YEAR BEING REPORTED: 2019

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

i)- iii) tabular summaries of all data generated under the "Monitoring Program"; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are results for Monitoring Station GRA-1 and GRA-3, as well as detailed chemical, physical and biological analysis required at GRA-2, GRA-6 and GRA-7.

Month Reported	Quantity of Water Obtained from all Sources (m³)	Quantity of Sewage Waste Discharged (Estimated, m³)
January	63,002.00	Same
February	55,587.00	Same
March	67,687.00	Same
April	62,143.00	Same
May	61,859.00	Same
June	54,221.00	Same
July	47,060.00	Same
August	33,412.00*	Same
September	20,237.00*	Same
October	55,846.00	Same
November	53,006.00	Same
December	56,034.00	Same
ANNUAL TOTAL	630,094.00	630,094.00

^{*}Broken flow meters and missed readings have caused monthly totals to become incomplete and inaccurate; most notably from August 18th to September 18th, 2019.

Pumping from Lower Landing Lake began on June 27, 2019. Below is the estimated Lower Landing Lake pumping volumes from June 29th, 2019 to August 23rd, 2019.

Month Reported	Estimated Water Transferred From Lower Landing Lake to Nipissar (m³)
June	12,536.84
July	188,052.60
August	112,831.56
TOTAL	313,421.00

An estimated total of 313,421.00 m³ was pumped to Nipissar Lake in 2019.

Below are the results for Monitoring Program Station GRA-1. Please note, water elevation is a measurement taken from a datum on the shoreline; therefore a decrease in elevation measurement represents an increase in Lake water level.

Date	Nipissar Lake Elevation (m)	Change in Nipissar Lake Elevation (m)
June	No Reading on	No Reading on
	Record	Record
July	No Reading on	No Reading on
	Record	Record
August	No Reading on	No Reading on
_	Record	Record

^{*}No Nipissar Lake elevation readings are on record for 2019.

Solid screenings separated from the sewage effluent at the Sewage Treatment Facility are contained in bags and transported to a designated area of the Rankin Inlet Solid Waste Site. Approximately 1 m³ of screenings are removed weekly. As per Part H, Item 5 of the Licence, below is a summary of solids remove from Sewage Treatment Facility at Monitoring Station Number GRA-4.

Month Reported	Solids Removed from the Sewage Treatment Facility (m³)
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;
- none
- v. a list of unauthorized discharges and summary of follow-up action taken;

Spills:

Spill #	Occurrence Date	Location Description	Product Spilled	Quantity
		Between Health Centre and		Zanarra,
2019452	03-Nov-19	Power Plant		40,000 L
				Unknown
2019480	31-Oct-19	Melvin Bay		Quantity
			Petroleum - fuel oil (jet A,	
2019425	14-Oct-19	414 / 17-13 Ave.	diesel, turbo A, heat)	200 L
			Petroleum - fuel oil (jet A,	Unknown
2019410	01-Oct-19	902 Maniruq 61st	diesel, turbo A, heat)	Quantity
		188-24 Inukshuk Avenue,	Petroleum - fuel oil (jet A,	
2019270	05-Jul-19	unit 541b	diesel, turbo A, heat)	278 L
		Condominiums, 44 - 15th		Unknown
2019255	26-Jun-19	Street		Quantity
			Petroleum - fuel oil (jet A,	Unknown
2019216	22-May-19	Box 251	diesel, turbo A, heat)	Quantity
		CBC Building 101-21 Tariuq	Petroleum - fuel oil (jet A,	Unknown
2019194	02-May-19	Avenue	diesel, turbo A, heat)	Quantity
		Courtyard Condominiums,	Wastewater (sewage, mine	
2019155	09-Apr-19	44-15 Ayaruaq street	tailings)	800 L
		CBC Building 101-21 Tariuq	Petroleum - fuel oil (jet A,	
2019221	01-Mar-19	Avenue	diesel, turbo A, heat)	2000 L

VI.	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 Wastewater Effluent Characterization Study has been undertaken by Dillon Consulating, as per Environment and Climate Change Canada Fisheries Act Direction.
viii	any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and
	- Pumping from Landing Lake started on June 27 th , 2019.
ix.	updates or revisions to the approved Operation and Maintenance Plans.
	- none
ADDIT	TIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:
	- none
FOLL	OW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:
inspect	- The 3AM-GRA1624 CIRNAC Inspection took place on July 17 th , 2019. A copy of the ion report has not been received to date.

Appendix A: Landing Lake Volumes with Nipissar Lake Elevations – 1 page Appendix B: Hazardous Materials Spill Database, Rankin Inlet 2019 – 1 page **Appendix C: Rankin Inlet 2019 Sampling Summary – 3 pages** Appendix D: Summary of Hydrocarbon Contamination Analysis – 1 page Appendix E: Summary of GRA-3 Wastewater Effluent Analysis – 1 page Appendix F: Certificate of Analysis January 10, 2019 – 17 pages Appendix G: Certificate of Analysis February 11, 2019 – 19 pages Appendix H: Certificate of Analysis March 7, 2019 – 19 pages Appendix I: Certificate of Analysis April 3, 2019 – 18 pages Appendix J: Certificate of Analysis May 13, 2019 – 19 pages Appendix K: Certificate of Analysis June 4, 2019 – 18 pages Appendix L: Certificate of Analysis June 25, 2019 – 27 pages Appendix M: Certificate of Analysis July 2, 2019 – 19 pages Appendix N: Certificate of Analysis July 8, 2019 – 18 pages Appendix O: Certificate of Analysis July 16, 2019 – 18 pages Appendix P: Certificate of Analysis July 22, 2019 – 18 pages Appendix O: Certificate of Analysis July 29, 2019 – 15 pages Appendix R: Certificate of Analysis August 6, 2019 – 18 pages Appendix S: Certificate of Analysis August 12, 2019 – 18 pages Appendix T: Certificate of Analysis August 19, 2019 – 18 pages Appendix U: Certificate of Analysis August 26, 2019 – 18 pages Appendix V: Certificate of Analysis October 2, 2019 – 17 pages Appendix W: Certificate of Analysis October 31, 2019 – 19 pages Appendix X: Certificate of Analysis November 25, 2019 – 19 pages Appendix Y: Certificate of Analysis December 4, 2019 – 19 pages

Appendix A

The Lower Landing Lake monthly pumping volumes are approximate calculations based on an hourly flow rate of 272.54 m³/h. The calculation accounts for an hour of maintenance, pump checks, and fuel addition into the pump for an estimated total of 23 pumping hours per day. This is equal to 6,268.42 m³/day. Due to broken flow meters, inconsistent recording, and missing log sheets, this is the best approach to record keeping for the 2019 pumping season.

Appendix B

Spill	Occurance Date -	Spill Region	Location	Location Description	Product Spilled	Quantity	Measurement	Spill Cause	Lead Agency
spill- 2019452	November 3, 2019	Keewatin	Rankin Inlet, Community, Nunavut	Between Health Centre and Power Plant		40000.00	Litres	Breakage	GN - Government of Nunavut
spill- 2019480	October 31, 2019	Keewatin	Rankin Inlet, Community, Nunavut	Melvin Bay		Unknown Quantity			INAC - Indigenous and Northern Affairs Canada
spill- 2019425	October 14, 2019	Keewatin	Rankin Inlet, Community, Nunavut	414 / 17-13 Ave.	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	200.00	Litres	Tank Leak	GN - Government of Nunavut
spill- 2019410	October 1, 2019	Keewatin	Rankin Inlet, Community, Nunavut	902 Maniruq 61st	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity		Breakage	GN - Government of Nunavut
spill- 2019270	July 5, 2019	Keewatin	Rankin Inlet, Community, Nunavut	188-24 Inukshuk Avenue, unit 541b	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	278.00	Litres	Breakage	GN - Government of Nunavut
spill- 2019255	June 26, 2019	Keewatin	Rankin Inlet, Community, Nunavut	Condominiums, 44 - 15th Street		Unknown Quantity			GN - Government of Nunavut
spill- 2019216	May 22, 2019	Keewatin	Rankin Inlet, Community, Nunavut	Box 251	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity		Pipe Leaks	GN - Government of Nunavut
spill- 2019194	May 2, 2019	Keewatin	Rankin Inlet, Community, Nunavut	CBC Building 101-21 Tariuq Avenue	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity			GN - Government of Nunavut
spill- 2019155	April 9, 2019	Keewatin	Rankin Inlet, Community, Nunavut	Courtyard Condominiums, 44-15 Ayaruaq street	Wastewater (sewage, mine tailings)	800.00	Litres	Breakage	GN - Government of Nunavut
spill- 2019221	March 1, 2019	Keewatin	Rankin Inlet, Community, Nunavut	CBC Building 101-21 Tariuq Avenue	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	2000.00	Litres	Fitting Leak	GN - Government of Nunavut

Appendix C

Rankin Inlet-CGS GRA-1

GRA-1						
Development	l locia	DI.	2019	N 41:	Statistics	A
Parameter Alkalinity	Unit	DL	25-Jun-19	Min	Max	Average
Bicarbonate (HCO3)	mg/L	1.2	37.2	36.1	57.1	43.93
Carbonate (CO3)	mg/L	0.60	<0.60	0.60	0.60	0.60
Hydroxide (OH)	mg/L	0.34	<0.34	0.34	0.34	0.34
Alkalinity, Total (as CaCO3)	mg/L	1.0	30.5	29.6	46.8	36.00
Ammonia by Colour	1116/ 2	1.0	30.3	23.0	40.0	30.00
Ammonia Total (as N)	mg/L	0.20	0.040	0.010	0.087	0.050
Biochemical Oxygen Demand (BOD)	9,					
Biochemical Oxygen Demand	mg/L	6.0	<2.0	2.0	2.9	2.33
Carbonaceous BOD						
BOD Carbonaceous	mg/L	6.0	<2.0	2.0	2.5	2.17
Chloride in Water by IC						
Chloride (CI)	mg/L	10	21.9	20.7	36.9	28.60
Conductivity ()					1	
Conductivity	umhos/cm	1.0	157	149	246	194.67
Fecal Coliforms ()						
Fecal Coliforms	MPN/100mL	3	<10	3	10	5.33
Hardness Calculated	/	0.00	45.0	40.0	70.5	55.07
Hardness (as CaCO3)	mg/L	0.30	45.2	40.8	72.5	55.87
Mercury Total Mercury (Hg)	ma/l	0.00020	<0.0000050	0.00000E	0.00003	0.00003
Nitrate in Water by IC	mg/L	0.00020	<0.0000050	0.000003	0.00002	0.00002
Nitrate (as N)	mg/L	0.40	<0.020	0.020	0.020	0.020
Nitrate + Nitrite	mg/ L	0.40	VO.020	0.020	0.020	0.020
Nitrate and Nitrite as N	mg/L	0.45	<0.070	0.070	0.070	0.070
Nitrite in Water by IC	1116/ 2	0.43	10.070	0.070	0.070	0.070
Nitrite (as N)	mg/L	0.20	<0.010	0.010	0.010	0.010
Oil & Grease - Gravimetric	8/ =	0.20		0.020	0.020	0.020
Oil and Grease	mg/L	5.0	<5.0	2.0	5.0	4.00
Phenol	0.					
Phenols	mg/L	0.0010	<0.0010	0.001	0.0027	0.0016
Phosphorus, Total						
Phosphorus (P)	mg/L	0.010	0.0163	0.012	0.014	0.013
r nosphorus (r)	IIIg/ L	0.010	0.0103	0.012	0.017	0.013
Sulfate in Water by IC	mg/ L	0.010	0.0103	0.012	0.014	0.013
	mg/L	6.0	14.7	10.9	20.8	15.30
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS	mg/L	6.0	14.7	10.9	20.8	15.30
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al)	mg/L	6.0 0.0050	14.7 0.0352	10.9 0.0126	20.8	15.30 0.025
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As)	mg/L mg/L mg/L	6.0 0.0050 0.00020	14.7 0.0352 0.00061	10.9 0.0126 0.00046	20.8 0.0491 0.00052	15.30 0.025 0.00049
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd)	mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010	14.7 0.0352 0.00061 <0.0000050	10.9 0.0126 0.00046 0.00001	20.8 0.0491 0.00052 0.00001	15.30 0.025 0.00049 0.00001
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca)	mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10	14.7 0.0352 0.00061 <0.0000050 12.7	10.9 0.0126 0.00046 0.00001 11.80	20.8 0.0491 0.00052 0.00001 21.0	15.30 0.025 0.00049 0.00001 16.233
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr)	mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044	10.9 0.0126 0.00046 0.00001 11.80 0.0010	20.8 0.0491 0.00052 0.00001 21.0 0.0010	0.025 0.00049 0.00001 16.233 0.0010
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012	0.0126 0.00046 0.00001 11.80 0.0010 0.0002	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002	0.025 0.00049 0.00001 16.233 0.0010 0.00020
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020	14.7 0.0352 0.00061 <0.000050 12.7 0.00044 0.00012 0.00098	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.00082
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010	14.7 0.0352 0.00061 <0.000050 12.7 0.00044 0.00012 0.00098 0.071	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.00082 0.053
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090	0.0352 0.00061 <0.000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.00082 0.053 0.00009
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010	14.7 0.0352 0.00061 <0.000050 12.7 0.00044 0.00012 0.00098 0.071	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.00082 0.053 0.00009 3.72
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090	14.7 0.0352 0.00061 <0.000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.00082 0.053 0.00009
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030	14.7 0.0352 0.00061 <0.000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.00082 0.053 0.00009 3.72 0.024
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020	14.7 0.0352 0.00061 <0.000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031 0.0020	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.0020	0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031 0.0020 2.61	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.0020 0.030	0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031 0.0020 2.61 22.5	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn) Total Organic Carbon by Combustion	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.0020 0.030	0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58	0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031 0.0020 2.61 22.5	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn) Total Organic Carbon by Combustion	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.020 0.030	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031 0.0020 2.61 22.5 0.0020	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids () Total Suspended Solids	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.020 0.030	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031 0.0020 2.61 22.5 0.0020	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids pH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00020 0.0020 0.030 0.0020 0.50	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031 22.5 0.0020 4.18	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.053 0.0009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon by Combustion Total Suspended Solids () Total Suspended Solids pH pH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00020 0.030 0.0020 0.50 13	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9 5.0	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031 0.0020 2.61 22.5 0.0020 4.18	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06 5.00
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids () Total Suspended Solids pH pH Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00090 0.010 0.00020 0.0020 0.0020 13	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0 7.40 <0.00050	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9 5.0 7.34 0.00050	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.00009 4.9 0.031 0.0020 2.61 22.5 0.0020 4.18 5.0 7.63 0.00050	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06 5.00
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids () Total Suspended Solids PH pH Benzene Toluene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.000090 0.010 0.0020 0.0020 0.0020 13	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0 7.40 <0.00050 <0.0010	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9 5.0 7.34 0.00050 0.0010	20.8 0.0491 0.00052 0.00001 21.0 0.0010 0.0002 0.00087 0.10 0.031 0.0020 2.61 22.5 0.0020 4.18 5.0 7.63 0.00050 0.0010	0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06 5.00
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids () Total Suspended Solids PH pH Benzene Toluene Ethyl Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00020 0.010 0.0020 0.0020 0.030 0.0020 13 0.10 0.00050 0.0010 0.00050	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0 7.40 <0.00050 <0.0010 <0.00050	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9 5.0 7.34 0.00050 0.0010 0.00050	20.8 0.0491 0.00052 0.00001 21.0 0.0002 0.00087 0.10 0.0001 0.0002 4.9 0.031 0.0020 2.61 22.5 0.0020 4.18 5.0 7.63 0.00050 0.0010 0.00050	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.00082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06 5.00 7.48 0.00050 0.0010 0.00050
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Organic Carbon Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene o-Xylene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.0020 0.50 13 0.10 0.00050 0.00050 0.00050	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0 7.40 <0.00050 <0.0010 <0.00050 <0.00050	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9 5.0 7.34 0.00050 0.0010 0.00050	20.8 0.0491 0.00052 0.00001 21.0 0.0002 0.00087 0.10 0.00009 4.9 0.031 0.0020 2.61 22.5 0.0020 4.18 5.0 7.63 0.00050 0.00050	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.00082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06 5.00 7.48 0.00050 0.0010 0.00050 0.00050
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Organic Carbon Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene o-Xylene F1 (C6-C10)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.020 0.030 0.0020 13 0.10 0.00050 0.0010 0.00050 0.00050 0.10	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0 7.40 <0.00050 <0.0010 <0.00050 <0.00050 <0.10	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9 5.0 7.34 0.00050 0.0010 0.00050 0.10	20.8 0.0491 0.00052 0.00001 21.0 0.0002 0.00087 0.10 0.0002 2.61 22.5 0.0020 4.18 5.0 7.63 0.00050 0.00050 0.00050 0.10	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06 5.00 7.48 0.00050 0.0010 0.00050 0.00050 0.10
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon by Combustion Total Organic Carbon Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene o-Xylene F1 (C6-C10) F2 (C10-C16)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.020 0.030 0.0020 13 0.10 0.00050 0.0010 0.00050 0.00050 0.10 0.25	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0 7.40 <0.00050 <0.0010 <0.00050 <0.100 <0.100	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9 5.0 7.34 0.00050 0.0010 0.00050 0.100 0.10	20.8 0.0491 0.00052 0.00001 21.0 0.0002 0.00087 0.10 0.0001 0.031 0.0020 2.61 22.5 0.0020 4.18 5.0 7.63 0.00050 0.0010 0.00050 0.10 0.25	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06 5.00 7.48 0.00050 0.0010 0.00050 0.00050 0.10 0.1
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon by Combustion Total Organic Carbon Total Suspended Solids () Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene o-Xylene F1 (C6-C10) F2 (C10-C16) F3 (C16-C34)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.0020 0.030 0.0020 0.50 13 0.10 0.00050 0.0010 0.00050 0.00050 0.10 0.25 0.25	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0 7.40 <0.00050 <0.0010 <0.00050 <0.100 <0.100 <0.25	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9 5.0 7.34 0.00050 0.0010 0.00050 0.0010 0.10 0.10	20.8 0.0491 0.00052 0.00001 21.0 0.0002 0.00087 0.10 0.0001 0.031 0.0020 2.61 22.5 0.0020 4.18 5.0 7.63 0.00050 0.0010 0.00050 0.00050 0.10 0.25 0.25	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06 5.00 7.48 0.00050 0.0010 0.00050 0.00050 0.10 0.1
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon by Combustion Total Organic Carbon Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene o-Xylene F1 (C6-C10) F2 (C10-C16)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.020 0.030 0.0020 13 0.10 0.00050 0.0010 0.00050 0.00050 0.10 0.25	14.7 0.0352 0.00061 <0.0000050 12.7 0.00044 0.00012 0.00098 0.071 <0.000050 3.28 0.0446 0.00098 1.58 12.8 <0.0030 3.72 <2.0 7.40 <0.00050 <0.0010 <0.00050 <0.100 <0.100	10.9 0.0126 0.00046 0.00001 11.80 0.0010 0.0002 0.00073 0.0290 0.00009 2.72 0.0112 0.0020 1.57 13.1 0.0020 3.9 5.0 7.34 0.00050 0.0010 0.00050 0.100 0.10	20.8 0.0491 0.00052 0.00001 21.0 0.0002 0.00087 0.10 0.0001 0.031 0.0020 2.61 22.5 0.0020 4.18 5.0 7.63 0.00050 0.0010 0.00050 0.10 0.25	15.30 0.025 0.00049 0.00001 16.233 0.0010 0.00020 0.0082 0.053 0.00009 3.72 0.024 0.0020 2.05 17.70 0.0020 4.06 5.00 7.48 0.00050 0.0010 0.00050 0.00050 0.10 0.1

GRA-0			2019		Statistics	
Parameter	Unit	DL	25-Jun-19	Min	Max	Average
Alkalinity						
Bicarbonate (HCO3)	mg/L	1.2	24.9	19.0	30.3	25.8
Carbonate (CO3) Hydroxide (OH)	mg/L	0.60	<0.60 <0.34	0.60	0.60 0.34	0.60 0.34
Alkalinity, Total (as CaCO3)	mg/L mg/L	1.0	20.4	15.6	24.8	21.2
Ammonia by Colour	1116/ L	1.0	20.4	15.0	24.0	21.2
Ammonia Total (as N)	mg/L	0.20	<0.010	0.010	0.010	0.010
Biochemical Oxygen Demand (BOD)	<u>. </u>					
Biochemical Oxygen Demand	mg/L	6.0	<2.0	2.0	2.0	2.0
Carbonaceous BOD						
BOD Carbonaceous	mg/L	6.0	<2.0	2.0	2.0	2.0
Chloride in Water by IC Chloride (CI)	mg/L	10	16.0	13.2	23.7	16.9
Conductivity ()	IIIg/ L	10	10.0	13.2	23.7	10.5
Conductivity	umhos/cm	1.0	101	88.7	143.0	109.4
Fecal Coliforms ()						
Fecal Coliforms	MPN/100mL	3	<10	3.0	10.0	5.3
Hardness Calculated						
Hardness (as CaCO3)	mg/L	0.30	26.8	23.00	42.00	30.90
Mercury Total Mercury (Hg)	ma/l	0.00020	<0.0000050	0.000005	0.000020	0.000015
Nitrate in Water by IC	mg/L	0.00020	\0.0000030	0.000000	0.000020	0.000013
Nitrate (as N)	mg/L	0.40	<0.020	0.020	0.020	0.020
Nitrate + Nitrite	g.					
Nitrate and Nitrite as N	mg/L	0.45	<0.070	0.070	0.070	0.070
Nitrite in Water by IC						
Nitrite (as N)	mg/L	0.20	<0.010	0.010	0.010	0.010
Oil & Grease - Gravimetric Oil and Grease	mg/l	5.0	<5.0	2.0	5.0	4.0
Phenol	mg/L	5.0	₹5.0	2.0	5.0	4.0
Phenols	mg/L	0.0010	<0.0010	0.0010	0.0028	0.0016
Phosphorus, Total	G,					
Phosphorus (P)	mg/L	0.010	0.0076	0.010	0.011	0.010
Sulfate in Water by IC	,					
Sulfate (SO4)	mg/L	6.0	4.36	4.32	6.29	5.01
Total Metals by ICP-MS Aluminium (AI)	mg/L	0.0050	0.0118	0.0085	0.0289	0.0176
Arsenic (As)	mg/L	0.00020	0.00035	0.00023	0.00033	0.00028
Cadmium (Cd)	mg/L	0.000010	<0.000050	0.000010	0.000010	0.000010
Calcium (Ca)	mg/L	0.10	7.85	6.71	12.70	9.23
Chromium (Cr)	mg/L	0.0010	0.00025	0.0010	0.0010	0.0010
Cobalt (Co)	mg/L	0.00020	<0.00010	0.00020	0.00020	0.00020
Copper (Cu) Iron (Fe)	mg/L mg/L	0.00020 0.010	0.00092 0.066	0.00075 0.10	0.00083 0.18	0.00080 0.14
Lead (Pb)	mg/L	0.000090	<0.00050	0.00009	0.00009	0.00009
Magnesium (Mg)	mg/L	0.010	1.75	1.52	2.48	1.91
Manganese (Mn)	mg/L	0.00030	0.0034	0.0030	0.0436	0.0191
Nickel (Ni)	mg/L	0.0020	0.00063	0.0020	0.0020	0.0020
Potassium (K)	mg/L	0.020	1.26	1.17	1.71	1.43
Sodium (Na)	mg/L	0.030	8.75	7.35	12.50	9.24
Zinc (Zn) Total Organic Carbon by Combustion	mg/L	0.0020	<0.0030	0.0020	0.0020	0.0020
Total Organic Carbon Total Organic Carbon	mg/L	0.50	4.53	4.0	5.0	4.6
Total Suspended Solids ()	6/ =					
Total Suspended Solids	mg/L	13	<2.0	5.0	5.0	5.0
рН						
рН	pH Units	0.10	7.28	7.4	7.4	7.4
Benzene	mg/L	0.00050	<0.00050	0.00050	0.00050	0.00050
Toluene Ethyl Benzene	mg/L mg/L	0.0010 0.00050	<0.0010 <0.00050	0.0010 0.00050	0.0010 0.00050	0.0010 0.00050
o-Xylene	mg/L	0.00050	<0.00050	0.00050	0.00050	0.00050
F1 (C6-C10)	mg/L	0.10	<0.10	0.10	0.10	0.10
F2 (C10-C16)	mg/L	0.25	<0.10	0.10	0.25	0.15
F3 (C16-C34)	mg/L	0.25	<0.25	0.25	0.25	0.25
F4 (C34-C50)	mg/L	0.25	<0.25	0.25	0.25	0.25
Total Hydrocarbons (C6-C50)	mg/L	0.44	<0.38	0.38	0.44	0.40

GRA-7			2019		Statistics	
Parameter	Unit	DL	25-Jun-19	Min	Max	Average
Alkalinity						
Bicarbonate (HCO3)	mg/L	1.2	15.6	16.5	30	23.8
Carbonate (CO3)	mg/L	0.60	<0.60	0.60	0.60	0.60
Hydroxide (OH)	mg/L	0.34	<0.34	0.34	0.34	0.34
Alkalinity, Total (as CaCO3) Ammonia by Colour	mg/L	1.0	12.8	13.5	24.6	19.5
Ammonia Total (as N)	mg/L	0.20	<0.0010	0.010	0.12	0.047
Biochemical Oxygen Demand (BOD)	IIIB/ L	0.20	10.0010	0.010	0.12	0.047
Biochemical Oxygen Demand	mg/L	6.0	<2.0	2.0	2.0	2.0
Carbonaceous BOD						
BOD Carbonaceous	mg/L	6.0	<2.0	2.0	2.0	2.0
Chloride in Water by IC		4.0	440	44.4	22.5	45.00
Chloride (CI) Conductivity ()	mg/L	10	14.9	11.4	23.5	15.83
Conductivity	umhos/cm	1.0	96.0	77.1	143	102.77
Fecal Coliforms ()	arrings, crit	1.0	30.0	,,,,	110	102177
Fecal Coliforms	MPN/100mL	3	<10	3	10	5.33
Hardness Calculated						
Hardness (as CaCO3)	mg/L	0.30	24.5	19.6	41.4	28.87
Mercury Total	1.	0.00000	.0.00005	0.00000=	0.00000	0.0000:-
Mercury (Hg) Nitrate in Water by IC	mg/L	0.00020	<0.000050	0.000005	0.00002	0.000015
Nitrate in Water by iC Nitrate (as N)	mg/L	0.40	<0.020	0.020	0.020	0.020
Nitrate + Nitrite	1116/ 2	0.10	10.020	0.020	0.020	0.020
Nitrate and Nitrite as N	mg/L	0.45	<0.070	0.070	0.070	0.070
Nitrite in Water by IC						
Nitrite (as N)	mg/L	0.20	<0.010	0.010	0.010	0.010
Oil & Grease - Gravimetric		F 0	.F. O	2.0	F 0	4.0
Oil and Grease Phenol	mg/L	5.0	<5.0	2.0	5.0	4.0
Phenols	mg/L	0.0010	0.0011	0.001	0.0021	0.0015
Phosphorus, Total	6/ =	0.0010	010011	0.001	0.0021	0.0013
						1
Phosphorus (P)	mg/L	0.010	0.0081	0.010	0.011	0.010
Sulfate in Water by IC						
Sulfate in Water by IC Sulfate (SO4)	mg/L mg/L	6.0	0.0081 4.03	0.010 3.94	0.011 6.31	0.010 4.75
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS	mg/L	6.0	4.03	3.94	6.31	4.75
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI)	mg/L mg/L	6.0 0.0050	4.03 0.0143	3.94 0.0139	6.31 0.0469	4.75 0.026
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS	mg/L	6.0	4.03 0.0143 0.00034	3.94	6.31	4.75
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As)	mg/L mg/L mg/L	6.0 0.0050 0.00020	4.03 0.0143 0.00034	3.94 0.0139 0.00021	6.31 0.0469 0.00031	4.75 0.026 0.00027
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr)	mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040	3.94 0.0139 0.00021 0.000010 5.68 0.0010	6.31 0.0469 0.00031 0.000010 12.5 0.0010	4.75 0.026 0.00027 0.000010 8.61 0.0010
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.00010	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.00010 0.00106	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.00010 0.00106 0.069	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.00010 0.00106	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.00010 0.00106 0.069 <0.000050	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.00030 0.0020	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.069 <0.00050 1.59 0.00362 0.00064	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.0020	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.069 <0.00050 1.59 0.00362 0.00064 1.20	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.020 0.030	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.000106 0.069 <0.000050 1.59 0.00362 0.00064 1.20 7.81	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68 12	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.0020	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.069 <0.00050 1.59 0.00362 0.00064 1.20	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn) Total Organic Carbon by Combustion	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.020 0.030 0.0020	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.00010 0.069 <0.000050 1.59 0.00362 0.00064 1.20 7.81 <0.0030	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68 12 0.0020	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.020 0.030	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.000106 0.069 <0.000050 1.59 0.00362 0.00064 1.20 7.81	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68 12	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn) Total Organic Carbon	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.020 0.030 0.0020	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.00010 0.069 <0.000050 1.59 0.00362 0.00064 1.20 7.81 <0.0030	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68 12 0.0020	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids () Total Suspended Solids pH	mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.00106 0.069 <0.000050 1.59 0.00362 0.00064 1.20 7.81 <0.0030 4.37	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020 3.93 5.0	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68 12 0.0020 4.76	4.75 0.026 0.00027 0.000010 8.61 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020 4.26
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids pH pH	mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.069 <0.000050 1.59 0.00362 0.00064 1.20 7.81 <0.0030 4.37 <2.0 6.78	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020 3.93 5.0 7.31	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68 12 0.0020 4.76 5.0	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020 4.26 5.0 7.35
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids () Total Suspended Solids pH pH Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.000090 0.010 0.00020 0.030 0.0020 0.50 13	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.00106 0.069 <0.000050 1.59 0.00362 0.00064 1.20 7.81 <0.0030 4.37 <2.0 6.78 <0.00050	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020 3.93 5.0 7.31 0.00050	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68 12 0.0020 4.76 5.0 7.38 0.00050	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020 4.26 5.0 7.35 0.00050
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids () Total Suspended Solids pH pH Benzene Toluene	mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13 0.10 0.00050 0.0010	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.069 <0.00050 1.59 0.00362 0.00064 1.20 7.81 <0.0030 4.37 <2.0 6.78 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020 3.93 5.0 7.31 0.00050 0.0010	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.00090 2.46 0.029 0.0020 1.68 12 0.0020 4.76 5.0 7.38 0.00050 0.0010	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020 4.26 5.0 7.35 0.00050 0.0010
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon by Combustion Total Suspended Solids () Total Suspended Solids pH pH Benzene Toluene Ethyl Benzene	mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.020 0.030 0.0020 0.50 13 0.10 0.00050 0.0010 0.00050	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.000106 0.069 <0.00050 1.59 0.00362 0.00064 1.20 7.81 <0.0030 4.37 <2.0 6.78 <0.00050 <0.00050 <0.00050 <0.00050	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020 3.93 5.0 7.31 0.00050 0.0010 0.00050	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.00090 2.46 0.029 0.0020 1.68 12 0.0020 4.76 5.0 7.38 0.00050 0.0010 0.00050	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 4.26 5.0 7.35 0.00050 0.00050 0.00050
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids () Total Suspended Solids pH pH Benzene Toluene	mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13 0.10 0.00050 0.0010	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.069 <0.00050 1.59 0.00362 0.00064 1.20 7.81 <0.0030 4.37 <2.0 6.78 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020 3.93 5.0 7.31 0.00050 0.0010	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.00090 2.46 0.029 0.0020 1.68 12 0.0020 4.76 5.0 7.38 0.00050 0.0010	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020 4.26 5.0 7.35 0.00050 0.0010
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon by Combustion Total Suspended Solids () Total Suspended Solids pH pH Benzene Toluene Ethyl Benzene O-Xylene	mg/L	6.0 0.0050 0.00020 0.00010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.0069 <0.00050 1.59 0.00362 0.00064 1.20 7.81 <0.0030 4.37 <2.0 6.78 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020 3.93 5.0 7.31 0.00050 0.0010 0.00050 0.00050	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68 12 0.0020 4.76 5.0 7.38 0.00050 0.0010 0.00050 0.00050	4.75 0.026 0.00027 0.000010 8.61 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020 4.26 5.0 7.35 0.00050 0.0010 0.00050 0.00050
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon by Combustion Total Organic Carbon Total Suspended Solids () Total Suspended Solids pH pH Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10) F2 (C10-C16) F3 (C16-C34)	mg/L mg/L	6.0 0.0050 0.00020 0.00010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13 0.10 0.00050 0.0010 0.25 0.25	4.03 0.0143 0.00034 <0.000050 7.17 0.00040 <0.00010 0.069 <0.00050 1.59 0.00362 0.00064 1.20 7.81 <0.0030 4.37 <2.0 6.78 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.10 <0.25	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020 3.93 5.0 7.31 0.00050 0.0010 0.00050 0.00050 0.10 0.1	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.00090 2.46 0.029 0.0020 1.68 12 0.0020 4.76 5.0 7.38 0.00050 0.0010 0.00050 0.00050 0.10 0.25 0.25	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020 4.26 5.0 7.35 0.00050 0.0010 0.00050 0.00050 0.10 0.1
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K) Sodium (Na) Zinc (Zn) Total Organic Carbon by Combustion Total Suspended Solids () Total Suspended Solids pH pH Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10) F2 (C10-C16)	mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13 0.10 0.00050 0.00050 0.10 0.25	4.03 0.0143 0.00034 <0.0000050 7.17 0.00040 <0.000106 0.069 <0.000050 1.59 0.00362 0.00064 1.20 7.81 <0.0030 4.37 <2.0 6.78 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.00050 <0.10	3.94 0.0139 0.00021 0.000010 5.68 0.0010 0.00020 0.00068 0.10 0.000090 1.32 0.00312 0.0020 1.02 6.65 0.0020 3.93 5.0 7.31 0.00050 0.0010 0.00050 0.00050 0.10	6.31 0.0469 0.00031 0.000010 12.5 0.0010 0.00020 0.00082 0.19 0.000090 2.46 0.029 0.0020 1.68 12 0.0020 4.76 5.0 7.38 0.00050 0.0010 0.00050 0.00050 0.10 0.25	4.75 0.026 0.00027 0.000010 8.61 0.0010 0.00020 0.00075 0.14 0.000090 1.79 0.016 0.0020 1.34 8.45 0.0020 4.26 5.0 7.35 0.00050 0.0010 0.00050 0.00050 0.10 0.1

Appendix D

Summary of Hydrocarbon Contamination Analysis

				25-Jun-19		
Parameters	Units	Detection Limit	GRA-1: Nipissar Lake		GRA-7: Lower Landing Lake	Guidelines for Canadian Drinking Water Quality
BTX plus F1 by GCMS			•		Ü	, , , , , , , , , , , , , , , , , , ,
Benzene	mg/L	0.00050	<0.00050	<0.00050	<0.00050	MAC: 0.005 mg/L
Toluene	mg/L	0.0010	<0.0010	<0.0010	<0.0010	AO: ≤ 0.024 mg/L ¹
Ethylbenzene	mg/L	0.00050	<0.00050	<0.00050	<0.00050	AO: < 0.0024 mg/L ²
o-Xylene	mg/L	0.00050		<0.00050	<0.00050	
m+p-Xylenes	mg/L	0.00040	<0.00040	<0.00040	<0.00040	
F1 (C6-C10)	mg/L	0.10		<0.10		
CCME Total Hydrocarbons	8/ -	0.20	0.20	5125	3.23	
F1-BTEX	mg/L	0.10	<0.10	<0.10	<0.10	
F2-Naphth	mg/L	0.1	<0.10	<0.10	<0.10	
F3-PAH	mg/L	0.25	<0.25	<0.25	<0.25	
Total Hydrocarbons (C6-C50)	mg/L	0.38		<0.38		
F2-F4 PHC Method						
F2 (C10-C16)	mg/L	0.1	<0.10	<0.10	<0.10	
F3 (C16-C34)	mg/L	0.25	<0.25	<0.25	<0.25	
F4 (C34-C50)	mg/L	0.25	<0.25	<0.25	<0.25	
Sum of Xylene Isomer Concentrations						
Xylenes (Total)	mg/L	0.00064	<0.00064	<0.00064	<0.00064	AO: \leq 0.3 mg/L ³
Polyaromatic Hydrocarbons (PAHs)	G,					_ 0
1-Methyl Napthalene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
2-Methyl Naphthalene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Acenaphthene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Acenaphthylene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Anthracene	mg/L	0.000010	<0.000010	<0.000010	<0.00010	
Acridine	mg/L	0.000020	<0.000020	<0.000020	<0.00020	
Benzo(a)anthracene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Benzo(a)pyrene	mg/L	0.0000050	<0.0000050	<0.000050	<0.000050	MAC: 0.00001 mg/L
Benzo(b&j)fluoranthene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Benzo(g,h,i)perylene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Benzo(k)fluoranthene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Chrysene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Dibenzo(a,h)anthracene	mg/L	0.0000050	<0.0000050	<0.000050	<0.000050	
Fluoranthene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Fluorene	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
Indeno(1,2,3-cd)pyrene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Naphthalene	mg/L	0.000050	<0.000050	<0.000050	<0.000050	
Phenanthrene	mg/L	0.000050	<0.000050	<0.000050	<0.000050	
Pyrene	mg/L	0.000010	<0.000010	<0.000010	<0.000010	
Quinoline	mg/L	0.000020	<0.000020	<0.000020	<0.000020	
B(a)P Total Potency Equivalent	mg/L	0.000030	<0.000030	<0.000030	<0.000030	

MAC - Maximum acceptable concentrations (health based)

AO - Aesthetic objectives (based on aesthetic considerations)

OG - Operational guidance values (based on operational considerations)

¹ AO based on odour

³ AO based on odour; levels above the AO would render drinking water unpalatable

³ AO based on taste and odour; levels above the AO would render water unpalatable

