0.01 | 08-DEC-21 |
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5672496** | | | | | | | | |
| **WG3672031-11 DUP** | | **L2670437-1** | | | | | | |
| Nitrate (as N) | | 5.40 | 5.39 | | mg/L | 0.2 | 20 | 08-DEC-21 |
| **WG3672031-10 LCS** | | | | | | | | |
| Nitrate (as N) | | | 96.6 | | % | | 90-110 | 08-DEC-21 |
| **WG3672031-9 MB** | | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **NO3-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5672496** | | | | | | | | |
| **WG3672031-9 MB** | | | | | | | | |
| Nitrate (as N) | | | <0.020 | | mg/L | | 0.02 | 08-DEC-21 |
| **WG3672031-12 MS** | | **L2670437-1** | | | | | | |
| Nitrate (as N) | | | N/A | MS-B | % | | - | 08-DEC-21 |
| **OG-GRAV-WP** | **Water** | | | | | | | |
| **Batch R5677397** | | | | | | | | |
| **WG3673877-2 LCS** | | | | | | | | |
| Oil and Grease | | | 90.7 | | % | | 70-130 | 10-DEC-21 |
| **WG3673877-1 MB** | | | | | | | | |
| Oil and Grease | | | <5.0 | | mg/L | | 5 | 10-DEC-21 |
| **P-T-COL-WP** | **Water** | | | | | | | |
| **Batch R5674687** | | | | | | | | |
| **WG3672478-15 DUP** | | **L2670416-3** | | | | | | |
| Phosphorus (P)-Total | | 0.218 | 0.219 | | mg/L | 0.2 | 20 | 10-DEC-21 |
| **WG3672478-14 LCS** | | | | | | | | |
| Phosphorus (P)-Total | | | 94.4 | | % | | 80-120 | 10-DEC-21 |
| **WG3672478-13 MB** | | | | | | | | |
| Phosphorus (P)-Total | | | <0.0030 | | mg/L | | 0.003 | 10-DEC-21 |
| **WG3672478-16 MS** | | **L2670469-1** | | | | | | |
| Phosphorus (P)-Total | | | N/A | MS-B | % | | - | 10-DEC-21 |
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5678755** | | | | | | | | |
| **WG3673737-2 LCS** | | | | | | | | |
| 1-Methylnaphthalene | | | 98.3 | | % | | 60-130 | 14-DEC-21 |
| 2-Methylnaphthalene | | | 95.3 | | % | | 60-130 | 14-DEC-21 |
| Acenaphthene | | | 97.4 | | % | | 60-130 | 14-DEC-21 |
| Acenaphthylene | | | 95.5 | | % | | 60-130 | 14-DEC-21 |
| Anthracene | | | 89.3 | | % | | 60-130 | 14-DEC-21 |
| Acridine | | | 108.8 | | % | | 60-130 | 14-DEC-21 |
| Benzo(a)anthracene | | | 102.8 | | % | | 60-130 | 14-DEC-21 |
| Benzo(a)pyrene | | | 76.2 | | % | | 60-130 | 14-DEC-21 |
| Benzo(b&j)fluoranthene | | | 73.6 | | % | | 60-130 | 14-DEC-21 |
| Benzo(g,h,i)perylene | | | 150.3 | LCS-H | % | | 60-130 | 14-DEC-21 |
| Benzo(k)fluoranthene | | | 83.8 | | % | | 60-130 | 14-DEC-21 |
| Chrysene | | | 93.9 | | % | | 60-130 | 14-DEC-21 |
| Dibenz(a,h)anthracene | | | 144.5 | LCS-H | % | | 60-130 | 14-DEC-21 |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAH-CCME-PPM-WT** | **Water** | | | | | | | |
| **Batch R5678755** | | | | | | | | |
| **WG3673737-2 LCS** | | | | | | | | |
| Fluoranthene | | | 97.3 | | % | | 60-130 | 14-DEC-21 |
| Fluorene | | | 99.3 | | % | | 60-130 | 14-DEC-21 |
| Indeno(1,2,3-cd)pyrene | | | 146.1 | LCS-H | % | | 60-130 | 14-DEC-21 |
| Naphthalene | | | 98.2 | | % | | 50-130 | 14-DEC-21 |
| Phenanthrene | | | 102.7 | | % | | 60-130 | 14-DEC-21 |
| Pyrene | | | 95.9 | | % | | 60-130 | 14-DEC-21 |
| Quinoline | | | 112.1 | | % | | 60-130 | 14-DEC-21 |
| **WG3673737-1 MB** | | | | | | | | |
| 1-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| 2-Methylnaphthalene | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| Acenaphthene | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| Acenaphthylene | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| Anthracene | | | <0.000010 | | mg/L | | 0.00001 | 14-DEC-21 |
| Acridine | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| Benzo(a)anthracene | | | <0.000010 | | mg/L | | 0.00001 | 14-DEC-21 |
| Benzo(a)pyrene | | | <0.000005( | | mg/L | | 0.000005 | 14-DEC-21 |
| Benzo(b&j)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 14-DEC-21 |
| Benzo(g,h,i)perylene | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| Benzo(k)fluoranthene | | | <0.000010 | | mg/L | | 0.00001 | 14-DEC-21 |
| Chrysene | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| Dibenz(a,h)anthracene | | | <0.000005( | | mg/L | | 0.000005 | 14-DEC-21 |
| Fluoranthene | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| Fluorene | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| Indeno(1,2,3-cd)pyrene | | | <0.000010 | | mg/L | | 0.00001 | 14-DEC-21 |
| Naphthalene | | | <0.000050 | | mg/L | | 0.00005 | 14-DEC-21 |
| Phenanthrene | | | <0.000050 | | mg/L | | 0.00005 | 14-DEC-21 |
| Pyrene | | | <0.000010 | | mg/L | | 0.00001 | 14-DEC-21 |
| Quinoline | | | <0.000020 | | mg/L | | 0.00002 | 14-DEC-21 |
| Surrogate: Naphthalene d8 | | | 134.0 | SURQC | % | | 50-130 | 14-DEC-21 |
| Surrogate: Phenanthrene d10 | | | 137.1 | SURQC | % | | 60-130 | 14-DEC-21 |
| Surrogate: Chrysene d12 | | | 128.6 | | % | | 60-130 | 14-DEC-21 |
| Surrogate: Acridine d9 | | | 133.5 | SURQC | % | | 60-130 | 14-DEC-21 |
| **PH-WP** | **Water** | | | | | | | |