Appendix E

Rankin Inlet-CGS

GRA-3																
dia-3							20	19								
Parameter	Unit	13-May-19	04-Jun-19	02-Jul-19	08-Jul-19	16-Jul-19	22-Jul-19	29-Jul-19	06-Aug-19	12-Aug-19	19-Aug-19	26-Aug-19	02-Oct-19	31-Oct-19	25-Nov-19	04-Dec-
Alkalinity																
Bicarbonate (HCO3)	mg/L	149	63.8	59.4	108	135	151	78.9	63.9	53.4	43.6	114	75.6	137	152	71.1
Carbonate (CO3)	mg/L	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
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	0.34	0.34	0.34	0.34
Total (as CaCO3)	mg/L	122	52.3	48.7	88.6	110	124	64.7	52.4	43.8	35.7	93.7	62	112	124	58.3
Ammonia by Colour																
Total Ammonia (as N)	mg/L	7.03	2.47	1.92	4.37	9.2	1.9	3.70	2.95	1.99	1.26	5.69	2.38	9.05	13.1	1.97
Biochemical Oxygen Demand (BOD)																
Biochemical Oxygen Demand	mg/L	106	27	28	115	113	108	65	49	16.7	11.8	124	68	195	150	63
Carbonaceous BOD																
BOD Carbonaceous	mg/L	90	18.6	22.7	110	75	114	46	40	13.8	9.9	99	86	158	160	53
Chloride in Water by IC																
Chloride (CI)	mg/L	77.2	44.6	38	51.2	43.7	49.9	44.2	38	35.8	33.1	55.7	46.6	54.5	56.3	47.5
Conductivity ()																
Conductivity	umhos/cm	557	290	256	380	430	491	336	271	241	216	416	325	463	492	300
Fecal Coliforms ()																
Fecal Coliforms	MPN/100mL	24200	\	24200									24200	24200	24200	24200
Hardness Calculated																
Hardness (as CaCO3)	mg/L	127	79.7	68.9	103	77.9	91.4	78.2	271	63.8	117	100	90.1	473	89.5	82.1
Mercury Total																
Mercury (Hg)	mg/L	0.0000140	0.0000050	0.0000050	0.0000050	0.000610	0.0000170	0.0000050	0.00000050	0.0000050	0.000025	0.0000070	0.0000050	0.0000090	0.0000150	0.00000
Nitrate in Water by IC																
Nitrate (as N)	mg/L	0.020	0.072	0.039	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.029	0.020	0.020	0.020
Nitrate + Nitrite																
Nitrate and Nitrite as N	mg/L	0.070	0.111	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
Nitrite in Water by IC																
Nitrite (as N)	mg/L	0.010	0.039	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Total Nitrogen	mg/L															
Oil & Grease - Gravimetric																
Oil and Grease	mg/L	19.3	8.3	10	52.2	18.3	17.5	15.3	11.2	7.4	5	24.7	41.1	35.7	44.7	24
Phenol																
Phenols	mg/L	0.0099	0.0026	0.0027	0.0059	0.0116	0.0117	0.0057	0.0034	0.0021	0.0026	0.0097	0.0065	0.0153	0.0191	0.0032
Phosphorus, Total																
Phosphorus (P)	mg/L	2.40	0.51	0.722	1.67	2.97	3.94	1.28	1.01	0.48	0.40	1.81	1.05	3.28	3.71	0.98
Sulfate in Water by IC																
Sulfate (SO4)	mg/L	33.6	20.4	20.1	29.2	23.3	28.7	22.8	20.7	19.3	17.8	28.7	24.9	27	27.1	24.6
Total Metals by ICP-MS	i e															
Aluminium (AI)	mg/L	0.0171	0.148	0.148	0.289	0.115	0.112	0.106	0.096	0.0841	0.150	0.275	0.128	0.003	0.283	0.118
Arsenic (As)	mg/L	0.00109	0.00103	0.00139	0.00138	0.00098	0.00105	0.00085	0.00093	0.00076	0.00172	0.00115	0.00114	0.00077	0.00085	0.0008
Cadmium (Cd)	mg/L	0.0000595	0.0000312	0.0000242	0.0000723	0.0000744	0.000136	0.0000465	0.0000299	0.0000242	0.000104	0.0000700	0.0000567	0.000005	0.000135	0.00003
Calcium (Ca)	mg/L	35.8	22.5	19.8	32.6	23	27.4	22.7	17.9	18.4	34.9	29.8	27.1	70.9	25.4	23.5
Chromium (Cr)	mg/L	0.00064	0.00077	0.00069	0.00128	0.00070	0.00057	0.00047	0.00052	0.00037	0.00113	0.00079	0.00086	0.00014	0.00085	0.0006
Cobalt (Co)	mg/L	0.00020	0.00026	0.00053	0.00058	0.00033	0.00053	0.00030	0.00021	0.00019	0.0054	0.00044	0.00035	0.00022	0.00024	0.0001
Copper (Cu)	mg/L	0.257	0.133	0.137	0.136	0.137	0.157	0.0911	0.0714	0.0549	0.178	0.140	0.0843	0.0271	0.191	0.136
Iron (Fe)	mg/L	0.632	0.407	0.7260000	0.411	0.226	0.284	0.162	0.196	0.126	0.359	0.285	0.420	0.191	0.276	0.240
Lead (Pb)	mg/L	0.00302	0.00354	0.00217	0.00127	0.00107	0.00124	0.00123	0.00114	0.00109	0.00207	0.00251	0.00318	0.000198	0.00279	0.0027
Magnesium (Mg)	mg/L	9.22	5.68	4.71	5.36	4.95	5.59	5.21	4.34	4.33	7.12	6.32	5.47	71.8	6.33	5.71
Manganese (Mn)	mg/L				0.0433											
<u> </u>		0.0620	0.0353	0.334		0.0348	0.0517	0.0476	0.0435	0.0438	0.0893	0.0811	0.0478	0.0084	0.0378	0.0252
Nickel (Ni)		0.0620	0.0353	0.334	0.0455	0.0348	0.0517	0.0476	0.0435	0.0438	0.0893	0.0811	0.0478	0.0084	0.0378	0.0252
		0.0620	0.00314	0.334					0.0435	0.0438		0.0811	0.0478	0.0084	0.0378	
	mg/L	0.00308	0.00314	0.00384	0.00952	0.00667	0.0138	0.00403	0.00247	0.00099	0.00607	0.00454	0.00301	0.00085	0.00298	0.0029
Potassium (K)	mg/L mg/L	0.00308 8.59	0.00314 5.14	0.00384 3.59	0.00952 7.86	0.00667 6.48	0.0138 11.7	0.00403 5.71	0.00247 4.03	0.00099	0.00607 10.2	0.00454 8.02	0.00301 5.39	0.00085 5.68	0.00298 12.1	0.0029 4.83
Potassium (K) Sodium (Na)	mg/L mg/L mg/L	0.00308 8.59 44.5	0.00314 5.14 24.7	0.00384 3.59 22.4	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22	0.00298 12.1 34.6	0.0029 4.83 28.1
Potassium (K) Sodium (Na) Zinc (Zn)	mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087	0.00314 5.14	0.00384 3.59 22.4 0.0408	0.00952 7.86	0.00667 6.48	0.0138 11.7	0.00403 5.71	0.00247 4.03	0.00099	0.00607 10.2	0.00454 8.02	0.00301 5.39	0.00085 5.68 22 0.005	0.00298 12.1 34.6 0.108	0.0029 4.83 28.1 0.000
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb)	mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001	0.00298 12.1 34.6 0.108 0.0002	0.0029 4.83 28.1 0.000 0.0008
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001	0.00298 12.1 34.6 0.108 0.0002 0.029	0.0029 4.83 28.1 0.000 0.0008 0.027
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001	0.0029 4.83 28.1 0.000 0.0008 0.027 0.0001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.000109	0.0029 4.83 28.1 0.000 0.0008 0.027 0.0001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.000074	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.00001	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.000109 0.0032	0.0029 4.83 28.1 0.000 0.0008 0.027 0.0001 0.00004
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.000074 0.0040	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.00001 0.0265 0.000434	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.000109 0.0032 0.00133	0.0029 4.83 28.1 0.000 0.0008 0.027 0.00004 0.0034 0.0010
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.000074 0.0040 0.000743 0.00876	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.000418 0.00351	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0265 0.000434 0.00343	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.000109 0.0032 0.00133	0.0029 4.83 28.1 0.000 0.0008 0.027 0.00004 0.0034 0.0010 0.0046
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.000074 0.00040 0.000743 0.00876	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.00023 0.000418 0.00351 0.000108	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.00001 0.0265 0.000434 0.00343	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329	0.0029 4.83 28.1 0.000 0.0008 0.027 0.0000 0.0004 0.0010 0.0046 0.00012
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.000074 0.000743 0.00876 0.000272 0.000029	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.00038 0.0023 0.000418 0.00351 0.000108	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0265 0.000434 0.00343 0.00005 0.00001	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068	0.0029 4.83 28.1 0.0000 0.0008 0.027 0.0000 0.0004 0.0010 0.00046 0.00012
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.000074 0.0040 0.000743 0.00876 0.000272 0.000029 0.164	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.000418 0.00351 0.000108 0.000109	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0265 0.000434 0.00343 0.00005 0.00001 0.252	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.00019 0.0032 0.00133 0.0132 0.000329 0.000068	0.0029 4.83 28.1 0.000 0.0008 0.027 0.0000 0.00004 0.0010 0.0010 0.00001 0.00000 0.115
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (TI)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.00074 0.0040 0.000743 0.000272 0.00029 0.164 0.00001	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.00038 0.0023 0.000418 0.000108 0.000109	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0265 0.000434 0.00343 0.00005 0.00001	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00032 0.000329 0.000329 0.000068	0.0029 4.83 28.1 0.000 0.0008 0.027 0.0000 0.0004 0.0010 0.0010 0.0000 0.115
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Ti) Titanium (Ti)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.00074 0.00074 0.00074 0.000272 0.000272 0.00029 0.164 0.00001 0.00327	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.000418 0.000108 0.000010 0.000010 0.000010	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 0.0005 0.0001 0.0001 0.00001 0.0265 0.000434 0.000434 0.0005 0.00001 0.252 0.00001 0.0003	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.00109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.000291	0.0029 4.83 28.1 0.000 0.0008 0.0027 0.0000 0.00004 0.0010 0.00000 0.115 0.00000 0.0101
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.00074 0.00073 0.00072 0.0000272 0.0000272 0.00001 0.00001	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.000418 0.00351 0.000100 0.000010 0.000010 0.000014 0.000019 0.000019	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0006 0.000434 0.000343 0.00005 0.00001 0.252 0.00001 0.0003 0.00038	0.00298 12.1 34.6 0.108 0.0002 0.009 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.000291	0.0029 4.83 28.1 0.000 0.0008 0.0000 0.0000 0.0001 0.0046 0.0001 0.0000 0.115 0.0000 0.0100 0.0010
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U) Vanadium (V)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.00074 0.00074 0.00074 0.000272 0.000272 0.00029 0.164 0.00001 0.00327	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.000418 0.000108 0.000010 0.000010 0.000010	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 0.0005 0.0001 0.0001 0.00001 0.0265 0.000434 0.000434 0.0005 0.00001 0.252 0.00001 0.0003	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.00109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.000291	0.0029 4.83 28.1 0.000 0.0008 0.027 0.000 0.0004 0.0010 0.0006 0.0010 0.0000 0.0100 0.0000
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (TI) Titanium (TI) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.00074 0.0040 0.000743 0.000272 0.00029 0.164 0.0001 0.00327 0.000101	0.00314 5.14 24.7 0.044	0.00384 3.59 22.4 0.0408 0.00013 0.0025 0.00010 0.000038 0.00021 0.000108 0.000109 0.000019 0.00324 0.00023 0.00023	0.00952 7.86 30 0.132	0.00667 6.48 25.6 0.0830	0.0138 11.7 28 0.104	0.00403 5.71 25.6 0.049	0.00247 4.03 20.1 0.051	0.00099 3.46 21.3 0.027	0.00607 10.2 31.9 0.123	0.00454 8.02 31.7 0.063	0.00301 5.39 24.8 0.048	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0265 0.000434 0.00343 0.00005 0.00001 0.252 0.00001 0.0003 0.000283 0.000283	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00032 0.00032 0.00032 0.00068 0.116 0.00001 0.00291 0.000175	0.0029 4.83 28.1 0.0000 0.0008 0.027 0.0000 0.0004 0.0010 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (5r) Thallium (Ti) Itanium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon Total Organic Carbon	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.00074 0.00073 0.00072 0.0000272 0.0000272 0.00001 0.00001	0.00314 5.14 24.7	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.000418 0.00351 0.000100 0.000010 0.000010 0.000014 0.000019 0.000019	0.00952 7.86 30	0.00667 6.48 25.6	0.0138 11.7 28	0.00403 5.71 25.6	0.00247 4.03 20.1	0.00099 3.46 21.3	0.00607 10.2 31.9	0.00454 8.02 31.7	0.00301 5.39 24.8	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0006 0.000434 0.000343 0.00005 0.00001 0.252 0.00001 0.0003 0.00038	0.00298 12.1 34.6 0.108 0.0002 0.009 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.000291	0.0029 4.83 28.1 0.0000 0.0008 0.027 0.0000 0.0004 0.0010 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon Total Organic Carbon Total Suspended Solids ()	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0048 0.0001 0.00074 0.00074 0.00072 0.0000272 0.0000272 0.0000272 0.00001 0.00327 0.00001	0.00314 5.14 24.7 0.044	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000018 0.00031 0.00023 0.000418 0.00051 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010	0.00952 7.86 30 0.132	0.00667 6.48 25.6 0.0830	0.0138 11.7 28 0.104	0.00403 5.71 25.6 0.049	0.00247 4.03 20.1 0.051	0.00099 3.46 21.3 0.027	0.00607 10.2 31.9 0.123	0.00454 8.02 31.7 0.063	0.00301 5.39 24.8 0.048	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0265 0.000343 0.00005 0.00001 0.252 0.00001 0.0003 0.000283 0.000283	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.000109 0.0032 0.00132 0.00032 0.00032 0.000068 0.116 0.00001 0.000291 0.000175 0.00052	0.0029 4.83 28.1 0.0000 0.0008 0.027 0.0000 0.0003 0.0010 0.00010 0.0001 0.0001 0.0001 0.0001 0.0001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Titanium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Suspended Solids () Total Suspended Solids	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.00074 0.0040 0.000743 0.000272 0.00029 0.164 0.0001 0.00327 0.000101	0.00314 5.14 24.7 0.044	0.00384 3.59 22.4 0.0408 0.00013 0.0025 0.00010 0.000038 0.00021 0.000108 0.000109 0.000019 0.00324 0.00023 0.00023	0.00952 7.86 30 0.132	0.00667 6.48 25.6 0.0830	0.0138 11.7 28 0.104	0.00403 5.71 25.6 0.049	0.00247 4.03 20.1 0.051	0.00099 3.46 21.3 0.027	0.00607 10.2 31.9 0.123	0.00454 8.02 31.7 0.063	0.00301 5.39 24.8 0.048	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0265 0.000434 0.00343 0.00005 0.00001 0.252 0.00001 0.0003 0.000283 0.000283	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00032 0.00032 0.00032 0.00068 0.116 0.00001 0.00291 0.000175	0.0029 4.83 28.1 0.0000 0.0008 0.027 0.0000 0.0003 0.0010 0.00010 0.0001 0.0001 0.0001 0.0001 0.0001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (TI) Titanium (TI) Uranium (U) Vanadium (V) Total Organic Carbon Total Suspended Solids () Total Suspended Solids pH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.00074 0.0040 0.00074 0.000272 0.000272 0.00027 0.00327 0.000101 0.0005	0.00314 5.514 24.7 0.044 13.4 36.5	0.00384 3.59 22.4 0.0408 0.00013 0.0025 0.00010 0.000038 0.00023 0.00011 0.000108 0.000010 0.000010 0.000019 0.00023 0.00023 0.00023	0.00952 7.86 30 0.132 70.2	0.00667 6.48 25.6 0.0830	0.0138 11.7 28 0.104	0.00403 5.71 25.6 0.049	0.00247 4.03 20.1 0.051 37.9 45.9	0.00099 3.46 21.3 0.027	0.00607 10.2 31.9 0.123 0.123	0.00454 8.02 31.7 0.063	0.00301 5.39 24.8 0.048 44.5	0.00085 5.68 22 0.005 0.0001 0.0001 0.0265 0.000434 0.00343 0.00005 0.00001 0.252 0.00001 0.0003 0.000283 0.0005	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.00068 0.116 0.00001 0.00291 0.000175 0.00052	0.0029 4.83 28.1 0.000 0.0008 0.0007 0.0000 0.0010 0.0010 0.0010 0.0010 0.0010 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016 0.00016
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (5r) Thallium (Ti) Titanium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon Total Suspended Solids () Total Suspended Solids pH pH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.00074 0.00074 0.00072 0.000272 0.000272 0.00029 0.164 0.00001 0.00327 0.000101 0.0005	0.00314 5.14 24.7 0.044 13.4 36.5 6.80	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.000418 0.00010 0.000010 0.000019 0.000010 0.000019	70.2 106 7.01	0.00667 6.48 25.6 0.0830 59.2 111	0.0138 11.7 28 0.104	0.00403 5.71 25.6 0.049 46.8 63.5	0.00247 4.03 20.1 0.051 37.9 45.9	0.00099 3.46 21.3 0.027 18.2 43.5	0.00607 10.2 31.9 0.123 0.123	0.00454 8.02 31.7 0.063 71.8 87.4	0.00301 5.39 24.8 0.048 44.5	0.00085 5.68 22 0.005 0.0001 0.0001 0.0265 0.000434 0.000434 0.00005 0.00001 0.252 0.00001 0.0003 0.000283 0.0005	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.000291 0.000175 0.00052	0.0029 4.83 28.1 0.000 0.0008 0.027 0.0001 0.0002 0.0032 0.0010 0.0006 0.0001 0.0001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Suspended Solids () Total Suspended Solids PH PH Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.000743 0.00876 0.000272 0.000272 0.00029 0.164 0.0001 0.00327 0.000101 0.0005 73.9	0.00314 5.14 24.7 0.044 13.4 36.5 6.80 0.00050	0.00384 3.59 22.4 0.0408 0.00013 0.00252 0.00010 0.000038 0.0023 0.000011 0.00010 0.000010 0.000010 0.000010 0.000010 0.000010 0.00021 0.000010 0.00021 0.000019 0.00022 0.000019 0.00024 46.8	7.02 106 7.01 0.00050	0.00667 6.48 25.6 0.0830 59.2 111 7.29 0.00050	0.0138 11.7 28 0.104	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.00050	0.00247 40.03 20.1 0.051 37.9 45.9 7.02 0.00050	0.00099 3.46 21.3 0.027 18.2 43.5 7.27 0.00050	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 7.68 0.00050	71.8 87.4 7.22 0.00050	0.00301 5.39 24.8 0.048 0.048	0.00085 5.68 22 0.005 0.0001 0.0001 0.0001 0.0001 0.0005 0.0001 0.0005 0.0001 0.0003 0.0003 0.0003 0.0003 0.0003 0.0005 86.7	0.00298 12.1 34.6 0.108 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.00021 1.00001 0.00021 0.00052	0.0029 4.83 28.1 0.0000 0.0008 0.0027 0.0000 0.0001 0.0010 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Suspended Solids () Total Suspended Solids pH pH Benzene Toluene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.0448 0.0001 0.000074 0.00040 0.000743 0.00876 0.000272 0.000029 0.164 0.00001 0.00327 0.000101 0.0005	0.00314 5.14 24.7 0.044 13.4 36.5 6.80 0.00050 0.0010	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.00021 0.000018 0.000108 0.000010 0.00920 0.000019 0.00324 0.000223 0.00080 22.9 46.8 7.13 0.00050 0.0010	70.2 106 7.01 0.00050 0.0013	0.00667 6.48 25.6 0.0830 59.2 111 7.29 0.00050 0.0010	0.0138 11.7 28 0.104 0.104	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.00050	0.00247 4.023 20.1 0.051 37.9 45.9 7.02 0.00050 0.0010	0.00099 3.46 21.3 0.027 18.2 43.5 7.27 0.00050 0.0010	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 7.68 0.00050 0.0010	71.8 87.4 7.22 0.0050 0.0010	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.00050 0.0041	0.00085 5.68 22 0.005 0.0001 0.0001 0.0265 0.000434 0.00343 0.00005 0.0001 0.0003 0.000283 0.00058 7.00 0.00050 0.0001	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.000291 0.00052 129 166 7.30 0.00050 0.0012	0.0029 4.83 28.1 0.0000 0.0008 0.0027 0.0000 0.00000 0.00100 0.00100 0.00000 28.6 97.2 7.14 0.0005
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (5r) Thallium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Suspended Solids () Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.00074 0.0040 0.00073 0.000272 0.000027 0.00027 0.00010 0.00327 0.00010 0.0005	13.4 36.5 6.80 0.00050	0.00384 3.59 22.4 0.0408 0.00013 0.0025 0.00010 0.000038 0.00023 0.00011 0.000108 0.000010 0.000019 0.00023 0.00023 0.00023 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000019 0.000010 0.0000010	70.2 106 7.01 0.0050 0.0050	0.00667 6.48 25.6 0.0830 59.2 111 7.29 0.00050	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.00050 0.0010 0.00050	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.0050 0.00050	37.9 45.9 0.0050 0.0050	18.2 43.5 7.27 0.0050 0.0010 0.00050	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 7.68 0.00050	71.8 87.4 7.22 0.00050	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.0050	0.00085 5.68 22 0.005 0.0001 0.0001 0.0265 0.0001 0.0003 0.0003 0.0003 0.0003 0.000283 0.0005 86.7	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.00068 0.116 0.00001 0.00291 0.000175 0.00052 129 166 7.30 0.00050	0.0025 0.0025 0.000000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Titanium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon Total Organic Carbon Total Suspended Solids () Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene O-Xylene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.00074 0.0040 0.00074 0.000272 0.000272 0.00029 0.164 0.00051 0.00050 73.9	0.00314 5.14 24.7 0.044 13.4 36.5 6.80 0.0050 0.00050 0.00050	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000010 0.000011 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000050 0.00050	70.2 106 7.01 0.00050 0.00050	0.00667 6.48 25.6 0.0830 	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.00050 0.00050	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.00050 0.00050	0.00247 4.03 20.1 0.051 37.9 45.9 7.02 0.00050 0.00050 0.00050	0.00099 3.46 21.3 0.027 18.2 43.5 7.27 0.00050 0.00050 0.00050	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 7.68 0.00050 0.00050 0.00050	71.8 87.4 7.22 0.00050 0.00050	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.00050 0.00050	0.00085 5.68 22 0.005 0.0001 0.0001 0.0265 0.0001 0.0005 0.0001 0.252 0.00001 0.0003 0.000283 0.0005 86.7 209 7.00 0.00050 0.00050	0.00298 12.1 34.6 0.108 0.0002 0.029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.000291 0.000175 0.00052 129 166 7.30 0.00050 0.00050	0.00292 4.833 28.1.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Organic Carbon Total Suspended Solids () Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.00074 0.00074 0.000727 0.000272 0.000272 0.00029 0.164 0.00001 0.00327 0.000101 0.0005 73.9 85.3	0.00314 5.14 24.7 0.044 13.4 36.5 6.80 0.00050 0.00050 0.00050 0.00050	0.00384 3.59 22.4 0.0408 0.00013 0.0025 0.00010 0.000038 0.0023 0.000418 0.00351 0.00010 0.000038 0.00023 0.000019 0.000324 0.000050 0.00050 0.00050 0.00050 0.00050	70.2 106 7.01 0.00050 0.00050 0.00050 0.10	0.00667 6.48 25.6 0.0830 	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.00050 0.00050 0.00050 0.10	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.00050 0.00050 0.00050 0.00050	0.00247 4.0.1 0.051 0.051 37.9 45.9 7.02 0.00050 0.0010 0.00050 0.10	0.00099 3.46 21.3 0.027 18.2 43.5 7.27 0.00050 0.0010 0.00050 0.10	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 7.68 0.00050 0.00050 0.00050 0.00050 0.00050	71.8 87.4 7.22 0.00050 0.00050 0.10	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.00050 0.0041 0.00050 0.00050 0.10	0.00085 5.68 22 0.005 0.0001 0.0001 0.0001 0.00265 0.000434 0.00343 0.00005 0.0003 86.7 209 7.00 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005	0.00298 12.1 34.6 0.108 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.00016 0.000175 0.00050 166 7.30 0.00050 0.0012 0.00050 0.00050 0.00050 0.10	0.0029 4.83 28.1 0.0000 0.0008 0.0027 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001 0.0001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Tl) Titanium (Tl) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Organic Carbon Total Suspended Solids () Total Suspended Solids pH pH Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10) F2 (C10-C16)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.000074 0.0040 0.00072 0.000272 0.00029 0.164 0.0001 0.00327 0.00010 0.00050 0.00050 0.00050 0.00050 0.110 0.48	0.00314 5.14 24.7 0.044 13.4 36.5 6.80 0.00050 0.00050 0.00050 0.0010 0.110 0.14	0.00384 3.59 22.4 0.0408 0.00013 0.00252 0.00010 0.000018 0.00018 0.000118 0.00010 0.000019 0.00324 0.00023 0.00023 0.00023 0.0000000000000	70.2 106 7.01 0.00050 0.0013 0.00050 0.0010 0.72	0.00667 6.48 25.6 0.0830 59.2 111 7.29 0.00050 0.00050 0.00050	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.00050 0.0010 0.00050 0.00050	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.00050 0.00050 0.00050	37.9 45.9 7.02 0.0050 0.00050 0.00050 0.00050 0.00050	0.00099 3.46 21.3 0.027 18.2 43.5 7.27 0.00050 0.0010 0.00050 0.0010 0.110 0.12	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 7.68 0.00050 0.00050 0.00050 0.00050	71.8 87.4 7.22 0.00050 0.00050 0.00450 0.034	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.00050 0.00051 0.00050 0.00050	0.00085 5.68 22 0.005 0.0001 0.0001 0.0265 0.000434 0.00343 0.00005 0.0001 0.0003 0.000283 0.0005 86.7 209 7.00 0.00050 0.0001 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.000075 0.00052 129 166 7.30 0.00050 0.0012 0.00050 0.00050 0.00110 1.51	0.0029 4.83 28.1 0.000 0.0008 0.0027 0.0001 0.0010 0.0010 0.0010 0.0010 0.0010 0.0010 0.0010 0.0010 0.0010 0.0010 0.0005
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Hanium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Organic Carbon of Carbon Total Suspended Solids () Total Suspended Solids () PH PH Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10) F2 (C10-C16) F3 (C16-C34)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.000074 0.0040 0.000272 0.000272 0.00027 0.00010 0.00327 0.00010 0.0005 73.9 85.3 6.86 0.00050 0.0010 0.00050 0.00050 0.100 0.48 7.88	13.4 36.5 6.80 0.00050 0.00050 0.10 0.14 2.34	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.000418 0.00351 0.00010 0.000019 0.00324 0.00023 0.00008 22.9 46.8 7.13 0.00050 0.00050 0.00050 0.10 0.14	70.2 106 7.001 0.00050 0.00050 0.00050 0.10 0.72 10.3	59.2 111 7.29 0.0050 0.0050 0.0050 0.10 0.49 9.0	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.0050 0.00050 0.00050 0.100 100.00 780.0	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.00050 0.00050 0.10 0.12 4.5	37.9 45.9 7.002 0.0010 0.00050 0.00050 0.10 100.000 250.0	0.00099 3.46 21.3 0.027 18.2 18.2 43.5 7.207 0.00050 0.00050 0.00050 0.10 0.12 1.9	8.84 7.9 0.0050 0.00050 0.00050 0.10 0.54 13.8	71.8 87.4 7.22 0.0050 0.0050 0.0050 0.10 0.34 6.6	0.00301 5.339 24.8 0.048 0.048 44.5 83.2 6.88 0.0050 0.00050 0.00050 0.10 2.04 11.4	0.00085 5.68 22 0.005 0.0001 0.0001 0.0265 0.000434 0.00343 0.00005 0.0001 0.0252 0.00001 0.0003 0.000283 0.0005 86.7 209 7.00 0.00050 0.0001 0.00050 0.00050 0.00050 0.10	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00032 0.00032 0.00032 0.000068 0.116 0.00001 0.00291 0.000175 0.00052 129 166 7.30 0.00050 0.0012 0.00050 0.00050 0.106 1.51 21.6	0.0029 4.83 28.1 0.000 0.0008 0.027 0.0003 0.0010 0.0006 0.0015 0.0000 0.0107 0.00016 0.0005 28.6 97.2 7.14 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon Total Organic Carbon Total Suspended Solids () Total Suspended Solids PH Ph Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10) F2 (C10-C16) F3 (C16-C34) F4 (C34-C50)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.000074 0.0007743 0.00876 0.000272 0.000029 0.164 0.0001 0.00057 73.9 85.3 6.86 0.00050 0.0010 0.00050 0.00050 0.00050 0.100 0.48 7.88 3.34	0.00314 5.14 24.7 0.044 13.4 36.5 6.80 0.00050 0.00050 0.00050 0.00050 0.10 0.1	0.00384 3.59 22.4 0.0408 0.00013 0.00252 0.00010 0.00038 0.0023 0.000011 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000050 0.000050 0.00050 0.10 0.1	70.2 106 7.01 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050	0.00667 6.48 25.6 0.0830 	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.00050 0.00050 0.00050 0.10 100.00 780.00 500.00	0.00403 5.71 25.6 0.049 46.8 63.5 0.00050 0.00050 0.10 0.25 4.5 2.58	37.9 45.9 7.02 0.00050 0.00050 0.00050 0.10 100.00 250.00	18.2 43.5 7.27 0.00050 0.00050 0.100 0.12 1.9 0.78	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 7.68 0.00050 0.00150 0.00050 0.10050 0.10054 1.34 4.91	71.8 87.4 7.22 0.00050 0.00050 0.00050 0.00050 0.004 6.6 4.18	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.00050 0.00050 0.00050 0.10 2.04 11.4 9.46	0.00085 5.68 22 0.005 0.0001 0.0001 0.0001 0.00034 0.0004 0.0005 0.0003 0.0005 0.0005 0.0005 0.00050	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.000291 0.00050 0.0012 0.00050 0.0012 0.00050 0.100 1.51 1.51 2.1.6 6.41	0.0029 4.83 28.1 0.000 0.0008 0.0002 0.0002 0.0010 0.0010 0.0001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Organic Total Organic Carbon Total Suspended Solids () Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10) F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Total Hydrocarbons (C6-C50)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.000074 0.00074 0.000727 0.00010 0.00327 0.00010 0.00327 0.00010 0.00050 0.0010 0.00050 0.0010 0.48 7.88 3.34 11.7	13.4 36.5 6.80 0.00050 0.00050 0.10 0.14 2.34	0.00384 3.59 22.4 0.0408 0.00013 0.0025 0.00010 0.00038 0.0023 0.000418 0.00351 0.000108 0.00023 0.00023 0.00023 0.000050 0.00050 0.00050 0.00050 0.010 0.14 3.15 0.72 4.01	70.2 106 7.001 0.00050 0.00050 0.00050 0.10 0.72 10.3	59.2 111 7.29 0.0050 0.0050 0.0050 0.10 0.49 9.0	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.0050 0.00050 0.00050 0.100 100.00 780.0	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.00050 0.00050 0.10 0.12 4.5	37.9 45.9 7.002 0.0010 0.00050 0.00050 0.10 100.000 250.0	0.00099 3.46 21.3 0.027 18.2 18.2 43.5 7.207 0.00050 0.00050 0.00050 0.10 0.12 1.9	8.84 7.9 0.0050 0.00050 0.00050 0.10 0.54 13.8	71.8 87.4 7.22 0.0050 0.0050 0.0050 0.10 0.34 6.6	0.00301 5.339 24.8 0.048 0.048 44.5 83.2 6.88 0.0050 0.00050 0.00050 0.10 2.04 11.4	0.00085 5.68 22 0.005 0.0001 0.0001 0.0005 0.0001 0.0005 0.0001 0.0003 0.00028 0.0005 0.0001 0.0005 0.0005 0.0001 0.0005	0.00298 12.1 34.6 0.108 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.00016 0.000175 0.00052 129 166 7.30 0.00050 0.0012 0.00050 0.0012 0.00050 0.101 1.51 21.6 6.41 29.5	0.0029 4.83 28.1 0.000 0.0008 0.0007 0.0001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Organic Carbon by Combustion Total Suspended Solids () Total Suspended Solids PH PH Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10) F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Total Hydrocarbons (C6-C50) Fluoride (F)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.000074 0.0007743 0.00876 0.000272 0.000029 0.164 0.0001 0.00057 73.9 85.3 6.86 0.00050 0.0010 0.00050 0.00050 0.00050 0.100 0.48 7.88 3.34	0.00314 5.14 24.7 0.044 13.4 36.5 6.80 0.00050 0.00050 0.00050 0.00050 0.10 0.1	0.00384 3.59 22.4 0.0408 0.00013 0.00252 0.00010 0.00038 0.0023 0.000011 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000050 0.000050 0.00050 0.10 0.1	70.2 106 7.01 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050	0.00667 6.48 25.6 0.0830 	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.00050 0.00050 0.00050 0.10 100.00 780.00 500.00	0.00403 5.71 25.6 0.049 46.8 63.5 0.00050 0.00050 0.10 0.25 4.5 2.58	37.9 45.9 7.02 0.00050 0.00050 0.00050 0.10 100.00 250.00	18.2 43.5 7.27 0.00050 0.00050 0.100 0.12 1.9 0.78	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 7.68 0.00050 0.00150 0.00050 0.10050 0.10054 1.34 4.91	71.8 87.4 7.22 0.00050 0.00050 0.00050 0.00050 0.004 6.6 4.18	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.00050 0.00050 0.00050 0.10 2.04 11.4 9.46	0.00085 5.68 22 0.005 0.0001 0.0001 0.0001 0.00034 0.0004 0.0005 0.0003 0.0005 0.0005 0.0005 0.00050	0.00298 12.1 34.6 0.108 0.0002 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.000068 0.116 0.00001 0.000291 0.00050 0.0012 0.00050 0.0012 0.00050 0.100 1.51 1.51 2.1.6 6.41	0.0029 4.83 28.1 0.000 0.0008 0.0002 0.0002 0.0010 0.0010 0.0001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (TI) Titanium (TI) Uranium (U) Vanadium (V) Total Organic Carbon Total Organic Carbon Total Suspended Solids () Total Suspended Solids PH Ph Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10) F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Total Hydrocarbons (C6-C50) Fluoride (F) Total and E. Coli	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.000074 0.0040 0.00073 0.000272 0.000027 0.00027 0.00010 0.00327 0.00010 0.0005 73.9 85.3 6.86 0.0050 0.0010 0.00050 0.00050 0.10 0.48 7.88 3.34 11.7 0.132	0.00314 24.7 0.044 13.4 36.5 6.80 0.00050 0.0010 0.00050 0.10 0.14 2.34 1.05 3.54	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.00011 0.00010 0.0000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.0000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.0000010 0.000010 0.000010 0.000010 0.000010 0.000050	70.2 106 7.0050 0.00050 0.00050 0.00050 0.10 0.72 10.3 4.74 15.70	\$9.2 111 7.29 0.0050 0.0050 0.0050 0.10 0.49 9.0 2.66 12.10	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.0050 0.00050 0.00050 0.00050 0.100 100.00 780.0 500.00 1.28	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.0050 0.00050 0.00050 0.10 0.25 4.5 2.58 7.28	37.9 45.9 7.002 0.0010 0.00050 0.0010 0.00050 0.10 100.00 250.00 250.00 0.38	0.00099 3.43 21.3 0.027 18.2 43.5 7.207 0.00010 0.00050 0.00050 0.10 0.12 1.9 0.78 2.76	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 0.00010 0.00050 0.00050 0.10 0.54 13.8 4.91 19.3	71.8 87.4 7.22 0.00050 0.00050 0.00050 0.10 0.34 6.6 4.18 11.2	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.00050 0.00050 0.00050 0.10 2.04 11.4 9.46	0.00085 5.68 22 0.005 0.0001 0.0001 0.0003 0.000434 0.00343 0.00005 0.0001 0.0003 0.000283 0.0005 86.7 209 7.00 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 10.0005 0.0005	0.00298 12.1 34.6 0.108 0.0002 0.0002 0.0001 0.000109 0.0032 0.000133 0.0132 0.00032 0.000068 0.116 0.00001 0.000291 0.000175 0.00052 129 166 7.30 0.00050 0.0012 0.00050 0.0012 0.00050 0.10 1.51 21.6 6.41 29.5 0.155	0.0029 4.83 28.1 0.000 0.0008 0.027 0.0003 0.0010 0.0010 0.0010 0.0010 0.0010 0.0005 28.6 97.2 7.14 0.0005 0.0002 0.0005 0.0010 0.0005 28.6 97.2
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (Ti) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Organic Carbon Total Suspended Solids () Total Suspended Solids PH Ph Benzene Toluene Ethyl Benzene O-Xylene F1 (C6-C10) F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Total Hydrocarbons (C6-C50) Fluoride (F) Total and E. Coli Total Coliforms	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.000074 0.000743 0.00876 0.000272 0.000029 0.164 0.00001 0.00327 0.000101 0.0005 73.9 85.3 6.86 0.00050 0.0010 0.00050 0.10 0.48 7.88 3.34 11.7 0.132	0.00314 5.14 24.7 0.044 13.4 36.5 6.80 0.00050 0.0010 0.00050 0.10	0.00384 3.59 22.4 0.0408 0.00013 0.00252 0.00010 0.000038 0.0023 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.00000000	70.2 106 7.01 0.00050 0.0013 0.00050 0.0013 0.00050 0.100 0.72 10.3 4.74 15.70	0.00667 6.48 25.6 0.0830 	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.00050 0.0010 0.00050 0.10 100.00 780.00 1.28	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.00050 0.0010 0.00050 0.10 0.25 4.5 7.28	0.00247 4.003 20.1 0.051 37.9 45.9 7.02 0.00050 0.0010 0.00050 0.10 100.00 250.00 0.38	0.00099 3.46 21.3 0.027 18.2 43.5 7.27 0.00050 0.0010 0.00050 0.10 0.12 1.9 0.78 2.76	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 7.68 0.0050 0.0010 0.00050 0.10 0.0050 1.10 1.54 1.33 4.91 1.93	71.8 87.4 71.8 87.4 7.22 0.00050 0.0010 0.00050 0.100 0.34 4.18 11.2	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.00050 0.00050 0.00050 0.10 2.04 11.4 9.46	0.00085 5.68 22 0.005 0.0001 0.038 0.0001 0.0001 0.0005 0.0001 0.0055 0.000434 0.00034 0.00050 0.0005 0.0005 0.0005 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.001 0.0050 0.00050 0.001 0.0050 0.00050	0.00298 12.1 34.6 0.108 0.0029 0.0001 0.000109 0.0032 0.00133 0.0132 0.000329 0.00016 0.000175 0.00050 0.0012 0.00050 0.0012 0.00050 0.0012 0.00050 0.101 1.51 21.6 6.41 29.5 0.155	0.0029 4.83 2.8.1 0.000 0.0008 0.0002 0.0001
Potassium (K) Sodium (Na) Zinc (Zn) Antimony (Sb) Barium (Ba) Beryllium (Be) Cesium (Cs) Lithium (Li) Molybdenum (Mo) Rubidium (Rb) Selenium (Se) Silver (Ag) Strontium (Sr) Thallium (TI) Titanium (TI) Uranium (U) Vanadium (V) Total Organic Carbon by Combustion Total Organic Carbon Total Organic Carbon Fotal Suspended Solids (I) Total Suspended Solids (I) Total Suspended Solids (I) Fotal Suspended Solids (I) Fotal Suspended Solids (I) Total Suspended Solids (II) Total Su	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.00308 8.59 44.5 0.087 0.00016 0.00448 0.0001 0.000074 0.0040 0.00073 0.000272 0.000027 0.00027 0.00010 0.00327 0.00010 0.0005 73.9 85.3 6.86 0.0050 0.0010 0.00050 0.00050 0.10 0.48 7.88 3.34 11.7 0.132	0.00314 24.7 0.044 13.4 36.5 6.80 0.00050 0.0010 0.00050 0.10 0.14 2.34 1.05 3.54	0.00384 3.59 22.4 0.0408 0.00013 0.0252 0.00010 0.000038 0.0023 0.00011 0.00010 0.0000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.0000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.000010 0.0000010 0.000010 0.000010 0.000010 0.000010 0.000050	70.2 106 7.0050 0.00050 0.00050 0.00050 0.10 0.72 10.3 4.74 15.70	\$9.2 111 7.29 0.0050 0.0050 0.0050 0.10 0.49 9.0 2.66 12.10	0.0138 11.7 28 0.104 0.104 68.8 78 7.23 0.0050 0.00050 0.00050 0.00050 0.100 100.00 780.0 500.00 1.28	0.00403 5.71 25.6 0.049 46.8 63.5 6.95 0.0050 0.00050 0.00050 0.10 0.25 4.5 2.58 7.28	37.9 45.9 7.002 0.0010 0.00050 0.0010 0.00050 0.10 100.00 250.00 250.00 0.38	0.00099 3.43 21.3 0.027 18.2 43.5 7.207 0.00010 0.00050 0.00050 0.10 0.12 1.9 0.78 2.76	0.00607 10.2 31.9 0.123 0.123 8.84 7.9 0.00010 0.00050 0.00050 0.10 0.54 13.8 4.91 19.3	71.8 87.4 7.22 0.00050 0.00050 0.00050 0.10 0.34 6.6 4.18 11.2	0.00301 5.39 24.8 0.048 0.048 44.5 83.2 6.88 0.00050 0.00050 0.00050 0.10 2.04 11.4 9.46	0.00085 5.68 22 0.005 0.0001 0.0001 0.0003 0.000434 0.00343 0.00005 0.0001 0.0003 0.000283 0.0005 86.7 209 7.00 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005 10.0005 0.0005	0.00298 12.1 34.6 0.108 0.0002 0.0002 0.0001 0.000109 0.0032 0.000133 0.0132 0.00032 0.000068 0.116 0.00001 0.000291 0.000175 0.00052 129 166 7.30 0.00050 0.0012 0.00050 0.0012 0.00050 0.10 1.51 21.6 6.41 29.5 0.155	0.0022 4.833 28.1 28.1 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0010 0.0000 0.0010 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0

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0.0032			
24.6			
0.118 0.00083 0000371 23.5 0.00064 0.00015 0.136 0.240 0.00279 5.71 0.0252			
0.00064 0.00015 0.136 0.240			
4.83 28.1 0.000			
0.000 0.00087 0.027 0.0001 .000043 0.0034			
0.0034			
0.00104 0.00466 0.000129 0.000027 0.115 0.00001 0.0107 0.00162 0.00059			
28.6 97.2			
7.14 0.00050 0.0023 0.00050			
0.00050 0.00100 0.10 0.32 8.3			
2.09 10.7 0.108			
24200 24200			

Appendix F



Rankin Inlet NU X0C 0G0

ATTN: SIMON DOIRON

Nunavut Community & Government Services - Rankin Inle

Date: 01-FEB-19

PO No.:

WO No.: L2222351

Project Ref: RANKIN INLET WWTP - MONTHLY EFFLUENT

Sample ID: RANKIN WWTP - EFFLUENT

Sampled By: SD

Date Collected: 10-JAN-19 Lab Sample ID: L2222351-1

Matrix: WASTE

PAGE 1 of 5

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1	1-F4						
	Xylenes (Total)	0.00171		mg/L	0.09	0.02	23-JAN-1
CCME Tota	ıl Hydrocarbons						
	F1-BTEX	<0.10		mg/L			31-JAN-1
	F2-Naphth	0.46		mg/L			31-JAN-1
	F3-PAH	8.97		mg/L			31-JAN-1
	Total Hydrocarbons (C6-C50)	12.5		mg/L			31-JAN-1
CCME PHC	F2-F4 in Water						
	F2 (C10-C16)	0.46		mg/L			19-JAN-1
	F3 (C16-C34)	8.97		mg/L			19-JAN-1
	F4 (C34-C50)	3.04		mg/L			19-JAN-1
Surr:	2-Bromobenzotrifluoride	102.0		%			19-JAN-1
BTX plus F	1 by GCMS						
	Benzene	<0.00050		mg/L	0.005		22-JAN-1
	Toluene	0.0035		mg/L	0.06	0.024	22-JAN-1
	Ethyl benzene	0.00058		mg/L	0.14	0.0016	22-JAN-
	o-Xylene	0.00067		mg/L			22-JAN-
	m+p-Xylenes	0.00104		mg/L			22-JAN-
	F1 (C6-C10)	<0.10		mg/L			22-JAN-
Surr:	4-Bromofluorobenzene (SS)	98.2		%			22-JAN-
Nunavut WW	Group 1						
Phosphoru							
	Phosphorus (P)-Total	2.94		mg/L			22-JAN-1
Mercury To	tal						
	Mercury (Hg)-Total	0.000025		mg/L	0.001		23-JAN-1
	Bicarbonate (HCO3)	158		mg/L			23-JAN-
	Carbonate (CO3)	<0.60		mg/L			23-JAN-
	Hydroxide (OH)	<0.34		mg/L			23-JAN-1
	*Nitrate and Nitrite as N	<0.070		mg/L	10		22-JAN-1
рН							
P	рН	6.90		pH units			22-JAN-
Total Suspe	ended Solids			p ae			
Total Suspe	Total Suspended Solids	53.6		mg/L			23-JAN-
		33.0		IIIg/L			23-JAIN-
Total Organ	nic Carbon by Combustion	20.0					04 1441
	Total Organic Carbon	66.8		mg/L			21-JAN-
Total Metal	s in Water by CRC ICPMS						
	Aluminum (Al)-Total	0.215		mg/L		0.1	22-JAN-
	Antimony (Sb)-Total	0.00018		mg/L	0.006		22-JAN-
	Arsenic (As)-Total	0.00086		mg/L	0.01		22-JAN-





Rankin Inlet NU X0C 0G0

ATTN: SIMON DOIRON

Nunavut Community & Government Services - Rankin Inle

Date: 01-FEB-19

PO No.:

WO No.: L2222351

Project Ref: RANKIN INLET WWTP - MONTHLY EFFLUENT

Sample ID: RANKIN WWTP - EFFLUENT

Sampled By: SD

Date Collected: 10-JAN-19 Lab Sample ID: L2222351-1

Matrix: WASTE

PAGE 2 of 5

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
Nunavut WW Group 1						
Total Metals in Water by CRC ICPMS						
Barium (Ba)-Total	0.0319		mg/L	1		22-JAN-1
Beryllium (Be)-Total	<0.00010		mg/L	·		22-JAN-1
Bismuth (Bi)-Total	0.00463		mg/L			22-JAN-1
Boron (B)-Total	0.079		mg/L	5		22-JAN-1
Cadmium (Cd)-Total	0.0000454		mg/L	0.005		22-JAN-1
Calcium (Ca)-Total	23.8		mg/L	0.000		22-JAN-1
Cesium (Cs)-Total	0.000078		mg/L			22-JAN-1
Chromium (Cr)-Total	0.00055		mg/L	0.05		22-JAN-1
Cobalt (Co)-Total	0.00017		mg/L	0.03		22-JAN-1
Copper (Cu)-Total	0.253		mg/L	2.0	1.0	22-JAN-1
Iron (Fe)-Total	0.246		mg/L	2.0	0.3	22-JAN-1
Lead (Pb)-Total	0.00312		mg/L	0.01	0.5	22-JAN-1
Lithium (Li)-Total	0.0030		mg/L	0.01		22-JAN-1
Magnesium (Mg)-Total	5.93		mg/L			22-JAN-1
Manganese (Mn)-Total	0.0323		mg/L		0.05	22-JAN-1
Molybdenum (Mo)-Total	0.00114		_		0.05	22-JAN-1
Nickel (Ni)-Total	0.00114		mg/L			22-JAN-
Potassium (K)-Total	8.22		mg/L mg/L			22-JAN-
Phosphorus (P)-Total	3.33		mg/L			22-JAN-
Rubidium (Rb)-Total	0.00954		mg/L			22-JAN-
Selenium (Se)-Total	0.00954		mg/L	0.05		22-JAN-
Silicon (Si)-Total	0.38		mg/L	0.03		22-JAN-
Silver (Ag)-Total	0.000095		mg/L			22-JAN-
Sodium (Na)-Total	32.5		mg/L		200	22-JAN-1
Strontium (Sr)-Total	0.116		_		200	22-JAN-1
Sulfur (S)-Total	10.7		mg/L mg/L			22-JAN-1
Tellurium (Te)-Total	<0.00020		mg/L			22-JAN-1
Thallium (TI)-Total	<0.00020		mg/L			22-JAN-
Thorium (Th)-Total	<0.00010		mg/L			22-JAN-
Tin (Sn)-Total	0.00104		mg/L			22-JAN-1
Titanium (Ti)-Total	0.00687		mg/L			22-JAN-1
Tungsten (W)-Total	<0.00010		mg/L			22-JAN-1
Uranium (U)-Total	0.000117		mg/L	0.02		22-JAN-
Vanadium (V)-Total	<0.00050		mg/L	0.02		22-JAN-1
Zinc (Zn)-Total	0.106		mg/L		5.0	22-JAN-1
Zirconium (Zr)-Total	0.000956		mg/L		0.0	22-JAN-
Sulfate in Water by IC			g/ =			
Sulfate (SO4)	22.9		mg/L		500	19-JAN-1
	22.3		IIIg/L		500	15-5/11-1
Phenol (4AAP) Phenols (4AAP)	0.0611		mg/L			21-JAN-1
Oil & Grease - Gravimetric	3.0011		ilig/L			5, 4, 4
Oil and Grease	18.0		mg/L			28-JAN-1
Oil and Grease	10.0		mg/∟			20-JAI





Rankin Inlet NU X0C 0G0

ATTN: SIMON DOIRON

Nunavut Community & Government Services - Rankin Inle

Date: 01-FEB-19

PO No.:

WO No.: L2222351

Project Ref: RANKIN INLET WWTP - MONTHLY EFFLUENT

Sample ID: RANKIN WWTP - EFFLUENT

Sampled By: SD

Date Collected: 10-JAN-19 Lab Sample ID: L2222351-1

Matrix: WASTE

PAGE 3 of 5

			Units of	CDWQG	Aesthetic	Date
Test Description	Result	Qualifier	Measure	MAC	Objective	Analyzed
Nunavut WW Group 1						
Nitrite in Water by IC						
*Nitrite (as N)	<0.010		mg/L	1		19-JAN-19
Nitrate in Water by IC						
*Nitrate (as N)	<0.020		mg/L	10		19-JAN-19
	V0.020		IIIg/L	10		10 0/11 10
Hardness Calculated	02.0	HTC	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			00 144140
Hardness (as CaCO3)	83.9	HIC	mg/L		500	23-JAN-19
Fecal coliforms, 1:10 dilution by QT97						
Fecal Coliforms	>24200	PEHR	MPN/100mL			18-JAN-19
Conductivity						
Conductivity	502		umhos/cm			22-JAN-19
Chloride in Water by IC						
Chloride (CI)	55.9		mg/L		250	19-JAN-19
Carbonaceous BOD			9_		200	
BOD Carbonaceous	65					19-JAN-19
	05		mg/L			19-0/11-19
Biochemical Oxygen Demand (BOD)	00					40 1411 40
Biochemical Oxygen Demand	82		mg/L			19-JAN-19
Ammonia by colour						
Ammonia, Total (as N)	10.9		mg/L			23-JAN-19
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	130		mg/L			22-JAN-19
Fluoride (F)	0.105		mg/L	1.5		19-JAN-19
Total and E. coli, 1:10 dilution by QT97						
Total Coliforms	>24200	PEHR	MPN/100mL	0		18-JAN-19
Escherichia Coli	>24200	PEHR	MPN/100mL	0		18-JAN-19
Polyaromatic Hydrocarbons (PAHs)						
1-Methyl Naphthalene	<0.000020		mg/L			30-JAN-19
2-Methyl Naphthalene	<0.000020		mg/L			30-JAN-19
Acenaphthene	<0.000020		mg/L			30-JAN-19
Acenaphthylene	<0.000020		mg/L			30-JAN-19
Anthracene	<0.000010		mg/L			30-JAN-19
Acridine	<0.000020		mg/L			30-JAN-19
Benzo(a)anthracene	<0.000010		mg/L			30-JAN-19
Benzo(a)pyrene	<0.000050		mg/L	0.00004		30-JAN-19
Benzo(b&j)fluoranthene	<0.000010		mg/L			30-JAN-19
Benzo(g,h,i)perylene	<0.000020		mg/L			30-JAN-19
Benzo(k)fluoranthene	<0.000010		mg/L			30-JAN-19
Chrysene	<0.000020		mg/L			30-JAN-19





Rankin Inlet NU X0C 0G0

ATTN: SIMON DOIRON

Nunavut Community & Government Services - Rankin Inle

Date: 01-FEB-19

PO No.:

WO No.: L2222351

Project Ref: RANKIN INLET WWTP - MONTHLY EFFLUENT

Sample ID: RANKIN WWTP - EFFLUENT

Sampled By: SD

Date Collected: 10-JAN-19 Lab Sample ID: L2222351-1

Matrix: WASTE

PAGE 4 of 5

	Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
Polyaromati	ic Hydrocarbons (PAHs)						
i Oiyai Oiliati	, ,	-0.0000050					30-JAN-1
	Dibenzo(a,h)anthracene Fluoranthene	<0.000050 <0.000020		mg/L			30-JAN-1
	Fluorene	<0.000020	DLCI	mg/L			30-JAN-1
	Indeno(1,2,3-cd)pyrene	<0.00005	DECI	mg/L			30-JAN-1
	Naphthalene	<0.000010		mg/L mg/L			30-JAN-1
	Phenanthrene	<0.000050					30-JAN-1
	Pyrene	<0.000030		mg/L			30-JAN-
	Quinoline	<0.000010		mg/L mg/L			30-JAN-
	B(a)P Total Potency	<0.000020		mg/L			30-JAN-
	Equivalent	<0.000030		IIIg/L			30-3711
Surr:	Acenaphthene d10	70.9		%			30-JAN-
Surr:	Acridine d9	98.3		%			30-JAN-
Surr:	Chrysene d12	98.1		%			30-JAN-
Surr:	Naphthalene d8	90.6		%			30-JAN-
Surr:	Phenanthrene d10	86.5		%			30-JAN-
	ealth Canada Guideline Limits updated	MAY 2018					
A snaded va	lue in the Results column exceeds CDWQ	G MAC and/ or A	restnetic Objecti	ve.			
Approved by	Hua Wo	_					
	Account Manager						



Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

Health Canada MAC Health Related Criteria Limits

Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants. Nitrate/Nitrite-N*

Lead* A cumulative body poison, uncommon in naturally occurring hard waters.

Fluoride* Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).

Total Coliforms* Criteria is 0 CFU/100mL. Adverse health effects.

Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening. E. Coli*

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.

Balance Quality control parameter ratioing cations to anions See Alkalinity. Report as the anion HCO3-1 Bicarbonate Carbonate See Alkalinity. Reported at the anion CO3-2

See Hardness. Common major cation of water chemistry. Calcium

Chloride Common major anion of water chemistry.

Physical test measuring water salinity (dissolved ions or solids) Conductance

Hardness Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.

See alkalinity Hydroxide

Magnesium See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action. рН

Measure of water acidity/alkalinity. Normal range is 7.0-8.5.

Potassium Common major cation of water chemistry.

Common major cation of water chemistry. Measure of salinity (saltiness). The aesthetic objective (not related to health) for Sodium

sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health

concerning the use of that water.

Sulphate Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.

Total Dissolved Solids A measure of water salinity.

Iron Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.

Manganese Elevated levels may cause staining of laundry and porcelain.

Heterotrophic Plate Count Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

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

ma/ka 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.