# Quality Control Report



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

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PH-WP** | **Water** | | | | | | | |
| **Batch R5676196** | | | | | | | | |
| **WG3673790-10 DUP** | | **L2670421-1** | | | | | | |
| pH | | 8.26 | 8.25 | J | pH units | 0.01 | 0.2 | 10-DEC-21 |
| **WG3673790-7 LCS** | | | | | | | | |
| pH | | | 6.99 | | pH units | | 6.9-7.1 | 10-DEC-21 |
| **PHENOLS-4AAP-WT** | **Water** | | | | | | | |
| **Batch R5677736** | | | | | | | | |
| **WG3673418-3 DUP** | | **L2671121-1** | | | | | | |
| Phenols (4AAP) | | <0.0010 | 0.0010 | RPD-NA | mg/L | N/A | 20 | 14-DEC-21 |
| **WG3673418-2 LCS** | | | | | | | | |
| Phenols (4AAP) | | | 97.9 | | % | | 85-115 | 14-DEC-21 |
| **WG3673418-1 MB** | | | | | | | | |
| Phenols (4AAP) | | | <0.0010 | | mg/L | | 0.001 | 14-DEC-21 |
| **WG3673418-4 MS** | | **L2671121-1** | | | | | | |
| Phenols (4AAP) | | | 104.5 | | % | | 75-125 | 14-DEC-21 |
| **SO4-IC-N-WP** | **Water** | | | | | | | |
| **Batch R5672496** | | | | | | | | |
| **WG3672031-10 LCS** | | | | | | | | |
| Sulfate (SO4) | | | 97.7 | | % | | 90-110 | 08-DEC-21 |
| **WG3672031-9 MB** | | | | | | | | |
| Sulfate (SO4) | | | <0.30 | | mg/L | | 0.3 | 08-DEC-21 |
| **SOLIDS-TOTSUS-WP** | **Water** | | | | | | | |
| **Batch R5674857** | | | | | | | | |
| **WG3672394-6 DUP** | | **L2670840-1** | | | | | | |
| Total Suspended Solids | | 8810 | 8080 | | mg/L | 8.6 | 20 | 09-DEC-21 |
| **WG3672394-5 LCS** | | | | | | | | |
| Total Suspended Solids | | | 97.0 | | % | | 85-115 | 09-DEC-21 |
| **WG3672394-4 MB** | | | | | | | | |
| Total Suspended Solids | | | <3.0 | | mg/L | | 3 | 09-DEC-21 |