Workorder: L2222351 Report Date: 01-FEB-19 Page 1 of 10

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP Water							
Batch R4462708							
WG2975278-15 DUP Alkalinity, Total (as CaCO3)	L2222351-1 130	131		mg/L	0.7	20	22-JAN-19
WG2975278-14 LCS Alkalinity, Total (as CaCO3)		103.4		%		85-115	22-JAN-19
WG2975278-11 MB Alkalinity, Total (as CaCO3)		1.0		mg/L		1	22-JAN-19
BOD-CBOD-WP Water							
Batch R4467581							
WG2973145-4 DUP BOD Carbonaceous	L2222351-1 65	68		mg/L	4.8	20	19-JAN-19
WG2973145-2 LCS BOD Carbonaceous		90.9		%		85-115	19-JAN-19
WG2973145-1 MB BOD Carbonaceous		<2.0		mg/L		2	19-JAN-19
BOD-WP Water							
Batch R4467581 WG2973145-2 LCS							
Biochemical Oxygen Demand		97.0		%		85-115	19-JAN-19
WG2973145-1 MB Biochemical Oxygen Demand		<2.0		mg/L		2	19-JAN-19
BTEXS+F1-HSMS-WP Water							
Batch R4463528 WG2974301-2 LCS							
Benzene		105.0		%		70-130	21-JAN-19
Toluene		113.6		%		70-130	21-JAN-19
Ethyl benzene		110.5		%		70-130	21-JAN-19
o-Xylene		113.5		%		70-130	21-JAN-19
m+p-Xylenes		106.4		%		70-130	21-JAN-19
WG2974301-3 LCS F1 (C6-C10)		86.3		%		70-130	21-JAN-19
WG2974301-1 MB Benzene		<0.00050		mg/L		0.0005	21-JAN-19
Toluene		<0.0010		mg/L		0.001	21-JAN-19
Ethyl benzene		<0.00050		mg/L		0.0005	21-JAN-19
o-Xylene		<0.00030		mg/L		0.0003	21-JAN-19
m+p-Xylenes		<0.00040		mg/L		0.0004	21-JAN-19
F1 (C6-C10)		<0.10		mg/L		0.1	21-JAN-19



Workorder: L2222351

Report Date: 01-FEB-19 Page 2 of 10

								igo <u>2</u> 01 10
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	Water							
Batch R4463528 WG2974301-1 MB Surrogate: 4-Bromofluor	obenzene (SS)		92.7		%		70-130	21-JAN-19
C-TOC-HTC-WP	Water							
Batch R4460928 WG2974562-2 LCS Total Organic Carbon			100.7		%		80-120	21-JAN-19
WG2974562-1 MB Total Organic Carbon			<0.50		mg/L		0.5	21-JAN-19
CL-IC-N-WP	Water							
Batch R4460787 WG2973611-2 LCS Chloride (CI)			99.2		%		90-110	19-JAN-19
WG2973611-1 MB Chloride (CI)			<0.50		mg/L		0.5	19-JAN-19
EC-WP	Water							
Batch R4462708 WG2975278-15 DUP Conductivity		L2222351-1 502	500		umhos/cm	0.4	10	22-JAN-19
WG2975278-13 LCS Conductivity			99.2		%		90-110	22-JAN-19
WG2975278-11 MB Conductivity			<1.0		umhos/cm		1	22-JAN-19
F-IC-N-WP	Water							
Batch R4460787 WG2973611-2 LCS Fluoride (F)			100.4		%		90-110	19-JAN-19
WG2973611-1 MB Fluoride (F)			<0.020		mg/L		0.02	19-JAN-19
F2-F4-FID-WP	Water							
Batch R4459890								
WG2973190-2 LCS F2 (C10-C16)			83.5		%		70-130	19-JAN-19
F3 (C16-C34)			92.5		%		70-130	19-JAN-19
F4 (C34-C50)			95.6		%		70-130	19-JAN-19
WG2973190-1 MB F2 (C10-C16)			<0.10		mg/L		0.1	19-JAN-19



Workorder: L2222351 Report Date: 01-FEB-19 Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-FID-WP	Water							
Batch R4459890 WG2973190-1 MB F3 (C16-C34)			<0.25		mg/L		0.25	19-JAN-19
F4 (C34-C50)			<0.25		mg/L		0.25	19-JAN-19
Surrogate: 2-Bromobenz	zotrifluoride		108.5		%		60-140	19-JAN-19
FC10-QT97-WP	Water							
Batch R4456143 WG2972898-1 MB Fecal Coliforms			<1		MPN/100mL		1	18-JAN-19
HG-T-CVAA-WP	Water							
Batch R4465029 WG2976047-2 LCS Mercury (Hg)-Total			104.0		%		80-120	23-JAN-19
WG2976047-1 MB Mercury (Hg)-Total			<0.00000	5 C	mg/L		0.000005	23-JAN-19
MET-T-CCMS-WP	Water							
Batch R4462078 WG2974391-2 LCS								
Aluminum (Al)-Total			104.4		%		80-120	22-JAN-19
Antimony (Sb)-Total			101.0		%		80-120	22-JAN-19
Arsenic (As)-Total			99.0		%		80-120	22-JAN-19
Barium (Ba)-Total			102.7		%		80-120	22-JAN-19
Beryllium (Be)-Total			105.6		%		80-120	22-JAN-19
Bismuth (Bi)-Total			103.0		%		80-120	22-JAN-19
Boron (B)-Total			103.4		%		80-120	22-JAN-19
Cadmium (Cd)-Total			104.2		%		80-120	22-JAN-19
Calcium (Ca)-Total			104.1		%		80-120	22-JAN-19
Cesium (Cs)-Total			112.4		%		80-120	22-JAN-19
Chromium (Cr)-Total			103.3		%		80-120	22-JAN-19
Cobalt (Co)-Total			103.3		%		80-120	22-JAN-19
Copper (Cu)-Total			104.9		%		80-120	22-JAN-19
Iron (Fe)-Total			98.5		%		80-120	22-JAN-19
Lead (Pb)-Total			107.5		%		80-120	22-JAN-19
Lithium (Li)-Total			106.8		%		80-120	22-JAN-19
Magnesium (Mg)-Total			113.9		%		80-120	22-JAN-19
Manganese (Mn)-Total			104.2		%		80-120	22-JAN-19



Workorder: L2222351 Report Date: 01-FEB-19 Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4462078								
WG2974391-2 LCS			100.7		0/		00.100	00 1441 10
Molybdenum (Mo)-Tota	II		102.7		%		80-120	22-JAN-19
Nickel (Ni)-Total			103.9		%		80-120	22-JAN-19
Potassium (K)-Total			99.0		%		80-120	22-JAN-19
Phosphorus (P)-Total			103.1		%		80-120	22-JAN-19
Rubidium (Rb)-Total			103.3		%		80-120	22-JAN-19
Selenium (Se)-Total			97.7		%		80-120	22-JAN-19
Silicon (Si)-Total			102.5		%		80-120	22-JAN-19
Silver (Ag)-Total			109.7		%		80-120	22-JAN-19
Sodium (Na)-Total			105.4		%		80-120	22-JAN-19
Strontium (Sr)-Total			110.2		%		80-120	22-JAN-19
Sulfur (S)-Total			106.6		%		80-120	22-JAN-19
Tellurium (Te)-Total			100.5		%		80-120	22-JAN-19
Thallium (TI)-Total			97.8		%		80-120	22-JAN-19
Thorium (Th)-Total			110.2		%		80-120	22-JAN-19
Tin (Sn)-Total			100.2		%		80-120	22-JAN-19
Titanium (Ti)-Total			99.6		%		80-120	22-JAN-19
Tungsten (W)-Total			103.5		%		80-120	22-JAN-19
Uranium (U)-Total			113.2		%		80-120	22-JAN-19
Vanadium (V)-Total			104.5		%		80-120	22-JAN-19
Zinc (Zn)-Total			105.9		%		80-120	22-JAN-19
Zirconium (Zr)-Total			105.1		%		80-120	22-JAN-19
WG2974391-1 MB								
Aluminum (Al)-Total			< 0.0030		mg/L		0.003	22-JAN-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	22-JAN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	22-JAN-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	22-JAN-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	22-JAN-19
Bismuth (Bi)-Total			<0.000050)	mg/L		0.00005	22-JAN-19
Boron (B)-Total			<0.010		mg/L		0.01	22-JAN-19
Cadmium (Cd)-Total			<0.000005	5C	mg/L		0.000005	22-JAN-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	22-JAN-19
Cesium (Cs)-Total			<0.000010)	mg/L		0.00001	22-JAN-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	22-JAN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	22-JAN-19



Workorder: L2222351 Report Date: 01-FEB-19 Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4462078								
WG2974391-1 MB Copper (Cu)-Total			<0.00050		ma/l		0.0005	00 1411 40
			<0.000		mg/L		0.0005	22-JAN-19
Iron (Fe)-Total					mg/L		0.01	22-JAN-19
Lead (Pb)-Total			<0.000050 <0.0010		mg/L		0.00005	22-JAN-19
Lithium (Li)-Total Magnesium (Mg)-Total					mg/L		0.001	22-JAN-19
S (S)			<0.0050		mg/L		0.005	22-JAN-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	22-JAN-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	22-JAN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	22-JAN-19
Potassium (K)-Total			<0.050		mg/L		0.05	22-JAN-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	22-JAN-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	22-JAN-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	22-JAN-19
Silicon (Si)-Total			<0.10		mg/L		0.1	22-JAN-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	22-JAN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	22-JAN-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	22-JAN-19
Sulfur (S)-Total			<0.50		mg/L		0.5	22-JAN-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	22-JAN-19
Thallium (TI)-Total			<0.000010		mg/L		0.00001	22-JAN-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	22-JAN-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	22-JAN-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	22-JAN-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	22-JAN-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	22-JAN-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	22-JAN-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	22-JAN-19
Zirconium (Zr)-Total			<0.000060		mg/L		0.00006	22-JAN-19
NH3-COL-WP	Water							
Batch R4465132								
WG2976021-6 LCS Ammonia, Total (as N)			95.0		%		85-115	23-JAN-19
WG2976021-5 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	23-JAN-19
NO2-IC-N-WP	Water							



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Workorder: L2222351 Report Date: 01-FEB-19

est	Matrix	Reference	Result C	ualifier Units	RPD	Limit	Analyzed
NO2-IC-N-WP	Water						
Batch R4460787							
WG2973611-2 LCS Nitrite (as N)			100.4	%		90-110	19-JAN-19
WG2973611-1 MB Nitrite (as N)			<0.010	mg/L		0.01	19-JAN-19
NO3-IC-N-WP	Water						
Batch R4460787							
WG2973611-2 LCS Nitrate (as N)			98.5	%		90-110	19-JAN-19
WG2973611-1 MB Nitrate (as N)			<0.020	mg/L		0.02	19-JAN-19
	Water		10.020	g, _		0.02	15-0/11-15
DG-GRAV-WP Batch R4472727	water						
WG2977154-2 LCS							
Oil and Grease			89.9	%		70-130	28-JAN-19
WG2977154-1 MB Oil and Grease			<5.0	mg/L		5	28-JAN-19
P-T-COL-WP	Water						
Batch R4462090							
WG2974270-14 LCS Phosphorus (P)-Total			93.4	%		80-120	22-JAN-19
WG2974270-13 MB Phosphorus (P)-Total			<0.0030	mg/L		0.003	22-JAN-19
PAH,PANH-WP	Water						
Batch R4479968							
WG2976483-2 LCS							
1-Methyl Naphthalene			92.0	%		60-130	30-JAN-19
2-Methyl Naphthalene			78.6	%		60-130	30-JAN-19
Acenaphthene			82.4	%		60-130	30-JAN-19
Acenaphthylene			80.3	%		60-130	30-JAN-19
Anthracene			83.1	%		60-130	30-JAN-19
Acridine			75.3	%		60-130	30-JAN-19
Benzo(a)anthracene			75.9	%		60-130	30-JAN-19
Benzo(a)pyrene			77.2	%		60-130	30-JAN-19
Benzo(b&j)fluoranthene			79.9	%		60-130	30-JAN-19
Benzo(g,h,i)perylene			85.5	%		60-130	30-JAN-19
Benzo(k)fluoranthene			85.8	%		60-130	30-JAN-19



Workorder: L2222351 Report Date: 01-FEB-19 Page 7 of 10

Test N	/latrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP V	Nater							
Batch R4479968								
WG2976483-2 LCS			70.4		0/			
Chrysene			73.4		%		60-130	30-JAN-19
Dibenzo(a,h)anthracene			81.3		%		60-130	30-JAN-19
Fluoranthene			87.5		%		60-130	30-JAN-19
Fluorene			78.4		%		60-130	30-JAN-19
Indeno(1,2,3-cd)pyrene			76.2		%		60-130	30-JAN-19
Naphthalene			79.3		%		50-130	30-JAN-19
Phenanthrene			84.6		%		60-130	30-JAN-19
Pyrene			85.6		%		60-130	30-JAN-19
Quinoline			91.2		%		60-130	30-JAN-19
WG2976483-1 MB 1-Methyl Naphthalene			<0.000020)	mg/L		0.00002	31-JAN-19
2-Methyl Naphthalene			<0.000020)	mg/L		0.00002	31-JAN-19
Acenaphthene			<0.000020)	mg/L		0.00002	31-JAN-19
Acenaphthylene			<0.000020)	mg/L		0.00002	31-JAN-19
Anthracene			<0.000010)	mg/L		0.00001	31-JAN-19
Acridine			<0.000020)	mg/L		0.00002	31-JAN-19
Benzo(a)anthracene			<0.000010)	mg/L		0.00001	31-JAN-19
Benzo(a)pyrene			<0.00000	5C	mg/L		0.000005	31-JAN-19
Benzo(b&j)fluoranthene			<0.000010)	mg/L		0.00001	31-JAN-19
Benzo(g,h,i)perylene			<0.000020)	mg/L		0.00002	31-JAN-19
Benzo(k)fluoranthene			<0.000010)	mg/L		0.00001	31-JAN-19
Chrysene			<0.000020)	mg/L		0.00002	31-JAN-19
Dibenzo(a,h)anthracene			<0.00000	5C	mg/L		0.000005	31-JAN-19
Fluoranthene			<0.000020)	mg/L		0.00002	31-JAN-19
Fluorene			<0.000020)	mg/L		0.00002	31-JAN-19
Indeno(1,2,3-cd)pyrene			<0.000010)	mg/L		0.00001	31-JAN-19
Naphthalene			<0.000050)	mg/L		0.00005	31-JAN-19
Phenanthrene			<0.000050)	mg/L		0.00005	31-JAN-19
Pyrene			<0.000010)	mg/L		0.00001	31-JAN-19
Quinoline			<0.000020		mg/L		0.00002	31-JAN-19
Surrogate: Acenaphthene of	d10		113.7		%		60-130	31-JAN-19
Surrogate: Acridine d9			108.9		%		60-130	31-JAN-19
Surrogate: Chrysene d12			104.7		%		60-130	31-JAN-19
Surrogate: Naphthalene d8	3		116.3		%		50-130	31-JAN-19



Workorder: L2222351 Report Date: 01-FEB-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP Batch R4479968 WG2976483-1 MB Surrogate: Phenanthren	Water e d10		115.2		%		60-130	31-JAN-19
PH-WP	Water							
Batch R4462708 WG2975278-15 DUP pH		L2222351-1 6.90	6.91	J	pH units	0.01	0.2	22-JAN-19
WG2975278-12 LCS pH			7.40		pH units		7.3-7.5	22-JAN-19
PHENOLS-4AAP-WT	Water							
Batch R4459947 WG2973953-2 LCS Phenols (4AAP)			100.7		%		85-115	21-JAN-19
WG2973953-1 MB Phenols (4AAP)			<0.0010		mg/L		0.001	21-JAN-19
SO4-IC-N-WP	Water							
Batch R4460787 WG2973611-2 LCS Sulfate (SO4)			99.6		%		90-110	19-JAN-19
WG2973611-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	19-JAN-19
SOLIDS-TOTSUS-WP	Water							
Batch R4467929 WG2975184-6 LCS Total Suspended Solids			93.0		%		85-115	23-JAN-19
WG2975184-5 MB Total Suspended Solids			<2.0		mg/L		2	23-JAN-19
TC,EC10-QT97-WP	Water							
Batch R4456145								
WG2972900-1 MB Total Coliforms			<1		MPN/100mL		1	18-JAN-19
Escherichia Coli			<1		MPN/100mL		1	18-JAN-19

Workorder: L2222351 Report Date: 01-FEB-19 Page 9 of 10

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.

Workorder: L2222351 Report Date: 01-FEB-19 Page 10 of 10

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
		Sampling Date	Date Flocesseu	Nec. III	Actual III	Units	Qualifier
Physical Tests							
Total Suspended Solids							
	1	10-JAN-19 09:30	23-JAN-19 08:00	7	13	days	EHTR
рН							
	1	10-JAN-19 09:30	22-JAN-19 12:00	0.25	290	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC							
·	1	10-JAN-19 09:30	19-JAN-19 12:00	3	9	days	EHTR
Nitrite in Water by IC							
•	1	10-JAN-19 09:30	19-JAN-19 12:00	3	9	days	EHTR
Bacteriological Tests						•	
Fecal coliforms, 1:10 dilution	on by QT97						
	1	10-JAN-19 09:30	18-JAN-19 17:00	30	199	hours	EHTR
Total and E. coli, 1:10 diluti	on by QT97						
10tal and 2100m, 1110 and 1	1	10-JAN-19 09:30	18-JAN-19 17:00	30	199	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Dema	and (BOD)						
Biochemical Oxygen Dema	1	10-JAN-19 09:30	19-JAN-19 07:00	48	214	hours	EHTR
Carbonaceous BOD	'	10-0/AIN-19 09.00	13-3/414-13-07.00	70	217	110013	LIIIX
Carbonaceous BOD	1	10-JAN-19 09:30	19-JAN-19 07:00	48	214	hours	EHTR
	ı	10-JAIN-19 09.30	13-JAIN-13 U1.00	40	∠ I '1	Hours	EHIK
agand & Qualifier Definition	no.						

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 L2222351 were received on 18-JAN-19 12:30.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

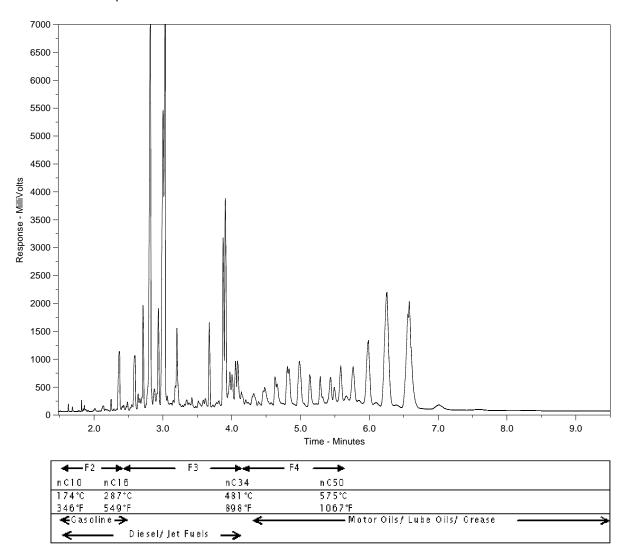
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2222351-1

Client Sample ID: RANKIN 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.

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Contáct:	SIMON DOIRON	- Company Committee - Committe		₹ PDF	The second secon					Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT										
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Phone:	one: 867-645-8155 Cell#:						· · · · · · · · · · · · · · · · · · ·	Analysis Request												
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(fat	use only)			Contact:	Craig Riddell	Sampled By:	Simon Dolfon	F4-WP	上	×	g.	QT97-WP								o o
Sample		Sample ide	ntification	. 		Time		正	Δ.	A VE	Ż	Ö					i 1			ber
#	(This	s description will a	ppear on the	e report)	Date Sampled	Sampled	Sample Type	BTX	PAH, PANH-WP	NUNAVUT-WW-GRP1.WR	F-IC-N-WF	Z, E,E					ı İ			Number of Containers
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Nunavut-WW	-GRP1-WP pkg inclu	ides 1 L BOD/CBC	DD, 1 L Rout	tine, 250 ml Metals , 40	ml Mercury Vial,	250 ml Amber	Nutrient , 250 ml	4mbe	r Phe	nois,	2 x 2	50 ml	Ambe	er Oil	& Gre	ase ,	250	mi Ba	cteria	a (9
Dottles) + 5 V	ials for BTX F1-F4 ar	10 1 L Amber for F	AH's = Tota	al of 15 Bottles per sam	ple.						.,							objective or also	فراني الروات دون	
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix G



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 13-FEB-19

Report Date: 26-FEB-19 13:13 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2232348

Project P.O. #: NOT SUBMITTED

Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT

C of C Numbers: Legal Site Desc:

Hua Wo

Chemistry Laboratory Manager

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L2232348 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2232348-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: Bill Ross on 11-FEB-19 @ 14:20							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene Benzene	<0.00050		0.00050	mg/L		21-FEB-19	R4520834
Toluene	0.0056		0.0010	mg/L		21-FEB-19	R4520834
Ethyl benzene	<0.00050		0.00050	mg/L		21-FEB-19	R4520834
o-Xylene	<0.00050		0.00050	mg/L		21-FEB-19	R4520834
m+p-Xylenes	<0.00040		0.00040	mg/L		21-FEB-19	R4520834
F1 (C6-C10)	<0.10		0.10	mg/L		21-FEB-19	R4520834
Surrogate: 4-Bromofluorobenzene (SS)	83.1		70-130	%		21-FEB-19	R4520834
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.53		0.10	mg/L	16-FEB-19	16-FEB-19	R4518372
F3 (C16-C34)	12.9		0.25	mg/L	16-FEB-19	16-FEB-19	R4518372
F4 (C34-C50)	3.28		0.25	mg/L	16-FEB-19	16-FEB-19	R4518372
Surrogate: 2-Bromobenzotrifluoride	106.1		60-140	%	16-FEB-19	16-FEB-19	R4518372
CCME Total Hydrocarbons	2.5					05 555 ::	
F1-BTEX	<0.10		0.10	mg/L		25-FEB-19	
F2-Naphth	0.53		0.10	mg/L		25-FEB-19	
F3-PAH	12.9		0.25	mg/L		25-FEB-19	
Total Hydrocarbons (C6-C50)	16.7		0.38	mg/L		25-FEB-19	
Sum of Xylene Isomer Concentrations Xylenes (Total)	<0.00064		0.00064	mg/L		22-FEB-19	
Miscellaneous Parameters	<0.0004		0.00004	IIIg/L		22-1 LD-19	
Fluoride (F)	0.122		0.020	mg/L		14-FEB-19	R4512851
Total Coliform and E.coli by MPN QT97	0.122		0.020	IIIg/L		14-1 25-19	K4312031
Total Coliforms	>2420		1	MPN/100mL		13-FEB-19	R4506649
Escherichia Coli	>2420		1	MPN/100mL		13-FEB-19	R4506649
CCME PAHs in mg/L			·				
1-Methyl Naphthalene	0.000093		0.000020	mg/L	22-FEB-19	25-FEB-19	R4524713
2-Methyl Naphthalene	0.000147		0.000020	mg/L	22-FEB-19	25-FEB-19	R4524713
Acenaphthene	<0.000020		0.000020	mg/L	22-FEB-19	25-FEB-19	R4524713
Acenaphthylene	<0.000020		0.000020	mg/L	22-FEB-19	25-FEB-19	R4524713
Anthracene	<0.000010		0.000010	mg/L	22-FEB-19	25-FEB-19	R4524713
Acridine	<0.000020		0.000020	mg/L	22-FEB-19	25-FEB-19	R4524713
Benzo(a)anthracene	<0.000010		0.000010	mg/L	22-FEB-19	25-FEB-19	R4524713
Benzo(a)pyrene	0.0000050		0.0000050	_	22-FEB-19	25-FEB-19	R4524713
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	22-FEB-19	25-FEB-19	R4524713
Benzo(g,h,i)perylene	0.000058		0.000020	mg/L	22-FEB-19	25-FEB-19	R4524713
Benzo(k)fluoranthene Chrysene	<0.000010		0.000010	mg/L	22-FEB-19	25-FEB-19	R4524713
	<0.000020		0.000020	mg/L	22-FEB-19	25-FEB-19	R4524713
Dibenzo(a,h)anthracene Fluoranthene	0.0000379		0.0000050	mg/L	22-FEB-19	25-FEB-19	R4524713
Fluoranthene Fluorene	0.000021 <0.000060	DLQ	0.000020	mg/L	22-FEB-19 22-FEB-19	25-FEB-19 25-FEB-19	R4524713
Indeno(1,2,3-cd)pyrene	0.000493	250	0.000060	mg/L mg/L	22-FEB-19 22-FEB-19	25-FEB-19 25-FEB-19	R4524713 R4524713
Naphthalene	0.000493		0.000010	mg/L	22-FEB-19 22-FEB-19	25-FEB-19 25-FEB-19	R4524713 R4524713
Phenanthrene	<0.000050		0.000050	mg/L	22-FEB-19	25-FEB-19	R4524713 R4524713
Pyrene	0.000030		0.000030	mg/L	22-FEB-19	25-FEB-19	R4524713
Quinoline	0.000020		0.000010	mg/L	22-FEB-19	25-FEB-19	R4524713
B(a)P Total Potency Equivalent	0.000071		0.000020	mg/L	22-FEB-19	25-FEB-19	R4524713
Surrogate: d8-Naphthalene	124.0		50-150	%	22-FEB-19	25-FEB-19	R4524713
Surrogate: d10-Phenanthrene	109.3		50-150	%	22-FEB-19	25-FEB-19	R4524713
Surrogate: d12-Chrysene	104.8		50-150	%	22-FEB-19	25-FEB-19	R4524713
Surrogate: d10-Acenaphthene	109.5		50-150	%	22-FEB-19	25-FEB-19	R4524713
Surrogate: d9-Acridine (SS)	107.4		50-150	%	22-FEB-19	25-FEB-19	R4524713

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2232348-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: Bill Ross on 11-FEB-19 @ 14:20							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	113		1.2	mg/L		20-FEB-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		20-FEB-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		20-FEB-19	
Alkalinity, Total (as CaCO3)	νο.στ		0.54	IIIg/L		201 LD-13	
Alkalinity, Total (as CaCO3)	92.6		1.0	mg/L		15-FEB-19	R4511402
Ammonia by colour							
Ammonia, Total (as N)	6.6		1.0	mg/L		14-FEB-19	R4508897
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	101		20	mg/L		14-FEB-19	R4513827
Carbonaceous BOD							
BOD Carbonaceous	95		20	mg/L		14-FEB-19	R4513827
Chloride in Water by IC							
Chloride (CI)	60.5		0.50	mg/L		14-FEB-19	R4512851
Conductivity Conductivity	448		1.0	umhos/cm		15-FEB-19	R4511402
Hardness Calculated	440		1.0	ummos/om		1012510	114011402
Hardness (as CaCO3)	108	HTC	0.20	mg/L		20-FEB-19	
Mercury Total							
Mercury (Hg)-Total	0.0000130		0.0000050	mg/L	15-FEB-19	20-FEB-19	R4517787
Nitrate in Water by IC Nitrate (as N)	0.000		0.000			14-FEB-19	D4540054
Nitrate+Nitrite	0.022		0.020	mg/L		14-FED-19	R4512851
Nitrate and Nitrite as N	<0.070		0.070	mg/L		19-FEB-19	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		14-FEB-19	R4512851
Oil & Grease - Gravimetric	40.0		5.0	/1		05 FFD 40	D4505040
Oil and Grease Phenol (4AAP)	48.8		5.0	mg/L		25-FEB-19	R4525613
Phenols (4AAP)	0.0106		0.0010	mg/L		19-FEB-19	R4513850
Phosphorus, Total							
Phosphorus (P)-Total	2.25		0.030	mg/L		20-FEB-19	R4516026
Sulfate in Water by IC						44 555 45	
Sulfate (SO4)	26.5		0.30	mg/L		14-FEB-19	R4512851
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.398		0.0030	mg/L	19-FEB-19	19-FEB-19	R4515089
Antimony (Sb)-Total	0.00015		0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Arsenic (As)-Total	0.00148		0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Barium (Ba)-Total	0.0392		0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Bismuth (Bi)-Total	0.00149		0.000050	mg/L	19-FEB-19	19-FEB-19	R4515089
Boron (B)-Total Cadmium (Cd)-Total	0.070		0.010	mg/L	19-FEB-19	19-FEB-19 19-FEB-19	R4515089
Calcium (Ca)-Total	0.000135 29.8		0.0000050 0.050	mg/L mg/L	19-FEB-19 19-FEB-19	19-FEB-19 19-FEB-19	R4515089 R4515089
Cesium (Cs)-Total	0.000098		0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Chromium (Cr)-Total	0.00233		0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Cobalt (Co)-Total	0.00058		0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Copper (Cu)-Total	0.160		0.00050	mg/L	19-FEB-19	19-FEB-19	R4515089
Iron (Fe)-Total	0.828		0.010	mg/L	19-FEB-19	19-FEB-19	R4515089
Lead (Pb)-Total	0.00352		0.000050	mg/L	19-FEB-19	19-FEB-19	R4515089

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

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Sample Details/Parameters	Result	Qualifier* D.L.	Units	Extracted	Analyzed	Batch
L2232348-1 RANKIN INLET WWTP - EFFLUENT						
Sampled By: Bill Ross on 11-FEB-19 @ 14:20						
Matrix: WASTE						
Total Metals in Water by CRC ICPMS Lithium (Li)-Total	0.0040	0.0010	mg/L	19-FEB-19	19-FEB-19	R4515089
Magnesium (Mg)-Total	8.05	0.0050	mg/L	19-FEB-19	19-FEB-19	R4515089
Manganese (Mn)-Total	0.0529	0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Molybdenum (Mo)-Total	0.00104	0.000050	mg/L	19-FEB-19	19-FEB-19	R4515089
Nickel (Ni)-Total	0.00414	0.00050	mg/L	19-FEB-19	19-FEB-19	R4515089
Potassium (K)-Total	7.98	0.050	mg/L	19-FEB-19	19-FEB-19	R4515089
Phosphorus (P)-Total	2.58	0.030	mg/L	19-FEB-19	19-FEB-19	R4515089
Rubidium (Rb)-Total	0.00836	0.00020	mg/L	19-FEB-19	19-FEB-19	R4515089
Selenium (Se)-Total	0.000267	0.000050	mg/L	19-FEB-19	19-FEB-19	R4515089
Silicon (Si)-Total	0.72	0.10	mg/L	19-FEB-19	19-FEB-19	R4515089
Silver (Ag)-Total	0.000041	0.000010	mg/L	19-FEB-19	19-FEB-19	R4515089
Sodium (Na)-Total	35.4	0.050	mg/L	19-FEB-19	19-FEB-19	R4515089
Strontium (Sr)-Total	0.136	0.00020	mg/L	19-FEB-19	19-FEB-19	R4515089
Sulfur (S)-Total	10.9	0.50	mg/L	19-FEB-19	19-FEB-19	R4515089
Tellurium (Te)-Total	<0.00020	0.00020	mg/L	19-FEB-19	19-FEB-19	R4515089
Thallium (TI)-Total	<0.000010	0.000010	mg/L	19-FEB-19	19-FEB-19	R4515089
Thorium (Th)-Total	0.00011	0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Tin (Sn)-Total	0.00086	0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Titanium (Ti)-Total	0.00997	0.00030	mg/L	19-FEB-19	19-FEB-19	R4515089
Tungsten (W)-Total	<0.00010	0.00010	mg/L	19-FEB-19	19-FEB-19	R4515089
Uranium (U)-Total	0.000137	0.000010	mg/L	19-FEB-19	19-FEB-19	R4515089
Vanadium (V)-Total	0.00114	0.00050	mg/L	19-FEB-19	19-FEB-19	R4515089
Zinc (Zn)-Total Zirconium (Zr)-Total	0.0825	0.0030	mg/L	19-FEB-19	19-FEB-19	R4515089
` ′	0.000350	0.000060	mg/L	19-FEB-19	19-FEB-19	R4515089
Total Organic Carbon by Combustion Total Organic Carbon	57.3	2.5	mg/L		20-FEB-19	R4519529
Total Suspended Solids						
Total Suspended Solids	134	6.0	mg/L		15-FEB-19	R4515894
pH						
рН	6.92	0.10	pH units		15-FEB-19	R4511402

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

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Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
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:

Test Method Neleichtes.									
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- Water Alkalinity, Bicarbonate CALCULATION

WP

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.

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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.

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 200.2/6020A (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.

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

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Reference Information

Test Method References:

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

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 Total Coliform and E.coli by MPN QT97 APHA 9223B QT97 Water

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 35.0 – 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

XYLENES-SUM-CALC-

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.

ma/ka - 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.



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Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

C-TOC-HTC-WP

Water

Test N	latrix Re	eference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP V	Vater							
Batch R4511402								
WG2990374-24 LCS								
Alkalinity, Total (as CaCO3)		102.2		%		85-115	15-FEB-19
WG2990374-21 MB	`		4.0					
Alkalinity, Total (as CaCO3)		<1.0		mg/L		1	15-FEB-19
	Vater							
Batch R4513827								
WG2988686-2 LCS BOD Carbonaceous			89.4		%		05 445	44 555 40
			09.4		76		85-115	14-FEB-19
WG2988686-1 MB BOD Carbonaceous			<2.0		mg/L		2	14-FEB-19
	••				g, L		_	17-1 LD-13
	Vater							
Batch R4513827								
WG2988686-2 LCS Biochemical Oxygen Dema	ınd		102.8		%		85-115	14-FEB-19
WG2988686-1 MB			102.0		70		00-110	14-1-65-19
Biochemical Oxygen Dema	ınd		<2.0		mg/L		2	14-FEB-19
BTEXS+F1-HSMS-WP V	Vater							
Batch R4520834								
WG2992070-6 LCS								
Benzene			110.2		%		70-130	21-FEB-19
Toluene			112.3		%		70-130	21-FEB-19
Ethyl benzene			102.1		%		70-130	21-FEB-19
o-Xylene			102.9		%		70-130	21-FEB-19
m+p-Xylenes			112.7		%		70-130	21-FEB-19
WG2992070-7 LCS								
F1 (C6-C10)			76.2		%		70-130	20-FEB-19
WG2992070-5 MB			:					
Benzene			<0.00050		mg/L		0.0005	20-FEB-19
Toluene			<0.0010		mg/L		0.001	20-FEB-19
Ethyl benzene			<0.00050		mg/L		0.0005	20-FEB-19
o-Xylene			<0.00030		mg/L		0.0003	20-FEB-19
m+p-Xylenes			<0.00040		mg/L		0.0004	20-FEB-19
F1 (C6-C10)			<0.10		mg/L		0.1	20-FEB-19
Surrogate: 4-Bromofluorob	enzene (SS)		80.3		%		70-130	20-FEB-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
Batch R4519529								
WG2992658-2 LCS Total Organic Carbon			95.3		%		80-120	20-FEB-19
WG2992658-1 MB			55.5		70		00-120	20-FEB-19
Total Organic Carbon			<0.50		mg/L		0.5	20-FEB-19
CL-IC-N-WP	Water							
Batch R4512851								
WG2989002-10 LCS			07.0		0/		00.440	
Chloride (Cl)			97.9		%		90-110	14-FEB-19
WG2989002-9 MB Chloride (Cl)			<0.50		mg/L		0.5	14-FEB-19
EC-WP	Water							
Batch R4511402								
WG2990374-23 LCS								
Conductivity			101.4		%		90-110	15-FEB-19
WG2990374-21 MB Conductivity			<1.0		umhos/cm		1	15-FEB-19
F-IC-N-WP	Water							
Batch R4512851								
WG2989002-10 LCS Fluoride (F)			100.5		%		00.440	44 EED 40
WG2989002-9 MB			100.5		70		90-110	14-FEB-19
Fluoride (F)			<0.020		mg/L		0.02	14-FEB-19
F2-F4-FID-WP	Water							
Batch R4518372								
WG2990406-2 LCS								
F2 (C10-C16)			83.6		%		70-130	16-FEB-19
F3 (C16-C34)			87.5		%		70-130	16-FEB-19
F4 (C34-C50)			90.4		%		70-130	16-FEB-19
WG2990406-1 MB F2 (C10-C16)			<0.10		mg/L		0.1	16-FEB-19
F3 (C16-C34)			<0.25		mg/L		0.25	16-FEB-19
F4 (C34-C50)			<0.25		mg/L		0.25	16-FEB-19
Surrogate: 2-Bromoben	zotrifluoride		104.8		%		60-140	16-FEB-19
HG-T-CVAA-WP	Water							



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est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
IG-T-CVAA-WP	Water							
Batch R4517787								
WG2992453-2 LCS								
Mercury (Hg)-Total			100.0		%		80-120	20-FEB-19
WG2992453-1 MB Mercury (Hg)-Total			<0.00000	EC.	ma/l		0.000005	00 FFD 40
Mercury (11g)-10tal			<0.00000	3 C	mg/L		0.000005	20-FEB-19
IET-T-CCMS-WP	Water							
Batch R4515089								
WG2991122-2 LCS Aluminum (Al)-Total			107.6		%		80-120	19-FEB-19
Antimony (Sb)-Total			103.2		%		80-120	19-FEB-19
Arsenic (As)-Total			97.9		%		80-120	19-FEB-19
Barium (Ba)-Total			102.0		%		80-120	19-FEB-19
Beryllium (Be)-Total			105.7		%		80-120	19-FEB-19
Bismuth (Bi)-Total			106.5		%		80-120	19-FEB-19
Boron (B)-Total			104.3		%		80-120	19-FEB-19
Cadmium (Cd)-Total			102.6		%		80-120	19-FEB-19
Calcium (Ca)-Total			99.5		%		80-120	19-FEB-19
Cesium (Cs)-Total			105.3		%		80-120	19-FEB-19
Chromium (Cr)-Total			102.2		%		80-120	19-FEB-19
Cobalt (Co)-Total			94.3		%		80-120	19-FEB-19
Copper (Cu)-Total			101.4		%		80-120	19-FEB-19
Iron (Fe)-Total			94.8		%		80-120	19-FEB-19
Lead (Pb)-Total			106.7		%		80-120	19-FEB-19
Lithium (Li)-Total			99.9		%		80-120	19-FEB-19
Magnesium (Mg)-Total			119.3		%		80-120	19-FEB-19
Manganese (Mn)-Total			102.7		%		80-120	19-FEB-19
Molybdenum (Mo)-Total			100.4		%		80-120	19-FEB-19
Nickel (Ni)-Total			100.5		%		80-120	19-FEB-19
Potassium (K)-Total			103.5		%		80-120	19-FEB-19
Phosphorus (P)-Total			106.6		%		80-120	19-FEB-19
Rubidium (Rb)-Total			105.4		%		80-120	19-FEB-19
Selenium (Se)-Total			99.6		%		80-120	19-FEB-19
Silicon (Si)-Total			106.2		%		80-120	19-FEB-19
Silver (Ag)-Total			105.4		%		80-120	19-FEB-19
Sodium (Na)-Total			106.8		%		80-120	19-FEB-19
Strontium (Sr)-Total			107.8		%		80-120	19-FEB-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4515089 WG2991122-2 LCS								
Sulfur (S)-Total			101.7		%		80-120	19-FEB-19
Tellurium (Te)-Total			99.5		%		80-120	19-FEB-19
Thallium (TI)-Total			105.1		%		80-120	19-FEB-19
Thorium (Th)-Total			106.9		%		80-120	19-FEB-19
Tin (Sn)-Total			98.9		%		80-120	19-FEB-19
Titanium (Ti)-Total			96.4		%		80-120	19-FEB-19
Tungsten (W)-Total			98.6		%		80-120	19-FEB-19
Uranium (U)-Total			110.4		%		80-120	19-FEB-19
Vanadium (V)-Total			102.4		%		80-120	19-FEB-19
Zinc (Zn)-Total			105.6		%		80-120	19-FEB-19
Zirconium (Zr)-Total			99.5		%		80-120	19-FEB-19
WG2991122-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	19-FEB-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	19-FEB-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	19-FEB-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	19-FEB-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	19-FEB-19
Bismuth (Bi)-Total			<0.00005	0	mg/L		0.00005	19-FEB-19
Boron (B)-Total			<0.010		mg/L		0.01	19-FEB-19
Cadmium (Cd)-Total			<0.00000	50	mg/L		0.000005	19-FEB-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	19-FEB-19
Cesium (Cs)-Total			<0.00001	0	mg/L		0.00001	19-FEB-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	19-FEB-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	19-FEB-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-FEB-19
Iron (Fe)-Total			<0.010		mg/L		0.01	19-FEB-19
Lead (Pb)-Total			<0.00005	0	mg/L		0.00005	19-FEB-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	19-FEB-19
Magnesium (Mg)-Total			< 0.0050		mg/L		0.005	19-FEB-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	19-FEB-19
Molybdenum (Mo)-Tota	l		<0.00005	0	mg/L		0.00005	19-FEB-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	19-FEB-19
Potassium (K)-Total			<0.050		mg/L		0.05	19-FEB-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	19-FEB-19



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Test	Matrix	Reference	Result Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water						
Batch R4515089 WG2991122-1 MB Rubidium (Rb)-Total			<0.00020	mg/L		0.0002	19-FEB-19
Selenium (Se)-Total			<0.000050	mg/L		0.00005	19-FEB-19
Silicon (Si)-Total			<0.10	mg/L		0.1	19-FEB-19
Silver (Ag)-Total			<0.000010	mg/L		0.00001	19-FEB-19
Sodium (Na)-Total			<0.050	mg/L		0.05	19-FEB-19
Strontium (Sr)-Total			<0.00020	mg/L		0.0002	19-FEB-19
Sulfur (S)-Total			<0.50	mg/L		0.5	19-FEB-19
Tellurium (Te)-Total			<0.00020	mg/L		0.0002	19-FEB-19
Thallium (TI)-Total			<0.000010	mg/L		0.00001	19-FEB-19
Thorium (Th)-Total			<0.00010	mg/L		0.0001	19-FEB-19
Tin (Sn)-Total			<0.00010	mg/L		0.0001	19-FEB-19
Titanium (Ti)-Total			<0.00030	mg/L		0.0003	19-FEB-19
Tungsten (W)-Total			<0.00010	mg/L		0.0001	19-FEB-19
Uranium (U)-Total			<0.000010	mg/L		0.00001	19-FEB-19
Vanadium (V)-Total			<0.00050	mg/L		0.0005	19-FEB-19
Zinc (Zn)-Total			<0.0030	mg/L		0.003	19-FEB-19
Zirconium (Zr)-Total			<0.000060	mg/L		0.00006	19-FEB-19
NH3-COL-WP	Water						
Batch R4508897 WG2989570-10 LCS Ammonia, Total (as N)			101.1	%		85-115	14-FEB-19
WG2989570-9 MB Ammonia, Total (as N)			<0.010	mg/L		0.01	14-FEB-19
NO2-IC-N-WP	Water						
Batch R4512851 WG2989002-10 LCS Nitrite (as N)			98.1	%		90-110	14-FEB-19
WG2989002-9 MB Nitrite (as N)			<0.010	mg/L		0.01	14-FEB-19
NO3-IC-N-WP	Water						
Batch R4512851 WG2989002-10 LCS Nitrate (as N)			98.7	%		90-110	14-FEB-19
WG2989002-9 MB Nitrate (as N)			<0.020	mg/L		0.02	14-FEB-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OG-GRAV-WP	Water							
Batch R4525613 WG2993830-2 LCS Oil and Grease			94.1		%		70-130	25-FEB-19
WG2993830-1 MB Oil and Grease			<5.0		mg/L		5	25-FEB-19
P-T-COL-WP	Water							
Batch R4516026 WG2991833-10 LCS Phosphorus (P)-Total			90.5		%		80-120	20-FEB-19
WG2991833-9 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	20-FEB-19
PAH-CCME-PPM-WT	Water							
Batch R4524713								
WG2993781-2 LCS 1-Methyl Naphthalene			99.4		%		50-150	25-FEB-19
2-Methyl Naphthalene			98.5		%		50-150	25-FEB-19
Acenaphthene			99.8		%		50-150	25-FEB-19
Acenaphthylene			98.3		%		50-150	25-FEB-19
Anthracene			93.6		%		50-150	25-FEB-19
Acridine			83.8		%		50-150	25-FEB-19
Benzo(a)anthracene			86.5		%		50-150	25-FEB-19
Benzo(a)pyrene			75.8		%		50-150	25-FEB-19
Benzo(b&j)fluoranthene			80.9		%		50-150	25-FEB-19
Benzo(g,h,i)perylene			84.8		%		50-150	25-FEB-19
Benzo(k)fluoranthene			83.0		%		50-150	25-FEB-19
Chrysene			89.8		%		50-150	25-FEB-19
Dibenzo(a,h)anthracene			78.8		%		50-150	25-FEB-19
Fluoranthene			102.1		%		50-150	25-FEB-19
Fluorene			102.0		%		50-150	25-FEB-19
Indeno(1,2,3-cd)pyrene			84.8		%		50-150	25-FEB-19
Naphthalene			102.5		%		50-150	25-FEB-19
Phenanthrene			105.0		%		50-150	25-FEB-19
Pyrene			103.8		%		50-150	25-FEB-19
Quinoline			120.6		%		50-150	25-FEB-19
WG2993781-1 MB 1-Methyl Naphthalene			<0.000020)	mg/L		0.00002	25-FEB-19
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	25-FEB-19



Workorder: L2232348 Report Date: 26-FEB-19 Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R45247	13							
WG2993781-1 MB Acenaphthene			<0.000020	1	mg/L		0.00002	25-FEB-19
Acenaphthylene			<0.000020		mg/L		0.00002	25-FEB-19 25-FEB-19
Anthracene			<0.000020		mg/L		0.00002	25-FEB-19
Acridine			<0.000010		mg/L		0.00001	25-FEB-19 25-FEB-19
Benzo(a)anthracene			<0.000020		mg/L		0.00002	25-FEB-19 25-FEB-19
Benzo(a)pyrene			<0.000010		mg/L		0.00001	25-FEB-19 25-FEB-19
Benzo(b&j)fluoranthe	ne		<0.000010		mg/L		0.000003	25-FEB-19
Benzo(g,h,i)perylene	110		<0.000010		mg/L		0.00001	25-FEB-19 25-FEB-19
Benzo(k)fluoranthene	<u>,</u>		<0.000020		mg/L		0.00002	25-FEB-19 25-FEB-19
Chrysene	,		<0.000010		mg/L		0.00001	25-FEB-19 25-FEB-19
Dibenzo(a,h)anthrace	ane		<0.000020		mg/L		0.00002	
Fluoranthene	J110		<0.000020		mg/L		0.000003	25-FEB-19 25-FEB-19
Fluorene			<0.000020		mg/L		0.00002	25-FEB-19
Indeno(1,2,3-cd)pyrei	ne		<0.000020		mg/L		0.00002	25-FEB-19 25-FEB-19
Naphthalene			<0.000050		mg/L		0.00001	25-FEB-19
Phenanthrene			<0.000050		mg/L		0.00005	25-FEB-19
Pyrene			<0.000010		mg/L		0.00003	25-FEB-19
Quinoline			<0.000010		mg/L		0.00001	25-FEB-19
Surrogate: d8-Naphth	nalene		107.8	•	%		50-150	25-FEB-19
Surrogate: d10-Phena			111.6		%		50-150	25-FEB-19
Surrogate: d12-Chrys			104.4		%		50-150	25-FEB-19
Surrogate: d10-Acena			109.4		%		50-150	25-FEB-19
Surrogate: d9-Acridin			82.8		%		50-150	25-FEB-19
_			02.0		,,		30-130	25-1 LB-19
PH-WP	Water							
Batch R451140								
WG2990374-22 LCS	•		7.41		pH units		7.3-7.5	15-FEB-19
,					,		7.0 7.0	10 1 25 10
PHENOLS-4AAP-WT	Water							
Batch R45138	50							
WG2990979-6 LCS Phenols (4AAP)			90.6		%		85-115	19-FEB-19
WG2990979-5 MB Phenols (4AAP)			<0.0010		mg/L		0.001	19-FEB-19
SO4-IC-N-WP	Water							



Workorder: L2232348

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est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	Water							
Batch R4512851								
WG2989002-10 LCS Sulfate (SO4)			98.5		%		90-110	14-FEB-19
WG2989002-9 MB Sulfate (SO4)			<0.30		mg/L		0.3	14-FEB-19
OLIDS-TOTSUS-WP	Water							
Batch R4515894								
WG2989638-6 LCS Total Suspended Solids			105.2		%		85-115	15-FEB-19
WG2989638-5 MB Total Suspended Solids			<2.0		mg/L		2	15-FEB-19
C,EC-QT97-WP	Water							
Batch R4506649								
WG2988470-2 DUP		L2232348-1						
Total Coliforms		>2420	>2420		MPN/100mL	0.0	65	13-FEB-19
Escherichia Coli		>2420	>2420		MPN/100mL	0.0	65	13-FEB-19
WG2988470-1 MB Total Coliforms			<1		MPN/100mL		4	40 FED 40
							1	13-FEB-19
Escherichia Coli			<1		MPN/100mL		1	13-FEB-19

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Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank ADE

MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2232348 Report Date: 26-FEB-19 Page 10 of 10

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	11-FEB-19 14:20	15-FEB-19 12:00	0.25	94	hours	EHTR-FM
Bacteriological Tests							
Total Coliform and E.coli by	MPN QT97						
	1	11-FEB-19 14:20	13-FEB-19 17:15	30	51	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Dema	nd (BOD)						
	1	11-FEB-19 14:20	14-FEB-19 07:00	48	65	hours	EHTR
Carbonaceous BOD							
	1	11-FEB-19 14:20	14-FEB-19 07:00	48	65	hours	EHTR
Logand & Qualifier Definition							

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 L2232348 were received on 13-FEB-19 14:00.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

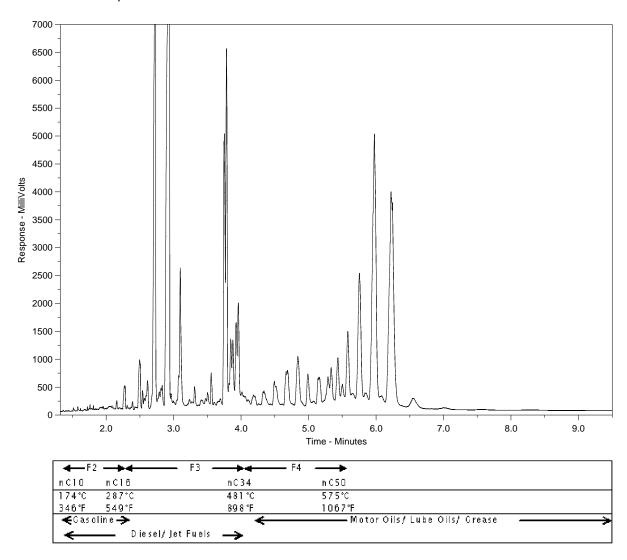
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2232348-1

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.