# Quality Control Report

Workorder: L2670520 Report Date: 16-DEC-21

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



**Legend:**

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

**Sample Parameter Qualifier Definitions:**

| Qualifier | Description |
|---|---|
| J | Duplicate results and limits are expressed in terms of absolute difference. |
| LCS-H | Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RPD-NA | Relative Percent Difference Not Available due to result(s) being less than detection limit. |
| SURQC | Surrogate recovery marginally exceeded DQO in QC sample (MB, LCS, RM, or MS). Surrogates are less important for QC samples than for test samples. Refer to regular (non-surrogate) analyte results in affected QC sample for assessment of potential impacts to those analytes. |

# Quality Control Report

Workorder: L2670520 Report Date: 16-DEC-21

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



**Hold Time Exceedances:**

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|---|---|---|---|---|---|---|---|
| **Physical Tests** | | | | | | | |
| pH | | | | | | | |
| | 1 | 07-DEC-21 | 10-DEC-21 12:00 | 0.25 | 72 | hours | EHTR-FM |

**Legend & Qualifier Definitions:**

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2670520 were received on 08-DEC-21 11:30.

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

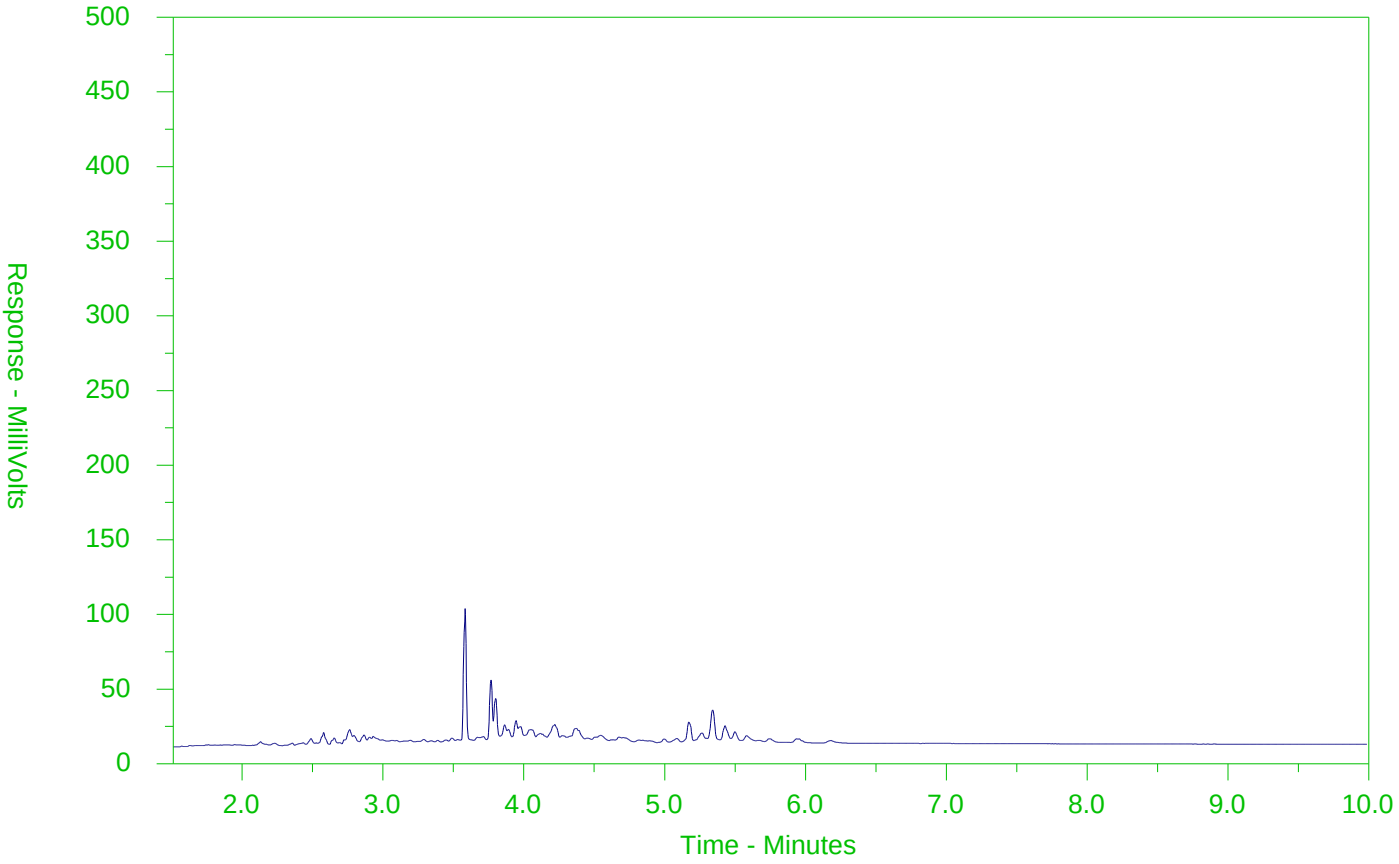
---

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

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

# CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2670520-1
Client Sample ID: RANKIN INLET WWTP - EFFLUENT