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SHIPMENT RECEPTION (lab use only)

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Time:

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Received by:

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Temperature:

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SHIPMENT RELEASE (client use)

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Released by:

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Verified by:

Date:
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Observations:
Yes / No ?
If Yes add SIF

SHIPMENT VERIFICATION (lab use only)

ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix H



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 08-MAR-19

Report Date: 20-MAR-19 09:27 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2241719

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.]

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



L2241719 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241719-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 07-MAR-19							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		16-MAR-19	R4571797
Toluene	<0.0010		0.0010	mg/L		16-MAR-19	R4571797
Ethyl benzene	<0.00050		0.00050	mg/L		16-MAR-19	R4571797
o-Xylene	<0.00050		0.00050	mg/L		16-MAR-19	R4571797
m+p-Xylenes	<0.00040		0.00040	mg/L		16-MAR-19	R4571797
F1 (C6-C10)	<0.10		0.10	mg/L		16-MAR-19	R4571797
Surrogate: 4-Bromofluorobenzene (SS)	94.6		70-130	%		16-MAR-19	R4571797
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.70		0.10	mg/L	11-MAR-19	12-MAR-19	R4561209
F3 (C16-C34)	11.3		0.25	mg/L	11-MAR-19	12-MAR-19	R4561209
F4 (C34-C50)	5.96		0.25	mg/L	11-MAR-19	12-MAR-19	R4561209
Surrogate: 2-Bromobenzotrifluoride	120.9		60-140	%	11-MAR-19	12-MAR-19	R4561209
CCME Total Hydrocarbons F1-BTEX	-0.10		0.40	ma/l		20-MAR-19	
F2-Naphth	<0.10 0.70		0.10 0.10	mg/L mg/L		20-MAR-19 20-MAR-19	
F3-PAH	11.3		0.10	mg/L		20-MAR-19	
Total Hydrocarbons (C6-C50)	17.9		0.23	mg/L		20-MAR-19	
Sum of Xylene Isomer Concentrations	17.0		0.00	g, _		20 1411 110	
Xylenes (Total)	<0.00064		0.00064	mg/L		20-MAR-19	
Miscellaneous Parameters							
Fluoride (F)	0.155		0.020	mg/L		08-MAR-19	R4554132
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200		10	MPN/100mL		08-MAR-19	R4553884
Escherichia Coli	>24200		10	MPN/100mL		08-MAR-19	R4553884
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000041		0.000020	mg/L	08-MAR-19	12-MAR-19	R4559187
2-Methyl Naphthalene	0.000051		0.000020	mg/L	08-MAR-19	12-MAR-19	R4559187
Acenaphthene	<0.000020		0.000020	mg/L	08-MAR-19	12-MAR-19	R4559187
Acenaphthylene Anthracene	<0.000020		0.000020	mg/L	08-MAR-19	12-MAR-19 12-MAR-19	R4559187
Acridine	<0.000010 <0.000020		0.000010	mg/L mg/L	08-MAR-19 08-MAR-19	12-MAR-19	R4559187 R4559187
Benzo(a)anthracene	0.000020		0.000020	mg/L	08-MAR-19	12-MAR-19	R4559187
Benzo(a)pyrene	0.000010		0.000010		08-MAR-19	12-MAR-19	R4559187
Benzo(b&j)fluoranthene	<0.0000333		0.0000000	mg/L	08-MAR-19	12-MAR-19	R4559187
Benzo(g,h,i)perylene	<0.000020		0.000010	mg/L	08-MAR-19	12-MAR-19	R4559187
Benzo(k)fluoranthene	0.000029	EMPC	0.000010	mg/L	08-MAR-19	12-MAR-19	R4559187
Chrysene	0.000021	EMPC	0.000020	mg/L	08-MAR-19	12-MAR-19	R4559187
Dibenzo(a,h)anthracene	<0.000050		0.0000050		08-MAR-19	12-MAR-19	R4559187
Fluoranthene	0.000022		0.000020	mg/L	08-MAR-19	12-MAR-19	R4559187
Fluorene	<0.000020		0.000020	mg/L	08-MAR-19	12-MAR-19	R4559187
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	08-MAR-19	12-MAR-19	R4559187
Naphthalene	<0.000050		0.000050	mg/L	08-MAR-19	12-MAR-19	R4559187
Phenanthrene	<0.000050		0.000050	mg/L	08-MAR-19	12-MAR-19	R4559187
Pyrene	0.000031		0.000010	mg/L	08-MAR-19	12-MAR-19	R4559187
Quinoline	0.000064	EMPC	0.000020	mg/L	08-MAR-19	12-MAR-19	R4559187
B(a)P Total Potency Equivalent	0.000062		0.000030	mg/L	08-MAR-19	12-MAR-19	R4559187
Surrogate: Acenaphthene d10	88.9		60-130	%	08-MAR-19	12-MAR-19	R4559187
Surrogate: Acridine d9	94.4		60-130	%	08-MAR-19	12-MAR-19	R4559187
Surrogate: Nephthelana de	109.8		60-130	%	08-MAR-19	12-MAR-19	R4559187
Surrogate: Naphthalene d8	103.2		50-130	%	08-MAR-19	12-MAR-19	R4559187
Surrogate: Phenanthrene d10	94.2		60-130	%	08-MAR-19	12-MAR-19	R4559187

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

L2241719 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L 2244740 4 DANIZIN INI ET MANTE EFFLUENT							
L2241719-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 07-MAR-19							
Matrix: WASTE Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	107		1.2	mg/L		13-MAR-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		13-MAR-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		13-MAR-19	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	87.5		1.0	mg/L		12-MAR-19	R4561039
Ammonia by colour							
Ammonia, Total (as N)	5.4		1.0	mg/L		12-MAR-19	R4562808
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	82		20	mg/L		09-MAR-19	R4567525
Carbonaceous BOD BOD Carbonaceous	52		20	ma/l		09-MAR-19	DAEGZEGE
Chloride in Water by IC			20	mg/L			R4567525
Chloride (CI) Conductivity	66.8		0.50	mg/L		08-MAR-19	R4554132
Conductivity	448		1.0	umhos/cm		12-MAR-19	R4561039
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	>24200		10	MPN/100mL		08-MAR-19	R4553882
Hardness Calculated Hardness (as CaCO3)	110	нтс	0.20	mg/L		14-MAR-19	
Mercury Total							
Mercury (Hg)-Total	0.0000070		0.0000050	mg/L	12-MAR-19	15-MAR-19	R4570467
Nitrate in Water by IC Nitrate (as N)	0.168		0.020	mg/L		08-MAR-19	R4554132
Nitrate+Nitrite Nitrate and Nitrite as N	0.181		0.070	mg/L		11-MAR-19	
Nitrite in Water by IC Nitrite (as N)	0.013		0.010	mg/L		08-MAR-19	R4554132
Oil & Grease - Gravimetric	0.013		0.010	IIIg/L		00-WAK-19	K4554152
Oil and Grease	14.8		5.0	mg/L		14-MAR-19	R4564773
Phenol (4AAP)							
Phenols (4AAP)	0.0099		0.0010	mg/L		11-MAR-19	R4558527
Phosphorus, (P) Total	0.44		0.000	m c:/!		40 MAD 40	D4570007
Phosphorus (P)-Total Sulfate in Water by IC	2.14		0.030	mg/L		19-MAR-19	R4570207
Sulfate (SO4)	30.8		0.30	mg/L		09-MAR-19	R4558311
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.223		0.0030	mg/L	13-MAR-19	13-MAR-19	R4563001
Antimony (Sb)-Total	0.223		0.0030	mg/L	13-MAR-19	13-MAR-19	R4563001
Arsenic (As)-Total	0.00036		0.00010	mg/L	13-MAR-19	13-MAR-19	R4563001
Barium (Ba)-Total	0.0388		0.00010	mg/L	13-MAR-19	13-MAR-19	R4563001
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	13-MAR-19	13-MAR-19	R4563001
Bismuth (Bi)-Total	0.000728		0.000050	mg/L	13-MAR-19	13-MAR-19	R4563001
Boron (B)-Total	0.085		0.010	mg/L	13-MAR-19	13-MAR-19	R4563001
Cadmium (Cd)-Total	0.0000492		0.0000050	mg/L	13-MAR-19	13-MAR-19	R4563001
Calcium (Ca)-Total	30.8		0.050	mg/L	13-MAR-19	13-MAR-19	R4563001
Cesium (Cs)-Total	0.000061		0.000010	mg/L	13-MAR-19	13-MAR-19	R4563001
Chromium (Cr)-Total	0.00086		0.00010	mg/L	13-MAR-19	13-MAR-19	R4563001
Cobalt (Co)-Total	0.00019		0.00010	mg/L	13-MAR-19	13-MAR-19	R4563001
Copper (Cu)-Total	0.212		0.00050	mg/L	13-MAR-19	13-MAR-19	R4563001

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

L2241719 CONTD.... PAGE 4 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2241719-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 07-MAR-19							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS Iron (Fe)-Total	0.229		0.010	mg/L	13-MAR-19	13-MAR-19	R4563001
Lead (Pb)-Total	0.00410		0.00050	mg/L	13-MAR-19	13-MAR-19	R4563001
Lithium (Li)-Total	0.0039		0.0010	mg/L	13-MAR-19	13-MAR-19	R4563001
Magnesium (Mg)-Total	8.01		0.0050	mg/L	13-MAR-19	13-MAR-19	R4563001
Manganese (Mn)-Total	0.0536		0.00010	mg/L	13-MAR-19	13-MAR-19	R4563001
Molybdenum (Mo)-Total	0.00172		0.000050	mg/L	13-MAR-19	13-MAR-19	R4563001
Nickel (Ni)-Total	0.00429		0.00050	mg/L	13-MAR-19	13-MAR-19	R4563001
Potassium (K)-Total	8.12		0.050	mg/L	13-MAR-19	13-MAR-19	R4563001
Phosphorus (P)-Total	1.73		0.030	mg/L	13-MAR-19	13-MAR-19	R4563001
Rubidium (Rb)-Total	0.00794		0.00020	mg/L	13-MAR-19	13-MAR-19	R4563001
Selenium (Se)-Total	0.000192		0.000050	mg/L	13-MAR-19	13-MAR-19	R4563001
Silicon (Si)-Total	0.64		0.10	mg/L	13-MAR-19	13-MAR-19	R4563001
Silver (Ag)-Total	0.000028		0.000010	mg/L	13-MAR-19	13-MAR-19	R4563001
Sodium (Na)-Total	42.7		0.050	mg/L	13-MAR-19	13-MAR-19	R4563001
Strontium (Sr)-Total	0.146		0.00020	mg/L	13-MAR-19	13-MAR-19	R4563001
Sulfur (S)-Total	12.8		0.50	mg/L	13-MAR-19	13-MAR-19	R4563001
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	13-MAR-19	13-MAR-19	R4563001
Thallium (TI)-Total Thorium (Th)-Total	<0.000010		0.000010	mg/L	13-MAR-19 13-MAR-19	13-MAR-19	R4563001
Tin (Sn)-Total	<0.00010 0.00101		0.00010 0.00010	mg/L	13-MAR-19	13-MAR-19 13-MAR-19	R4563001
Titanium (Ti)-Total	0.00101		0.00010	mg/L mg/L	13-MAR-19	13-MAR-19	R4563001 R4563001
Tungsten (W)-Total	<0.00230		0.00030	mg/L	13-MAR-19	13-MAR-19	R4563001
Uranium (U)-Total	0.00010		0.00010	mg/L	13-MAR-19	13-MAR-19	R4563001
Vanadium (V)-Total	<0.00050		0.00050	mg/L	13-MAR-19	13-MAR-19	R4563001
Zinc (Zn)-Total	0.0848		0.0030	mg/L	13-MAR-19	13-MAR-19	R4563001
Zirconium (Zr)-Total	0.000494		0.000060	mg/L	13-MAR-19	13-MAR-19	R4563001
Total Organic Carbon by Combustion Total Organic Carbon	77.6		5.0	mg/L		12-MAR-19	R4560427
Total Suspended Solids				•			
Total Suspended Solids	53.7		2.0	mg/L		13-MAR-19	R4566868
рН							
pH	6.80		0.10	pH units		12-MAR-19	R4561039

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

L2241719 CONTD....

PAGE 5 of 7 Version: FINAL

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRQC	Refer to report remarks for information regarding this QC result.

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- Water Alkalinity, Bicarbonate CALCULATION WP

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.

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.

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP Water CCME PHC F2-F4 in Water EPA 351

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

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

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

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

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

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

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

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

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

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

Ammonia by colour

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

APHA 4500 NH3 F

nitroprusside and measured colourmetrically.

Water

NH3-COL-WP

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

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

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

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

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

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

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

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

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

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

PH-WP Water pH APHA 4500H

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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

reference electrode.

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

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

red complex which is measured colorimetrically.

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 – 0.5°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-

Water

Sum of Xylene Isomer Concentrations

CALCULATED RESULT

WP

vvalei

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.



Workorder: L2241719 Report Date: 20-MAR-19 Page 1 of 10

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

C-TOC-HTC-WP

Water

Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP Water							
Batch R4561039 WG3005284-4 LCS							
Alkalinity, Total (as CaCO3)		103.8		%		85-115	12-MAR-19
WG3005284-1 MB Alkalinity, Total (as CaCO3)		<1.0		mg/L		1	12-MAR-19
BOD-CBOD-WP Water							
Batch R4567525 WG3003252-7 LCS							
BOD Carbonaceous		96.7		%		85-115	09-MAR-19
WG3003252-6 MB BOD Carbonaceous		<2.0		mg/L		2	09-MAR-19
BOD-WP Water							
Batch R4567525							
WG3003252-7 LCS Biochemical Oxygen Demand		95.6		%		85-115	09-MAR-19
WG3003252-6 MB Biochemical Oxygen Demand		<2.0		mg/L		2	09-MAR-19
BTEXS+F1-HSMS-WP Water							
Batch R4571797							
WG3003900-2 LCS		405.0		0/			
Benzene		105.6		%		70-130	16-MAR-19
Toluene		107.5		%		70-130	16-MAR-19
Ethyl benzene		105.4		%		70-130	16-MAR-19
o-Xylene		107.4		%		70-130	16-MAR-19
m+p-Xylenes		107.9		%		70-130	16-MAR-19
WG3003900-3 LCS F1 (C6-C10)		88.9		%		70-130	16-MAR-19
WG3003900-1 MB		-0.00050				0.000	40.144.7 42
Benzene		<0.00050		mg/L		0.0005	16-MAR-19
Toluene		<0.0010		mg/L		0.001	16-MAR-19
Ethyl benzene		<0.00050		mg/L		0.0005	16-MAR-19
o-Xylene		<0.00030		mg/L		0.0003	16-MAR-19
m+p-Xylenes		<0.00040		mg/L		0.0004	16-MAR-19
F1 (C6-C10)		<0.10		mg/L		0.1	16-MAR-19
Surrogate: 4-Bromofluorobenzene (SS))	84.5		%		70-130	16-MAR-19



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Report Date: 20-MAR-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
	60427 LCS							
Total Organic Car			93.5		%		80-120	12-MAR-19
WG3005275-1 I Total Organic Car	MB rbon		<0.50		mg/L		0.5	12-MAR-19
CL-IC-N-WP	Water							
Batch R455	54132							
WG3002754-10 I Chloride (CI)	LCS		99.2		%		90-110	08-MAR-19
WG3002754-9 Chloride (CI)	МВ		<0.50		mg/L		0.5	08-MAR-19
EC-WP	Water							
Batch R456	61039							
WG3005284-3 I Conductivity	LCS		99.6		%		90-110	12-MAR-19
WG3005284-1 I	МВ		<1.0		umhos/cm		1	12-MAR-19
F-IC-N-WP	Water							
Batch R455	54132							
WG3002754-10 If Fluoride (F)	LCS		100.6		%		90-110	08-MAR-19
WG3002754-9 I Fluoride (F)	МВ		<0.020		mg/L		0.02	08-MAR-19
F2-F4-FID-WP	Water							
	61209							
WG3003708-2	LCS							
F2 (C10-C16)			90.4		%		70-130	12-MAR-19
F3 (C16-C34)			92.9		%		70-130	12-MAR-19
F4 (C34-C50)			101.3		%		70-130	12-MAR-19
WG3003708-1 F2 (C10-C16)	MB		<0.10		mg/L		0.1	12-MAR-19
F3 (C16-C34)			<0.25		mg/L		0.25	12-MAR-19
F4 (C34-C50)			<0.25		mg/L		0.25	12-MAR-19
Surrogate: 2-Bron	nobenzotrifluoride		106.2		%		60-140	12-MAR-19
FC10-QT97-WP	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	Water							
Batch R4553882 WG3002911-2 DUP Fecal Coliforms		L2241719-1 >24200	>24200		MPN/100mL	0.0	65	08-MAR-19
WG3002911-1 MB Fecal Coliforms			<1		MPN/100mL		1	08-MAR-19
HG-T-CVAA-WP	Water							
Batch R4570467 WG3009008-2 LCS Mercury (Hg)-Total			98.0		%		80-120	15-MAR-19
WG3009008-1 MB Mercury (Hg)-Total			<0.00000	5 C	mg/L		0.000005	15-MAR-19
MET-T-CCMS-WP	Water							
Batch R4563001								
WG3005516-2 LCS Aluminum (Al)-Total			99.4		%		80-120	13-MAR-19
Antimony (Sb)-Total			104.5		%		80-120	13-MAR-19
Arsenic (As)-Total			98.6		%		80-120	13-MAR-19
Barium (Ba)-Total			98.8		%		80-120	13-MAR-19
Beryllium (Be)-Total			101.0		%		80-120	13-MAR-19
Bismuth (Bi)-Total			101.7		%		80-120	13-MAR-19
Boron (B)-Total			106.4		%		80-120	13-MAR-19
Cadmium (Cd)-Total			100.7		%		80-120	13-MAR-19
Calcium (Ca)-Total			101.0		%		80-120	13-MAR-19
Cesium (Cs)-Total			105.7		%		80-120	13-MAR-19
Chromium (Cr)-Total			100.2		%		80-120	13-MAR-19
Cobalt (Co)-Total			99.5		%		80-120	13-MAR-19
Copper (Cu)-Total			99.1		%		80-120	13-MAR-19
Iron (Fe)-Total			98.6		%		80-120	13-MAR-19
Lead (Pb)-Total			98.3		%		80-120	13-MAR-19
Lithium (Li)-Total			102.9		%		80-120	13-MAR-19
Magnesium (Mg)-Total			107.8		%		80-120	13-MAR-19
Manganese (Mn)-Total			100.2		%		80-120	13-MAR-19
Molybdenum (Mo)-Total			103.3		%		80-120	13-MAR-19
Nickel (Ni)-Total			97.2		%		80-120	13-MAR-19
Potassium (K)-Total			100.7		%		80-120	13-MAR-19
Phosphorus (P)-Total			103.6		%		80-120	13-MAR-19
Rubidium (Rb)-Total			99.3		%		80-120	13-MAR-19



Workorder: L2241719 Report Date: 20-MAR-19 Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4563001								
WG3005516-2 LCS Selenium (Se)-Total			102.7		%		80-120	13-MAR-19
Silicon (Si)-Total			100.8		%		80-120	13-MAR-19
Silver (Ag)-Total			100.1		%		80-120	13-MAR-19
Sodium (Na)-Total			104.5		%		80-120	13-MAR-19
Strontium (Sr)-Total			105.1		%		80-120	13-MAR-19
Sulfur (S)-Total			92.9		%		80-120	13-MAR-19
Tellurium (Te)-Total			98.4		%		80-120	13-MAR-19
Thallium (TI)-Total			99.98		%		80-120	13-MAR-19
Thorium (Th)-Total			101.4		%		80-120	13-MAR-19
Tin (Sn)-Total			102.2		%		80-120	13-MAR-19
Titanium (Ti)-Total			96.4		%		80-120	13-MAR-19
Tungsten (W)-Total			98.8		%		80-120	13-MAR-19
Uranium (U)-Total			105.1		%		80-120	13-MAR-19
Vanadium (V)-Total			100.7		%		80-120	13-MAR-19
Zinc (Zn)-Total			99.98		%		80-120	13-MAR-19
Zirconium (Zr)-Total			105.0		%		80-120	13-MAR-19
WG3005516-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	13-MAR-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Bismuth (Bi)-Total			<0.00005	0	mg/L		0.00005	13-MAR-19
Boron (B)-Total			<0.010		mg/L		0.01	13-MAR-19
Cadmium (Cd)-Total			<0.00000	5C	mg/L		0.000005	13-MAR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	13-MAR-19
Cesium (Cs)-Total			<0.00001	0	mg/L		0.00001	13-MAR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	13-MAR-19
Iron (Fe)-Total			<0.010		mg/L		0.01	13-MAR-19
Lead (Pb)-Total			<0.00005	0	mg/L		0.00005	13-MAR-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	13-MAR-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	13-MAR-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4563001 WG3005516-1 MB Manganese (Mn)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	13-MAR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	13-MAR-19
Potassium (K)-Total			<0.050		mg/L		0.05	13-MAR-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	13-MAR-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	13-MAR-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	13-MAR-19
Silicon (Si)-Total			<0.10		mg/L		0.1	13-MAR-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	13-MAR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	13-MAR-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	13-MAR-19
Sulfur (S)-Total			<0.50		mg/L		0.5	13-MAR-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	13-MAR-19
Thallium (TI)-Total			<0.000010		mg/L		0.00001	13-MAR-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	13-MAR-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	13-MAR-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	13-MAR-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	13-MAR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	13-MAR-19
Zirconium (Zr)-Total			<0.000060		mg/L		0.00006	13-MAR-19
NH3-COL-WP	Water							
Batch R4562808 WG3005745-18 LCS Ammonia, Total (as N)			101.5		%		85-115	12-MAR-19
WG3005745-17 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	12-MAR-19
NO2-IC-N-WP	Water							
Batch R4554132 WG3002754-10 LCS Nitrite (as N)			98.4		%		90-110	08-MAR-19
WG3002754-9 MB Nitrite (as N)			<0.010		mg/L		0.01	08-MAR-19
NO3-IC-N-WP	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-WP	Water							
Batch R4554132 WG3002754-10 LCS Nitrate (as N)			99.7		%		90-110	08-MAR-19
WG3002754-9 MB			00.7		70		30-110	00-MAR-19
Nitrate (as N)			<0.020		mg/L		0.02	08-MAR-19
OG-GRAV-WP	Water							
Batch R4564773								
WG3005398-2 LCS Oil and Grease			91.6		%		70-130	14-MAR-19
WG3005398-1 MB Oil and Grease			<5.0		mg/L		5	14-MAR-19
P-T-COL-WP	Water							
Batch R4570207								
WG3008731-6 LCS								
Phosphorus (P)-Total			94.4		%		80-120	19-MAR-19
WG3008731-5 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	19-MAR-19
PAH,PANH-WP	Water				S			
Batch R4559187								
WG3001877-2 LCS								
1-Methyl Naphthalene			90.6		%		60-130	11-MAR-19
2-Methyl Naphthalene			76.1		%		60-130	11-MAR-19
Acenaphthene			89.2		%		60-130	11-MAR-19
Acenaphthylene			77.5		%		60-130	11-MAR-19
Anthracene			74.4		%		60-130	11-MAR-19
Acridine			70.2		%		60-130	11-MAR-19
Benzo(a)anthracene			74.5		%		60-130	11-MAR-19
Benzo(a)pyrene			82.8		%		60-130	11-MAR-19
Benzo(b&j)fluoranthene			71.8		%		60-130	11-MAR-19
Benzo(g,h,i)perylene			73.7		%		60-130	11-MAR-19
Benzo(k)fluoranthene			100.3		%		60-130	11-MAR-19
Chrysene			91.7		%		60-130	11-MAR-19
Dibenzo(a,h)anthracene			77.7		%		60-130	11-MAR-19
Fluoranthene			80.5		%		60-130	11-MAR-19
Fluorene			75.9		%		60-130	11-MAR-19
Indeno(1,2,3-cd)pyrene			76.4		%		60-130	11-MAR-19
Naphthalene			86.4		%		50-130	11-MAR-19



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Test Matrix	Reference	Result Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP Water						
Batch R4559187						
WG3001877-2 LCS		24.4	0/			
Phenanthrene		91.4	%		60-130	11-MAR-19
Pyrene		78.7	%		60-130	11-MAR-19
Quinoline		126.7	%		60-130	11-MAR-19
WG3001877-1 MB 1-Methyl Naphthalene		<0.000020	mg/L		0.00002	11-MAR-19
2-Methyl Naphthalene		<0.000020	mg/L		0.00002	11-MAR-19
Acenaphthene		<0.000020	mg/L		0.00002	11-MAR-19
Acenaphthylene		<0.000020	mg/L		0.00002	11-MAR-19
Anthracene		<0.000020	mg/L		0.00002	11-MAR-19
Acridine		<0.000010	mg/L		0.00001	11-MAR-19
Benzo(a)anthracene		<0.000020	mg/L		0.00002	11-MAR-19
Benzo(a)pyrene		<0.000010	mg/L		0.00001	11-MAR-19
Benzo(b&j)fluoranthene		<0.0000000	mg/L		0.000003	11-MAR-19
Benzo(g,h,i)perylene		<0.000010	mg/L		0.00001	11-MAR-19
Benzo(k)fluoranthene		<0.000010	mg/L		0.00002	11-MAR-19
Chrysene		<0.000010	mg/L		0.00001	11-MAR-19
Dibenzo(a,h)anthracene		<0.000020	mg/L		0.00002	11-MAR-19
Fluoranthene		<0.000020	mg/L		0.000003	11-MAR-19
Fluorene		<0.000020	mg/L		0.00002	11-MAR-19
Indeno(1,2,3-cd)pyrene		<0.000020	mg/L		0.00002	11-MAR-19
Naphthalene		<0.000010	mg/L		0.00001	11-MAR-19
Phenanthrene		<0.000050	mg/L		0.00005	11-MAR-19
Pyrene		<0.000030	mg/L		0.00003	11-MAR-19
Quinoline		<0.000010	mg/L		0.00001	11-MAR-19
Surrogate: Acenaphthene d10		67.5	%		60-130	11-MAR-19
Surrogate: Acridine d9		68.5	%		60-130	11-MAR-19
Surrogate: Chrysene d12		81.3	%		60-130	11-MAR-19
Surrogate: Naphthalene d8		62.4	%		50-130	_
Surrogate: Phenanthrene d10		73.7	%		60-130	11-MAR-19
PH-WP Water		10.1	70		00-130	11-MAR-19
Batch R4561039						
WG3005284-2 LCS						
pH		7.37	pH units		7.3-7.5	12-MAR-19

PHENOLS-4AAP-WT

Water



Workorder: L2241719

Report Date: 20-MAR-19

Page 8 of 10

								_
Test .	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	Water							
Batch R4558527								
WG3003602-2 LCS Phenols (4AAP)			95.2		%		85-115	11-MAR-19
WG3003602-1 MB Phenols (4AAP)			<0.0010		mg/L		0.001	11-MAR-19
SO4-IC-N-WP	Water							
Batch R4558311								
WG3003210-2 LCS Sulfate (SO4)			97.8		%		90-110	09-MAR-19
WG3003210-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	09-MAR-19
SOLIDS-TOTSUS-WP	Water							
Batch R4566868								
WG3005540-22 LCS Total Suspended Solids			110.8		%		85-115	13-MAR-19
WG3005540-21 MB								
Total Suspended Solids			<2.0		mg/L		2	13-MAR-19
TC,EC10-QT97-WP	Water							
Batch R4553884								
WG3002915-2 DUP		L2241719-1						
Total Coliforms		>24200	>24200		MPN/100mL	0.0	65	08-MAR-19
Escherichia Coli		>24200	>24200		MPN/100mL	0.0	65	08-MAR-19
WG3002915-1 MB Total Coliforms			<1		MPN/100mL		1	08-MAR-19
Escherichia Coli			<1		MPN/100mL		1	08-MAR-19

Report Date: 20-MAR-19 Workorder: L2241719 Page 9 of 10

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank ADE

MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2241719 Report Date: 20-MAR-19 Page 10 of 10

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	07-MAR-19	12-MAR-19 12:00	0.25	120	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 L2241719 were received on 08-MAR-19 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.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

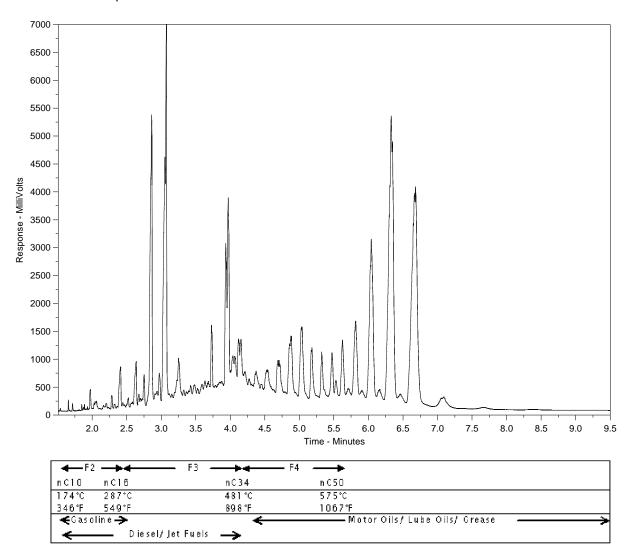
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2241719-1

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.

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Report To				<u>* </u>	L2241719-C	COFC	<u></u>	Ser	vice F	Reque	ested	(Ruši	for ro	outine	analy:	sis sub	oject to	availo	bility)
Company:	Nunavut CGS - Ran	kin Inlet (W8133	3)	[[☑] Stance	المسمور التاب معدرات	-									usiness				
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix I



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 04-APR-19

Report Date: 12-APR-19 15:48 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2253873

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.]

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



L2253873 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2253873-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		05-APR-19	R4592409
Toluene	<0.0010		0.0010	mg/L		05-APR-19	R4592409
Ethyl benzene	<0.00050		0.00050	mg/L		05-APR-19	R4592409
o-Xylene	<0.00050		0.00050	mg/L		05-APR-19	R4592409
m+p-Xylenes	<0.00040		0.00040	mg/L		05-APR-19	R4592409
F1 (C6-C10)	<0.10		0.10	mg/L		05-APR-19	R4592409
Surrogate: 4-Bromofluorobenzene (SS)	102.3		70-130	%		05-APR-19	R4592409
CCME Total Hydrocarbons	0.40		0.40			44 ADD 40	
F1-BTEX	<0.10		0.10	mg/L		11-APR-19	
F2-Naphth F3-PAH	<0.10 0.50		0.10 0.25	mg/L mg/L		11-APR-19 11-APR-19	
Total Hydrocarbons (C6-C50)	0.86		0.25	mg/L		11-APR-19 11-APR-19	
Sum of Xylene Isomer Concentrations	0.00		0.00	1119/L		1174111-19	
Xylenes (Total)	<0.00064		0.00064	mg/L		09-APR-19	
Miscellaneous Parameters							
Fluoride (F)	<0.10	DLM	0.10	mg/L		10-APR-19	R4598472
Total Suspended Solids	76.3		2.0	mg/L		10-APR-19	R4595533
Total Coliform and E.coli by MPN QT97							
Total Coliforms	>2420		1	MPN/100mL		04-APR-19	R4591130
Escherichia Coli	>2420		1	MPN/100mL		04-APR-19	R4591130
F2-F4 (O.Reg.153/04)							
F2 (C10-C16)	<100		100	ug/L	08-APR-19	09-APR-19	R4592938
F3 (C16-C34)	500		250	ug/L	08-APR-19	09-APR-19	R4592938
F4 (C34-C50)	350		250	ug/L	08-APR-19	09-APR-19	R4592938
Chrom. to baseline at nC50 Surrogate: 2-Bromobenzotrifluoride	YES		00.440	0/	08-APR-19	09-APR-19	R4592938
	92.0		60-140	%	08-APR-19	09-APR-19	R4592938
Polyaromatic Hydrocarbons (PAHs) 1-Methyl Naphthalene	<0.000020		0.000020	mg/L	08-APR-19	10-APR-19	R4595667
2-Methyl Naphthalene	0.000022		0.000020	mg/L	08-APR-19	10-APR-19	R4595667
Acenaphthene	<0.000020		0.000020	mg/L	08-APR-19	10-APR-19	R4595667
Acenaphthylene	<0.000020		0.000020	mg/L	08-APR-19	10-APR-19	R4595667
Anthracene	<0.00010		0.000010	mg/L	08-APR-19	10-APR-19	R4595667
Acridine	<0.000020		0.000020	mg/L	08-APR-19	10-APR-19	R4595667
Benzo(a)anthracene	<0.000010		0.000010	mg/L	08-APR-19	10-APR-19	R4595667
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	08-APR-19	10-APR-19	R4595667
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	08-APR-19	10-APR-19	R4595667
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	08-APR-19	10-APR-19	R4595667
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	08-APR-19	10-APR-19	R4595667
Chrysene	<0.000020		0.000020	mg/L	08-APR-19	10-APR-19	R4595667
Dibenzo(a,h)anthracene Fluoranthene	<0.000050		0.0000050	mg/L	08-APR-19 08-APR-19	10-APR-19 10-APR-19	R4595667
Fluorantnene	<0.000020 <0.000020		0.000020 0.000020	mg/L mg/L	08-APR-19 08-APR-19	10-APR-19 10-APR-19	R4595667 R4595667
Indeno(1,2,3-cd)pyrene	<0.000020		0.000020	mg/L	08-APR-19	10-APR-19 10-APR-19	R4595667
Naphthalene	0.000010		0.000010	mg/L	08-APR-19	10-AFR-19	R4595667
Phenanthrene	<0.000050		0.000050	mg/L	08-APR-19	10-APR-19	R4595667
Pyrene	<0.000010		0.000010	mg/L	08-APR-19	10-APR-19	R4595667
Quinoline	0.000028		0.000020	mg/L	08-APR-19	10-APR-19	R4595667
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	08-APR-19	10-APR-19	R4595667
Surrogate: Acenaphthene d10	93.9		60-130	%	08-APR-19	10-APR-19	R4595667
Surrogate: Acridine d9	73.4		60-130	%	08-APR-19	10-APR-19	R4595667
Surrogate: Chrysene d12	91.3		60-130	%	08-APR-19	10-APR-19	R4595667

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

L2253873 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2253873-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD							
Matrix: WASTE							
Polyaromatic Hydrocarbons (PAHs)							
Surrogate: Naphthalene d8	95.8		50-130	%	08-APR-19	10-APR-19	R4595667
Surrogate: Phenanthrene d10	60.8		60-130	%	08-APR-19	10-APR-19	R4595667
Nunavut WW Group 1							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	108		1.2	mg/L		06-APR-19	
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		06-APR-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		06-APR-19	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	88.7		1.0	mg/L		05-APR-19	R4591781
Ammonia by colour	0.55		0.15			00 455 46	Durocasa
Ammonia, Total (as N)	3.20		0.10	mg/L		08-APR-19	R4592829
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	51		20	mg/L		05-APR-19	R4598267
Carbonaceous BOD	01			9, -		557111110	
BOD Carbonaceous	50		20	mg/L		05-APR-19	R4598267
Chloride in Water by IC							
Chloride (CI)	73.5		0.50	mg/L		05-APR-19	R4591802
Conductivity Conductivity	494		1.0	umhos/cm		05-APR-19	R4591781
Fecal coliforms, 1:10 dilution by QT97	434		1.0	ummos/CIII		00-MFK-18	101150411
Fecal Coliforms	>24200		10	MPN/100mL		04-APR-19	R4591122
Hardness Calculated							
Hardness (as CaCO3)	113	HTC	0.20	mg/L		12-APR-19	
Mercury Total	0.0000000		0.0000055		00 ADD 40	40 ADD 40	D4500544
Mercury (Hg)-Total	0.0000060		0.0000050	mg/L	08-APR-19	10-APR-19	R4593514
Nitrate in Water by IC Nitrate (as N)	0.129		0.020	mg/L		05-APR-19	R4591802
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.141		0.070	mg/L		09-APR-19	
Nitrite in Water by IC							
Nitrite (as N)	0.012		0.010	mg/L		05-APR-19	R4591802
Oil & Grease - Gravimetric Oil and Grease	11.1		5.0	mg/L		12-APR-19	R4599046
Phenol (4AAP)	11.1		0.0	g/ L		1271111119	11-0000-0
Phenols (4AAP)	0.0051		0.0010	mg/L		08-APR-19	R4592955
Phosphorus, Total							
Phosphorus (P)-Total	1.31		0.0060	mg/L		11-APR-19	R4596067
Sulfate in Water by IC Sulfate (SO4)	40.5		0.30	mg/L		05-APR-19	R4591802
Total Metals in Water by CRC ICPMS	40.5		0.30	illy/L		00-MFK-18	174091002
Aluminum (Al)-Total	0.0833		0.0030	mg/L	11-APR-19	11-APR-19	R4597668
Arsenic (As)-Total	0.00112		0.00010	mg/L	11-APR-19	11-APR-19	R4597668
Cadmium (Cd)-Total	0.0000576		0.0000050	mg/L	11-APR-19	11-APR-19	R4597668
Calcium (Ca)-Total	31.9		0.050	mg/L	11-APR-19	11-APR-19	R4597668
Chromium (Cr)-Total	0.00067		0.00010	mg/L	11-APR-19	11-APR-19	R4597668
Cobalt (Co)-Total	0.00013		0.00010	mg/L	11-APR-19	11-APR-19	R4597668
Copper (Cu)-Total Iron (Fe)-Total	0.168 0.258		0.00050 0.010	mg/L mg/L	11-APR-19 11-APR-19	11-APR-19 11-APR-19	R4597668 R4597668
Lead (Pb)-Total	0.258		0.010	mg/L	11-APR-19 11-APR-19	11-APR-19 11-APR-19	R4597668
Magnesium (Mg)-Total	8.07		0.0050	mg/L	11-APR-19	11-APR-19	R4597668
	5.07		0.0000				

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2253873-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS							
Manganese (Mn)-Total	0.0601		0.00010	mg/L	11-APR-19	11-APR-19	R4597668
Nickel (Ni)-Total	0.00247		0.00050	mg/L	11-APR-19	11-APR-19	R4597668
Potassium (K)-Total	7.88		0.050	mg/L	11-APR-19	11-APR-19	R4597668
Sodium (Na)-Total	40.1		0.050	mg/L	11-APR-19	11-APR-19	R4597668
Zinc (Zn)-Total	0.0593		0.0030	mg/L	11-APR-19	11-APR-19	R4597668
Total Organic Carbon by Combustion Total Organic Carbon	47.2		0.50	mg/L		05-APR-19	R4591644
pH			0.00	9/ =		00710	
pH	7.01		0.10	pH units		05-APR-19	R4591781

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

L2253873 CONTD....

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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:

Tool mounda monorones	,			
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- Water Alkalinity, Bicarbonate CALCULATION WP

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.

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.

L2253873 CONTD....

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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-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.

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

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

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Grease is determined from the weight of the residue in the vial.

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

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

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

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

PH-WP Water pH APHA 4500H

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

L2253873 CONTD....

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Reference Information

Test Method References:

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

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

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

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

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

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

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

TC,EC-QT97-WP Water Total Coliform and E.coli by MPN QT97 APHA 9223B QT97

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 35.0 – 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

XYLENES-SUM-CALC-

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.



Workorder: L2253873 Report Date: 12-APR-19 Page 1 of 9

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R4591781 WG3022578-14 LCS Alkalinity, Total (as Car			105.8		%		85-115	05-APR-19
WG3022578-11 MB Alkalinity, Total (as Ca	CO3)		<1.0		mg/L		1	05-APR-19
BOD-CBOD-WP	Water							
Batch R4598267 WG3021635-7 LCS BOD Carbonaceous	7		100.3		%		85-115	05-APR-19
WG3021635-6 MB BOD Carbonaceous			<2.0		mg/L		2	05-APR-19
BOD-WP	Water							
Batch R4598267 WG3021635-7 LCS Biochemical Oxygen D			104.0		%		85-115	05-APR-19
WG3021635-6 MB Biochemical Oxygen D			<2.0		mg/L		2	05-APR-19
BTEXS+F1-HSMS-WP	Water							
Batch R4592409	9							
WG3022072-2 LCS Benzene			93.9		%		70-130	05 ADD 10
Toluene			102.2		%		70-130 70-130	05-APR-19 05-APR-19
Ethyl benzene			103.4		%		70-130	05-APR-19 05-APR-19
o-Xylene			111.8		%		70-130	05-AFR-19
m+p-Xylenes			94.4		%		70-130	05-APR-19
WG3022072-3 LCS			0		,,		70-130	03-Ai K-19
F1 (C6-C10)			90.3		%		70-130	05-APR-19
WG3022072-1 MB Benzene			<0.00050)	mg/L		0.0005	05-APR-19
Toluene			<0.0010		mg/L		0.001	05-APR-19
Ethyl benzene			<0.00050)	mg/L		0.0005	05-APR-19
o-Xylene			<0.00030)	mg/L		0.0003	05-APR-19
m+p-Xylenes			<0.00040)	mg/L		0.0004	05-APR-19
F1 (C6-C10)			<0.10		mg/L		0.1	05-APR-19
Surrogate: 4-Bromofluo	orobenzene (SS))	107.8		%		70-130	05-APR-19
C-TOC-HTC-WP	Water							



Workorder: L2253873

Report Date: 12-APR-19

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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP		Water							
	591644								
WG3022438-2 Total Organic C	LCS arbon			98.7		%		80-120	05-APR-19
WG3022438-1	MB								
Total Organic C	arbon			<0.50		mg/L		0.5	05-APR-19
CL-IC-N-WP		Water							
Batch R4	591802								
WG3021924-3 Chloride (CI)	DUP		L2253873-1 73.5	73.9		mg/L	0.6	20	05-APR-19
WG3021924-2	LCS			101.0		%		00.440	05 ABB 40
Chloride (CI) WG3021924-1	МВ			101.0		76		90-110	05-APR-19
Chloride (CI)	IVID			<0.50		mg/L		0.5	05-APR-19
WG3021924-4 Chloride (CI)	MS		L2253873-1	107.6		%		75-125	05-APR-19
EC-WP		Water							
Batch R4	591781								
WG3022578-13	LCS								
Conductivity				97.7		%		90-110	05-APR-19
WG3022578-11 Conductivity	МВ			<1.0		umhos/cm		1	05-APR-19
F-IC-N-WP		Water							
Batch R4	598472								
WG3024887-2 Fluoride (F)	LCS			102.4		%		00.440	40 APD 40
	МВ			102.4		70		90-110	10-APR-19
WG3024887-1 Fluoride (F)	MB			<0.020		mg/L		0.02	10-APR-19
F2-F4-WT		Water							
Batch R4	592938								
WG3023264-2	LCS								
F2 (C10-C16)				98.8		%		65-135	09-APR-19
F3 (C16-C34)				99.0		%		65-135	09-APR-19
F4 (C34-C50)				105.2		%		65-135	09-APR-19
WG3023264-1 F2 (C10-C16)	MB			<100		ug/L		100	09-APR-19
F3 (C16-C34)				<250		ug/L		250	09-APR-19
F4 (C34-C50)				<250		ug/L		250	09-APR-19
Surrogate: 2-Bro	omobenz	zotrifluoride		88.8		%		60-140	09-APR-19
-								-	



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	Water							
Batch R4591122								
WG3021366-2 DUP Fecal Coliforms		L2253873-1 >24200	>24200		MPN/100mL	0.0	65	04-APR-19
WG3021366-1 MB Fecal Coliforms			<1		MPN/100mL		1	04-APR-19
HG-T-CVAA-WP	Water							
Batch R4593514								
WG3024665-2 LCS Mercury (Hg)-Total			109.0		%		80-120	10-APR-19
WG3024665-1 MB Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	10-APR-19
MET-T-CCMS-WP	Water							
Batch R4597668								
WG3025505-2 LCS								
Aluminum (Al)-Total			98.3		%		80-120	11-APR-19
Arsenic (As)-Total			96.2		%		80-120	11-APR-19
Cadmium (Cd)-Total			96.7		%		80-120	11-APR-19
Calcium (Ca)-Total			96.2		%		80-120	11-APR-19
Chromium (Cr)-Total			96.3		%		80-120	11-APR-19
Cobalt (Co)-Total			95.8		%		80-120	11-APR-19
Copper (Cu)-Total			96.3		%		80-120	11-APR-19
Iron (Fe)-Total			90.6		%		80-120	11-APR-19
Lead (Pb)-Total			96.9		%		80-120	11-APR-19
Magnesium (Mg)-Total			105.2		%		80-120	11-APR-19
Manganese (Mn)-Total			97.5		%		80-120	11-APR-19
Nickel (Ni)-Total			95.3		%		80-120	11-APR-19
Potassium (K)-Total			93.7		%		80-120	11-APR-19
Sodium (Na)-Total			97.1		%		80-120	11-APR-19
Zinc (Zn)-Total			94.3		%		80-120	11-APR-19
WG3025505-1 MB Aluminum (Al)-Total			<0.0030		mg/L		0.003	11-APR-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	11-APR-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	11-APR-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	11-APR-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	11-APR-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	11-APR-19
Copper (Cu)-Total			<0.00010		mg/L		0.0001	11-APR-19



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Workorder: L2253873 Report Date: 12-APR-19

Test	Matrix	Reference	Result Q	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							_
Batch R4597668 WG3025505-1 MB								
Iron (Fe)-Total			<0.010		mg/L		0.01	11-APR-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	11-APR-19
Magnesium (Mg)-Total			< 0.0050		mg/L		0.005	11-APR-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	11-APR-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	11-APR-19
Potassium (K)-Total			<0.050		mg/L		0.05	11-APR-19
Sodium (Na)-Total			<0.050		mg/L		0.05	11-APR-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	11-APR-19
NH3-COL-WP	Water							
Batch R4592829 WG3023655-6 LCS Ammonia, Total (as N)			103.8		%		85-115	08-APR-19
WG3023655-5 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	08-APR-19
NO2-IC-N-WP	Water							
Batch R4591802								
WG3021924-3 DUP Nitrite (as N)		L2253873-1 0.012	0.012		mg/L	1.5	20	05-APR-19
WG3021924-2 LCS Nitrite (as N)			98.5		%		90-110	05-APR-19
WG3021924-1 MB Nitrite (as N)			<0.010		mg/L		0.01	05-APR-19
WG3021924-4 MS Nitrite (as N)		L2253873-1	100.9		%		75-125	05-APR-19
NO3-IC-N-WP	Water							
Batch R4591802 WG3021924-3 DUP Nitrate (as N)		L2253873-1 0.129	0.128		mg/L	1.0	20	05-APR-19
WG3021924-2 LCS Nitrate (as N)			101.3		%		90-110	05-APR-19
WG3021924-1 MB Nitrate (as N)			<0.020		mg/L		0.02	05-APR-19
WG3021924-4 MS Nitrate (as N)		L2253873-1	108.5		%		75-125	05-APR-19
OG-GRAV-WP	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OG-GRAV-WP	Water							_
Batch R4599046 WG3025093-2 LCS Oil and Grease			100.1		%		70-130	12-APR-19
WG3025093-1 MB Oil and Grease			<5.0		mg/L		5	12-APR-19
P-T-COL-WP	Water							
Batch R4596067 WG3025385-2 LCS Phosphorus (P)-Total			97.6		%		80-120	11-APR-19
WG3025385-1 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	11-APR-19
PAH,PANH-WP	Water							
Batch R4595667								
WG3023337-2 LCS 1-Methyl Naphthalene			87.1		%		60-130	10-APR-19
2-Methyl Naphthalene			79.9		%		60-130	10-APR-19
Acenaphthene			87.5		%		60-130	10-APR-19
Acenaphthylene			77.5		%		60-130	10-APR-19
Anthracene			70.3		%		60-130	10-APR-19
Acridine			74.9		%		60-130	10-APR-19
Benzo(a)anthracene			84.0		%		60-130	10-APR-19
Benzo(a)pyrene			74.8		%		60-130	10-APR-19
Benzo(b&j)fluoranthene			73.5		%		60-130	10-APR-19
Benzo(g,h,i)perylene			79.8		%		60-130	10-APR-19
Benzo(k)fluoranthene			95.7		%		60-130	10-APR-19
Chrysene			90.9		%		60-130	10-APR-19
Dibenzo(a,h)anthracene	:		74.2		%		60-130	10-APR-19
Fluoranthene			86.6		%		60-130	10-APR-19
Fluorene			74.0		%		60-130	10-APR-19
Indeno(1,2,3-cd)pyrene			73.9		%		60-130	10-APR-19
Naphthalene			84.1		%		50-130	10-APR-19
Phenanthrene			72.2		%		60-130	10-APR-19
Pyrene			86.0		%		60-130	10-APR-19
Quinoline			112.0		%		60-130	10-APR-19
WG3023337-1 MB 1-Methyl Naphthalene			<0.00002	0	mg/L		0.00002	10-APR-19
2-Methyl Naphthalene			<0.00002		mg/L		0.00002	10-APR-19
			10.00002	-	9, =		0.00002	10-74 10-10



Workorder: L2253873 Report Date: 12-APR-19 Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4595667								
WG3023337-1 MB				_				
Acenaphthene			<0.00002		mg/L		0.00002	10-APR-19
Acenaphthylene			<0.00002		mg/L		0.00002	10-APR-19
Anthracene			<0.00001		mg/L		0.00001	10-APR-19
Acridine			<0.00002		mg/L		0.00002	10-APR-19
Benzo(a)anthracene			<0.00001		mg/L		0.00001	10-APR-19
Benzo(a)pyrene			<0.00000	5C	mg/L		0.000005	10-APR-19
Benzo(b&j)fluoranthene			<0.00001)	mg/L		0.00001	10-APR-19
Benzo(g,h,i)perylene			<0.00002)	mg/L		0.00002	10-APR-19
Benzo(k)fluoranthene			<0.00001)	mg/L		0.00001	10-APR-19
Chrysene			<0.00002)	mg/L		0.00002	10-APR-19
Dibenzo(a,h)anthracene			<0.00000	5C	mg/L		0.000005	10-APR-19
Fluoranthene			<0.00002)	mg/L		0.00002	10-APR-19
Fluorene			<0.00002)	mg/L		0.00002	10-APR-19
Indeno(1,2,3-cd)pyrene			<0.00001)	mg/L		0.00001	10-APR-19
Naphthalene			<0.00005)	mg/L		0.00005	10-APR-19
Phenanthrene			<0.00005)	mg/L		0.00005	10-APR-19
Pyrene			<0.00001)	mg/L		0.00001	10-APR-19
Quinoline			<0.00002)	mg/L		0.00002	10-APR-19
Surrogate: Acenaphthene	e d10		85.1		%		60-130	10-APR-19
Surrogate: Acridine d9			69.7		%		60-130	10-APR-19
Surrogate: Chrysene d12	2		86.0		%		60-130	10-APR-19
Surrogate: Naphthalene of	d8		81.3		%		50-130	10-APR-19
Surrogate: Phenanthrene	e d10		61.3		%		60-130	10-APR-19
PH-WP	Water							
Batch R4591781								
WG3022578-12 LCS								
рН			7.33		pH units		7.3-7.5	05-APR-19
PHENOLS-4AAP-WT	Water							
Batch R4592955								
WG3023165-18 LCS Phenols (4AAP)			96.0		%		85-115	08-APR-19
WG3023165-17 MB Phenols (4AAP)			<0.0010		mg/L		0.001	08-APR-19
SO4-IC-N-WP	Water							



Workorder: L2253873 Report Date: 12-APR-19 Page 7 of 9

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP		Water							
Batch R459	91802								
WG3021924-3 Sulfate (SO4)	DUP		L2253873-1 40.5	40.9		mg/L	1.0	20	05-APR-19
WG3021924-2 Sulfate (SO4)	LCS			101.3		%		90-110	05-APR-19
WG3021924-1 Sulfate (SO4)	МВ			<0.30		mg/L		0.3	05-APR-19
WG3021924-4 Sulfate (SO4)	MS		L2253873-1	106.6		%		75-125	05-APR-19
SOLIDS-TOTSUS-WI	P	Water							
Batch R459	95533								
WG3024734-6 Total Suspended	LCS Solids			98.0		%		85-115	10-APR-19
WG3024734-5 Total Suspended	MB Solids			<2.0		mg/L		2	10-APR-19
TC,EC-QT97-WP		Water							
Batch R459	91130								
WG3021367-2 Total Coliforms	DUP		L2253873-1 >2420	>2420		MPN/100mL	0.0	65	04-APR-19
Escherichia Coli			>2420	>2420		MPN/100mL	0.0	65	04-APR-19
WG3021367-1 Total Coliforms	МВ			<1		MPN/100mL		1	04-APR-19
Escherichia Coli				<1		MPN/100mL		1	04-APR-19

Report Date: 12-APR-19 Workorder: L2253873 Page 8 of 9

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank ADE

MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2253873 Report Date: 12-APR-19 Page 9 of 9

Hold Time Exceedances:

Sample						
ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
1	Not provided	05-APR-19 12:00	0.25	20	hours	EHTR-FM
	•	ID Sampling Date	ID Sampling Date Date Processed	ID Sampling Date Date Processed Rec. HT	ID Sampling Date Date Processed Rec. HT Actual HT	ID Sampling Date Date Processed Rec. HT Actual HT Units

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 L2253873 were received on 04-APR-19 16:15.

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

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

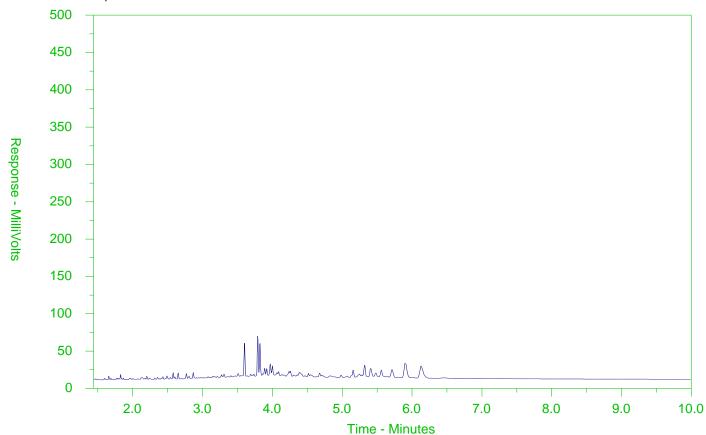
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2253873-1

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	
Gasolin	ie →	← Mo	tor 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.

Rankin Inlet WWTP- Monthly Effluent

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Ránkin Inlét, NU, XÔC ÓGÔ

Ránkiň Inlet WWTP - Éffluént

So all ICP-MS metals report.

SIMON DOIRÓN

867-645-8155

Same as Report ?

Box 490

Hardcopy of Invoice with Řéport?

Lab Work Order #

(lab use only)

Company:

Contact:

Address:

Phòne:

Invoice To

Company:

Contáct:

Addréss: Phoné:

Sample

Nunávut ČGS - Rankin Irilét (W8133)

Cell#

Fax:

**NOTE TO LOGIN - remove metals Reporting Code WP-NUNAVUT-WW-GRP1

Sample Identification

(This description will appear on the report)

☐ No

_ No

y Yes

Yes

L2253873-COFC

sdoiron@gov.nu.ca

mlusty@gov.nu.ca

Client / Project Information

Craig Riddell

Date Sampled

Èmail 1:

Email 2:

Émáil 3:

Job#:

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Quote #:

Contact:

ALS

PO / AFE:

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Special instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/DC CSR - Com

Nunavut-WW-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine, 250 ml Metals , 40 ml Mercury Vial, 250 ml Amber Nutrient , 25 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

By the use of this form the user acknowledges and agrees with the Terms and Conditions

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / SHIDMENT DELEASE (aliant una)

OTH MEAT TELEPIOE (CHERT USE)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)				
	Réléased by:	Date (dd-nynni-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
	RILL RASS	\ \k2\!	A .	MH	4-4-10	4:15	11 00				Yes / No ?
	D111 KUJ	HOUND !	1 OOPM	11111	1	(- ()	<u> </u>				If Yes add SIF

ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix J



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 15-MAY-19

Report Date: 28-MAY-19 07:37 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2273673

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.]

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



L2273673 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2273673-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 13-MAY-19							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		27-MAY-19	R4644890
Toluene	<0.0010		0.0010	mg/L		27-MAY-19	R4644890
Ethyl benzene	<0.00050		0.00050	mg/L		27-MAY-19	R4644890
o-Xylene	<0.00050		0.00050	mg/L		27-MAY-19	R4644890
m+p-Xylenes	0.00044		0.00040	mg/L		27-MAY-19	R4644890
F1 (C6-C10)	<0.10		0.10	mg/L		27-MAY-19	R4644890
Surrogate: 4-Bromofluorobenzene (SS)	106.0		70-130	%		27-MAY-19	R4644890
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.48		0.10	mg/L	17-MAY-19	17-MAY-19	R4637345
F3 (C16-C34)	7.88		0.25	mg/L	17-MAY-19	17-MAY-19	R4637345
F4 (C34-C50)	3.34		0.25	mg/L	17-MAY-19	17-MAY-19	R4637345
Surrogate: 2-Bromobenzotrifluoride	88.5		60-140	%	17-MAY-19	17-MAY-19	R4637345
CCME Total Hydrocarbons F1-BTEX	-0.10		0.40	ma/l		27-MAY-19	
F2-Naphth	<0.10 0.48		0.10 0.10	mg/L mg/L		27-MAY-19 27-MAY-19	
F3-PAH	7.88		0.10	mg/L		27-MAY-19	
Total Hydrocarbons (C6-C50)	11.7		0.23	mg/L		27-MAY-19	
Sum of Xylene Isomer Concentrations			0.00	g, _		27 111111 10	
Xylenes (Total)	<0.00064		0.00064	mg/L		27-MAY-19	
Miscellaneous Parameters							
Fluoride (F)	0.132		0.020	mg/L		16-MAY-19	R4637947
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200		10	MPN/100mL		15-MAY-19	R4636262
Escherichia Coli	>24200	PEHR	10	MPN/100mL		15-MAY-19	R4636262
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000023		0.000020	mg/L	17-MAY-19	19-MAY-19	R4641977
2-Methyl Naphthalene	0.000041		0.000020	mg/L	17-MAY-19	19-MAY-19	R4641977
Acenaphthene	<0.000020		0.000020	mg/L	17-MAY-19	19-MAY-19	R4641977
Acenaphthylene	<0.000020		0.000020	mg/L	17-MAY-19	19-MAY-19	R4641977
Anthracene Acridine	<0.000010		0.000010	mg/L	17-MAY-19 17-MAY-19	19-MAY-19 19-MAY-19	R4641977
Benzo(a)anthracene	<0.000020 <0.000010		0.000020	mg/L mg/L	17-MAY-19	19-MAY-19	R4641977 R4641977
Benzo(a)pyrene	<0.000010		0.000010		17-MAY-19	19-MAY-19	R4641977
Benzo(b&j)fluoranthene	<0.000010		0.0000030	mg/L	17-MAY-19	19-MAY-19	R4641977
Benzo(g,h,i)perylene	<0.000010		0.000010	mg/L	17-MAY-19	19-MAY-19	R4641977
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	17-MAY-19	19-MAY-19	R4641977
Chrysene	<0.00020		0.000020	mg/L	17-MAY-19	19-MAY-19	R4641977
Dibenzo(a,h)anthracene	0.0000051		0.0000050		17-MAY-19	19-MAY-19	R4641977
Fluoranthene	<0.000020		0.000020	mg/L	17-MAY-19	19-MAY-19	R4641977
Fluorene	<0.000020		0.000020	mg/L	17-MAY-19	19-MAY-19	R4641977
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	17-MAY-19	19-MAY-19	R4641977
Naphthalene	0.000057		0.000050	mg/L	17-MAY-19	19-MAY-19	R4641977
Phenanthrene	<0.000050		0.000050	mg/L	17-MAY-19	19-MAY-19	R4641977
Pyrene	0.000023		0.000010	mg/L	17-MAY-19	19-MAY-19	R4641977
Quinoline	0.000021		0.000020	mg/L	17-MAY-19	19-MAY-19	R4641977
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	17-MAY-19	19-MAY-19	R4641977
Surrogate: Acenaphthene d10	105.3		60-130	%	17-MAY-19	19-MAY-19	R4641977
Surrogate: Acridine d9	113.9		60-130	%	17-MAY-19	19-MAY-19	R4641977
Surrogate: Nephthelene de	113.9		60-130	%	17-MAY-19	19-MAY-19	R4641977
Surrogate: Phononthropo d10	108.4		50-130	%	17-MAY-19	19-MAY-19	R4641977
Surrogate: Phenanthrene d10	116.0		60-130	%	17-MAY-19	19-MAY-19	R4641977

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

L2273673 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2273673-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 13-MAY-19							
Matrix: WATER							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	149		1.2	mg/L		18-MAY-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		18-MAY-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	ma/l		18-MAY-19	
Alkalinity, Total (as CaCO3)	<0.34		0.34	mg/L		10-IVIA 1-19	
Alkalinity, Total (as CaCO3)	122		1.0	mg/L		17-MAY-19	R4637826
Ammonia by colour Ammonia, Total (as N)	7.03		0.20	mg/L		21-MAY-19	R4640491
Biochemical Oxygen Demand (BOD)			5.20				
Biochemical Oxygen Demand	106		20	mg/L		16-MAY-19	R4640272
Carbonaceous BOD							
BOD Carbonaceous	90		20	mg/L		16-MAY-19	R4640272
Chloride in Water by IC Chloride (CI)	77.2		0.50	mg/L		16-MAY-19	R4637947
Conductivity	11.2		0.50	illy/L		10-1VIA (-18	11403/34/
Conductivity	557		1.0	umhos/cm		17-MAY-19	R4637826
Fecal coliforms, 1:10 dilution by QT97		DELID					D
Fecal Coliforms	>24200	PEHR	10	MPN/100mL		15-MAY-19	R4636265
Hardness Calculated Hardness (as CaCO3)	127	HTC	0.20	mg/L		21-MAY-19	
Mercury Total	121		0.20	1119/1		21 100 (1 10	
Mercury (Hg)-Total	0.000014	DLM	0.000010	mg/L	21-MAY-19	23-MAY-19	R4642548
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		16-MAY-19	R4637947
Nitrate+Nitrite	0.070		0.070			22-MAY-19	
Nitrate and Nitrite as N Nitrite in Water by IC	<0.070		0.070	mg/L		22-IVIA 1-19	
Nitrite (as N)	<0.010		0.010	mg/L		16-MAY-19	R4637947
Oil & Grease - Gravimetric							
Oil and Grease	19.3		5.0	mg/L		23-MAY-19	R4641370
Phenol (4AAP)							
Phenols (4AAP)	0.0099		0.0010	mg/L		21-MAY-19	R4639681
Phosphorus, Total Phosphorus (P)-Total	2.40		0.030	mg/L		17-MAY-19	R4637142
Sulfate in Water by IC	2.40		0.030	iiig/L		17-W/A1-13	114007 142
Sulfate (SO4)	33.6		0.30	mg/L		16-MAY-19	R4637947
Total Metals in Water by CRC ICPMS							
Aluminum (AI)-Total	0.171		0.0030	mg/L	17-MAY-19	17-MAY-19	R4638587
Antimony (Sb)-Total	0.00016		0.00010	mg/L	17-MAY-19	17-MAY-19	R4638587
Arsenic (As)-Total	0.00109		0.00010	mg/L	17-MAY-19	17-MAY-19	R4638587
Barium (Ba)-Total	0.0448		0.00010	mg/L	17-MAY-19	17-MAY-19	R4638587
Beryllium (Be)-Total Bismuth (Bi)-Total	<0.00010 0.00146		0.00010	mg/L	17-MAY-19 17-MAY-19	17-MAY-19 17-MAY-19	R4638587
Boron (B)-Total	0.00146		0.000050 0.010	mg/L mg/L	17-MAY-19 17-MAY-19	17-MAY-19	R4638587 R4638587
Cadmium (Cd)-Total	0.000595		0.000050	mg/L	17-MAY-19	17-MAY-19	R4638587
Calcium (Ca)-Total	35.8		0.050	mg/L	17-MAY-19	17-MAY-19	R4638587
Cesium (Cs)-Total	0.000074		0.000010	mg/L	17-MAY-19	17-MAY-19	R4638587
Chromium (Cr)-Total	0.00064		0.00010	mg/L	17-MAY-19	17-MAY-19	R4638587
Cobalt (Co)-Total	0.00020		0.00010	mg/L	17-MAY-19	17-MAY-19	R4638587
Copper (Cu)-Total	0.257		0.00050	mg/L	17-MAY-19	17-MAY-19	R4638587

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2273673-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 13-MAY-19							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Iron (Fe)-Total	0.632		0.010	mg/L	17-MAY-19	17-MAY-19	R4638587
Lead (Pb)-Total	0.00302		0.000050	mg/L	17-MAY-19	17-MAY-19	R4638587
Lithium (Li)-Total	0.0040		0.0010	mg/L	17-MAY-19	17-MAY-19	R4638587
Magnesium (Mg)-Total	9.22		0.0050	mg/L	17-MAY-19	17-MAY-19	R4638587
Manganese (Mn)-Total	0.0620		0.00010	mg/L	17-MAY-19	17-MAY-19	R4638587
Molybdenum (Mo)-Total	0.000743		0.000050	mg/L	17-MAY-19	17-MAY-19	R4638587
Nickel (Ni)-Total	0.00308		0.00050	mg/L	17-MAY-19	17-MAY-19	R4638587
Potassium (K)-Total	8.59		0.050	mg/L	17-MAY-19	17-MAY-19	R4638587
Phosphorus (P)-Total	2.86		0.030	mg/L	17-MAY-19	17-MAY-19	R4638587
Rubidium (Rb)-Total	0.00876		0.00020	mg/L	17-MAY-19	17-MAY-19	R4638587
Selenium (Se)-Total	0.000272		0.000050	mg/L	17-MAY-19	17-MAY-19	R4638587
Silicon (Si)-Total Silver (Ag)-Total	0.50		0.10	mg/L	17-MAY-19	17-MAY-19	R4638587
Sodium (Na)-Total	0.000029 44.5		0.000010 0.050	mg/L mg/L	17-MAY-19 17-MAY-19	17-MAY-19 17-MAY-19	R4638587 R4638587
Strontium (Sr)-Total	0.164		0.000	mg/L	17-MAY-19	17-MAY-19	R4638587 R4638587
Sulfur (S)-Total	13.8		0.00020	mg/L	17-MAY-19	17-MAY-19	R4638587
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	17-MAY-19	17-MAY-19	R4638587
Thallium (TI)-Total	<0.00010		0.000010	mg/L	17-MAY-19	17-MAY-19	R4638587
Thorium (Th)-Total	<0.00010		0.00010	mg/L	17-MAY-19	17-MAY-19	R4638587
Tin (Sn)-Total	0.00074		0.00010	mg/L	17-MAY-19	17-MAY-19	R4638587
Titanium (Ti)-Total	0.00327		0.00030	mg/L	17-MAY-19	17-MAY-19	R4638587
Tungsten (W)-Total	<0.00010		0.00010	mg/L	17-MAY-19	17-MAY-19	R4638587
Uranium (U)-Total	0.000101		0.000010	mg/L	17-MAY-19	17-MAY-19	R4638587
Vanadium (V)-Total	<0.00050		0.00050	mg/L	17-MAY-19	17-MAY-19	R4638587
Zinc (Zn)-Total	0.0865		0.0030	mg/L	17-MAY-19	17-MAY-19	R4638587
Zirconium (Zr)-Total	0.000591		0.000060	mg/L	17-MAY-19	17-MAY-19	R4638587
Total Organic Carbon by Combustion Total Organic Carbon	73.9		2.5	mg/L		22-MAY-19	R4641367
Total Suspended Solids						47.14.57.7	
Total Suspended Solids	85.3		2.0	mg/L		17-MAY-19	R4639613
рН рН	6.86		0.10	pH units		17-MAY-19	R4637826
——————————————————————————————————————	0.00		0.10	priunits		17-1012-19	K4037626

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

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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).
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.
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- Water Alkalinity, Bicarbonate CALCULATION WP

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.

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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°C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

PH-WP Water pH APHA 4500H

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

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

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

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

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

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

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

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

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

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

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.



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Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

est Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
LK-TITR-WP Water							
Batch R4637826							
WG3053365-4 LCS				0/			
Alkalinity, Total (as CaCO3)		103.1		%		85-115	17-MAY-19
WG3053365-1 MB Alkalinity, Total (as CaCO3)		<1.0		mg/L		1	17-MAY-19
BOD-CBOD-WP Water		V1.0		mg/L		'	17-1012(1-18
Batch R4640272							
WG3051124-7 LCS							
BOD Carbonaceous		91.6		%		85-115	16-MAY-19
WG3051124-6 MB							
BOD Carbonaceous		<2.0		mg/L		2	16-MAY-19
OD-WP Water							
Batch R4640272							
WG3051124-7 LCS							
Biochemical Oxygen Demand		100.7		%		85-115	16-MAY-19
WG3051124-6 MB Biochemical Oxygen Demand		<2.0		mg/L		2	40 MAY 40
· -		\2.0		mg/L		2	16-MAY-19
BTEXS+F1-HSMS-WP Water							
Batch R4644890 WG3055669-2 LCS							
Benzene		109.9		%		70-130	17-MAY-19
Toluene		111.6		%		70-130	17-MAY-19
Ethyl benzene		115.0		%		70-130	17-MAY-19
o-Xylene		115.4		%		70-130	17-MAY-19
m+p-Xylenes		110.5		%		70-130	17-MAY-19
WG3055669-3 LCS							
F1 (C6-C10)		95.5		%		70-130	17-MAY-19
WG3055669-1 MB				r			
Benzene 		<0.00050		mg/L		0.0005	17-MAY-19
Toluene		<0.0010		mg/L		0.001	17-MAY-19
Ethyl benzene		<0.00050		mg/L		0.0005	17-MAY-19
o-Xylene		<0.00030		mg/L		0.0003	17-MAY-19
m+p-Xylenes		<0.00040		mg/L		0.0004	17-MAY-19
F1 (C6-C10)		<0.10		mg/L		0.1	17-MAY-19
Surrogate: 4-Bromofluorobenzene (SS)		92.0		%		70-130	17-MAY-19



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Report Date: 28-MAY-19

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Test	Ma	atrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	W	ater							
Batch R4 WG3056392-2 Total Organic C	641367 LCS arbon			103.5		%		80-120	22-MAY-19
WG3056392-1 Total Organic C	МВ			<0.50		mg/L		0.5	22-MAY-19
CL-IC-N-WP	W	ater							
Batch R4 WG3051356-2 Chloride (CI)	637947 LCS			100.2		%		90-110	16-MAY-19
WG3051356-1 Chloride (CI)	MB			<0.50		mg/L		0.5	16-MAY-19
EC-WP	W	ater							
Batch R4 WG3053365-3 Conductivity	637826 LCS			98.2		%		90-110	17-MAY-19
WG3053365-1 Conductivity	МВ			<1.0		umhos/cm		1	17-MAY-19
F-IC-N-WP	W	ater							
Batch R4 WG3051356-2 Fluoride (F)	637947 LCS			103.6		%		90-110	16-MAY-19
WG3051356-1 Fluoride (F)	МВ			<0.020		mg/L		0.02	16-MAY-19
F2-F4-FID-WP	W	ater							
Batch R4	637345								
WG3052255-2 F2 (C10-C16)	LCS			107.3		%		70.420	47 MAY 40
F3 (C16-C34)				107.3		%		70-130 70-130	17-MAY-19 17-MAY-19
F4 (C34-C50)				104.0		%		70-130	17-MAY-19
WG3052255-1 F2 (C10-C16)	МВ			<0.10		mg/L		0.1	17-MAY-19
F3 (C16-C34)				<0.25		mg/L		0.25	17-MAY-19
F4 (C34-C50)				<0.25		mg/L		0.25	17-MAY-19
Surrogate: 2-Bro	omobenzotrif	fluoride		79.6		%		60-140	17-MAY-19
FC10-QT97-WP	W	ater							



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Гest	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	Water							
Batch R4636265 WG3050791-1 MB Fecal Coliforms			<1		MPN/100mL		1	15-MAY-19
HG-T-CVAA-WP	Water							
Batch R4642548 WG3057799-2 LCS Mercury (Hg)-Total			101.0		%		80-120	23-MAY-19
WG3057799-1 MB Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	23-MAY-19
MET-T-CCMS-WP	Water							
Batch R4638587 WG3052561-2 LCS								
Aluminum (Al)-Total			111.5		%		80-120	17-MAY-19
Antimony (Sb)-Total			108.6		%		80-120	17-MAY-19
Arsenic (As)-Total			106.0		%		80-120	17-MAY-19
Barium (Ba)-Total			104.5		%		80-120	17-MAY-19
Beryllium (Be)-Total			104.6		%		80-120	17-MAY-19
Bismuth (Bi)-Total			103.1		%		80-120	17-MAY-19
Boron (B)-Total			112.3		%		80-120	17-MAY-19
Cadmium (Cd)-Total			105.8		%		80-120	17-MAY-19
Calcium (Ca)-Total			104.9		%		80-120	17-MAY-19
Cesium (Cs)-Total			104.9		%		80-120	17-MAY-19
Chromium (Cr)-Total			112.9		%		80-120	17-MAY-19
Cobalt (Co)-Total			109.0		%		80-120	17-MAY-19
Copper (Cu)-Total			91.8		%		80-120	17-MAY-19
Iron (Fe)-Total			100.4		%		80-120	17-MAY-19
Lead (Pb)-Total			106.5		%		80-120	17-MAY-19
Lithium (Li)-Total			109.6		%		80-120	17-MAY-19
Magnesium (Mg)-Total			112.5		%		80-120	17-MAY-19
Manganese (Mn)-Total			108.4		%		80-120	17-MAY-19
Molybdenum (Mo)-Total			106.8		%		80-120	17-MAY-19
Nickel (Ni)-Total			106.8		%		80-120	17-MAY-19
Potassium (K)-Total			104.7		%		80-120	17-MAY-19
Phosphorus (P)-Total			119.2		%		80-120	17-MAY-19
Rubidium (Rb)-Total			108.6		%		80-120	17-MAY-19
Selenium (Se)-Total			107.0		%		80-120	17-MAY-19



Workorder: L2273673 Report Date: 28-MAY-19 Page 4 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4638587 WG3052561-2 LCS								
Silicon (Si)-Total			106.1		%		80-120	17-MAY-19
Silver (Ag)-Total			105.0		%		80-120	17-MAY-19
Sodium (Na)-Total			109.9		%		80-120	17-MAY-19
Strontium (Sr)-Total			107.3		%		80-120	17-MAY-19
Sulfur (S)-Total			109.8		%		80-120	17-MAY-19
Tellurium (Te)-Total			104.4		%		80-120	17-MAY-19
Thallium (TI)-Total			104.6		%		80-120	17-MAY-19
Thorium (Th)-Total			103.5		%		80-120	17-MAY-19
Tin (Sn)-Total			105.3		%		80-120	17-MAY-19
Titanium (Ti)-Total			106.6		%		80-120	17-MAY-19
Tungsten (W)-Total			105.7		%		80-120	17-MAY-19
Uranium (U)-Total			108.7		%		80-120	17-MAY-19
Vanadium (V)-Total			109.5		%		80-120	17-MAY-19
Zinc (Zn)-Total			113.3		%		80-120	17-MAY-19
Zirconium (Zr)-Total			104.3		%		80-120	17-MAY-19
WG3052561-1 MB								
Aluminum (AI)-Total			<0.0030		mg/L		0.003	17-MAY-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	17-MAY-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	17-MAY-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	17-MAY-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	17-MAY-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	17-MAY-19
Boron (B)-Total			<0.010		mg/L		0.01	17-MAY-19
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	17-MAY-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	17-MAY-19
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	17-MAY-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	17-MAY-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	17-MAY-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	17-MAY-19
Iron (Fe)-Total			<0.010		mg/L		0.01	17-MAY-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	17-MAY-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	17-MAY-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	17-MAY-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	17-MAY-19



Workorder: L2273673 Report Date: 28-MAY-19 Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4638587 WG3052561-1 MB			0.00050				2 22225	.=
Molybdenum (Mo)-Total			<0.00050		mg/L		0.00005	17-MAY-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	17-MAY-19
Potassium (K)-Total			<0.050		mg/L		0.05	17-MAY-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	17-MAY-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	17-MAY-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	17-MAY-19
Silicon (Si)-Total			<0.10		mg/L		0.1	17-MAY-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	17-MAY-19
Sodium (Na)-Total			<0.050		mg/L		0.05	17-MAY-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	17-MAY-19
Sulfur (S)-Total			< 0.50		mg/L		0.5	17-MAY-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	17-MAY-19
Thallium (TI)-Total			<0.000010		mg/L		0.00001	17-MAY-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	17-MAY-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	17-MAY-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	17-MAY-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	17-MAY-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	17-MAY-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	17-MAY-19
Zinc (Zn)-Total			< 0.0030		mg/L		0.003	17-MAY-19
Zirconium (Zr)-Total			<0.000060		mg/L		0.00006	17-MAY-19
NH3-COL-WP	Water							
Batch R4640491 WG3055635-6 LCS Ammonia, Total (as N)			102.2		%		85-115	21-MAY-19
WG3055635-5 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	21-MAY-19
NO2-IC-N-WP	Water							
Batch R4637947 WG3051356-2 LCS Nitrite (as N)			105.3		%		90-110	16-MAY-19
WG3051356-1 MB Nitrite (as N)			<0.010		mg/L		0.01	16-MAY-19
NO3-IC-N-WP	Water							



Workorder: L2273673 Report Date: 28-MAY-19

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Test	Matrix	Reference	Result Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-WP	Water						
Batch R4637947 WG3051356-2 LCS Nitrate (as N)			100.4	%		90-110	16-MAY-19
WG3051356-1 MB Nitrate (as N)			<0.020	mg/L		0.02	16-MAY-19
OG-GRAV-WP	Water						
Batch R4641370 WG3055181-2 LCS Oil and Grease			83.1	%		70-130	23-MAY-19
WG3055181-1 MB Oil and Grease			<5.0	mg/L		5	23-MAY-19
P-T-COL-WP	Water						
Batch R4637142 WG3051783-2 LCS							
Phosphorus (P)-Total			98.2	%		80-120	17-MAY-19
WG3051783-1 MB Phosphorus (P)-Total			<0.0030	mg/L		0.003	17-MAY-19
PAH,PANH-WP	Water						
Batch R4641977							
WG3052974-2 LCS 1-Methyl Naphthalene			119.2	%		60-130	19-MAY-19
2-Methyl Naphthalene			110.1	%		60-130	19-MAY-19
Acenaphthene			125.0	%		60-130	19-MAY-19
Acenaphthylene			105.8	%		60-130	19-MAY-19
Anthracene			97.7	%		60-130	19-MAY-19
Acridine			100.4	%		60-130	19-MAY-19
Benzo(a)anthracene			91.9	%		60-130	19-MAY-19
Benzo(a)pyrene			88.7	%		60-130	19-MAY-19
Benzo(b&j)fluoranthene			91.4	%		60-130	19-MAY-19
Benzo(g,h,i)perylene			91.8	%		60-130	19-MAY-19
Benzo(k)fluoranthene			111.8	%		60-130	19-MAY-19
Chrysene			113.2	%		60-130	19-MAY-19
Dibenzo(a,h)anthracene			87.5	%		60-130	19-MAY-19
Fluoranthene			113.9	%		60-130	19-MAY-19
Fluorene			106.2	%		60-130	19-MAY-19
Indeno(1,2,3-cd)pyrene			78.2	%		60-130	19-MAY-19
Naphthalene			122.3	%		50-130	19-MAY-19



Workorder: L2273673 Report Date: 28-MAY-19 Page 7 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4641977								
WG3052974-2 LCS			400.7		0/			
Phenanthrene			123.7		%		60-130	19-MAY-19
Pyrene			112.2		%		60-130	19-MAY-19
Quinoline			89.8		%		60-130	19-MAY-19
WG3052974-1 MB 1-Methyl Naphthalene			<0.000020	0	mg/L		0.00002	19-MAY-19
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	19-MAY-19
Acenaphthene			<0.000020	0	mg/L		0.00002	19-MAY-19
Acenaphthylene			<0.000020	0	mg/L		0.00002	19-MAY-19
Anthracene			<0.000010	0	mg/L		0.00001	19-MAY-19
Acridine			<0.000020	0	mg/L		0.00002	19-MAY-19
Benzo(a)anthracene			<0.000010	0	mg/L		0.00001	19-MAY-19
Benzo(a)pyrene			<0.00000	5C	mg/L		0.000005	19-MAY-19
Benzo(b&j)fluoranthene			<0.000010	0	mg/L		0.00001	19-MAY-19
Benzo(g,h,i)perylene			<0.000020	0	mg/L		0.00002	19-MAY-19
Benzo(k)fluoranthene			<0.000010	0	mg/L		0.00001	19-MAY-19
Chrysene			<0.000020	0	mg/L		0.00002	19-MAY-19
Dibenzo(a,h)anthracene			<0.00000	5C	mg/L		0.000005	19-MAY-19
Fluoranthene			<0.000020	0	mg/L		0.00002	19-MAY-19
Fluorene			<0.000020	0	mg/L		0.00002	19-MAY-19
Indeno(1,2,3-cd)pyrene			<0.000010	0	mg/L		0.00001	19-MAY-19
Naphthalene			<0.000050	0	mg/L		0.00005	19-MAY-19
Phenanthrene			<0.000050	0	mg/L		0.00005	19-MAY-19
Pyrene			<0.000010	0	mg/L		0.00001	19-MAY-19
Quinoline			<0.000020	0	mg/L		0.00002	19-MAY-19
Surrogate: Acenaphthene	d10		100.5		%		60-130	19-MAY-19
Surrogate: Acridine d9			89.5		%		60-130	19-MAY-19
Surrogate: Chrysene d12			108.4		%		60-130	19-MAY-19
Surrogate: Naphthalene d	8		93.5		%		50-130	19-MAY-19
Surrogate: Phenanthrene	d10		107.1		%		60-130	19-MAY-19
PH-WP	Water							
Batch R4637826								
WG3053365-2 LCS pH			7.37		pH units		7.3-7.5	17-MAY-19
Pi i			1.51		priums		1.3-1.3	17-IVIA1-19

PHENOLS-4AAP-WT

Water



Workorder: L2273673

Report Date: 28-MAY-19

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								•
est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	Water							
Batch R4639681								
WG3054396-6 LCS Phenols (4AAP)			97.8		%		85-115	21-MAY-19
WG3054396-5 MB Phenols (4AAP)			<0.0010		mg/L		0.001	21-MAY-19
604-IC-N-WP	Water							
Batch R4637947								
WG3051356-2 LCS Sulfate (SO4)			100.4		%		90-110	16-MAY-19
WG3051356-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	16-MAY-19
OLIDS-TOTSUS-WP	Water							
Batch R4639613								
WG3051561-44 LCS Total Suspended Solids			95.0		%		85-115	17-MAY-19
WG3051561-43 MB			<2.0				0	47.8487/ 40
Total Suspended Solids			<2.0		mg/L		2	17-MAY-19
C,EC10-QT97-WP	Water							
Batch R4636262								
WG3050808-2 DUP Total Coliforms		L2273673-1 >24200	>24200		MPN/100mL	0.0	65	15-MAY-19
Escherichia Coli		>24200	>24200		MPN/100mL	0.0	65	15-MAY-19
WG3050808-1 MB								
Total Coliforms			<1		MPN/100mL		1	15-MAY-19
Escherichia Coli			<1		MPN/100mL		1	15-MAY-19

Report Date: 28-MAY-19 Workorder: L2273673 Page 9 of 10

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank ADE

MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2273673 Report Date: 28-MAY-19 Page 10 of 10

Hold Time Exceedances:

	Sample						
ALS Product Description	ID [.]	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	13-MAY-19	17-MAY-19 12:00	0.25	96	hours	EHTR-FM
Bacteriological Tests							
Fecal coliforms, 1:10 dilution	n by QT97						
	1	13-MAY-19	15-MAY-19 17:50	30	54	hours	EHTR
Total and E. coli, 1:10 dilution	on by QT97						
	1	13-MAY-19	15-MAY-19 17:50	30	54	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Demar	nd (BOD)						
	1	13-MAY-19	16-MAY-19 07:00	48	67	hours	EHTR
Carbonaceous BOD							
	1	13-MAY-19	16-MAY-19 07:00	48	67	hours	EHTR
Laward & Ovalities Definition							

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 L2273673 were received on 15-MAY-19 12:50.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

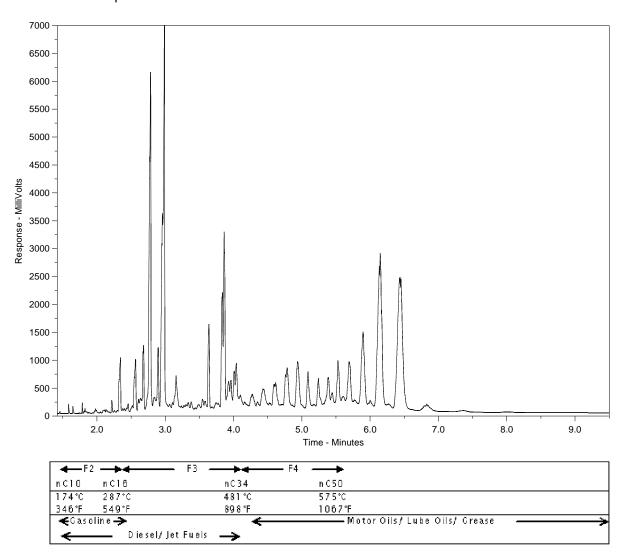
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2273673-1

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.

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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix K



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 06-JUN-19

Report Date: 19-JUN-19 12:24 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2287018

Project P.O. #: NOT SUBMITTED

Job Reference: RANKIN INLET WWTP EFFLUENT

C of C Numbers: Legal Site Desc:

-lua Wo

Hua WO Chemistry Laborato

Chemistry Laboratory Manager

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

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



L2287018 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L 2207040 4 DANIZINI INI ET MANATO EFFLUENT							
L2287018-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 04-JUN-19							
Matrix: WASTE BTEX plus F1-F4							
•							
BTX plus F1 by GCMS Benzene	<0.00050		0.00050	mg/L		12-JUN-19	R4660945
Toluene	<0.0010		0.0010	mg/L		12-JUN-19	R4660945
Ethyl benzene	<0.00050		0.00050	mg/L		12-JUN-19	R4660945
o-Xylene	<0.00050		0.00050	mg/L		12-JUN-19	R4660945
m+p-Xylenes	<0.00040		0.00040	mg/L		12-JUN-19	R4660945
F1 (C6-C10)	<0.10		0.10	mg/L		12-JUN-19	R4660945
Surrogate: 4-Bromofluorobenzene (SS)	88.0		70-130	%		12-JUN-19	R4660945
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.14		0.10	mg/L	07-JUN-19	09-JUN-19	R4663393
F3 (C16-C34)	2.34		0.25	mg/L	07-JUN-19	09-JUN-19	R4663393
F4 (C34-C50)	1.05		0.25	mg/L	07-JUN-19	09-JUN-19	R4663393
Surrogate: 2-Bromobenzotrifluoride	86.5		60-140	%	07-JUN-19	09-JUN-19	R4663393
CCME Total Hydrocarbons F1-BTEX	-0.40		0.40	ma/l		14 1111 40	
F1-BTEX F2-Naphth	<0.10 0.14		0.10 0.10	mg/L mg/L		14-JUN-19 14-JUN-19	
F3-PAH	2.34		0.10	mg/L		14-JUN-19 14-JUN-19	
Total Hydrocarbons (C6-C50)	3.54		0.23	mg/L		14-JUN-19	
Sum of Xylene Isomer Concentrations	3.54		0.50	IIIg/L		14 0011 15	
Xylenes (Total)	<0.00064		0.00064	mg/L		14-JUN-19	
Total Coliform and E.coli by MPN QT97							
Total Coliforms	>2420	PEHR	1	MPN/100mL		06-JUN-19	R4661108
Escherichia Coli	>2420	PEHR	1	MPN/100mL		06-JUN-19	R4661108
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	12-JUN-19	13-JUN-19	R4669879
2-Methyl Naphthalene Acenaphthene	<0.000020		0.000020	mg/L	12-JUN-19	13-JUN-19	R4669879
Acenaphthylene	<0.000020 <0.000020		0.000020 0.000020	mg/L mg/L	12-JUN-19 12-JUN-19	13-JUN-19 13-JUN-19	R4669879 R4669879
Anthracene	<0.000020		0.000020	mg/L	12-JUN-19 12-JUN-19	13-JUN-19	R4669879
Acridine	<0.000010		0.000010	mg/L	12-JUN-19	13-JUN-19	R4669879
Benzo(a)anthracene	<0.000010		0.000020	mg/L	12-JUN-19	13-JUN-19	R4669879
Benzo(a)pyrene	<0.000050		0.0000050	mg/L	12-JUN-19	13-JUN-19	R4669879
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	12-JUN-19	13-JUN-19	R4669879
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	12-JUN-19	13-JUN-19	R4669879
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	12-JUN-19	13-JUN-19	R4669879
Chrysene	<0.000020		0.000020	mg/L	12-JUN-19	13-JUN-19	R4669879
Dibenzo(a,h)anthracene	<0.000050		0.0000050	mg/L	12-JUN-19	13-JUN-19	R4669879
Fluoranthene	<0.000020		0.000020	mg/L	12-JUN-19	13-JUN-19	R4669879
Fluorene	<0.000020		0.000020	mg/L	12-JUN-19	13-JUN-19	R4669879
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	12-JUN-19	13-JUN-19	R4669879
Naphthalene	<0.000050		0.000050	mg/L	12-JUN-19	13-JUN-19	R4669879
Phenanthrene	<0.000050		0.000050	mg/L	12-JUN-19	13-JUN-19	R4669879
Pyrene Quinoline	<0.000010		0.000010	mg/L	12-JUN-19 12-JUN-19	13-JUN-19 13-JUN-19	R4669879
B(a)P Total Potency Equivalent	<0.000020 <0.000030		0.000020 0.000030	mg/L mg/l	12-JUN-19 12-JUN-19	13-JUN-19 13-JUN-19	R4669879 R4669879
Surrogate: Acenaphthene d10	<0.000030 86.3		60-130	mg/L %	12-JUN-19 12-JUN-19	13-JUN-19 13-JUN-19	R4669879 R4669879
Surrogate: Aceriaprilierie d 10 Surrogate: Acridine d9	94.7		60-130	%	12-JUN-19 12-JUN-19	13-JUN-19	R4669879
Surrogate: Chrysene d12	94.7		60-130	%	12-JUN-19	13-JUN-19	R4669879
Surrogate: Naphthalene d8	84.3		50-130	%	12-JUN-19	13-JUN-19	R4669879
Surrogate: Phenanthrene d10	94.1		60-130	%	12-JUN-19	13-JUN-19	R4669879
Nunavut WW Group 1							
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2287018 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2287018-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 04-JUN-19							
Matrix: WASTE							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	63.8		1.2	mg/L		10-JUN-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		10-JUN-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		10-JUN-19	
Alkalinity, Total (as CaCO3)	10.0		0.0.				
Alkalinity, Total (as CaCO3)	52.3		1.0	mg/L		07-JUN-19	R4662373
Ammonia by colour Ammonia, Total (as N)	2.47		0.20	mg/L		07-JUN-19	R4662823
Biochemical Oxygen Demand (BOD)	2.47		0.20	IIIg/L		07-3011-13	K4002023
Biochemical Oxygen Demand	27		20	mg/L		07-JUN-19	R4670223
Carbonaceous BOD BOD Carbonaceous	18.6		6.0	mg/L		07-JUN-19	R4670223
Chloride in Water by IC	10.0		0.0	1119/ =		37 001113	117010220
Chloride (Cl)	44.6		0.50	mg/L		07-JUN-19	R4663515
Conductivity	_						
Conductivity Hardness Calculated	290		1.0	umhos/cm		07-JUN-19	R4662373
Hardness (as CaCO3)	79.7	нтс	0.20	mg/L		17-JUN-19	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	15-JUN-19	17-JUN-19	R4672470
Nitrate in Water by IC Nitrate (as N)	0.072		0.020	mg/L		07-JUN-19	R4663515
Nitrate+Nitrite	0.072		0.020	1119/2		07 0011 10	114003313
Nitrate and Nitrite as N	0.111		0.070	mg/L		11-JUN-19	
Nitrite in Water by IC	0.000		0.040			07 1111 40	D 4000545
Nitrite (as N) Oil & Grease - Gravimetric	0.039		0.010	mg/L		07-JUN-19	R4663515
Oil and Grease	8.3		5.0	mg/L		13-JUN-19	R4668051
Phenol (4AAP)							
Phenols (4AAP)	0.0026		0.0010	mg/L		12-JUN-19	R4668667
Phosphorus, Total Phosphorus (P)-Total	0.510		0.0030	mg/L		10-JUN-19	R4665090
Sulfate in Water by IC	0.010		0.0000	9/ =			11100000
Sulfate (SO4)	20.4		0.30	mg/L		07-JUN-19	R4663515
Total Metals in Water by CRC ICPMS	2.4.6		0.0000	n	44 11111 40	44 11 11 12	D 40740==
Aluminum (AI)-Total Arsenic (As)-Total	0.148		0.0030	mg/L mg/l	14-JUN-19 14-JUN-19	14-JUN-19 14-JUN-19	R4671275
Cadmium (Cd)-Total	0.00103 0.0000312		0.00010 0.000050	mg/L mg/L	14-JUN-19 14-JUN-19	14-JUN-19 14-JUN-19	R4671275 R4671275
Calcium (Ca)-Total	22.5		0.0000	mg/L	14-JUN-19 14-JUN-19	14-JUN-19 14-JUN-19	R4671275
Chromium (Cr)-Total	0.00077		0.00010	mg/L	14-JUN-19 14-JUN-19	14-JUN-19 14-JUN-19	R4671275
Cobalt (Co)-Total	0.00077		0.00010	mg/L	14-JUN-19	14-JUN-19	R4671275
Copper (Cu)-Total	0.133		0.00010	mg/L	14-JUN-19	14-JUN-19	R4671275
Iron (Fe)-Total	0.407		0.0000	mg/L	14-JUN-19	14-JUN-19	R4671275
Lead (Pb)-Total	0.00354		0.000050	mg/L	14-JUN-19	14-JUN-19	R4671275
Magnesium (Mg)-Total	5.68		0.0050	mg/L	14-JUN-19	14-JUN-19	R4671275
Manganese (Mn)-Total	0.0353		0.00010	mg/L	14-JUN-19	14-JUN-19	R4671275
Nickel (Ni)-Total	0.00314		0.00050	mg/L	14-JUN-19	14-JUN-19	R4671275
Potassium (K)-Total	5.14		0.050	mg/L	14-JUN-19	14-JUN-19	R4671275
Sodium (Na)-Total	24.7		0.050	mg/L	14-JUN-19	14-JUN-19	R4671275
Zinc (Zn)-Total	0.0440		0.0030	mg/L	14-JUN-19	14-JUN-19	R4671275
Total Organic Carbon by Combustion					-		

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

L2287018 CONTD.... PAGE 4 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2287018-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 04-JUN-19							
Matrix: WASTE							
Total Organic Carbon by Combustion Total Organic Carbon	13.4		0.50	mg/L		18-JUN-19	R4674167
Total Suspended Solids Total Suspended Solids	26.5		2.0	mg/L		11-JUN-19	R4665046
pH	36.5		2.0	IIIg/L			K4000U40
pH	6.80		0.10	pH units		07-JUN-19	R4662373

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

L2287018 CONTD....