| ←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 the 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.

L2670520-COFC

t Form
8

COC #

Page ___ of ___

| Report To | | | |
|---|---|---|---|
| Company: | Nunavut CGS - Rankin Inlet (WB133) | ☑ PDF ☐ Excel ☐ Digital ☐ Fax | Service Requested (Rush for routine analysis subject to availability) |
| Contact: | SIMON DOLFON | | ◉ Regular (Standard Turnaround Times - Business Days) |
| Address: | Box 490 | Email 1: sdolfon@gov.nu.ca | ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT |
| | Rankin Inlet , NU, X0C 0G0 | Email 2: mlusty@gov.nu.ca | ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT |
| Phone: | 867-645-8155 Cell# : | Email 3: | ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT |
| Invoice To | Same as Report ? ☑ Yes ☐ No | Client / Project Information | Analysis Request |
| Hardcopy of Invoice with Report? | ☐ Yes ☐ No | Job #: Rankin Inlet WWTP- Monthly Effluent | Please Indicate below Filtered, Preserved or both (F, P, F/P) |
| Company: | | PO / AFE: | |
| Contact: | | LSD: | |
| Address: | | | |
| Phone: | Fax: | Quote #: | |
| Lab Work Order # (lab use only) | | ALS Contact: Craig Riddell | Sampled By: Simon Dolfon |

| Sample # | Sample Identification (This description will appear on the report) | Date Sampled | Time Sampled | Sample Type | BTX,F1-F4-WP | PAH,PANH-WP | NUNAVUT-WW-GRP1-WP | F-IC-N-WP | TC,EC-QT97-WP | Number of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| | Rankin Inlet WWTP - Effluent | Dec 7/21 (as per bottles) | 9r | Waste | x | x | x | x | x | 15 |
| | **NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1 | | | | | | | | | |
| | So all ICP-MS metals report. | | | | | | | | | |