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Once Information Version: FINAL

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
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:

ALC Test Code		Total December 2	Mothed Deference**
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- Water Alkalinity, Bicarbonate CALCULATION

WP

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

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

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

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)

Water Water by to

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

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

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

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

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

Grease is determined from the weight of the residue in the vial.

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

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

after persulphate digestion of the sample.

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

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily

separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

PH-WP Water pH APHA 4500H

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

reference electrode.

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

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

red complex which is measured colorimetrically.

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

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

RANKIN INLET WWTP EFFLUENT

L2287018 CONTD....

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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 $35.0 - 0.5^{\circ}$ 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-

Water

Sum of Xylene Isomer Concentrations

CALCULATED RESULT

WP

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.



Workorder: L2287018 Report Date: 19-JUN-19 Page 1 of 9

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R466237 WG3072352-4 LCS Alkalinity, Total (as C	3		102.7		%		05.445	07 11111 40
			102.7		70		85-115	07-JUN-19
WG3072352-1 MB Alkalinity, Total (as C			<1.0		mg/L		1	07-JUN-19
BOD-CBOD-WP	Water							
Batch R467022								
WG3070677-2 LCS BOD Carbonaceous	5		104.9		%		85-115	07-JUN-19
WG3070677-1 MB BOD Carbonaceous			<2.0		mg/L		2	07-JUN-19
BOD-WP	Water							
Batch R467022								
WG3070677-2 LCS Biochemical Oxygen			107.6		%		85-115	07-JUN-19
WG3070677-1 MB Biochemical Oxygen			<2.0		mg/L		2	07-JUN-19
BTEXS+F1-HSMS-WP	Water							
Batch R466094	45							
WG3068640-14 LCS F1 (C6-C10)	5		96.0		%		70-130	07-JUN-19
WG3068640-8 LCS Benzene	3		95.1		%		70-130	07-JUN-19
Toluene			96.9		%		70-130	07-JUN-19
Ethyl benzene			97.6		%		70-130	07-JUN-19
o-Xylene			97.3		%		70-130	07-JUN-19
m+p-Xylenes			100.4		%		70-130	07-JUN-19
WG3068640-7 MB Benzene			<0.00050)	mg/L		0.0005	07-JUN-19
Toluene			<0.0010		mg/L		0.001	07-JUN-19
Ethyl benzene			<0.00050)	mg/L		0.0005	07-JUN-19
o-Xylene			<0.00030		mg/L		0.0003	07-JUN-19
m+p-Xylenes			<0.00040		mg/L		0.0004	07-JUN-19
F1 (C6-C10)			<0.10		mg/L		0.1	07-JUN-19
Surrogate: 4-Bromofle	uorobenzene (SS)		87.0		%		70-130	07-JUN-19
C-TOC-HTC-WP	Water							



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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP		Water							
	4674167								
WG3081439-2 Total Organic (LCS Carbon			104.2		%		80-120	18-JUN-19
WG3081439-1	МВ					,,		00-120	10 0011 15
Total Organic (<0.50		mg/L		0.5	18-JUN-19
CL-IC-N-WP		Water							
Batch R4	4663515								
WG3070793-3 Chloride (Cl)	DUP		L2287018-1 44.6	45.1		mg/L	0.9	20	07-JUN-19
WG3070793-2	LCS			00.4		0/			
Chloride (CI)	МВ			98.1		%		90-110	07-JUN-19
WG3070793-1 Chloride (CI)	MB			<0.50		mg/L		0.5	07-JUN-19
WG3070793-4 Chloride (CI)	MS		L2287018-1	104.3		%		75-125	07-JUN-19
EC-WP		Water						70 120	07 0011 10
	4662373								
WG3072352-3	LCS								
Conductivity				99.4		%		90-110	07-JUN-19
WG3072352-1 Conductivity	MB			<1.0		umhos/cm		1	07-JUN-19
		Water		<1.0		umios/em		ı	07-3014-19
F2-F4-FID-WP Batch R4	4663393	water							
WG3070647-2	LCS								
F2 (C10-C16)				103.1		%		70-130	09-JUN-19
F3 (C16-C34)				94.2		%		70-130	09-JUN-19
F4 (C34-C50)				103.4		%		70-130	09-JUN-19
WG3070647-1	MB								
F2 (C10-C16)				<0.10		mg/L		0.1	09-JUN-19
F3 (C16-C34)				<0.25		mg/L		0.25	09-JUN-19
F4 (C34-C50)		(-10)		<0.25		mg/L		0.25	09-JUN-19
Surrogate: 2-B	romobenz			92.2		%		60-140	09-JUN-19
HG-T-CVAA-WP		Water							
	4672470								
WG3080356-2 Mercury (Hg)-T	LCS otal			98.0		%		80-120	17-JUN-19
WG3080356-1	MB								
Mercury (Hg)-T	otal			<0.00000	50	mg/L		0.000005	17-JUN-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4671275								
WG3077371-2 LCS			00.4		0/			
Aluminum (Al)-Total			98.4		%		80-120	14-JUN-19
Arsenic (As)-Total			98.4		%		80-120	14-JUN-19
Cadmium (Cd)-Total			96.6		%		80-120	14-JUN-19
Calcium (Ca)-Total			94.0		%		80-120	14-JUN-19
Chromium (Cr)-Total			95.9		%		80-120	14-JUN-19
Cobalt (Co)-Total			93.9		%		80-120	14-JUN-19
Copper (Cu)-Total			96.2		%		80-120	14-JUN-19
Iron (Fe)-Total			90.5		%		80-120	14-JUN-19
Lead (Pb)-Total			98.5		%		80-120	14-JUN-19
Magnesium (Mg)-Total			106.6		%		80-120	14-JUN-19
Manganese (Mn)-Total			95.4		%		80-120	14-JUN-19
Nickel (Ni)-Total			94.8		%		80-120	14-JUN-19
Potassium (K)-Total			94.4		%		80-120	14-JUN-19
Sodium (Na)-Total			95.3		%		80-120	14-JUN-19
Zinc (Zn)-Total			99.9		%		80-120	14-JUN-19
WG3077371-1 MB								
Aluminum (AI)-Total			< 0.0030		mg/L		0.003	14-JUN-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	14-JUN-19
Cadmium (Cd)-Total			< 0.000005	5C	mg/L		0.000005	14-JUN-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	14-JUN-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	14-JUN-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	14-JUN-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	14-JUN-19
Iron (Fe)-Total			<0.010		mg/L		0.01	14-JUN-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	14-JUN-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	14-JUN-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	14-JUN-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	14-JUN-19
Potassium (K)-Total			<0.050		mg/L		0.05	14-JUN-19
Sodium (Na)-Total			<0.050		mg/L		0.05	14-JUN-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	14-JUN-19
Allo COL MD					···g. =		0.000	14 0011-10

NH3-COL-WP

Water



Workorder: L2287018

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-COL-WP	Water							
Batch R4662823 WG3072778-14 LCS Ammonia, Total (as N)			97.6		%		85-115	07-JUN-19
WG3072778-13 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	07-JUN-19
NO2-IC-N-WP	Water							
Batch R4663515 WG3070793-3 DUP Nitrite (as N)		L2287018-1 0.039	0.039		mg/L	1.4	20	07-JUN-19
WG3070793-2 LCS Nitrite (as N)			101.0		%		90-110	07-JUN-19
WG3070793-1 MB Nitrite (as N)			<0.010		mg/L		0.01	07-JUN-19
WG3070793-4 MS Nitrite (as N)		L2287018-1	109.6		%		75-125	07-JUN-19
NO3-IC-N-WP	Water							
Batch R4663515 WG3070793-3 DUP Nitrate (as N)		L2287018-1 0.072	0.071		mg/L	1.9	20	07-JUN-19
WG3070793-2 LCS Nitrate (as N)			98.7		%		90-110	07-JUN-19
WG3070793-1 MB Nitrate (as N)			<0.020		mg/L		0.02	07-JUN-19
WG3070793-4 MS Nitrate (as N)		L2287018-1	106.2		%		75-125	07-JUN-19
OG-GRAV-WP	Water							
Batch R4668051 WG3074648-2 LCS Oil and Grease			91.2		%		70-130	13-JUN-19
WG3074648-1 MB Oil and Grease			<5.0		mg/L		5	13-JUN-19
P-T-COL-WP	Water							
Batch R4665090 WG3072251-18 LCS Phosphorus (P)-Total			99.6		%		80-120	10-JUN-19
WG3072251-17 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	10-JUN-19
PAH,PANH-WP	Water							



Workorder: L2287018 Report Date: 19-JUN-19 Page 5 of 9

Test	Matrix Reference Result Qualifier Units		RPD	Limit	Analyzed			
PAH,PANH-WP	Water							
Batch R4669879								
WG3076147-2 LCS			400.0		0/			
1-Methyl Naphthalene			108.0		%		60-130	13-JUN-19
2-Methyl Naphthalene			99.7		%		60-130	13-JUN-19
Acenaphthene			111.3		%		60-130	13-JUN-19
Acenaphthylene			99.7		%		60-130	13-JUN-19
Anthracene			84.0		%		60-130	13-JUN-19
Acridine			65.7		%		60-130	13-JUN-19
Benzo(a)anthracene			83.6		%		60-130	13-JUN-19
Benzo(a)pyrene			81.5		%		60-130	13-JUN-19
Benzo(b&j)fluoranthene			82.3		%		60-130	13-JUN-19
Benzo(g,h,i)perylene			91.6		%		60-130	13-JUN-19
Benzo(k)fluoranthene			99.5		%		60-130	13-JUN-19
Chrysene			101.1		%		60-130	13-JUN-19
Dibenzo(a,h)anthracene			81.6		%		60-130	13-JUN-19
Fluoranthene			102.7		%		60-130	13-JUN-19
Fluorene			100.1		%		60-130	13-JUN-19
Indeno(1,2,3-cd)pyrene			83.9		%		60-130	13-JUN-19
Naphthalene			111.4		%		50-130	13-JUN-19
Phenanthrene			112.0		%		60-130	13-JUN-19
Pyrene			101.0		%		60-130	13-JUN-19
Quinoline			103.9		%		60-130	13-JUN-19
WG3076147-1 MB								
1-Methyl Naphthalene			<0.00002	20	mg/L		0.00002	13-JUN-19
2-Methyl Naphthalene			<0.00002	20	mg/L		0.00002	13-JUN-19
Acenaphthene			<0.00002	20	mg/L		0.00002	13-JUN-19
Acenaphthylene			<0.00002	20	mg/L		0.00002	13-JUN-19
Anthracene			< 0.00001	10	mg/L		0.00001	13-JUN-19
Acridine			< 0.00002	20	mg/L		0.00002	13-JUN-19
Benzo(a)anthracene			< 0.00001	10	mg/L		0.00001	13-JUN-19
Benzo(a)pyrene			<0.00000	050	mg/L		0.000005	13-JUN-19
Benzo(b&j)fluoranthene			< 0.00001	10	mg/L		0.00001	13-JUN-19
Benzo(g,h,i)perylene			<0.00002	20	mg/L		0.00002	13-JUN-19
Benzo(k)fluoranthene			<0.00001	10	mg/L		0.00001	13-JUN-19
Chrysene			<0.00002	20	mg/L		0.00002	13-JUN-19
Dibenzo(a,h)anthracene			<0.00000	D5C	mg/L		0.000005	13-JUN-19
					-			-



Workorder: L2287018

Report Date: 19-JUN-19

Page 6 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4669879 WG3076147-1 MB	9							
Fluoranthene			<0.00002	0	mg/L		0.00002	13-JUN-19
Fluorene			<0.00002	0	mg/L		0.00002	13-JUN-19
Indeno(1,2,3-cd)pyren	е		<0.00001	0	mg/L		0.00001	13-JUN-19
Naphthalene			<0.00005	0	mg/L		0.00005	13-JUN-19
Phenanthrene			<0.00005	0	mg/L		0.00005	13-JUN-19
Pyrene			<0.00001	0	mg/L		0.00001	13-JUN-19
Quinoline			<0.00002	0	mg/L		0.00002	13-JUN-19
Surrogate: Acenaphthe	ene d10		74.2		%		60-130	13-JUN-19
Surrogate: Acridine d9			65.8		%		60-130	13-JUN-19
Surrogate: Chrysene o	112		76.3		%		60-130	13-JUN-19
Surrogate: Naphthaler	ne d8		71.5		%		50-130	13-JUN-19
Surrogate: Phenanthre	ene d10		77.1		%		60-130	13-JUN-19
PH-WP	Water							
Batch R466237	3							
WG3072352-2 LCS pH			7.38		pH units		7.3-7.5	07-JUN-19
PHENOLS-4AAP-WT	Water							
Batch R466866	7							
WG3074671-2 LCS Phenols (4AAP)			108.2		%		85-115	12-JUN-19
WG3074671-1 MB Phenols (4AAP)			<0.0010		mg/L		0.001	12-JUN-19
SO4-IC-N-WP	Water							
Batch R466351	5							
WG3070793-3 DUP Sulfate (SO4)		L2287018-1 20.4	20.3		mg/L	0.3	20	07-JUN-19
WG3070793-2 LCS Sulfate (SO4)			100.0		%		90-110	07-JUN-19
WG3070793-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	07-JUN-19
WG3070793-4 MS Sulfate (SO4)		L2287018-1	105.3		%		75-125	07-JUN-19
SOLIDS-TOTSUS-WP	Water							



Workorder: L2287018

Report Date: 19-JUN-19

Page 7 of 9

Test Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-WP	Water	er						
Batch R4665046 WG3072270-10 LCS								
Total Suspended Solids			113.2		%		85-115	11-JUN-19
WG3072270-9 MB Total Suspended Solids			<2.0		mg/L		2	11-JUN-19
TC,EC-QT97-WP	Water							
Batch R4661108								
WG3070100-2 DUP Total Coliforms		L2287018-1 >2420	>2420		MPN/100mL	0.0	65	06-JUN-19
Escherichia Coli		>2420	>2420		MPN/100mL	0.0	65	06-JUN-19
WG3070100-1 MB			4		MDN1/4.001			
Total Coliforms			<1		MPN/100mL		1	06-JUN-19
Escherichia Coli			<1		MPN/100mL		1	06-JUN-19

Report Date: 19-JUN-19 Workorder: L2287018 Page 8 of 9

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2287018 Report Date: 19-JUN-19 Page 9 of 9

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	04-JUN-19	07-JUN-19 12:00	0.25	72	hours	EHTR-FM
Bacteriological Tests							
Total Coliform and E.coli by	MPN QT97						
	1	04-JUN-19	06-JUN-19 18:20	30	54	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Dema	nd (BOD)						
	1	04-JUN-19	07-JUN-19 07:00	48	67	hours	EHTR
Carbonaceous BOD							
	1	04-JUN-19	07-JUN-19 07:00	48	67	hours	EHTR
Logand & Qualifier Definition							

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 L2287018 were received on 06-JUN-19 16:35.

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

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

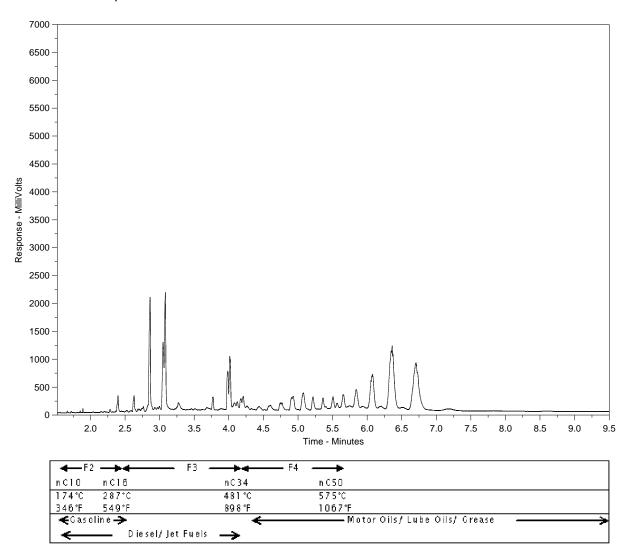
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2287018-1

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.

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1.0	Work Order #	44.		ALS Contact:	Craig Ríddell	Sampled By:	Simon Dolfon	-F4-WP	NH-W	-MM-1	d. Mar	QT97-V								r of Cor
Sample	b use only)	Sample Identification is description will appear or			Date Sampled	Time Sampled	Sample Type	┫╙	PAH, PANH-WP	NUNAVUT-WW-GR	F-IC-N-MP	TC,EC			10.04. 11					Numbe
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Nunavut-V	NW-GRE-1-VVE pkg II E Vials for BTX.F1-F4	4 and 1 L Amber for PAH's	= Total of 15 B	ottles per sa	ample.					= 015					 	· ·		,	-	
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix L



Nunavut Community & Government

Services - Rankin Inlet

ATTN: CONNOR FAULKNER

Box 96

Whale Cove NU XOC OJO

Date Received: 26-JUN-19

Report Date: 17-JUL-19 08:50 (MT)

Version: FINAL

Client Phone: 867-645-8176

Certificate of Analysis

Lab Work Order #: L2299273

Project P.O. #: NOT SUBMITTED

Job Reference: C of C Numbers: Legal Site Desc:

Mone

Hua Wo

Chemistry Laboratory Manager

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

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L299273-1 GRA-7 Sampled By: CF on Z5-JUN-19 @ 09:15 Marketic WY	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Sampled By: CF on 25-JUN-19 @ 09:15	L 2299273-1 GRA-7			Ţ				
Matrix WW BTEX plus F1 by GCMS B012Plus F1 by GCMS B012Plus F1 by GCMS B012Plus F1 by GCMS Co.0010 Co.00050 Co.000								
BTEX plus F1-F4 BTX plus F1 by GCMS 0.00050 0.00050 mg/L 05-JUL-19 R469643 70-Jul-19 R4696643 70-Jul-19 R46966643 70-Jul-19 R46966643 70-Jul-19 R46966643 70-Jul-1								
BTX plus F1 by GCMS Refrese < 0.00050 0.00050 mg/L 05-JUL-19 R469643 Toluene < 0.0010 0.0010 mg/L 05-JUL-19 R469643 R								
Benzene	-							
Toluene		<0.00050	0	0.00050	mg/L		05-JUL-19	R4696443
o-Xylene color: 200040 0.00040 mg/L 0.5-JUL-19 R4698443 F1 (C6-C10) 40.10 0.10 mg/L 0.5-JUL-19 R4698443 CCME PHG F2-F4 in Water F2 (C10-C16) 40.10 0.10 mg/L 28-JUN-19 07-JUL-19 R4698443 F2 (C10-C16) <0.10	Toluene	<0.0010		0.0010	-		05-JUL-19	R4696443
m-y-Xylenes	Ethyl benzene	<0.00050	0	0.00050	mg/L		05-JUL-19	R4696443
Fi (CG-C10)	o-Xylene	<0.00050	0	.00050	mg/L		05-JUL-19	R4696443
Surrogate: 4-Bromofluorobenzene (SS)	m+p-Xylenes	<0.00040	0	0.00040	mg/L		05-JUL-19	R4696443
COME PHC P2-F4 in Water F2 (C10-C1016) < 0.10		<0.10		0.10	•			R4696443
F2 (C10-C16)	Surrogate: 4-Bromofluorobenzene (SS)	84.0	7	70-130	%		05-JUL-19	R4696443
F3 (C16-C34)								
F4 (C34-C5G)					-			
Surrogate: Z-Bromobenzotrifluoride 89.9 60-140 % 28-JUN-19 07-JUL-19 R4699009	,			I	-			
CCME Total Hydrocarbons F1-BTEX	,				_			
F1-BTEX		89.9		00-140	70	∠o-JUN-19	07-JUL-19	K4699009
F2-Naphth		-0.10		0.10	ma/l		11 -10	
F3-PAH					-			
Total Hydrocarbons (C6-C50) Sum of Xylene Isomer Concentrations Xylenes (Total) Miscellaneous Parameters Total Suspended Solids Polyaromatic Hydrocarbons (PAHs) 1-Methyl Naphthalene 2-Methyl Naphthalene 3-0,000020 3-Methyl Naphthalene 3-0,000010 3-Methyl Naphthalen					-			
Sum of Xylene (Total)					-			
Xylenes (Total) Xylenes (Total) Xylenes (Total) Xylenes (Total Suspended Solids C2.0 C2.0 mg/L C2-JUL-19 C2-					3			
Total Suspended Solids		<0.00064	0	0.00064	mg/L		09-JUL-19	
Polyaromatic Hydrocarbons (PAHs) 1-Methyl Naphthalene	Miscellaneous Parameters							
1-Methyl Naphthalene	Total Suspended Solids	<2.0		2.0	mg/L		02-JUL-19	R4692638
2-Methyl Naphthalene <0.000020 0.000020 mg/L 02-JUL-19 03-JUL-19 R4693589 Acenaphthene <0.000020								
Acenaphthene <0.000020 0.000020 mg/L 02-JUL-19 03-JUL-19 R4693589 Acenaphthylene <0.000020		<0.000020		1	-			R4693589
Acenaphthylene <0.000020 0.000020 mg/L 02-JUL-19 03-JUL-19 R4693589 Anthracene <0.000010					-			
Anthracene <0.000010 0.000010 mg/L 02-JUL-19 03-JUL-19 R4693589 Acridine <0.000020				1	-			
Acridine					-			
Benzo(a)anthracene				1	-			
Benzo(a)pyrene				1	-			
Benzo(b&j)fluoranthene <0.000010 0.000010 mg/L 02-JUL-19 03-JUL-19 R4693589 Benzo(g,h,i)perylene <0.000020					-			
Benzo(g,h,i)perylene <0.000020 0.000020 mg/L 02-JUL-19 03-JUL-19 R4693589 Benzo(k)fluoranthene <0.000010					-			
Benzo(k)fluoranthene					-			
Chrysene <0.000020 0.000020 mg/L 02-JUL-19 03-JUL-19 R4693589 Dibenzo(a,h)anthracene <0.000050					•			1
Dibenzo(a,h)anthracene <0.0000050 mg/L 02-JUL-19 03-JUL-19 R4693589 Fluoranthene <0.000020								1
Fluoranthene <0.000020 mg/L 02-JUL-19 03-JUL-19 R4693589 Fluorene <0.000020	Dibenzo(a,h)anthracene				-			
Indeno(1,2,3-cd)pyrene		<0.000020	0.	.000020		02-JUL-19	03-JUL-19	R4693589
Naphthalene <0.000050 0.000050 mg/L 02-JUL-19 03-JUL-19 R4693589 Phenanthrene <0.000050	Fluorene	<0.000020	0.	.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Phenanthrene		<0.000010	0.	.000010	mg/L			R4693589
Pyrene					-			1
Quinoline <0.000020 mg/L 02-JUL-19 03-JUL-19 R4693589 B(a)P Total Potency Equivalent <0.000030					-			
B(a)P Total Potency Equivalent <0.000030					-			
Surrogate: Acenaphthene d10 92.7 60-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Acridine d9 88.3 60-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Chrysene d12 105.4 60-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Naphthalene d8 90.1 50-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Phenanthrene d10 100.3 60-130 % 02-JUL-19 03-JUL-19 R4693589 Nunavut WW Group 1 Alkalinity, Bicarbonate 8 60-130 % 02-JUL-19 03-JUL-19 R4693589			1		-			
Surrogate: Acridine d9 88.3 60-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Chrysene d12 105.4 60-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Naphthalene d8 90.1 50-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Phenanthrene d10 100.3 60-130 % 02-JUL-19 03-JUL-19 R4693589 Nunavut WW Group 1 Alkalinity, Bicarbonate 60-130 % 02-JUL-19 03-JUL-19 R4693589	, , ,				-			
Surrogate: Chrysene d12 105.4 60-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Naphthalene d8 90.1 50-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Phenanthrene d10 100.3 60-130 % 02-JUL-19 03-JUL-19 R4693589 Nunavut WW Group 1 Alkalinity, Bicarbonate Image: Chrysene d12 Image: Chrysene d12 % 02-JUL-19 03-JUL-19 R4693589	,							
Surrogate: Naphthalene d8 90.1 50-130 % 02-JUL-19 03-JUL-19 R4693589 Surrogate: Phenanthrene d10 100.3 60-130 % 02-JUL-19 03-JUL-19 R4693589 Nunavut WW Group 1 Alkalinity, Bicarbonate 8 8 8 8			1 1					
Surrogate: Phenanthrene d10 100.3 60-130 % 02-JUL-19 03-JUL-19 R4693589 Nunavut WW Group 1 Alkalinity, Bicarbonate			1 1					I I
Nunavut WW Group 1 Alkalinity, Bicarbonate								
Alkalinity, Bicarbonate		100.3	'	00-130	/0	02-00L-18	00-00L-13	114093309
	-							
		15.6		1.2	mg/L		28-JUN-19	

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

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2299273-1 GRA-7							
Sampled By: CF on 25-JUN-19 @ 09:15							
Matrix: WW							
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		28-JUN-19	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		28-JUN-19	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	12.8		1.0	mg/L		27-JUN-19	R4689958
Ammonia by colour	12.0		1.0	9/ =		2. 00.1.10	111000000
Ammonia, Total (as N)	<0.010		0.010	mg/L		02-JUL-19	R4692838
Biochemical Oxygen Demand (BOD)	0.0		0.0			07 1111 40	D 4000 447
Biochemical Oxygen Demand Carbonaceous BOD	<2.0		2.0	mg/L		27-JUN-19	R4693417
BOD Carbonaceous	<2.0		2.0	mg/L		27-JUN-19	R4693417
Chloride in Water by IC							
Chloride (CI)	14.9		0.50	mg/L		27-JUN-19	R4691095
Conductivity Conductivity	96.0		1.0	umhos/cm		27-JUN-19	R4689958
Fecal coliforms, 1:10 dilution by QT97	00.0		1.0	311113373111		2. 00.4 10	14-000000
Fecal Coliforms	<10	MBHT	10	MPN/100mL		26-JUN-19	R4689275
Hardness Calculated	0	LITO	0.55			00 11 11 46	
Hardness (as CaCO3) Mercury Total	24.5	HTC	0.20	mg/L		08-JUL-19	
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L	12-JUL-19	15-JUL-19	R4712816
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		27-JUN-19	R4691095
Nitrate+Nitrite Nitrate and Nitrite as N	<0.070		0.070	mg/L		30-JUN-19	
Nitrite in Water by IC	<0.070		0.070	IIIg/L		30-30N-13	
Nitrite (as N)	<0.010		0.010	mg/L		27-JUN-19	R4691095
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		28-JUN-19	R4690642
Phenol (4AAP) Phenols (4AAP)	0.0011		0.0010	mg/L		28-JUN-19	R4690317
Phosphorus, Total							
Phosphorus (P)-Total	0.0081		0.0030	mg/L		03-JUL-19	R4692701
Sulfate in Water by IC	4.02		0.20	ma/l		27 ILIN 10	D4604005
Sulfate (SO4) Total Metals in Water by CRC ICPMS	4.03		0.30	mg/L		27-JUN-19	R4691095
Aluminum (Al)-Total	0.0143		0.0030	mg/L	05-JUL-19	05-JUL-19	R4695920
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Arsenic (As)-Total	0.00034		0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Barium (Ba)-Total	0.0113		0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	05-JUL-19	05-JUL-19	R4695920
Boron (B)-Total	0.024		0.010	mg/L	05-JUL-19	05-JUL-19	R4695920
Cadmium (Cd)-Total Calcium (Ca)-Total	<0.0000050		0.0000050	mg/L	05-JUL-19	05-JUL-19	R4695920
Calcium (Ca)-1 otal Cesium (Cs)-Total	7.17 <0.000010		0.050 0.000010	mg/L mg/L	05-JUL-19 05-JUL-19	05-JUL-19 05-JUL-19	R4695920 R4695920
Chromium (Cr)-Total	0.00040		0.00010	mg/L	05-JUL-19 05-JUL-19	05-JUL-19 05-JUL-19	R4695920 R4695920
Cobalt (Co)-Total	<0.00040		0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Copper (Cu)-Total	0.00106		0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Iron (Fe)-Total	0.069		0.010	mg/L	05-JUL-19	05-JUL-19	R4695920
Lead (Pb)-Total	<0.00050		0.000050	mg/L	05-JUL-19	05-JUL-19	R4695920
Lithium (Li)-Total	<0.0010		0.0010	mg/L	05-JUL-19	05-JUL-19	R4695920

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

Nickel (Ni)-Total	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Sampled By:	L 2200272 4 CPA 7							
Matrix: WW Total Metals in Water by CRC ICPMS 1.59 0.0050 mg/L 0.5JUL-19 0.5								
Total Metals in Water by CRC ICPMS Magnesim (Mp)-Total 0.00062 0.00010 mg/L 05-JUL-19 05-JUL-19 0.5-JUL-19	, ,							
Magnesium (Mg)-Total 1.59 0.0050 mg/L 05-JUL-19 05-JUL-19 784895 Manganese (Mm)-Total 0.00362 0.00010 mg/L 05-JUL-19 05-JUL-1								
Manganese (Mn)-Total		1.50		0.0050	ma/l	05 1111 10	05 1111 10	P4605020
Molybdenum (Mo)-Total 0.000195 0.000050 mg/L 05-JUL-19 0.5-JUL-19 R46951 Nickel (Ni)-Total 0.00064 0.000050 mg/L 0.5-JUL-19 0.5-JUL-19 R46951 R4					_			
Nickel (Ni)-Total	, ,				_			R4695920
Potassium (K)-Total	, ,							R4695920
Phosphorus (P)-Total	` '				_			R4695920
Rubidium (Rb)-Total 0.00150 0.00020 mg/L 05-JUL-19 05-	. ,	_			•			R4695920
Silicen (Si)-Total	Rubidium (Rb)-Total	0.00150		0.00020	_	05-JUL-19	05-JUL-19	R4695920
Silver (Ag)-Total	Selenium (Se)-Total	<0.000050		0.000050	mg/L	05-JUL-19	05-JUL-19	R4695920
Sodium (Na)-Total 7.81	Silicon (Si)-Total	0.24		0.10	mg/L	05-JUL-19	05-JUL-19	R4695920
Strontium (Sh-Total 0.0413 0.00020 mg/L 05-JUL-19 05-J	Silver (Ag)-Total	<0.000010		0.000010	mg/L	05-JUL-19	05-JUL-19	R4695920
Sulfur (S)-Total	Sodium (Na)-Total	7.81		0.050	mg/L	05-JUL-19	05-JUL-19	R4695920
Tellurium (Te)-Total	` ,	0.0413		0.00020	_			R4695920
Thallium (Ti)-Total					_			R4695920
Thorium (Th)-Total	` ,				_			R4695920
Tin (Sn)-Total Titanium (Ti)-Total 0.000120 0.000100 mg/L 0.000030 mg/L 0.00010 mg	, ,				_			R4695920
Titanium (Ti)-Total	` '				_			R4695920
Tungsten (W)-Total	,				_			R4695920
Uranium (U)-Total 0.000029 0.000010 mg/L 05-JUL-19 05-JUL-19 R4895t Vanadium (V)-Total <0.00050	· ,				_			R4695920
Vanadium (V)-Total <0.00050	,							
Zinc (Zn)-Total					_			
Zirconium (Zr)-Total	, ,				_			
Total Organic Carbon by Combustion 4.37 0.50 mg/L 05-JUL-19 R4696: pH pH 6.78 0.10 pH units 27-JUN-19 R4696: L2299273-2 GRA-6 Sampled By: CF on 25-JUN-19 @ 09:40 CF on 25-JUN-19 @ 09:40 R4689: Matrix: WW BTEX plus F1-F4 BTX plus F1 by GCMS Benzene <0.00050 0.00050 mg/L 05-JUL-19 R4696: Toluene <0.00050 0.00050 mg/L 05-JUL-19 R4696: 0.5-JUL-19 R4696: 0.5-JUL-19 R4696: 0.5-JUL-19 R4696: 0.5-JUL-19 R4696: 0.00050 mg/L 05-JUL-19 R4696: 0.00050 0.00050 mg/L 05-JUL-19 R4696: 0.00050 0.00050 mg/L 05-JUL-19 R4696: 0.00050 0.00050 0.00050 mg/L 05-JUL-19 R4696: 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050	· ,				_			R4695920
Total Organic Carbon 4.37 0.50 mg/L 05-JUL-19 R4696/pH PH 6.78 0.10 pH units 27-JUN-19 R4696/pH PH R4696/pH R4696	` '	<0.00020		0.00020	iiig/ L	00 002 10	00 002 10	114033320
pH pH pH pH 6.78 0.10 pH units 27-JUN-19 R46898 L2299273-2 GRA-6 GRA-6 Sampled By: CF on 25-JUN-19 @ 09:40 CF on 25-JUN-19 @ 09:40 Frequency CF on 25-JUN-19 @ 09:40 Frequency Frequency Frequency Frequency CF on 25-JUN-19 @ 05-JUL-19 @ 05-J		4.37		0.50	mg/L		05-JUL-19	R4696200
PH								
Sampled By: CF on 25-JUN-19 @ 09:40 Matrix: WW BTEX plus F1-F4 BTX plus F1 by GCMS Benzene <0.00050	•	6.78		0.10	pH units		27-JUN-19	R4689958
Matrix: WW BTEX plus F1-F4 BTX plus F1 by GCMS Benzene <0.00050	L2299273-2 GRA-6							
Matrix: WW BTEX plus F1-F4 BTX plus F1 by GCMS Benzene <0.00050	Sampled By: CF on 25-JUN-19 @ 09:40							
BTEX plus F1-F4 CO.00050 CO.00050 Mg/L Mg	Matrix: WW							
BTX plus F1 by GCMS Senzene								
Benzene								
Ethyl benzene <0.00050		<0.00050		0.00050	mg/L		05-JUL-19	R4696443
o-Xylene <0.00050		<0.0010		0.0010	mg/L			R4696443
m+p-Xylenes <0.00040		<0.00050			_			R4696443
F1 (C6-C10) <0.10					_			R4696443
Surrogate: 4-Bromofluorobenzene (SS) 102.0 70-130 % 05-JUL-19 R46964 CCME PHC F2-F4 in Water 0.10 mg/L 28-JUN-19 07-JUL-19 R46996 F3 (C16-C34) 0.25 mg/L 28-JUN-19 07-JUL-19 R46996 F4 (C34-C50) 0.25 mg/L 28-JUN-19 07-JUL-19 R46996 Surrogate: 2-Bromobenzotrifluoride 82.7 60-140 % 28-JUN-19 07-JUL-19 R46996 CCME Total Hydrocarbons F1-BTEX <0.10	, ,				_			R4696443
CCME PHC F2-F4 in Water R46990 F2 (C10-C16) <0.10								R4696443
F2 (C10-C16) <0.10	` ,	102.0		70-130	%		05-JUL-19	R4696443
F3 (C16-C34)		-0.40		0.40	me/l	20 1111 40	07 1111 40	D4600000
F4 (C34-C50) <0.25	,	1			_			
Surrogate: 2-Bromobenzotrifluoride 82.7 60-140 % 28-JUN-19 07-JUL-19 R46990 CCME Total Hydrocarbons 0.10 mg/L 11-JUL-19 R46990 F2-Naphth <0.10	` '	1			_			
CCME Total Hydrocarbons 0.10 mg/L 11-JUL-19 F1-BTEX <0.10	,							R4699009 R4699009
F1-BTEX <0.10	_	02.7		00-1 -1 0	/0	25 55 14-15	0. 002-10	11-000003
F2-Naphth <0.10		<0.10		0.10	ma/L		11-JUL-19	
F3-PAH <0.25 0.25 mg/L 11-JUL-19					_			
	•	1			_			
lotal Hydrocarbons (C6-C50) <0.38 0.38 mg/L 11-JUL-19	Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		11-JUL-19	
Sum of Xylene Isomer Concentrations					-			
Xylenes (Total) <0.00064 mg/L 09-JUL-19		<0.00064		0.00064	mg/L		09-JUL-19	

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

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
1 2200272 2 CPA 6							
L2299273-2 GRA-6 Sampled By: CF on 25-JUN-19 @ 09:40							
Matrix: WW Miscellaneous Parameters							
Total Suspended Solids	<2.0		2.0	mg/L		02-JUL-19	R4692638
Polyaromatic Hydrocarbons (PAHs)	<2.0		2.0	IIIg/L		02-30L-19	K4092036
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Acenaphthene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Acenaphthylene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Anthracene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Acridine	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Benzo(a)anthracene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Benzo(a)pyrene	<0.000050		0.0000050		02-JUL-19	03-JUL-19	R4693589
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Chrysene Dibenzo(a,h)anthracene	<0.000020 <0.0000050		0.000020 0.0000050	mg/L mg/L	02-JUL-19 02-JUL-19	03-JUL-19 03-JUL-19	R4693589 R4693589
Fluoranthene	<0.0000050		0.0000030	mg/L	02-JUL-19 02-JUL-19	03-JUL-19 03-JUL-19	R4693589
Fluorene	<0.000020		0.000020	mg/L	02-JUL-19 02-JUL-19	03-JUL-19	R4693589
Indeno(1,2,3-cd)pyrene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Naphthalene	<0.000050		0.000050	mg/L	02-JUL-19	03-JUL-19	R4693589
Phenanthrene	<0.000050		0.000050	mg/L	02-JUL-19	03-JUL-19	R4693589
Pyrene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Quinoline	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	02-JUL-19	03-JUL-19	R4693589
Surrogate: Acenaphthene d10	77.7		60-130	%	02-JUL-19	03-JUL-19	R4693589
Surrogate: Acridine d9	79.2		60-130	%	02-JUL-19	03-JUL-19	R4693589
Surrogate: Chrysene d12	102.0		60-130	%	02-JUL-19	03-JUL-19	R4693589
Surrogate: Naphthalene d8	78.2		50-130	%	02-JUL-19	03-JUL-19	R4693589
Surrogate: Phenanthrene d10	85.4		60-130	%	02-JUL-19	03-JUL-19	R4693589
Nunavut WW Group 1							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	24.9		1.2	mg/L		28-JUN-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		28-JUN-19	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		28-JUN-19	
Alkalinity, Total (as CaCO3)	22.4					07 !!!!! 40	D 40000050
Alkalinity, Total (as CaCO3)	20.4		1.0	mg/L		27-JUN-19	R4689958
Ammonia by colour Ammonia, Total (as N)	<0.010		0.010	mg/L		02-JUL-19	R4692838
Biochemical Oxygen Demand (BOD)	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		0.010	1119/L		02 00L-10	117032000
Biochemical Oxygen Demand	<2.0		2.0	mg/L		27-JUN-19	R4693417
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		27-JUN-19	R4693417
Chloride in Water by IC							
Chloride (CI)	16.0		0.50	mg/L		27-JUN-19	R4691095
Conductivity Conductivity	101		1.0	umhos/cm		27-JUN-19	D4690050
Fecal coliforms, 1:10 dilution by QT97	101		1.0	ummos/CIII		21-JUN-19	R4689958
Fecal Coliforms, 1:10 dilution by Q197 Fecal Coliforms	<10	MBHT	10	MPN/100mL		26-JUN-19	R4689275
Hardness Calculated							
Hardness (as CaCO3)	26.8	нтс	0.20	mg/L		08-JUL-19	
Mercury Total							
<u> </u>	I					I	· '

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

Sample Details/Parameters	Result	Qualifier* D.L.	Units	Extracted	Analyzed	Batch
L2299273-2 GRA-6						
Sampled By: CF on 25-JUN-19 @ 09:40						
Matrix: WW						
Mercury Total Mercury (Hg)-Total	<0.000050	0.0000050	mg/L	12-JUL-19	15-JUL-19	R4712816
Nitrate in Water by IC			3			
Nitrate (as N)	<0.020	0.020	mg/L		27-JUN-19	R4691095
Nitrate+Nitrite						
Nitrate and Nitrite as N	<0.070	0.070	mg/L		30-JUN-19	
Nitrite in Water by IC					07 11 11 40	
Nitrite (as N)	<0.010	0.010	mg/L		27-JUN-19	R4691095
Oil & Grease - Gravimetric Oil and Grease	<5.0	5.0	mg/L		28-JUN-19	R4690642
Phenol (4AAP)	40.0	0.0	9/ =		20 00.1 10	111000012
Phenols (4AAP)	<0.0010	0.0010	mg/L		28-JUN-19	R4690317
Phosphorus, Total						
Phosphorus (P)-Total	0.0076	0.0030	mg/L		03-JUL-19	R4692701
Sulfate in Water by IC	4.26	0.00	ma/l		27 11 14 40	D4604005
Sulfate (SO4) Total Metals in Water by CRC ICPMS	4.36	0.30	mg/L		27-JUN-19	R4691095
Aluminum (Al)-Total	0.0118	0.0030	mg/L	05-JUL-19	05-JUL-19	R4695920
Antimony (Sb)-Total	<0.0010	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Arsenic (As)-Total	0.00035	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Barium (Ba)-Total	0.0124	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Beryllium (Be)-Total	<0.00010	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Bismuth (Bi)-Total	<0.000050	0.000050	mg/L	05-JUL-19	05-JUL-19	R4695920
Boron (B)-Total	0.021	0.010	mg/L	05-JUL-19	05-JUL-19	R4695920
Cadmium (Cd)-Total	<0.000050	0.0000050	mg/L	05-JUL-19	05-JUL-19	R4695920
Calcium (Ca)-Total	7.85	0.050	mg/L	05-JUL-19	05-JUL-19	R4695920
Cesium (Cs)-Total	<0.000010	0.000010	mg/L	05-JUL-19	05-JUL-19	R4695920
Chromium (Cr)-Total	0.00025	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Cobalt (Co)-Total	<0.00010	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Copper (Cu)-Total Iron (Fe)-Total	0.00092	0.00050	mg/L	05-JUL-19 05-JUL-19	05-JUL-19	R4695920
Lead (Pb)-Total	0.066 <0.000050	0.010 0.000050	mg/L mg/L	05-JUL-19 05-JUL-19	05-JUL-19 05-JUL-19	R4695920 R4695920
Lithium (Li)-Total	<0.000050	0.00050	mg/L	05-JUL-19 05-JUL-19	05-JUL-19 05-JUL-19	R4695920 R4695920
Magnesium (Mg)-Total	1.75	0.0010	mg/L	05-JUL-19	05-JUL-19	R4695920
Manganese (Mn)-Total	0.00340	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Molybdenum (Mo)-Total	0.000204	0.000050	mg/L	05-JUL-19	05-JUL-19	R4695920
Nickel (Ni)-Total	0.00063	0.00050	mg/L	05-JUL-19	05-JUL-19	R4695920
Potassium (K)-Total	1.26	0.050	mg/L	05-JUL-19	05-JUL-19	R4695920
Phosphorus (P)-Total	< 0.030	0.030	mg/L	05-JUL-19	05-JUL-19	R4695920
Rubidium (Rb)-Total	0.00159	0.00020	mg/L	05-JUL-19	05-JUL-19	R4695920
Selenium (Se)-Total	<0.000050	0.000050	mg/L	05-JUL-19	05-JUL-19	R4695920
Silicon (Si)-Total	0.27	0.10	mg/L	05-JUL-19	05-JUL-19	R4695920
Silver (Ag)-Total	<0.000010	0.000010	mg/L	05-JUL-19	05-JUL-19	R4695920
Sodium (Na)-Total	8.75	0.050	mg/L	05-JUL-19	05-JUL-19	R4695920
Strontium (Sr)-Total Sulfur (S)-Total	0.0451	0.00020	mg/L	05-JUL-19	05-JUL-19	R4695920
Tellurium (Te)-Total	1.59 <0.00020	0.50 0.00020	mg/L mg/l	05-JUL-19 05-JUL-19	05-JUL-19 05-JUL-19	R4695920
Thallium (TI)-Total	<0.00020	0.00020	mg/L mg/L	05-JUL-19 05-JUL-19	05-JUL-19 05-JUL-19	R4695920 R4695920
Thorium (Th)-Total	<0.00010	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Tin (Sn)-Total	0.00102	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Titanium (Ti)-Total	0.00051	0.00030	mg/L	05-JUL-19	05-JUL-19	R4695920
Tungsten (W)-Total	<0.00010	0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
Uranium (U)-Total	0.000034	0.000010	mg/L	05-JUL-19	05-JUL-19	R4695920