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

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

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

**By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.**

**Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.**

| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Released by: | Date (dd-mmm-yy) | Time (hh:mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No If Yes add SIF |
| Brll Ross | 7/12/21 | 10:30 | | DEC 08 2021 | 1130 | 4.6 °C | | DEC 08 2021 | | |

GENF 18.01 Front

# Appendix E

Crown-Indigenous Relations and Northern Affairs Canada | Relations Couronne-Autochtones et Affaires du Nord Canada

# WATER LICENCE INSPECTION FORM

☒ Original
☐ Follow-Up Report

| Licensee | Licensee Representative |
|---|---|
| Community and Government Services | Sarah Collins |
| **Licence No. / Expiry** | **Representative's Title** |
| 3AM-GRA1631 July 7th 2031 | Municipal Planning Engineer |
| **Date of Inspection** | **Inspector** |
| June 25th , 2021 | Atuat SHOULDICE |

**Activities Inspected**

☐ Camp ☐ Drilling ☐ Mining ☐ Construction ☐ Reclamation ☐ Fuel Storage
☐ Roads/Hauling ☒ Other: Municipal ☐ Other:

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**SECTION 1** ☒ **Comments** ☐ **Non-Compliance with Act or Licence** ☐ **Action Required**

**Background**

On June 25th 2021, a regularly scheduled inspection was conducted of the Nunavut Water Board (NWB) water licence no. 3AM-GRA1631 issued to the Government of Nunavut, Community and Government Services (CGS) for the use of water related to the fresh water intake, re-supply line, Water Treatment Plant (WTP) and Sewage Treatment Facility (STF). The inspection was conducted to ensure compliance with applicable terms and conditions of the licence. CGS representatives Bill Ross and Matthew Hewey accompanied the Inspector on the inspection.

**Observation**

1. The 2020 Annual Report is available for review on the NWB's website.
2. Fresh water is drawn from Nipisar Lake at monitoring station GRA-1.
3. The total water used in 2020, according to the Annual Report was 611,345 $m^3$ which respected the annual allotment of 850,000 $m^3$.
4. Sewage sludge is deposited at a rate of 1 cubic meter per week, into a designated area at the municipal Landfill.
5. All signage is posted as required by PART B item 5.
6. Resupply water was pumped for 78 days from Lower Landing to Nipisar Lake. The total volume pumped was 355,444 $m^3$ in 2020.
7. Water use and discharge logs were available upon request.

**SECTION 2-** ☒ **Comments** ☐ **Non-Compliance with Act or Licence** ☐ **Action Required**

The Government of Nunavut continues to work towards improving the fresh water supply. An amendment has been recently submitted to the Nunavut Water Board to capture the increase fresh water intake from Lower Landing Lake.

| Inspector's Name | Representatives Name |
|---|---|
| Atuat Shouldice | Sarah Collins |
| **Signature** | |
| Sent Electronically | |
| **Date** | |
| October 25th 2021 | |

Water Resource Officer, Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada – CIRNAC
Atuat.Shouldice@craanc-cirnac.gc.ca
Office #: 867-645-2840

Canada

**PHOTO LOG**

| Date: | Authorization Number: | Camera/Model: | Inspector |
|---|---|---|---|
| June 25th, 2021 | 3AM-GRA1631 | Samsung S9 | RMO Shouldice |