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

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2299273-2 GRA-6							
Sampled By: CF on 25-JUN-19 @ 09:40							
Matrix: WW							
Total Metals in Water by CRC ICPMS							
Vanadium (V)-Total	<0.00050		0.00050	mg/L	05-JUL-19	05-JUL-19	R4695920
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	05-JUL-19	05-JUL-19	R4695920
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	05-JUL-19	05-JUL-19	R4695920
Total Organic Carbon by Combustion	4.50		0.50			05 1111 40	D 4000000
Total Organic Carbon	4.53		0.50	mg/L		05-JUL-19	R4696200
pH	7.00		0.40	pH units		27-JUN-19	D46000E0
pH	7.28		0.10	priums		27-3011-19	R4689958
L2299273-3 GRA-1							
Sampled By: CF on 25-JUN-19 @ 10:00							
Matrix: WW							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		05-JUL-19	R4696443
Toluene	<0.0010		0.0010	mg/L		05-JUL-19	R4696443
Ethyl benzene	<0.00050		0.00050	mg/L		05-JUL-19	R4696443
o-Xylene	<0.00050		0.00050	mg/L		05-JUL-19	R4696443
m+p-Xylenes	<0.00040		0.00040	mg/L		05-JUL-19	R4696443
F1 (C6-C10)	<0.10		0.10	mg/L		05-JUL-19	R4696443
Surrogate: 4-Bromofluorobenzene (SS)	105.0		70-130	%		05-JUL-19	R4696443
CCME PHC F2-F4 in Water	0.40		0.40	/1	00 11111 40	07 1111 40	D 4000000
F2 (C10-C16)	<0.10		0.10	mg/L	28-JUN-19	07-JUL-19	R4699009
F3 (C16-C34)	<0.25		0.25	mg/L	28-JUN-19	07-JUL-19	R4699009
F4 (C34-C50) Surrogate: 2-Bromobenzotrifluoride	<0.25		0.25	mg/L %	28-JUN-19 28-JUN-19	07-JUL-19 07-JUL-19	R4699009
-	84.3		60-140	70	20-3011-19	07-30L-19	R4699009
CCME Total Hydrocarbons F1-BTEX	<0.10		0.10	mg/L		11-JUL-19	
F2-Naphth	<0.10		0.10	mg/L		11-JUL-19	
F3-PAH	<0.10		0.10	mg/L		11-JUL-19	
Total Hydrocarbons (C6-C50)	<0.38		0.23	mg/L		11-JUL-19	
Sum of Xylene Isomer Concentrations	10.00		0.00	9/ =		11 002 10	
Xylenes (Total)	<0.00064		0.00064	mg/L		09-JUL-19	
Miscellaneous Parameters				3			
Total Suspended Solids	<2.0		2.0	mg/L		02-JUL-19	R4692638
Polyaromatic Hydrocarbons (PAHs)	12.0		2.0				11.002000
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Acenaphthene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Acenaphthylene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Anthracene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Acridine	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Benzo(a)anthracene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Benzo(a)pyrene	<0.000050		0.0000050	mg/L	02-JUL-19	03-JUL-19	R4693589
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Chrysene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Dibenzo(a,h)anthracene	<0.000050		0.0000050	mg/L	02-JUL-19	03-JUL-19	R4693589
Fluoranthene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Fluorene	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Naphthalene	<0.000050		0.000050	mg/L	02-JUL-19	03-JUL-19	R4693589

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

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2299273-3 GRA-1							
Sampled By: CF on 25-JUN-19 @ 10:00							
Matrix: WW							
Polyaromatic Hydrocarbons (PAHs)							
Phenanthrene	<0.000050		0.000050	mg/L	02-JUL-19	03-JUL-19	R4693589
Pyrene	<0.000010		0.000010	mg/L	02-JUL-19	03-JUL-19	R4693589
Quinoline	<0.000020		0.000020	mg/L	02-JUL-19	03-JUL-19	R4693589
B(a)P Total Potency Equivalent Surrogate: Acenaphthene d10	<0.000030 79.4		0.000030 60-130	mg/L %	02-JUL-19 02-JUL-19	03-JUL-19 03-JUL-19	R4693589 R4693589
Surrogate: Aceriaprimene d 10 Surrogate: Acridine d9	79.4		60-130	%	02-JUL-19 02-JUL-19	03-JUL-19 03-JUL-19	R4693589
Surrogate: Chrysene d12	104.9		60-130	%	02-JUL-19	03-JUL-19	R4693589
Surrogate: Naphthalene d8	81.0		50-130	%	02-JUL-19	03-JUL-19	R4693589
Surrogate: Phenanthrene d10	89.2		60-130	%	02-JUL-19	03-JUL-19	R4693589
Nunavut WW Group 1							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	37.2		1.2	mg/L		28-JUN-19	
Alkalinity, Carbonate							
Carbonate (CO3) Alkalinity, Hydroxide	<0.60		0.60	mg/L		28-JUN-19	
Hydroxide (OH) Alkalinity, Total (as CaCO3)	<0.34		0.34	mg/L		28-JUN-19	
Alkalinity, Total (as CaCO3) Ammonia by colour	30.5		1.0	mg/L		27-JUN-19	R4689958
Ammonia, Total (as N)	0.040		0.010	mg/L		02-JUL-19	R4692838
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	<2.0		2.0	mg/L		27-JUN-19	R4693417
Carbonaceous BOD BOD Carbonaceous	<2.0		2.0	mg/L		27-JUN-19	R4693417
Chloride in Water by IC Chloride (CI)	21.9		0.50	mg/L		27-JUN-19	R4691095
Conductivity Conductivity	157		1.0	umhos/cm		27-JUN-19	R4689958
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	<10	MBHT	10	MPN/100mL		26-JUN-19	R4689275
Hardness Calculated Hardness (as CaCO3)	45.2	HTC	0.20	mg/L		08-JUL-19	
Mercury Total Mercury (Hg)-Total	<0.000050		0.0000050	mg/L	12-JUL-19	15-JUL-19	R4712816
Nitrate in Water by IC Nitrate (as N)	<0.020		0.020	mg/L		27-JUN-19	R4691095
Nitrate+Nitrite Nitrate and Nitrite as N	<0.070		0.070	mg/L		30-JUN-19	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		27-JUN-19	R4691095
Oil & Grease - Gravimetric Oil and Grease	<5.0		5.0	mg/L		28-JUN-19	R4690642
Phenol (4AAP) Phenols (4AAP)	<0.0010		0.0010	mg/L		28-JUN-19	R4690317
Phosphorus, Total Phosphorus (P)-Total						03-JUL-19	
Sulfate in Water by IC	0.0163		0.0030	mg/L			R4692701
Sulfate (SO4)	14.7		0.30	mg/L		27-JUN-19	R4691095
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.0352		0.0030	mg/L	05-JUL-19	05-JUL-19	R4695920
Antimony (Sb)-Total	<0.00010		0.0030	mg/L	05-JUL-19	05-JUL-19	R4695920
Arsenic (As)-Total	0.00061		0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920

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

0.00010 0.00010 0.000050 0.010 0.000050 0.050 0.00010 0.00010 0.00050 0.010 0.00050 0.0010 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.0050 0.0050 0.0050 0.00050 0.00050 0.00050 0.00050 0.00050 0.00050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050 0.000050	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19	05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19 05-JUL-19	R4695920 R4695920
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0.00010	mg/L	05-JUL-19	05-JUL-19	R4695920
0.00030	mg/L	05-JUL-19	05-JUL-19	R4695920
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0.00050	mg/L	05-JUL-19	05-JUL-19	R4695920
0.0030	mg/L	05-JUL-19	05-JUL-19	R4695920
0.00020	mg/L	05-JUL-19	05-JUL-19	R4695920
0.50	ma/l		05-1111-10	R4696200
0.50	ilig/L		03-306-19	N4090200
0.10	pH units		27-JUN-19	R4689958
	0.00020 0.50 0.00020 0.000010 0.00010 0.00030 0.00010 0.00050 0.00050 0.0030 0.00020	0.00020 mg/L 0.50 mg/L 0.00020 mg/L 0.000010 mg/L 0.00010 mg/L 0.00010 mg/L 0.00030 mg/L 0.00010 mg/L 0.00050 mg/L 0.0030 mg/L 0.0030 mg/L 0.00050 mg/L 0.00020 mg/L	0.00020 mg/L 05-JUL-19 0.50 mg/L 05-JUL-19 0.00020 mg/L 05-JUL-19 0.000010 mg/L 05-JUL-19 0.00010 mg/L 05-JUL-19 0.00030 mg/L 05-JUL-19 0.00010 mg/L 05-JUL-19 0.000010 mg/L 05-JUL-19 0.000010 mg/L 05-JUL-19 0.00050 mg/L 05-JUL-19 0.0030 mg/L 05-JUL-19 0.00020 mg/L 05-JUL-19 0.50 mg/L 05-JUL-19	0.00020 mg/L 05-JUL-19 05-JUL-19 0.50 mg/L 05-JUL-19 05-JUL-19 0.00020 mg/L 05-JUL-19 05-JUL-19 0.000010 mg/L 05-JUL-19 05-JUL-19 0.00010 mg/L 05-JUL-19 05-JUL-19 0.00030 mg/L 05-JUL-19 05-JUL-19 0.00010 mg/L 05-JUL-19 05-JUL-19 0.000010 mg/L 05-JUL-19 05-JUL-19 0.00050 mg/L 05-JUL-19 05-JUL-19 0.0030 mg/L 05-JUL-19 05-JUL-19 0.50020 mg/L 05-JUL-19 05-JUL-19 0.50020 mg/L 05-JUL-19 05-JUL-19

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

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Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may be valid in some cases (refer to Health Canada guidance).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

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- Water Alkalinity, Bicarbonate CALCULATION WP

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.

3OD-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.

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

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP Water 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 $44.5 - 0.2^{\circ}$ C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PH-WP Water pH APHA 4500H

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

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

L2299273 CONTD....

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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-

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.



Workorder: L2299273 Report Date: 17-JUL-19 Page 1 of 11

Client: Nunavut Community & Government Services - Rankin Inlet

Box 96

Whale Cove NU X0C 0J0

Contact: CONNOR FAULKNER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R4	689958							
WG3091118-20 Alkalinity, Total		L2299273-2 20.4	20.8		mg/L	1.9	20	27-JUN-19
WG3091118-19 Alkalinity, Total			105.0		%		85-115	27-JUN-19
WG3091118-16 Alkalinity, Total			<1.0		mg/L		1	27-JUN-19
BOD-CBOD-WP	Water							
Batch R4	693417							
WG3089639-7 BOD Carbonace			90.0		%		85-115	27-JUN-19
WG3089639-6 BOD Carbonace	MB eous		<2.0		mg/L		2	27-JUN-19
BOD-WP	Water							
Batch R4	693417							
WG3089639-7	LCS							
Biochemical Ox	ygen Demand		103.9		%		85-115	27-JUN-19
WG3089639-6	МВ							
Biochemical Ox	ygen Demand		<2.0		mg/L		2	27-JUN-19
BTEXS+F1-HSMS-	WP Water							
Batch R4	696443							
WG3098147-4 Benzene	DUP	L2299273-1 <0.00050	<0.00050	RPD-NA	mg/L	N/A	30	05-JUL-19
Toluene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	05-JUL-19
Ethyl benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	05-JUL-19
o-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	05-JUL-19
m+p-Xylenes		<0.00040	<0.00040	RPD-NA	mg/L	N/A	30	05-JUL-19
F1 (C6-C10)		<0.10	<0.10	RPD-NA	mg/L	N/A	30	05-JUL-19
WG3098147-2 Benzene	LCS		92.4		%		70-130	07-JUL-19
Toluene			92.4		%		70-130	07-JUL-19
Ethyl benzene			99.9		%		70-130	07-JUL-19
o-Xylene			105.2		%		70-130	07-JUL-19
m+p-Xylenes			85.4		%		70-130	07-30L-19 07-JUL-19
WG3098147-3	LCS						70 100	07 001 10
F1 (C6-C10)	200		97.2		%		70-130	07-JUL-19
WG3098147-1 Benzene	МВ		<0.00050		mg/L		0.0005	05-JUL-19



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Workorder: L2299273 Report Date: 17-JUL-19

Test Matrix Reference Result Qualifier Units **RPD** Limit Analyzed BTEXS+F1-HSMS-WP Water R4696443 WG3098147-1 MB Toluene < 0.0010 mg/L 0.001 05-JUL-19 Ethyl benzene < 0.00050 mg/L 0.0005 05-JUL-19 o-Xylene < 0.00030 mg/L 0.0003 05-JUL-19 m+p-Xylenes < 0.00040 mg/L 0.0004 05-JUL-19 F1 (C6-C10) <0.10 mg/L 0.1 05-JUL-19 Surrogate: 4-Bromofluorobenzene (SS) 101.0 % 70-130 05-JUL-19 WG3098147-5 MS L2299273-3 F1 (C6-C10) 107.2 % 50-150 07-JUL-19 WG3098147-6 MS L2299273-2 Benzene 90.8 % 07-JUL-19 50-150 Toluene 88.7 % 50-150 07-JUL-19 Ethyl benzene 97.4 % 07-JUL-19 50-150 o-Xylene 104.7 % 50-150 07-JUL-19 m+p-Xylenes 83.2 % 50-150 07-JUL-19 C-TOC-HTC-WP Water R4696200 Batch WG3098093-6 LCS 99.2 **Total Organic Carbon** % 80-120 05-JUL-19 WG3098093-5 MB < 0.50 **Total Organic Carbon** mg/L 0.5 05-JUL-19 **CL-IC-N-WP** Water R4691095 Batch WG3089396-2 LCS Chloride (CI) 100.0 % 90-110 27-JUN-19 WG3089396-1 MB Chloride (CI) < 0.50 mg/L 0.5 27-JUN-19 EC-WP Water **Batch** R4689958 WG3091118-20 DUP L2299273-2 101 Conductivity 101 umhos/cm 0.0 10 27-JUN-19 WG3091118-18 LCS Conductivity 97.4 % 27-JUN-19 90-110 WG3091118-16 MB Conductivity <1.0 umhos/cm 1 27-JUN-19 F2-F4-FID-WP Water



Workorder: L2299273 Report Date: 17-JUL-19 Page 3 of 11

Test	Matrix	Reference	Result C	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-FID-WP	Water							
Batch R4699								
F2 (C10-C16)	,0		99.6		%		70-130	07-JUL-19
F3 (C16-C34)			100.4		%		70-130	07-JUL-19
F4 (C34-C50)			111.8		%		70-130	07-JUL-19
WG3092259-3 MI F2 (C10-C16)	3		<0.10		mg/L		0.1	07-JUL-19
F3 (C16-C34)			<0.25		mg/L		0.25	07-JUL-19
F4 (C34-C50)			<0.25		mg/L		0.25	07-JUL-19
Surrogate: 2-Bromo	benzotrifluoride		89.3		%		60-140	07-JUL-19
FC10-QT97-WP	Water							
Batch R4689	275							
WG3089240-2 DL		L2299273-1						
Fecal Coliforms		<10	<10	RPD-NA	MPN/100mL	N/A	65	26-JUN-19
WG3089240-1 MI Fecal Coliforms	3		<1		MPN/100mL		1	26-JUN-19
HG-T-CVAA-WP	Water							
Batch R4712	816							
WG3106592-3 DU	JP	L2299273-1						
Mercury (Hg)-Total		<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	15-JUL-19
WG3106592-2 LC Mercury (Hg)-Total	S		91.0		%		80-120	15-JUL-19
WG3106592-1 MI Mercury (Hg)-Total	3		<0.0000050		mg/L		0.000005	15-JUL-19
WG3106592-4 MS	5	L2299273-2						
Mercury (Hg)-Total			100.0		%		70-130	15-JUL-19
MET-T-CCMS-WP	Water							
Batch R4695	920							
WG3096575-2 LC								
Aluminum (Al)-Total			99.8		%		80-120	05-JUL-19
Antimony (Sb)-Total			100.0		%		80-120	05-JUL-19
Arsenic (As)-Total			100.3		%		80-120	05-JUL-19
Barium (Ba)-Total			97.1		%		80-120	05-JUL-19
Beryllium (Be)-Total			99.3		%		80-120	05-JUL-19
Bismuth (Bi)-Total			98.6		%		80-120	05-JUL-19
Boron (B)-Total			98.2		%		80-120	05-JUL-19
Cadmium (Cd)-Tota	ıl		98.6		%		80-120	05-JUL-19



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est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
IET-T-CCMS-WP	Water							
Batch R4695920								
WG3096575-2 LCS			00.0		0/			
Calcium (Ca)-Total			98.8		%		80-120	05-JUL-19
Cesium (Cs)-Total			95.6		%		80-120	05-JUL-19
Chromium (Cr)-Total			99.2		%		80-120	05-JUL-19
Cobalt (Co)-Total			97.8		%		80-120	05-JUL-19
Copper (Cu)-Total			98.3		%		80-120	05-JUL-19
Iron (Fe)-Total			84.3		%		80-120	05-JUL-19
Lead (Pb)-Total			98.6		%		80-120	05-JUL-19
Lithium (Li)-Total			89.3		%		80-120	05-JUL-19
Magnesium (Mg)-Total			110.9		%		80-120	05-JUL-19
Manganese (Mn)-Total			98.0		%		80-120	05-JUL-19
Molybdenum (Mo)-Total			102.7		%		80-120	05-JUL-19
Nickel (Ni)-Total			98.0		%		80-120	05-JUL-19
Potassium (K)-Total			95.6		%		80-120	05-JUL-19
Phosphorus (P)-Total			102.9		%		80-120	05-JUL-19
Rubidium (Rb)-Total			99.99		%		80-120	05-JUL-19
Selenium (Se)-Total			96.9		%		80-120	05-JUL-19
Silicon (Si)-Total			95.3		%		80-120	05-JUL-19
Silver (Ag)-Total			96.8		%		80-120	05-JUL-19
Sodium (Na)-Total			96.5		%		80-120	05-JUL-19
Strontium (Sr)-Total			97.8		%		80-120	05-JUL-19
Sulfur (S)-Total			99.6		%		80-120	05-JUL-19
Tellurium (Te)-Total			100.4		%		80-120	05-JUL-19
Thallium (TI)-Total			102.4		%		80-120	05-JUL-19
Thorium (Th)-Total			96.1		%		80-120	05-JUL-19
Tin (Sn)-Total			98.8		%		80-120	05-JUL-19
Titanium (Ti)-Total			98.1		%		80-120	05-JUL-19
Tungsten (W)-Total			98.2		%		80-120	05-JUL-19
Uranium (U)-Total			98.5		%		80-120	05-JUL-19
Vanadium (V)-Total			99.2		%		80-120	05-JUL-19
Zinc (Zn)-Total			98.9		%		80-120	05-JUL-19
Zirconium (Zr)-Total			95.8		%		80-120	05-JUL-19
WG3096575-1 MB			55.0		70		00-120	00-00L-19
Aluminum (Al)-Total			<0.0030		mg/L		0.003	05-JUL-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	05-JUL-19



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MET-T-CCMS-WP	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NC3096575-1 MB Arsenic (As)-Total <0.00010 mg/L 0.0001 05-JUL-19 Barium (Ba)-Total <0.00010 mg/L 0.0001 05-JUL-19 Beryllium (Be)-Total <0.00010 mg/L 0.0001 05-JUL-19 Bismuth (Bi)-Total <0.00050 mg/L 0.0005 05-JUL-19 Bismuth (Bi)-Total <0.000050 mg/L 0.00005 05-JUL-19 Boron (B)-Total <0.000050 mg/L 0.00005 05-JUL-19 Cadmium (Cd)-Total <0.000005 05-JUL-19 Cadmium (Cd)-Total <0.000005 05-JUL-19 Cadmium (Cd)-Total <0.000005 05-JUL-19 Cadmium (Cd)-Total <0.00000 05-JUL-19 Cosium (Ca)-Total <0.000010 mg/L 0.00001 05-JUL-19 Cosium (Ca)-Total <0.000010 mg/L 0.00010 05-JUL-19 Coball (Co)-Total <0.000010 mg/L 0.0001 05-JUL-19 Coball (Co)-Total <0.00010 mg/L 0.0001 05-JUL-19 Coper (Cu)-Total <0.00010 mg/L 0.0001 05-JUL-19 Iron (Fe)-Total <0.00010 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00010 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.000050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00010 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00010 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.000050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00010 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00010 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00010 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.000010 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.000010 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.00010 mg/L 0.00001 05-JUL-19 Iron (Fe)-Total <0.00010 mg/L	MET-T-CCMS-WP	Water							
Arsenic (As)-Total	Batch R4695920								
Barium (Ba)-Total				0.00040		4			
Beryllium (Be)-Total						-			
Bismuth (Bi)-Total									
Boron (B)-Total						-			
Cadmium (Cd)-Total <0.000055 mg/L 0.00005 05-JUL-19 Calcium (Ca)-Total <0.050	, ,)	-			
Calcium (Ca)-Total <0.050	` '					-		0.01	
Cesium (Cs)-Total <0.000010	,				5C				
Chromium (Cr)-Total <0.00010	, ,							0.05	05-JUL-19
Cobalt (Co)-Total <0.00010)	-		0.00001	05-JUL-19
Copper (Cu)-Total <0.00050 mg/L 0.0005 05-JUL-19 Iron (Fe)-Total <0.010	, ,								05-JUL-19
Iron (Fe)-Total <0.010				<0.00010		mg/L		0.0001	05-JUL-19
Lead (Pb)-Total <0.000050	Copper (Cu)-Total			<0.00050		mg/L		0.0005	05-JUL-19
Lithium (Li)-Total <0.0010 mg/L 0.001 05-JUL-19 Magnesium (Mg)-Total <0.0050	Iron (Fe)-Total			<0.010		mg/L		0.01	05-JUL-19
Magnesium (Mg)-Total <0.0050	Lead (Pb)-Total			<0.000050)	mg/L		0.00005	05-JUL-19
Manganese (Mh)-Total <0.00010	Lithium (Li)-Total			<0.0010		mg/L		0.001	05-JUL-19
Molybdenum (Mo)-Total <0.000050 mg/L 0.00005 05-JUL-19 Nickel (Ni)-Total <0.00050	Magnesium (Mg)-Total			< 0.0050		mg/L		0.005	05-JUL-19
Nickel (Ni)-Total <0.00050 mg/L 0.0005 05-JUL-19 Potassium (K)-Total <0.050	Manganese (Mn)-Total			<0.00010		mg/L		0.0001	05-JUL-19
Potassium (K)-Total <0.050 mg/L 0.05 05-JUL-19 Phosphorus (P)-Total <0.030	Molybdenum (Mo)-Total			<0.000050)	mg/L		0.00005	05-JUL-19
Phosphorus (P)-Total <0.030	Nickel (Ni)-Total			<0.00050		mg/L		0.0005	05-JUL-19
Rubidium (Rb)-Total <0.00020	Potassium (K)-Total			< 0.050		mg/L		0.05	05-JUL-19
Selenium (Se)-Total <0.000050	Phosphorus (P)-Total			< 0.030		mg/L		0.03	05-JUL-19
Silicon (Si)-Total <0.10	Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	05-JUL-19
Silver (Ag)-Total <0.000010	Selenium (Se)-Total			<0.000050)	mg/L		0.00005	05-JUL-19
Sodium (Na)-Total <0.050	Silicon (Si)-Total			<0.10		mg/L		0.1	05-JUL-19
Strontium (Sr)-Total <0.00020 mg/L 0.0002 05-JUL-19 Sulfur (S)-Total <0.50	Silver (Ag)-Total			<0.000010)	mg/L		0.00001	05-JUL-19
Sulfur (S)-Total <0.50	Sodium (Na)-Total			< 0.050		mg/L		0.05	05-JUL-19
Tellurium (Te)-Total <0.00020	Strontium (Sr)-Total			<0.00020		mg/L		0.0002	05-JUL-19
Thallium (TI)-Total <0.000010	Sulfur (S)-Total			<0.50		mg/L		0.5	05-JUL-19
Thorium (Th)-Total <0.00010 mg/L 0.0001 05-JUL-19 Tin (Sn)-Total <0.00010	Tellurium (Te)-Total			<0.00020		mg/L		0.0002	05-JUL-19
Tin (Sn)-Total <0.00010	Thallium (TI)-Total			<0.000010)	mg/L		0.00001	05-JUL-19
Titanium (Ti)-Total <0.00030	Thorium (Th)-Total			<0.00010		mg/L		0.0001	05-JUL-19
Tungsten (W)-Total <0.00010 mg/L 0.0001 05-JUL-19	Tin (Sn)-Total			<0.00010		mg/L		0.0001	05-JUL-19
	Titanium (Ti)-Total			<0.00030		mg/L		0.0003	05-JUL-19
Uranium (U)-Total <0.000010 mg/L 0.00001 05-JUL-19	Tungsten (W)-Total			<0.00010		mg/L		0.0001	05-JUL-19
	Uranium (U)-Total			<0.000010)	mg/L		0.00001	05-JUL-19



Workorder: L2299273

Report Date: 17-JUL-19

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Test	Matrix	Reference	Result C	Qualifier Ur	nits RPD	Limit	Analyzed
MET-T-CCMS-WP	Water						
Batch R4695920							
WG3096575-1 MB Vanadium (V)-Total			<0.00050	m	a/l	0.0005	05 1111 40
Zinc (Zn)-Total			<0.00030		ıg/L ıg/L	0.0005 0.003	05-JUL-19 05-JUL-19
Zirconium (Zr)-Total			<0.0000		ig/L	0.0002	05-JUL-19
NH3-COL-WP	Water		10.00020		3· –	0.0002	00 002 10
Batch R4692838							
WG3094584-6 LCS							
Ammonia, Total (as N)			96.6	%		85-115	02-JUL-19
WG3094584-5 MB			-0.040		a /l	0.04	00 11 11 15
Ammonia, Total (as N)			<0.010	m	g/L	0.01	02-JUL-19
NO2-IC-N-WP	Water						
Batch R4691095							
WG3089396-2 LCS Nitrite (as N)			101.7	%	3	90-110	27-JUN-19
WG3089396-1 MB							
Nitrite (as N)			<0.010	m	g/L	0.01	27-JUN-19
NO3-IC-N-WP	Water						
Batch R4691095							
WG3089396-2 LCS			99.8	%		00.440	07 11 11 40
Nitrate (as N)			99.0	70)	90-110	27-JUN-19
WG3089396-1 MB Nitrate (as N)			<0.020	m	g/L	0.02	27-JUN-19
OG-GRAV-WP	Water						
Batch R4690642							
WG3091032-2 LCS							
Oil and Grease			91.2	%)	70-130	28-JUN-19
WG3091032-1 MB Oil and Grease			-E O		a/l	F	00 11 11 46
Oil and Grease			<5.0	m	g/L	5	28-JUN-19
P-T-COL-WP	Water						
Batch R4692701							
WG3092371-2 LCS Phosphorus (P)-Total			100.2	%)	80-120	03-JUL-19
WG3092371-1 MB							
Phosphorus (P)-Total			<0.0030	m	g/L	0.003	03-JUL-19
PAH,PANH-WP	Water						



Workorder: L2299273 Report Date: 17-JUL-19 Page 7 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4693589								
WG3094695-2 LCS			07.4		0/			
1-Methyl Naphthalene			97.1		%		60-130	03-JUL-19
2-Methyl Naphthalene			89.4		%		60-130	03-JUL-19
Acenaphthene			96.4		%		60-130	03-JUL-19
Acenaphthylene			83.3		%		60-130	03-JUL-19
Anthracene			86.3		%		60-130	03-JUL-19
Acridine			99.0		%		60-130	03-JUL-19
Benzo(a)anthracene			91.5		%		60-130	03-JUL-19
Benzo(a)pyrene			88.8		%		60-130	03-JUL-19
Benzo(b&j)fluoranthene			89.4		%		60-130	03-JUL-19
Benzo(g,h,i)perylene			89.8		%		60-130	03-JUL-19
Benzo(k)fluoranthene			93.0		%		60-130	03-JUL-19
Chrysene			92.5		%		60-130	03-JUL-19
Dibenzo(a,h)anthracene			109.9		%		60-130	03-JUL-19
Fluoranthene			99.4		%		60-130	03-JUL-19
Fluorene			96.9		%		60-130	03-JUL-19
Indeno(1,2,3-cd)pyrene			85.7		%		60-130	03-JUL-19
Naphthalene			101.9		%		50-130	03-JUL-19
Phenanthrene			112.6		%		60-130	03-JUL-19
Pyrene			99.1		%		60-130	03-JUL-19
Quinoline			105.4		%		60-130	03-JUL-19
WG3094695-1 MB								
1-Methyl Naphthalene			<0.00002	0	mg/L		0.00002	03-JUL-19
2-Methyl Naphthalene			<0.00002	0	mg/L		0.00002	03-JUL-19
Acenaphthene			<0.00002	0	mg/L		0.00002	03-JUL-19
Acenaphthylene			<0.00002	0	mg/L		0.00002	03-JUL-19
Anthracene			<0.00001	0	mg/L		0.00001	03-JUL-19
Acridine			<0.00002	0	mg/L		0.00002	03-JUL-19
Benzo(a)anthracene			<0.00001	0	mg/L		0.00001	03-JUL-19
Benzo(a)pyrene			<0.00000	50	mg/L		0.000005	03-JUL-19
Benzo(b&j)fluoranthene			<0.00001	0	mg/L		0.00001	03-JUL-19
Benzo(g,h,i)perylene			<0.00002	0	mg/L		0.00002	03-JUL-19
Benzo(k)fluoranthene			<0.00001	0	mg/L		0.00001	03-JUL-19
Chrysene			<0.00002	0	mg/L		0.00002	03-JUL-19
Dibenzo(a,h)anthracene			<0.00000	50	mg/L		0.000005	03-JUL-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4693589 WG3094695-1 MB)							
Fluoranthene			<0.000020)	mg/L		0.00002	03-JUL-19
Fluorene			<0.000020)	mg/L		0.00002	03-JUL-19
Indeno(1,2,3-cd)pyrene	Э		<0.000010)	mg/L		0.00001	03-JUL-19
Naphthalene			<0.000050)	mg/L		0.00005	03-JUL-19
Phenanthrene			<0.000050)	mg/L		0.00005	03-JUL-19
Pyrene			<0.000010)	mg/L		0.00001	03-JUL-19
Quinoline			<0.000020)	mg/L		0.00002	03-JUL-19
Surrogate: Acenaphthe	ene d10		84.0		%		60-130	03-JUL-19
Surrogate: Acridine d9			82.4		%		60-130	03-JUL-19
Surrogate: Chrysene d	12		107.2		%		60-130	03-JUL-19
Surrogate: Naphthalen	e d8		86.4		%		50-130	03-JUL-19
Surrogate: Phenanthre	ne d10		87.1		%		60-130	03-JUL-19
PH-WP	Water							
Batch R4689958	3							
WG3091118-20 DUP		L2299273-2						
рН		7.28	7.29	J	pH units	0.01	0.2	27-JUN-19
WG3091118-17 LCS pH			7.39		pH units		7075	27 IIIN 40
			7.59		pri units		7.3-7.5	27-JUN-19
PHENOLS-4AAP-WT	Water							
Batch R4690317	7							
WG3091117-6 LCS Phenols (4AAP)			98.4		%		85-115	28-JUN-19
WG3091117-5 MB							00 110	20 0011 10
Phenols (4AAP)			<0.0010		mg/L		0.001	28-JUN-19
SO4-IC-N-WP	Water							
Batch R4691095								
WG3089396-2 LCS								
Sulfate (SO4)			101.1		%		90-110	27-JUN-19
WG3089396-1 MB								
Sulfate (SO4)			< 0.30		mg/L		0.3	27-JUN-19
SOLIDS-TOTSUS-WP	Water							
Batch R4692638	3							
WG3091740-10 LCS	_		440.5		0.4			
Total Suspended Solid	S		110.6		%		85-115	02-JUL-19
WG3091740-9 MB								



Workorder: L2299273 Report Date: 17-JUL-19 Page 9 of 11

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-WP	Water							
Batch R4692638 WG3091740-9 MB Total Suspended Solids			<2.0		mg/L			02-JUL-19

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

Workorder: L2299273 Report Date: 17-JUL-19 Page 11 of 11

Hold Time Exceedances:

S	Sample						
Product Description	ID [']	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
sical Tests							
Н							
	1	25-JUN-19 09:15	27-JUN-19 12:00	0.25	51	hours	EHTR-FM
	2	25-JUN-19 09:40	27-JUN-19 12:00	0.25	50	hours	EHTR-FM
	3	25-JUN-19 10:00	27-JUN-19 12:00	0.25	50	hours	EHTR-FM
teriological Tests							
Fecal coliforms, 1:10 dilution by	/ QT97						
	1	25-JUN-19 09:15	26-JUN-19 17:00	30	32	hours	EHTL
	2	25-JUN-19 09:40	26-JUN-19 17:00	30	31	hours	EHTL
	3	25-JUN-19 10:00	26-JUN-19 17:00	30	31	hours	EHTL
and 0 Onalities Definitions	3	25-JUN-19 10:00	26-JUN-19 17:00	30	31	nours	

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 L2299273 were received on 26-JUN-19 12:20.

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.

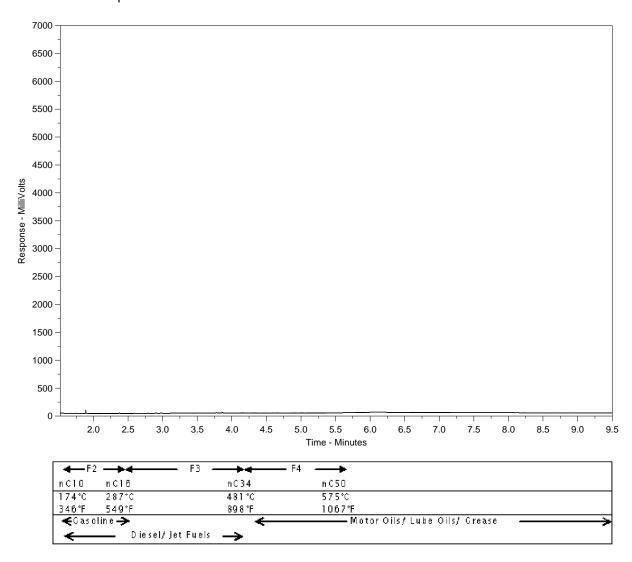
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide 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: L2299273-1 Client Sample ID: GRA-7



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.

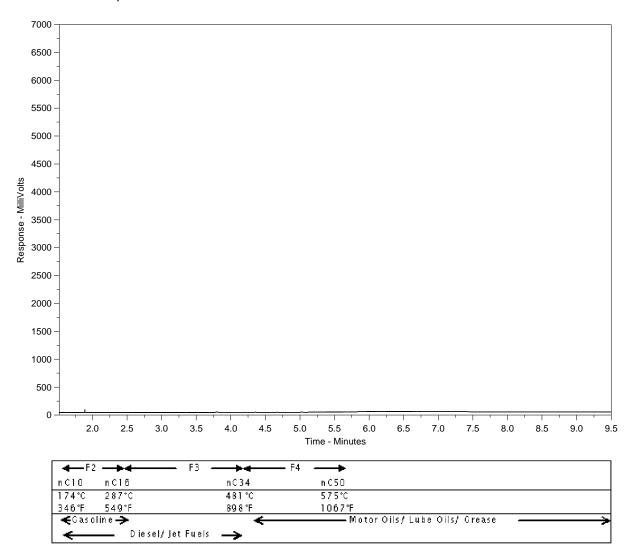
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2299273-2 Client Sample ID: GRA-6



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.

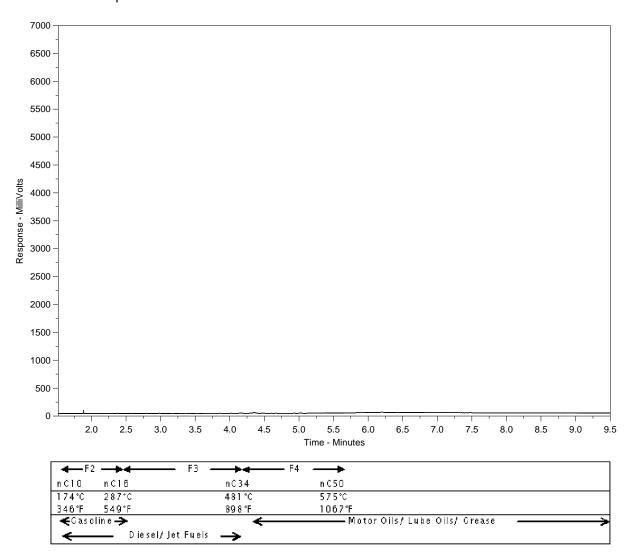
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2299273-3 Client Sample ID: GRA-1



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.



Chain of Custody (COC) / Analytic Request Form

L2299273-COFC

COC-Number: 17 - 747781

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Canada Toli Free: 1 800 668 9878

Contact and company name below will appear on the final report evel Below - Contact your AM to confirm all E&P TATs (surcharges may apply) Report To GN-Cas - Runtin Inlet PDF EXCEL | EDD (DIGITAL) Standard TAT if received by 3 pm - business days - no surcharges apply Company: 867-643-8176 Quality Control (QC) Report with Report 4 day [P4-20%] 1 Business day [E - 100%] Contact: Compare Results to Criteria on Report - provide details below if box checked 3 day [P3-25%] Phone: Same Day, Weekend or Statutory holiday [E2 -200% EMAIL | MAIL | FAX Company address below will appear on the final report 2 day [P2-50%] (Laboratory opening fees may apply)] Email 1 or Fax (fau) Kur @gov, nv. [9 (70 BOX 490 Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm Street: Rankin Inkt, NU or tasts that can not be performed according to the service level selected, you will be contacted. City/Province: Postal Code: XUL DUO Email 3 Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Invoice To Same as Report To YES [Invoice Distribution ON HOLD Select Invoice Distribution: EMAIL MAIL Copy of Invoice with Report YES [ONTAINER Email 1 or Fax Company Email 2 Contact: Total Menuny Oil and Gas Required Fields (client use) **Project Information** THE NATIONAL ALS Account # / Quote #: WB\37 Total prestill AFE/Cost Center \sim у. Job #: Major/Minor Code: Routing Code: Ō SAMPLES PO / ÁFE: P Requisitioner: 9 LSD: _ocation: 800 NUMBER Sampler: Connor ALS Contact: PAH ALS Lab Work Order # (lab use only): Faulther Date Sample Identification and/or Coordinates ALS Sample # Sample Type (lab use only) (dd-mmm-yy) (hh:mm) (This description will appear on the report) (264-7 WW 25-2n-19 NA 71:P 25-Jun-19 9.40 ADM P Cala-6 n P P WW 25-Tun-19 10:00 AM ρ SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples1 (client use) StF Observations Nο Frozen Are samples taken from a Regulated DW System? Numart -ww- GRPI-WP tce Cubes Custody seal intact ice Packs Yes No YES 🗹 NO Cooling Initiated BTX, FI-FU, PAH INIITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C Are samples for human consumption/ use? | | YES 🗐 NO FINAL SHIPMENT RECEPTION (lab use only) SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) Received by: Date: Time: Time: Received by: June 25/19 11:00 REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix M



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 04-JUL-19

Report Date: 22-JUL-19 07:20 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2304104

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.]

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



L2304104 CONTD.... PAGE 2 of 7 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2304104-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 02-JUL-19 @ 10:30							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene Benzene	<0.00050		0.00050	mg/L		11-JUL-19	R4707927
Toluene	<0.0010		0.0010	mg/L		11-JUL-19	R4707927
Ethyl benzene	<0.00050		0.00050	mg/L		11-JUL-19	R4707927
o-Xylene	<0.00050		0.00050	mg/L		11-JUL-19	R4707927
m+p-Xylenes	<0.00040		0.00040	mg/L		11-JUL-19	R4707927
F1 (C6-C10)	<0.10		0.10	mg/L		11-JUL-19	R4707927
Surrogate: 4-Bromofluorobenzene (SS)	90.7		70-130	%		11-JUL-19	R4707927
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.14		0.10	mg/L	11-JUL-19	20-JUL-19	R4699009
F3 (C16-C34)	3.15		0.25	mg/L	11-JUL-19	20-JUL-19	R4699009
F4 (C34-C50)	0.72		0.25	mg/L	11-JUL-19	20-JUL-19	R4699009
Surrogate: 2-Bromobenzotrifluoride	88.7		60-140	%	11-JUL-19	20-JUL-19	R4699009
CCME Total Hydrocarbons F1-BTEX	-0.40		0.40	m c /l		24 11 11 40	
F1-BTEX F2-Naphth	<0.10 0.14		0.10 0.10	mg/L mg/L		21-JUL-19 21-JUL-19	
F3-PAH	3.15		0.10	mg/L		21-JUL-19 21-JUL-19	
Total Hydrocarbons (C6-C50)	4.01		0.23	mg/L		21-JUL-19	
Sum of Xylene Isomer Concentrations	4.01		0.50	IIIg/L		21-001-10	
Xylenes (Total)	<0.00064		0.00064	mg/L		14-JUL-19	
Miscellaneous Parameters							
Fluoride (F)	0.057		0.020	mg/L		05-JUL-19	R4698591
Total Coliform and E.coli by MPN QT97							
Total Coliforms	>2420	PEHR	1	MPN/100mL		04-JUL-19	R4694644
Escherichia Coli	>2420	PEHR	1	MPN/100mL		04-JUL-19	R4694644
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000028		0.000020	mg/L	05-JUL-19	11-JUL-19	R4708979
2-Methyl Naphthalene	0.000031		0.000020	mg/L	05-JUL-19	11-JUL-19	R4708979
Acenaphthene	<0.000020		0.000020	mg/L	05-JUL-19	11-JUL-19	R4708979
Acenaphthylene	<0.000020		0.000020	mg/L	05-JUL-19	11-JUL-19	R4708979
Anthracene Acridine	<0.000010		0.000010	mg/L	05-JUL-19	11-JUL-19	R4708979
Benzo(a)anthracene	<0.000020 <0.000010		0.000020	mg/L mg/L	05-JUL-19 05-JUL-19	11-JUL-19 11-JUL-19	R4708979 R4708979
Benzo(a)pyrene	<0.000010		0.000010		05-JUL-19	11-JUL-19	R4708979
Benzo(b&j)fluoranthene	<0.000010		0.0000030	mg/L	05-JUL-19	11-JUL-19	R4708979
Benzo(g,h,i)perylene	<0.000010		0.000010	mg/L	05-JUL-19	11-JUL-19	R4708979
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	05-JUL-19	11-JUL-19	R4708979
Chrysene	<0.000020		0.000020	mg/L	05-JUL-19	11-JUL-19	R4708979
Dibenzo(a,h)anthracene	<0.000050		0.0000050		05-JUL-19	11-JUL-19	R4708979
Fluoranthene	<0.000020		0.000020	mg/L	05-JUL-19	11-JUL-19	R4708979
Fluorene	<0.000020		0.000020	mg/L	05-JUL-19	11-JUL-19	R4708979
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	05-JUL-19	11-JUL-19	R4708979
Naphthalene	<0.000050		0.000050	mg/L	05-JUL-19	11-JUL-19	R4708979
Phenanthrene	<0.000050		0.000050	mg/L	05-JUL-19	11-JUL-19	R4708979
Pyrene	<0.000010		0.000010	mg/L	05-JUL-19	11-JUL-19	R4708979
Quinoline	<0.000020		0.000020	mg/L	05-JUL-19	11-JUL-19	R4708979
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	05-JUL-19	11-JUL-19	R4708979
Surrogate: Acenaphthene d10	91.2		60-130	%	05-JUL-19	11-JUL-19	R4708979
Surrogate: Acridine d9	91.9		60-130	%	05-JUL-19	11-JUL-19	R4708979
Surrogate: Nephthelene de	105.9		60-130	%	05-JUL-19	11-JUL-19	R4708979
Surrogate: Phonosthropo d10	85.7		50-130	%	05-JUL-19	11-JUL-19	R4708979
Surrogate: Phenanthrene d10	103.4		60-130	%	05-JUL-19	11-JUL-19	R4708979

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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2304104-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 02-JUL-19 @ 10:30							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	59.4		1.2	mg/L		08-JUL-19	
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		08-JUL-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		08-JUL-19	
Alkalinity, Total (as CaCO3)							D4000040
Alkalinity, Total (as CaCO3) Ammonia by colour	48.7		1.0	mg/L		05-JUL-19	R4696018
Ammonia, Total (as N)	1.92		0.10	mg/L		09-JUL-19	R4704510
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	28		20	mg/L		05-JUL-19	R4707552
Carbonaceous BOD BOD Carbonaceous	22.7		6.0	mg/L		05-JUL-19	R4707552
Chloride in Water by IC Chloride (CI)	38.0		0.50	mg/L		05-JUL-19	R4698591
Conductivity Conductivity	256		1.0	umhos/cm		05-JUL-19	R4696018
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	>24200	PEHR	10	MPN/100mL		04-JUL-19	R4694636
Hardness Calculated Hardness (as CaCO3)	68.9	HTC	0.20	mg/L		15-JUL-19	
Mercury Total		1110			40 1111 40		D. (2.00.00
Mercury (Hg)-Total Nitrate in Water by IC	<0.0000050		0.0000050	mg/L	12-JUL-19	15-JUL-19	R4712816
Nitrate (as N)	0.039		0.020	mg/L		05-JUL-19	R4698591
Nitrate+Nitrite Nitrate and Nitrite as N	<0.070		0.070	mg/L		09-JUL-19	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		05-JUL-19	R4698591
Oil & Grease - Gravimetric Oil and Grease	10.0		5.0	mg/L		10-JUL-19	R4705011
Phenol (4AAP)							
Phenols (4AAP) Phosphorus, Total	0.0027		0.0010	mg/L		10-JUL-19	R4698590
Phosphorus (P)-Total Sulfate in Water by IC	0.722		0.0030	mg/L		11-JUL-19	R4707716
Sulfate (SO4)	20.1		0.30	mg/L		05-JUL-19	R4698591
Total Metals in Water by CRC ICPMS	_						
Aluminum (Al)-Total	0.148		0.0030	mg/L	12-JUL-19	12-JUL-19	R4710569
Antimony (Sb)-Total Arsenic (As)-Total	0.00013 0.00139		0.00010 0.00010	mg/L mg/L	12-JUL-19 12-JUL-19	12-JUL-19 12-JUL-19	R4710569 R4710569
Barium (Ba)-Total	0.00139		0.00010	mg/L	12-JUL-19 12-JUL-19	12-JUL-19 12-JUL-19	R4710569
Beryllium (Be)-Total	<0.0010		0.00010	mg/L	12-JUL-19	12-30L-19 12-JUL-19	R4710569
Bismuth (Bi)-Total	0.00132		0.000050	mg/L	12-JUL-19	12-JUL-19	R4710569
Boron (B)-Total	0.049		0.010	mg/L	12-JUL-19	12-JUL-19	R4710569
Cadmium (Cd)-Total	0.0000424		0.0000050	mg/L	12-JUL-19	12-JUL-19	R4710569
Calcium (Ca)-Total	19.8		0.050	mg/L	12-JUL-19	12-JUL-19	R4710569
Cesium (Cs)-Total	0.000038		0.000010	mg/L	12-JUL-19	12-JUL-19	R4710569
Chromium (Cr)-Total	0.00069		0.00010	mg/L	12-JUL-19	12-JUL-19	R4710569
Cobalt (Co)-Total	0.00053		0.00010	mg/L	12-JUL-19	12-JUL-19	R4710569
Copper (Cu)-Total	0.137		0.00050	mg/L	12-JUL-19	12-JUL-19	R4710569

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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2304104-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 02-JUL-19 @ 10:30							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS							
Iron (Fe)-Total	0.726		0.010	mg/L	12-JUL-19	12-JUL-19	R4710569
Lead (Pb)-Total	0.00217		0.000050	mg/L	12-JUL-19	12-JUL-19	R4710569
Lithium (Li)-Total	0.0023		0.0010	mg/L	12-JUL-19	12-JUL-19	R4710569
Magnesium (Mg)-Total	4.71		0.0050	mg/L	12-JUL-19	12-JUL-19	R4710569
Manganese (Mn)-Total	0.334		0.00010	mg/L	12-JUL-19	12-JUL-19	R4710569
Molybdenum (Mo)-Total	0.000418		0.000050	mg/L	12-JUL-19	12-JUL-19	R4710569
Nickel (Ni)-Total	0.00384		0.00050	mg/L	12-JUL-19	12-JUL-19	R4710569
Potassium (K)-Total	3.59		0.050	mg/L	12-JUL-19	12-JUL-19	R4710569
Phosphorus (P)-Total	0.631		0.030	mg/L	12-JUL-19	12-JUL-19	R4710569
Rubidium (Rb)-Total	0.00351		0.00020	mg/L	12-JUL-19	12-JUL-19	R4710569
Selenium (Se)-Total	0.000108		0.000050	mg/L	12-JUL-19	12-JUL-19	R4710569
Silicon (Si)-Total	0.36		0.10	mg/L	12-JUL-19	12-JUL-19	R4710569
Silver (Ag)-Total	<0.000010	'	0.000010	mg/L	12-JUL-19	12-JUL-19	R4710569
Sodium (Na)-Total Strontium (Sr)-Total	22.4 0.0920		0.050	mg/L	12-JUL-19 12-JUL-19	12-JUL-19 12-JUL-19	R4710569 R4710569
Sulfur (S)-Total Sulfur (S)-Total			0.00020	mg/L	12-JUL-19 12-JUL-19		
Tellurium (Te)-Total	7.81 <0.00020		0.50 0.00020	mg/L mg/L	12-JUL-19 12-JUL-19	12-JUL-19 12-JUL-19	R4710569 R4710569
Thallium (TI)-Total	0.000019		0.00020	mg/L	12-JUL-19	12-30L-19 12-JUL-19	R4710569
Thorium (Th)-Total	<0.00019		0.00010	mg/L	12-JUL-19	12-JUL-19	R4710569
Tin (Sn)-Total	0.00019		0.00010	mg/L	12-JUL-19	12-JUL-19	R4710569
Titanium (Ti)-Total	0.00324		0.00030	mg/L	12-JUL-19	12-JUL-19	R4710569
Tungsten (W)-Total	<0.00010		0.00010	mg/L	12-JUL-19	12-JUL-19	R4710569
Uranium (U)-Total	0.000223		0.000010	mg/L	12-JUL-19	12-JUL-19	R4710569
Vanadium (V)-Total	0.00080		0.00050	mg/L	12-JUL-19	12-JUL-19	R4710569
Zinc (Zn)-Total	0.0408		0.0030	mg/L	12-JUL-19	12-JUL-19	R4710569
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	12-JUL-19	12-JUL-19	R4710569
Total Organic Carbon by Combustion Total Organic Carbon	22.9		0.50	mg/L		09-JUL-19	R4702703
Total Suspended Solids							
Total Suspended Solids	46.8		6.0	mg/L		09-JUL-19	R4702695
pH							
pH	7.13		0.10	pH units		05-JUL-19	R4696018

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

L2304104 CONTD....