| Photo No. | Lat/Long (DD.MM.SS.SS, NAD83) |
|---|---|
| Photo 1 | |

**Description: Maintenance completed to fuel lines in Nipisar pump house**

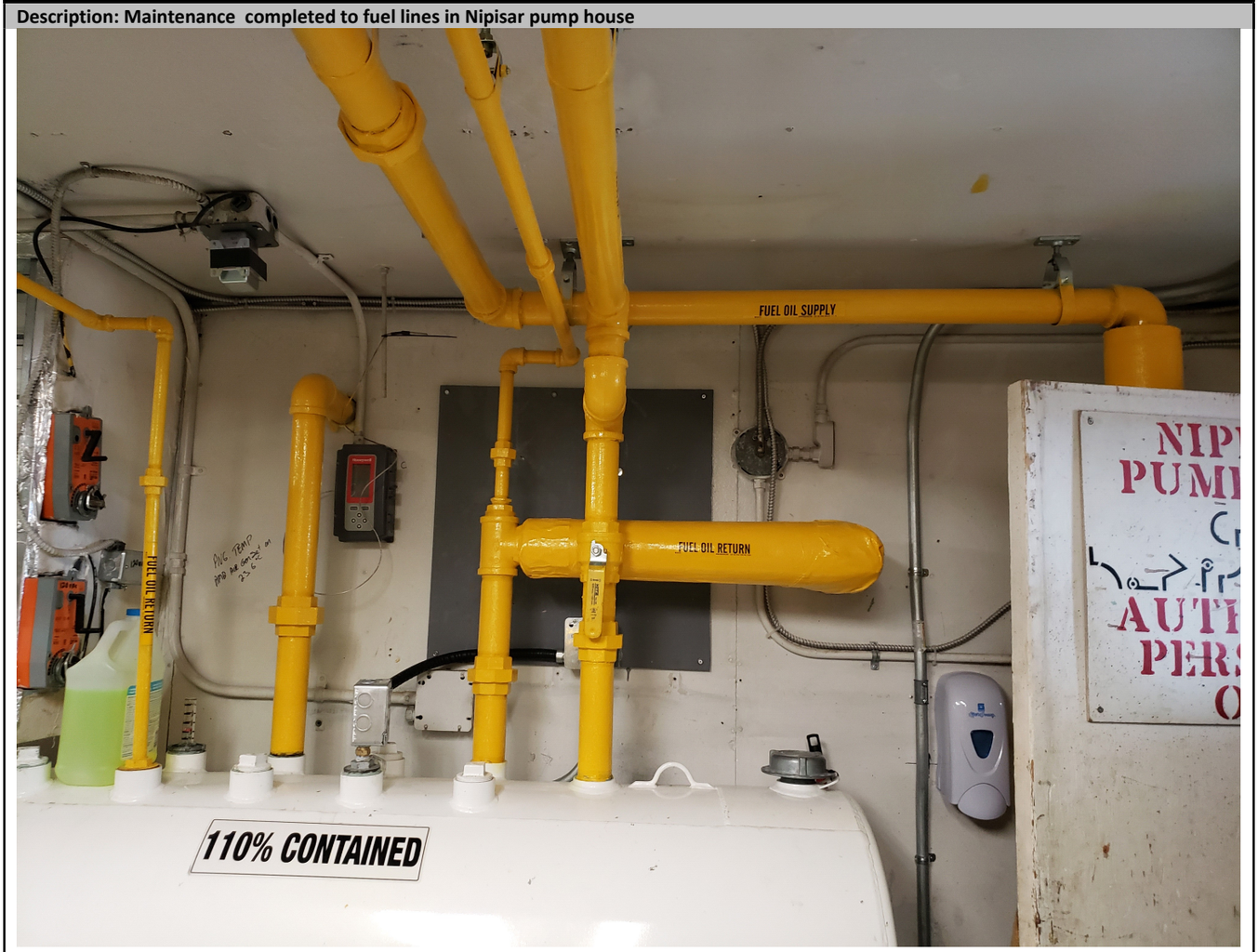

**PHOTO LOG**

| Date: | Authorization Number: | Camera/Model: | Inspector |
|---|---|---|---|
| June 25th, 2021 | 3AM-GRA1631 | Samsung S9 | RMO Shouldice |

| Photo No. | Lat/Long (DD.MM.SS.SS, NAD83) |
|---|---|
| Photo 2 | N/A |

**Description: Lower Landing Lake daily totals**

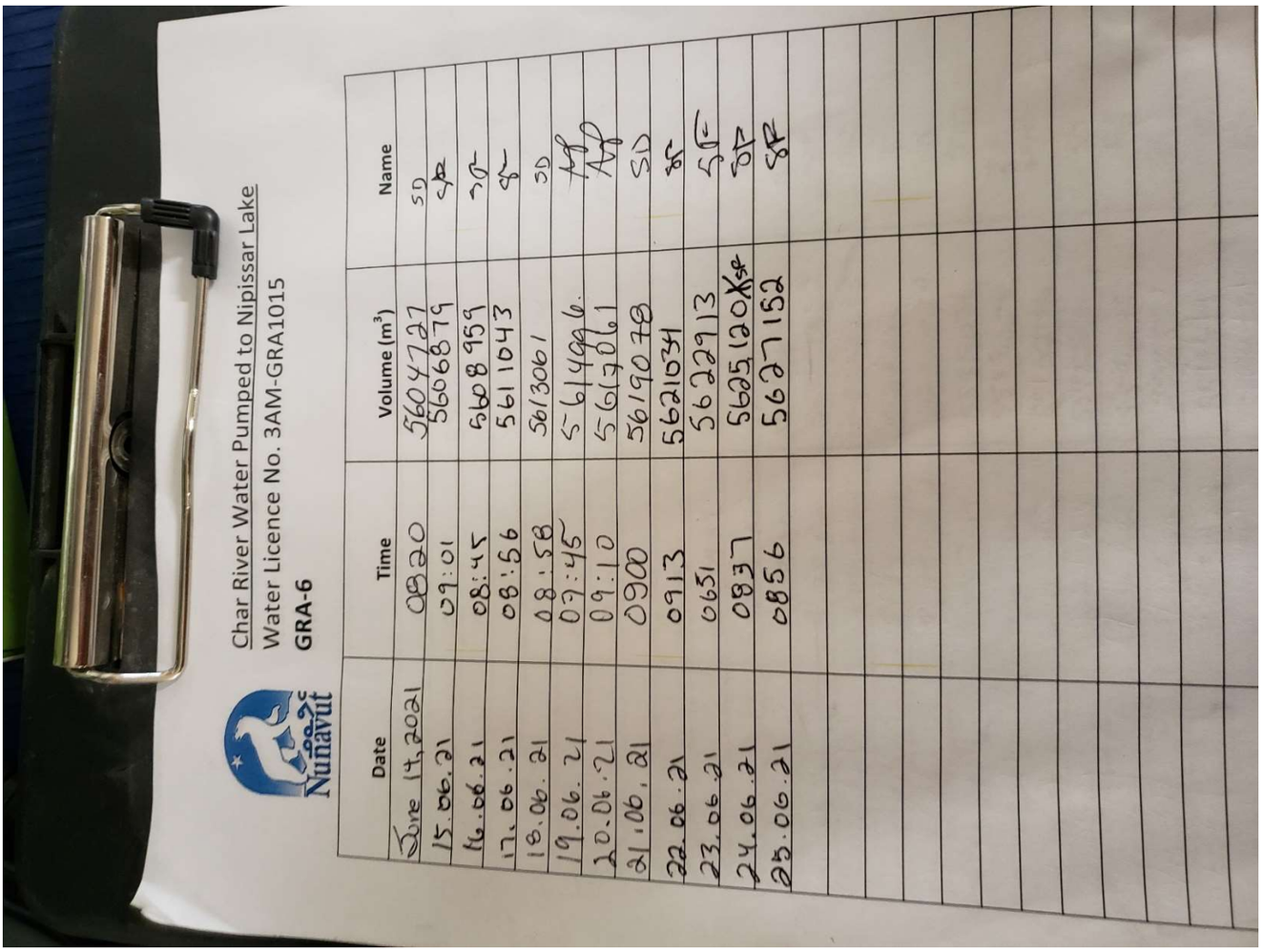

**PHOTO LOG**

| Date: | Authorization Number: | Camera/Model: | Inspector |
|---|---|---|---|
| June 25th, 2021 | 3AM-GRA1631 | Samsung S9 | RMO Shouldice |

| Photo No. | Lat/Long (DD.MM.SS.SS, NAD83) |
|---|---|
| Photo 3 | N/A |

**Description: Nipisar pump house**