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Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2304104-1	RANKIN INLET WWTP - EFFI	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Sample Parameter Qualifier Key:

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.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
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.
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- Water Alkalinity, Bicarbonate CALCULATION WP

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.

L2304104 CONTD....

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Reference Information

Test Method References:

ALS Test Code Matrix Method Reference** **Test Description** 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.

NO2-IC-N-WP

- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

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

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

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

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

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

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 APHA 4500 NH3 F Water Ammonia by colour

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** Nitrite in Water by IC

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

Water

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.

EPA 300.1 (mod)

P-T-COL-WP 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

L2304104 CONTD....

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

after persulphate digestion of the sample.

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

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

PH-WP Water pH APHA 4500H

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

reference electrode.

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

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

red complex which is measured colorimetrically.

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

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

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

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

TC.EC-QT97-WP Water Total Coliform and E.coli by MPN QT97 APHA 9223B QT97

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 35.0 – 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

XYLENES-SUM-CALC- 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:

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.



Workorder: L2304104 Report Date: 22-JUL-19 Page 1 of 10

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R4696018 WG3098502-14 LCS Alkalinity, Total (as CaC	·O3)		103.8		%		85-115	05-JUL-19
WG3098502-11 MB Alkalinity, Total (as CaC	O3)		<1.0		mg/L		1	05-JUL-19
BOD-CBOD-WP	Water							
Batch R4707552 WG3096542-2 LCS BOD Carbonaceous			106.3		%		85-115	05-JUL-19
WG3096542-1 MB BOD Carbonaceous			<2.0		mg/L		2	05-JUL-19
BOD-WP	Water							
Batch R4707552 WG3096542-2 LCS Biochemical Oxygen De	mand		107.8		%		85-115	05-JUL-19
WG3096542-1 MB Biochemical Oxygen De			<2.0		mg/L		2	05-JUL-19
BTEXS+F1-HSMS-WP	Water							
Batch R4707927								
WG3102204-2 LCS Benzene			89.1		%		70-130	10-JUL-19
Toluene			91.1		%		70-130	10-JUL-19
Ethyl benzene			92.0		%		70-130	10-JUL-19
o-Xylene			101.3		%		70-130	10-JUL-19
m+p-Xylenes			95.3		%		70-130	10-JUL-19
WG3102204-3 LCS F1 (C6-C10)			89.8		%		70-130	10-JUL-19
WG3102204-1 MB Benzene			<0.00050		mg/L		0.0005	10-JUL-19
Toluene			<0.0010		mg/L		0.0003	10-JUL-19
Ethyl benzene			<0.00050		mg/L		0.0005	10-JUL-19
o-Xylene			<0.00030		mg/L		0.0003	10-JUL-19
m+p-Xylenes			<0.00040		mg/L		0.0004	10-JUL-19
F1 (C6-C10)			<0.10		mg/L		0.1	10-JUL-19
Surrogate: 4-Bromofluor	robenzene (SS)		95.7		%		70-130	10-JUL-19
C-TOC-HTC-WP	Water							



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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP		Water							
	4702703								
WG3100819-2 Total Organic C	LCS Carbon			94.1		%		80-120	09-JUL-19
WG3100819-1	MB								
Total Organic C	Carbon			<0.50		mg/L		0.5	09-JUL-19
CL-IC-N-WP		Water							
	4698591								
WG3097515-6 Chloride (CI)	LCS			103.2		%		90-110	05-JUL-19
WG3097515-5	МВ			100.2		,,		90-110	03-30L-19
Chloride (CI)				<0.50		mg/L		0.5	05-JUL-19
EC-WP		Water							
Batch R4	1696018								
WG3098502-13	LCS			97.9		%		00.440	05 1111 40
Conductivity WG3098502-11	МВ			97.9		70		90-110	05-JUL-19
Conductivity	WID			<1.0		umhos/cm		1	05-JUL-19
F-IC-N-WP		Water							
Batch R4	1698591								
WG3097515-6 Fluoride (F)	LCS			103.8		%		00.440	05 1111 40
WG3097515-5	МВ			103.6		/0		90-110	05-JUL-19
Fluoride (F)	WID			<0.020		mg/L		0.02	05-JUL-19
F2-F4-FID-WP		Water							
Batch R4	1699009								
WG3103140-2	LCS								
F2 (C10-C16)				97.7		%		70-130	20-JUL-19
F3 (C16-C34)				89.3 92.2		%		70-130	20-JUL-19
F4 (C34-C50)	MD			92.2		%		70-130	20-JUL-19
WG3103140-1 F2 (C10-C16)	MB			<0.10		mg/L		0.1	20-JUL-19
F3 (C16-C34)				<0.25		mg/L		0.25	20-JUL-19
F4 (C34-C50)				<0.25		mg/L		0.25	20-JUL-19
Surrogate: 2-Br	romobenz	otrifluoride		91.1		%		60-140	20-JUL-19
FC10-QT97-WP		Water							



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Гest	Matrix	Reference	Result Qualifier	Units RPD	Limit Analyzed
FC10-QT97-WP	Water				
Batch R4694636 WG3096058-1 MB Fecal Coliforms			<1	MPN/100mL	1 04-JUL-19
HG-T-CVAA-WP	Water				
Batch R4712816 WG3106610-2 LCS Mercury (Hg)-Total			90.0	%	80-120 15-JUL-19
WG3106610-1 MB Mercury (Hg)-Total			<0.0000050	mg/L	0.000005 15-JUL-19
MET-T-CCMS-WP	Water				
Batch R4710569 WG3103633-6 LCS					
Aluminum (Al)-Total			97.7	%	80-120 12-JUL-19
Antimony (Sb)-Total			103.3	%	80-120 12-JUL-19
Arsenic (As)-Total			101.4	%	80-120 12-JUL-19
Barium (Ba)-Total			97.4	%	80-120 12-JUL-19
Beryllium (Be)-Total			109.4	%	80-120 12-JUL-19
Bismuth (Bi)-Total			104.6	%	80-120 12-JUL-19
Boron (B)-Total			110.3	%	80-120 12-JUL-19
Cadmium (Cd)-Total			101.9	%	80-120 12-JUL-19
Calcium (Ca)-Total			102.3	%	80-120 12-JUL-19
Cesium (Cs)-Total			99.1	%	80-120 12-JUL-19
Chromium (Cr)-Total			101.2	%	80-120 12-JUL-19
Cobalt (Co)-Total			99.8	%	80-120 12-JUL-19
Copper (Cu)-Total			103.8	%	80-120 12-JUL-19
Iron (Fe)-Total			97.9	%	80-120 12-JUL-19
Lead (Pb)-Total			101.7	%	80-120 12-JUL-19
Lithium (Li)-Total			107.2	%	80-120 12-JUL-19
Magnesium (Mg)-Total			109.3	%	80-120 12-JUL-19
Manganese (Mn)-Total			99.5	%	80-120 12-JUL-19
Molybdenum (Mo)-Total			103.6	%	80-120 12-JUL-19
Nickel (Ni)-Total			102.4	%	80-120 12-JUL-19
Potassium (K)-Total			95.6	%	80-120 12-JUL-19
Phosphorus (P)-Total			103.5	%	80-120 12-JUL-19
Rubidium (Rb)-Total			97.1	%	80-120 12-JUL-19
Selenium (Se)-Total			104.3	%	80-120 12-JUL-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4710569 WG3103633-6 LCS								
Silicon (Si)-Total			98.4		%		80-120	12-JUL-19
Silver (Ag)-Total			98.8		%		80-120	12-JUL-19
Sodium (Na)-Total			103.8		%		80-120	12-JUL-19
Strontium (Sr)-Total			100.5		%		80-120	12-JUL-19
Sulfur (S)-Total			97.5		%		80-120	12-JUL-19
Tellurium (Te)-Total			102.1		%		80-120	12-JUL-19
Thallium (TI)-Total			103.3		%		80-120	12-JUL-19
Thorium (Th)-Total			101.9		%		80-120	12-JUL-19
Tin (Sn)-Total			100.3		%		80-120	12-JUL-19
Titanium (Ti)-Total			97.1		%		80-120	12-JUL-19
Tungsten (W)-Total			102.5		%		80-120	12-JUL-19
Uranium (U)-Total			105.8		%		80-120	12-JUL-19
Vanadium (V)-Total			100.8		%		80-120	12-JUL-19
Zinc (Zn)-Total			102.6		%		80-120	12-JUL-19
Zirconium (Zr)-Total			103.3		%		80-120	12-JUL-19
WG3103633-5 MB								
Aluminum (AI)-Total			<0.0030		mg/L		0.003	12-JUL-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	12-JUL-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	12-JUL-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	12-JUL-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	12-JUL-19
Bismuth (Bi)-Total			<0.00005	0	mg/L		0.00005	12-JUL-19
Boron (B)-Total			<0.010		mg/L		0.01	12-JUL-19
Cadmium (Cd)-Total			<0.00000	50	mg/L		0.000005	12-JUL-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	12-JUL-19
Cesium (Cs)-Total			<0.00001	0	mg/L		0.00001	12-JUL-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	12-JUL-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	12-JUL-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	12-JUL-19
Iron (Fe)-Total			<0.010		mg/L		0.01	12-JUL-19
Lead (Pb)-Total			<0.00005	0	mg/L		0.00005	12-JUL-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	12-JUL-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	12-JUL-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	12-JUL-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4710569								
WG3103633-5 MB			0.0000=					
Molybdenum (Mo)-Total			<0.000050)	mg/L		0.00005	12-JUL-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	12-JUL-19
Potassium (K)-Total			<0.050		mg/L		0.05	12-JUL-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	12-JUL-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	12-JUL-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	12-JUL-19
Silicon (Si)-Total			<0.10		mg/L		0.1	12-JUL-19
Silver (Ag)-Total			<0.000010)	mg/L		0.00001	12-JUL-19
Sodium (Na)-Total			<0.050		mg/L		0.05	12-JUL-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	12-JUL-19
Sulfur (S)-Total			<0.50		mg/L		0.5	12-JUL-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	12-JUL-19
Thallium (TI)-Total			<0.000010)	mg/L		0.00001	12-JUL-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	12-JUL-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	12-JUL-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	12-JUL-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	12-JUL-19
Uranium (U)-Total			<0.000010)	mg/L		0.00001	12-JUL-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	12-JUL-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	12-JUL-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	12-JUL-19
NH3-COL-WP	Water							
Batch R4704510								
WG3101324-2 LCS								
Ammonia, Total (as N)			103.8		%		85-115	09-JUL-19
WG3101324-1 MB					,			
Ammonia, Total (as N)			<0.010		mg/L		0.01	09-JUL-19
NO2-IC-N-WP	Water							
Batch R4698591								
WG3097515-6 LCS Nitrite (as N)			104.5		%		90-110	05-JUL-19
WG3097515-5 MB Nitrite (as N)			<0.010		mg/L		0.01	05-JUL-19
NO3-IC-N-WP	Water							



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est	Matrix	Reference	Result Q	ualifier Units	RPD	Limit	Analyzed
NO3-IC-N-WP	Water						
Batch R4698591							
WG3097515-6 LCS Nitrate (as N)			103.9	%		90-110	05-JUL-19
WG3097515-5 MB			0.000	,,			
Nitrate (as N)			<0.020	mg/L		0.02	05-JUL-19
OG-GRAV-WP	Water						
Batch R4705011							
WG3099060-2 LCS Oil and Grease			91.5	%		70-130	10-JUL-19
WG3099060-1 MB							.0001.0
Oil and Grease			<5.0	mg/L		5	10-JUL-19
P-T-COL-WP	Water						
Batch R4707716							
WG3101905-2 LCS							
Phosphorus (P)-Total			97.1	%		80-120	11-JUL-19
WG3101905-1 MB Phosphorus (P)-Total			<0.0030	mg/L		0.003	11-JUL-19
			<0.0000	mg/L		0.003	11-JUL-19
PAH,PANH-WP	Water						
Batch R4708979 WG3102534-2 LCS							
1-Methyl Naphthalene			95.4	%		60-130	12-JUL-19
2-Methyl Naphthalene			86.3	%		60-130	12-JUL-19
Acenaphthene			94.4	%		60-130	12-JUL-19
Acenaphthylene			82.8	%		60-130	12-JUL-19
Anthracene			86.5	%		60-130	12-JUL-19
Acridine			88.4	%		60-130	12-JUL-19
Benzo(a)anthracene			87.4	%		60-130	12-JUL-19
Benzo(a)pyrene			82.2	%		60-130	12-JUL-19
Benzo(b&j)fluoranthene			89.3	%		60-130	12-JUL-19
Benzo(g,h,i)perylene			77.7	%		60-130	12-JUL-19
Benzo(k)fluoranthene			85.0	%		60-130	12-JUL-19
Chrysene			90.5	%		60-130	12-JUL-19
Dibenzo(a,h)anthracene			89.6	%		60-130	12-JUL-19
Fluoranthene			91.3	%		60-130	12-JUL-19
Fluorene			96.9	%		60-130	12-JUL-19
Indeno(1,2,3-cd)pyrene			77.6	%		60-130	12-JUL-19
Naphthalene			114.2	%		50-130	12-JUL-19



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est	Matrix	Reference	Result Q	ualifier	Jnits	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4708979								
WG3102534-2 LCS			440.5					
Phenanthrene			110.5		%		60-130	12-JUL-19
Pyrene			91.9		%		60-130	12-JUL-19
Quinoline			105.9	,	%		60-130	12-JUL-19
WG3102534-1 MB 1-Methyl Naphthalene			<0.000020		mg/L		0.00002	11-JUL-19
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	11-JUL-19
Acenaphthene			<0.000020		mg/L		0.00002	11-JUL-19
Acenaphthylene			<0.000020		mg/L		0.00002	11-JUL-19
Anthracene			<0.000010		mg/L		0.00002	11-JUL-19
Acridine			<0.000020		mg/L		0.00001	11-JUL-19
Benzo(a)anthracene			<0.000010		mg/L		0.00002	11-JUL-19
Benzo(a)pyrene			<0.0000050		mg/L		0.000005	11-JUL-19
Benzo(b&j)fluoranthene	;		<0.000010		mg/L		0.00001	11-JUL-19
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	11-JUL-19
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	11-JUL-19
Chrysene			<0.000020		mg/L		0.00002	11-JUL-19
Dibenzo(a,h)anthracene	Э		<0.0000050		mg/L		0.000005	11-JUL-19
Fluoranthene			<0.000020		mg/L		0.00002	11-JUL-19
Fluorene			<0.000020		mg/L		0.00002	11-JUL-19
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	11-JUL-19
Naphthalene			<0.000050		mg/L		0.00005	11-JUL-19
Phenanthrene			<0.000050		mg/L		0.00005	11-JUL-19
Pyrene			<0.000010		mg/L		0.00001	11-JUL-19
Quinoline			<0.000020		mg/L		0.00002	11-JUL-19
Surrogate: Acenaphthe	ne d10		93.0		%		60-130	11-JUL-19
Surrogate: Acridine d9			69.5	,	%		60-130	11-JUL-19
Surrogate: Chrysene d1	12		97.3	,	%		60-130	11-JUL-19
Surrogate: Naphthalene	e d8		95.8		%		50-130	11-JUL-19
Surrogate: Phenanthrer	ne d10		91.9		%		60-130	11-JUL-19
PH-WP	Water							
Batch R4696018								
WG3098502-12 LCS								
рН			7.37		oH units		7.3-7.5	05-JUL-19

PHENOLS-4AAP-WT Water



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Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Water							
		100.5		%		85-115	09-JUL-19
		<0.0010		mg/L		0.001	09-JUL-19
Water							
		104.0		%		90-110	05-JUL-19
		<0.30		mg/L		0.3	05-JUL-19
Water							
		103.6		%		85-115	09-JUL-19
		<2.0		mg/L		2	09-JUL-19
Water							
	L2304104-1 >2420	>2420		MPN/100mL	0.0	65	04-JUL-19
	_	_		MPN/100mL			04-JUL-19
		< 1		MPN/100mL		1	04-JUL-19
	Water	Water Water Water	Water 100.5 Water 104.0 Vater 103.6 <2.0 Water 12304104-1 >2420 >2420	Water 100.5 <0.0010 Water 104.0 <0.30 Water 103.6 <2.0 Water L2304104-1 >2420 >2420 >2420 >2420 >2420 >2420	Mater 100.5 %	Water 100.5	Mater 100.5 % 85.115 6.0010 mg/L 0.0010

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Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank ADE

MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2304104 Report Date: 22-JUL-19 Page 10 of 10

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	02-JUL-19 10:30	05-JUL-19 12:00	0.25	73	hours	EHTR-FM
Bacteriological Tests							
Fecal coliforms, 1:10 dilution	by QT97						
	1	02-JUL-19 10:30	04-JUL-19 17:30	30	55	hours	EHTR
Total Coliform and E.coli by	MPN QT97						
	1	02-JUL-19 10:30	04-JUL-19 17:30	30	55	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Demar	nd (BOD)						
	1	02-JUL-19 10:30	05-JUL-19 07:00	48	68	hours	EHTR
Carbonaceous BOD							
	1	02-JUL-19 10:30	05-JUL-19 07:00	48	68	hours	EHTR
Land Carlotte Barration							

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 L2304104 were received on 04-JUL-19 14:20.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

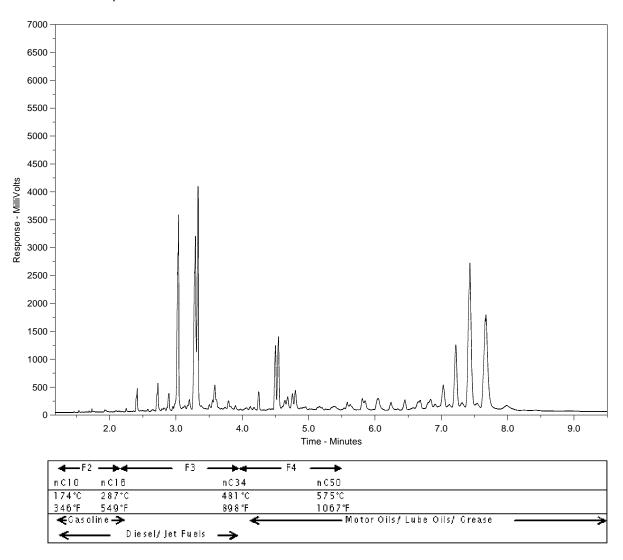
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2304104-1

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.

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(ALS)	Environmental	

L2304104-COFC

COC#	

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Report To			·-	•		TR.				Serv	ice R	eque	sted	(Rush	for ro	utine a	analys	is subj	ect to	availa	bility)	
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Contact:	SIMON DOIRON					☑ PDF	Excel	Digital	☐ Fax	O P	riority (2-4 Bu	siness	Days)	50%	Surcha	rge - C	ontact /	ALS to	Confirm	n TAT	
Address:	Box 490	,				Email 1:	sdoiron@gov.n	u.ca		O E	mergen	cy (1-	2 Bus.	Days) -	100%	Surch	arge -	Contact	ALS to	Confir	m TAT	
	Rankin Inlet , NU, X	0C 0G0)			Email 2:	mlusty@gov.nu	.ca		O s	ame Da	y or V	veeken	d Emer	gency	- Conta	act ALS	to Con	firm T	AT		
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	Vork Order # o use only)					ALS Contact:	Craig Riddell	Sampled By:	Simon Doiron	F1-F4-WP	PANH-WF	NUNAVUT-WW-GRP1-WP	-WP	TC,EC-QT97-WP								Number of Containers
Sample #	-		•	entification appear on the	e report)	•	Date Sampled	Time Sampled	Sample Type	BTX,F	PAH,P.	NUNAV	F-IC-N-WP	TC,EC								Numbe
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix N



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 11-JUL-19

Report Date: 25-JUL-19 13:17 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2308289

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.]

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



L2308289 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2308289-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		18-JUL-19	R4714779
Toluene	0.0013		0.0010	mg/L		18-JUL-19	R4714779
Ethyl benzene	<0.00050		0.00050	mg/L		18-JUL-19	R4714779
o-Xylene	<0.00050		0.00050	mg/L		18-JUL-19	R4714779
m+p-Xylenes	0.00059		0.00040	mg/L		18-JUL-19	R4714779
F1 (C6-C10)	<0.10		0.10	mg/L		18-JUL-19	R4714779
Surrogate: 4-Bromofluorobenzene (SS)	98.0		70-130	%		18-JUL-19	R4714779
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.72		0.10	mg/L	12-JUL-19	18-JUL-19	R4699009
F3 (C16-C34)	10.3		0.25	mg/L	12-JUL-19	18-JUL-19	R4699009
F4 (C34-C50)	4.74		0.25	mg/L	12-JUL-19	18-JUL-19	R4699009
Surrogate: 2-Bromobenzotrifluoride	104.7		60-140	%	12-JUL-19	18-JUL-19	R4699009
CCME Total Hydrocarbons F1-BTEX	-0.10		0.40	ma/l		22-JUL-19	
F2-Naphth	<0.10 0.72		0.10 0.10	mg/L mg/L		22-JUL-19 22-JUL-19	
F3-PAH	10.3		0.10	mg/L		22-JUL-19 22-JUL-19	
Total Hydrocarbons (C6-C50)	15.7		0.23	mg/L		22-JUL-19	
Sum of Xylene Isomer Concentrations	10.7		0.00	9/ _		22 002 10	
Xylenes (Total)	<0.00064		0.00064	mg/L		22-JUL-19	
Miscellaneous Parameters							
Fecal Coliforms	>2420		1	MPN/100mL		11-JUL-19	R4708698
Total Coliform and E.coli by MPN QT97							
Total Coliforms	>2420		1	MPN/100mL		11-JUL-19	R4708700
Escherichia Coli	>2420		1	MPN/100mL		11-JUL-19	R4708700
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000192		0.000020	mg/L	12-JUL-19	18-JUL-19	R4715869
2-Methyl Naphthalene	0.000247		0.000020	mg/L	12-JUL-19	18-JUL-19	R4715869
Acenaphthene Acenaphthylene	<0.000020		0.000020	mg/L	12-JUL-19 12-JUL-19	18-JUL-19 18-JUL-19	R4715869
Anthracene	<0.000020 <0.000010		0.000020	mg/L mg/L	12-JUL-19 12-JUL-19	18-JUL-19	R4715869 R4715869
Acridine	<0.000010		0.000010	mg/L	12-JUL-19	18-JUL-19	R4715869
Benzo(a)anthracene	<0.000020		0.000020	mg/L	12-JUL-19	18-JUL-19	R4715869
Benzo(a)pyrene	0.000010	EMPC	0.000000	mg/L	12-JUL-19	18-JUL-19	R4715869
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	12-JUL-19	18-JUL-19	R4715869
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	12-JUL-19	18-JUL-19	R4715869
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	12-JUL-19	18-JUL-19	R4715869
Chrysene	<0.000020		0.000020	mg/L	12-JUL-19	18-JUL-19	R4715869
Dibenzo(a,h)anthracene	0.0000092	EMPC	0.0000050	mg/L	12-JUL-19	18-JUL-19	R4715869
Fluoranthene	<0.000020		0.000020	mg/L	12-JUL-19	18-JUL-19	R4715869
Fluorene	0.000041	EMPC	0.000020	mg/L	12-JUL-19	18-JUL-19	R4715869
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	12-JUL-19	18-JUL-19	R4715869
Naphthalene	0.000162		0.000050	mg/L	12-JUL-19	18-JUL-19	R4715869
Phenanthrene	<0.000050		0.000050	mg/L	12-JUL-19	18-JUL-19	R4715869
Pyrene	<0.000010		0.000010	mg/L	12-JUL-19	18-JUL-19	R4715869
Quinoline	<0.000020		0.000020	mg/L	12-JUL-19	18-JUL-19	R4715869
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	12-JUL-19	18-JUL-19	R4715869
Surrogate: Acenaphthene d10 Surrogate: Acridine d9	93.2		60-130	%	12-JUL-19	18-JUL-19	R4715869
Surrogate: Acridine d9 Surrogate: Chrysene d12	95.5 102.5		60-130 60-130	% %	12-JUL-19 12-JUL-19	18-JUL-19 18-JUL-19	R4715869
Surrogate: Naphthalene d8	102.5		50-130	%	12-JUL-19 12-JUL-19	18-JUL-19 18-JUL-19	R4715869 R4715869
Surrogate: Phenanthrene d10	109.6		60-130	%	12-JUL-19 12-JUL-19	18-JUL-19	R4715869 R4715869
Surrogate. I Heriantinene uTU	1.00.7		00-130	/0	12-30L-19	10-30L-19	13009

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

L2308289 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2308289-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	108		1.2	mg/L		15-JUL-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		15-JUL-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		15-JUL-19	
Alkalinity, Total (as CaCO3)	00.0		4.0			40 1111 40	D 4740000
Alkalinity, Total (as CaCO3)	88.6		1.0	mg/L		12-JUL-19	R4710828
Ammonia by colour Ammonia, Total (as N)	4.37		0.10	mg/L		18-JUL-19	R4714710
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	115		20	mg/L		12-JUL-19	R4716108
Carbonaceous BOD						40 11 11 15	
BOD Carbonaceous	110		20	mg/L		12-JUL-19	R4716108
Chloride in Water by IC Chloride (CI)	51.2		0.50	mg/L		12-JUL-19	R4712449
Conductivity Conductivity	380		1.0	umhos/cm		12-JUL-19	R4710828
Hardness Calculated	360		1.0	ummos/cm		12-30L-19	K47 10828
Hardness (as CaCO3)	103	HTC	0.20	mg/L		25-JUL-19	
Mercury Total							
Mercury (Hg)-Total	0.0000050		0.0000050	mg/L	15-JUL-19	16-JUL-19	R4713506
Nitrate in Water by IC Nitrate (as N)	<0.020		0.000	ma/l		12-JUL-19	D4740440
Nitrate+Nitrite	<0.020		0.020	mg/L		12-30L-19	R4712449
Nitrate and Nitrite as N	<0.070		0.070	mg/L		16-JUL-19	
Nitrite in Water by IC	0.040		0.040			40 1111 40	D.1740440
Nitrite (as N) Oil & Grease - Gravimetric	<0.010		0.010	mg/L		12-JUL-19	R4712449
Oil and Grease	52.2		5.0	mg/L		18-JUL-19	R4714203
Phenol (4AAP)							
Phenols (4AAP)	0.0059		0.0010	mg/L		18-JUL-19	R4714834
Phosphorus, Total	4.07		0.46			45 "" 15	D 47444= :
Phosphorus (P)-Total	1.67		0.12	mg/L		15-JUL-19	R4711474
Sulfate in Water by IC Sulfate (SO4)	29.2		0.30	mg/L		12-JUL-19	R4712449
Total Metals in Water by CRC ICPMS							
Aluminum (AI)-Total	0.289		0.0030	mg/L	18-JUL-19	18-JUL-19	R4717602
Arsenic (As)-Total	0.00138		0.00010	mg/L	18-JUL-19	18-JUL-19	R4717602
Cadmium (Cd)-Total	0.0000723		0.0000050	mg/L	18-JUL-19	18-JUL-19	R4717602
Calcium (Ca)-Total	32.6		0.050	mg/L	18-JUL-19	18-JUL-19	R4717602
Chromium (Cr)-Total	0.00128		0.00010	mg/L	18-JUL-19	18-JUL-19	R4717602
Cobalt (Co)-Total	0.00058		0.00010	mg/L	18-JUL-19	18-JUL-19	R4717602
Copper (Cu)-Total	0.136		0.00050	mg/L	18-JUL-19	18-JUL-19	R4717602
Iron (Fe)-Total Lead (Pb)-Total	0.411		0.010 0.00050	mg/L	18-JUL-19 18-JUL-19	18-JUL-19 18-JUL-19	R4717602 R4717602
Magnesium (Mg)-Total	0.00127 5.36		0.00050	mg/L mg/L	18-JUL-19 18-JUL-19	18-JUL-19 18-JUL-19	R4717602 R4717602
Manganese (Mn)-Total	0.0433		0.0050	mg/L	18-JUL-19	18-JUL-19 18-JUL-19	R4717602 R4717602
Nickel (Ni)-Total	0.0433		0.00010	mg/L	18-JUL-19	18-JUL-19 18-JUL-19	R4717602 R4717602
Potassium (K)-Total	7.86		0.00030	mg/L	18-JUL-19	18-JUL-19	R4717602 R4717602
Sodium (Na)-Total	30.0		0.050	mg/L	18-JUL-19	18-JUL-19	R4717602
Zinc (Zn)-Total	0.132		0.0030	mg/L	18-JUL-19	18-JUL-19	R4717602
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^{*} Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2308289 CONTD.... PAGE 4 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2308289-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA							
Matrix: WASTE							
Total Organic Carbon by Combustion Total Organic Carbon	70.2		2.5	mg/L		17-JUL-19	R4714206
Total Suspended Solids Total Suspended Solids	106		4.3	mg/L		18-JUL-19	R4715410
pH							
pH	7.01		0.10	pH units		12-JUL-19	R4710828

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

L2308289 CONTD....

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Version: FINAL

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
В	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

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

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

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

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

L2308289 CONTD....

PAGE 6 of 7 Version: FINAL

Reference Information

Test Method References:

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

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.

Water Fecal Coliform by MPN QT97 APHA 9223B QT97

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 44.5 - 0.2°C for 18 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the number of positive responses to a probability table.

HARDNESS-CALC-WP Hardness Calculated Water **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 Mercury Total

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

MET-T-CCMS-WP Total Metals in Water by CRC ICPMS Water 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 EPA 1664 (modified) Oil & Grease - Gravimetric

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.

APHA 4500 P PHOSPHORUS-L Phosphorus, Total

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

after persulphate digestion of the sample.

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

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

PH-WP Water **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.

EPA 9066 PHENOI S-4AAP-WT Phenol (4AAP) Water

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)

L2308289 CONTD....

Reference Information

PAGE 7 of 7 Version: FINAL

Test Method References:

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

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 Total Coliform and E.coli by MPN QT97 APHA 9223B QT97 Water

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". E. coli and Total Coliform are determined simultaneously. The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 35.0 – 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

XYLENES-SUM-CALC-

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.

ma/ka - 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.



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Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R4710828								
WG3105128-19 LCS								
Alkalinity, Total (as CaC	CO3)		102.9		%		85-115	12-JUL-19
WG3105128-16 MB	202)		4.0		a./I			
Alkalinity, Total (as CaC	.03)		<1.0		mg/L		1	12-JUL-19
BOD-CBOD-WP	Water							
Batch R4716108								
WG3103224-2 LCS			440.4		0/			
BOD Carbonaceous			110.1		%		85-115	12-JUL-19
WG3103224-1 MB BOD Carbonaceous			<2.0		mg/L		2	12-JUL-19
			72.0		mg/L		۷	12-JUL-19
BOD-WP	Water							
Batch R4716108								
WG3103224-2 LCS Biochemical Oxygen De	emand		113.9		%		85-115	12-JUL-19
WG3103224-1 MB	omana .		110.0		70		03-113	12-30L-19
Biochemical Oxygen De	emand		<2.0		mg/L		2	12-JUL-19
BTEXS+F1-HSMS-WP	Water							
Batch R4714779								
WG3107943-2 LCS								
Benzene			83.6		%		70-130	18-JUL-19
Toluene			86.2		%		70-130	18-JUL-19
Ethyl benzene			96.0		%		70-130	18-JUL-19
o-Xylene			90.1		%		70-130	18-JUL-19
m+p-Xylenes			90.2		%		70-130	18-JUL-19
WG3107943-3 LCS								
F1 (C6-C10)			76.5		%		70-130	18-JUL-19
WG3107943-1 MB								
Benzene 			<0.00050		mg/L		0.0005	18-JUL-19
Toluene			<0.0010		mg/L		0.001	18-JUL-19
Ethyl benzene			<0.00050		mg/L		0.0005	18-JUL-19
o-Xylene			<0.00030		mg/L		0.0003	18-JUL-19
m+p-Xylenes			<0.00040		mg/L		0.0004	18-JUL-19
F1 (C6-C10)			<0.10		mg/L		0.1	18-JUL-19
Surrogate: 4-Bromofluo	robenzene (SS)		92.0		%		70-130	18-JUL-19
C-TOC-HTC-WP	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
	714206							
WG3107856-6 Total Organic C	LCS Carbon		97.8		%		80-120	17-JUL-19
WG3107856-5	МВ							
Total Organic C	Carbon		<0.50		mg/L		0.5	17-JUL-19
CL-IC-N-WP	Water							
Batch R4	712449							
WG3103429-6 Chloride (CI)	LCS		103.5		%		90-110	12-JUL-19
WG3103429-5	MB							
Chloride (CI)			<0.50		mg/L		0.5	12-JUL-19
EC-WP	Water							
	710828							
WG3105128-18 Conductivity	LCS		97.6		%		90-110	12-JUL-19
WG3105128-16 Conductivity	MB		<1.0		umhos/cm		1	12-JUL-19
F2-F4-FID-WP	Water							
	699009							
WG3103566-2	LCS							
F2 (C10-C16)			102.0		%		70-130	20-JUL-19
F3 (C16-C34)			97.2		%		70-130	20-JUL-19
F4 (C34-C50)			103.9		%		70-130	20-JUL-19
WG3103566-1 F2 (C10-C16)	МВ		<0.10		mg/L		0.1	20-JUL-19
F3 (C16-C34)			<0.25		mg/L		0.25	20-JUL-19
F4 (C34-C50)			<0.25		mg/L		0.25	20-JUL-19
Surrogate: 2-Br	omobenzotrifluoride		89.7		%		60-140	20-JUL-19
WG3103566-3	MB							
F2 (C10-C16)			<0.10		mg/L		0.1	18-JUL-19
F3 (C16-C34)			<0.25		mg/L		0.25	18-JUL-19
F4 (C34-C50)	om ob opzotrifluori -		<0.25 96.7		mg/L		0.25	18-JUL-19
	omobenzotrifluoride		96.7		%		60-140	18-JUL-19
FC-QT97-WP	Water							
	708698							
WG3102641-1 Fecal Coliforms	MB s		<1		MPN/100mL		1	11-JUL-19
							•	



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Test Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WP	Water							
Batch R4713506								
WG3107536-2 LCS			00.0		0/			
Mercury (Hg)-Total			93.0		%		80-120	16-JUL-19
WG3107536-1 MB Mercury (Hg)-Total			<0.00000	50	mg/L		0.000005	16-JUL-19
MET-T-CCMS-WP	Water		40.0000		g, =		0.000003	10-30L-13
	water							
Batch R4717602 WG3108640-2 LCS								
Aluminum (Al)-Total			104.3		%		80-120	18-JUL-19
Arsenic (As)-Total			105.0		%		80-120	18-JUL-19
Cadmium (Cd)-Total			104.8		%		80-120	18-JUL-19
Calcium (Ca)-Total			103.1		%		80-120	18-JUL-19
Chromium (Cr)-Total			100.7		%		80-120	18-JUL-19
Cobalt (Co)-Total			102.3		%		80-120	18-JUL-19
Copper (Cu)-Total			106.4		%		80-120	18-JUL-19
Iron (Fe)-Total			101.4		%		80-120	18-JUL-19
Lead (Pb)-Total			101.7		%		80-120	18-JUL-19
Magnesium (Mg)-Total			105.8		%		80-120	18-JUL-19
Manganese (Mn)-Total			104.1		%		80-120	18-JUL-19
Nickel (Ni)-Total			110.3		%		80-120	18-JUL-19
Potassium (K)-Total			102.2		%		80-120	18-JUL-19
Sodium (Na)-Total			106.1		%		80-120	18-JUL-19
Zinc (Zn)-Total			103.2		%		80-120	18-JUL-19
WG3108640-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	18-JUL-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	18-JUL-19
Cadmium (Cd)-Total			<0.00000	50	mg/L		0.000005	18-JUL-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	18-JUL-19
Chromium (Cr)-Total			0.00011	В	mg/L		0.0001	18-JUL-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	18-JUL-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	18-JUL-19
Iron (Fe)-Total			<0.010		mg/L		0.01	18-JUL-19
Lead (Pb)-Total			0.000474	В	mg/L		0.00005	18-JUL-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	18-JUL-19
Manganese (Mn)-Total			<0.00010)	mg/L		0.0001	18-JUL-19
Nickel (Ni)-Total			<0.00050)	mg/L		0.0005	18-JUL-19
Potassium (K)-Total			< 0.050		mg/L		0.05	18-JUL-19



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Test Test	Matrix	Reference	Result Qualifi	er Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water						
Batch R4717602 WG3108640-1 MB Sodium (Na)-Total			<0.050	mg/L		0.05	18-JUL-19
Zinc (Zn)-Total			<0.0030	mg/L		0.003	18-JUL-19
NH3-COL-WP	Water						
Batch R4714710 WG3108983-2 LCS Ammonia, Total (as N)			98.6	%		85-115	18-JUL-19
WG3108983-1 MB Ammonia, Total (as N)			<0.010	mg/L		0.01	18-JUL-19
NO2-IC-N-WP	Water						
Batch R4712449 WG3103429-6 LCS Nitrite (as N)			101.6	%		90-110	12-JUL-19
WG3103429-5 MB Nitrite (as N)			<0.010	mg/L		0.01	12-JUL-19
NO3-IC-N-WP	Water						
Batch R4712449 WG3103429-6 LCS Nitrate (as N)			104.1	%		90-110	12-JUL-19
WG3103429-5 MB Nitrate (as N)			<0.020	mg/L		0.02	12-JUL-19
OG-GRAV-WP	Water						
Batch R4714203 WG3105352-2 LCS Oil and Grease			109.0	%		70-130	18-JUL-19
WG3105352-1 MB Oil and Grease			<5.0	mg/L		5	18-JUL-19
P-T-COL-WP	Water						
Batch R4711474							
WG3103799-18 LCS Phosphorus (P)-Total			97.4	%		80-120	15-JUL-19
WG3103799-17 MB Phosphorus (P)-Total			<0.0030	mg/L		0.003	15-JUL-19
PAH,PANH-WP	Water						



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PAH,PANH-WP	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MG3103709-2 LCS	PAH,PANH-WP	Water							
1-Methyl Naphthalene	Batch R4715869								
2-Methyl Naphthalene 105.9 % 60-130 17-JUL-19 Acenaphthene 113.7 % 60-130 17-JUL-19 Acenaphthylene 94.7 % 60-130 17-JUL-19 Anthracene 85.9 % 60-130 17-JUL-19 Acridine 90.2 % 60-130 17-JUL-19 Benzo(a)prisene 72.2 % 60-130 17-JUL-19 Benzo(b)fluoranthene 96.0 % 60-130 17-JUL-19 Benzo(g,h,i)perylene 101.7 % 60-130 17-JUL-19 Benzo(g,h,i)perylene 101.7 % 60-130 17-JUL-19 Benzo(g,h,i)perylene 106.7 % 60-130 17-JUL-19 Benzo(g,hi)perylene 106.7 % 60-130 17-JUL-19 Chrysene 74.7 % 60-130 17-JUL-19 Chrysene 106.0 % 60-130 17-JUL-19 Fluoranthene 103.0 % 60-130 17-JUL-19 Rel				440.0		0.4			
Acenaphthene 113.7 % 60-130 17-JUL-19 Acenaphthylene 94.7 % 60-130 17-JUL-19 Antriacene 85.9 % 60-130 17-JUL-19 Acridine 90.2 % 60-130 17-JUL-19 Benzo(a)anthracene 72.2 % 60-130 17-JUL-19 Benzo(b)fjfuoranthene 96.0 % 60-130 17-JUL-19 Benzo(gl.n.) perylene 101.7 % 60-130 17-JUL-19 Benzo(gl.h) perylene 101.7 % 60-130 17-JUL-19 Benzo(gl.h) perylene 106.7 % 60-130 17-JUL-19 Benzo(gl.h) perylene 106.7 % 60-130 17-JUL-19 Chrysene 74.7 % 60-130 17-JUL-19 Chrysene 74.7 % 60-130 17-JUL-19 Diborac(a, h) anthracene 81.0 % 60-130 17-JUL-19 Fluoranthene 103.0 % 60-130 17-JUL-19									
Acenaphthylene 94.7 % 60-130 17-JUL-19 Anthracene 85.9 % 60-130 17-JUL-19 Acridine 90.2 % 60-130 17-JUL-19 Benzo(a)anthracene 72.2 % 60-130 17-JUL-19 Benzo(a)pyrene 71.5 % 60-130 17-JUL-19 Benzo(b)jfluoranthene 96.0 % 60-130 17-JUL-19 Benzo(b)jfluoranthene 101.7 % 60-130 17-JUL-19 Benzo(k)fluoranthene 106.7 % 60-130 17-JUL-19 Fluoranthene 103.0 % 60-130 17-JUL-19 Fluoranthene 103.0 % 60-130 17-JUL-19 Fluoranthene 108.9 % 60-130 17-JUL-19 Fluoranthene 108.9 % 60-130 17-JUL-19 Raphthalene 113.6 % 50-130 17-JUL-19 Naphthalene 113.6 % 50-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Pyrene 103.0 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Anthracene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthylene <0.000020 mg/L 0.00002 17-JUL-19 Benzo(a)phyrene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)phyrene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)jfluoranthene <0.000010 mg/L 0.00001 17-JUL-19									
Anthracene 85.9 % 60-130 17-JUL-19 Acridine 90.2 % 60-130 17-JUL-19 Benzo(a)anthracene 72.2 % 60-130 17-JUL-19 Benzo(a)pyrene 71.5 % 60-130 17-JUL-19 Benzo(b)fluoranthene 96.0 % 60-130 17-JUL-19 Benzo(b,fl)perylene 101.7 % 60-130 17-JUL-19 Benzo(b,fl)perylene 101.7 % 60-130 17-JUL-19 Benzo(h,fl)perylene 106.7 % 60-130 17-JUL-19 Benzo(h,fl)perylene 106.7 % 60-130 17-JUL-19 Benzo(h,fl)perylene 108.7 % 60-130 17-JUL-19 Benzo(h,fl)perylene 108.9 % 60-130 17-JUL-19 Fluoranthene 103.0 % 60-130 17-JUL-19 Fluorene 108.9 % 60-130 17-JUL-19 Indeno(1,2,3-cd)pyrene 80.1 % 60-130 17-JUL-19 Indeno(1,2,3-cd)pyrene 113.6 % 60-130 17-JUL-19 Naphthalene 105.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Quinoline 103.0 % 60-130 17-JUL-19 I-Metryl Naphthalene <0.000020 mg/L 0.0002 17-JUL-19 I-Metryl Naphthalene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthene <0.000020 mg/L 0.00002 17-JUL-19 Acridine <0.000020 mg/L 0.00002 17-JUL-19 Acridine <0.000020 mg/L 0.00002 17-JUL-19 Benzo(a)anthracene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)pyrene <0.0000060 mg/L 0.00002 17-JUL-19 Benzo(a)pyrene <0.0000060 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19									
Acridine 90.2 % 60-130 17-JUL-19 Benzo(a)anthracene 72.2 % 60-130 17-JUL-19 Benzo(a)pyrene 71.5 % 60-130 17-JUL-19 Benzo(b&j)fluoranthene 96.0 % 60-130 17-JUL-19 Benzo(b&j)fluoranthene 96.0 % 60-130 17-JUL-19 Benzo(b,j)fluoranthene 101.7 % 60-130 17-JUL-19 Benzo(k)fluoranthene 106.7 % 60-130 17-JUL-19 Chrysene 74.7 % 60-130 17-JUL-19 Dibenzo(a,h)anthracene 81.0 % 60-130 17-JUL-19 Dibenzo(a,h)anthracene 81.0 % 60-130 17-JUL-19 Fluoranthene 108.9 % 60-130 17-JUL-19 Fluorene 108.9 % 60-130 17-JUL-19 Indeno(1,2,3-cd)pyrene 80.1 % 60-130 17-JUL-19 Indeno(1,2,3-cd)pyrene 80.1 % 60-130 17-JUL-19 Naphthalene 113.6 % 50-130 17-JUL-19 Phenanthrene 105.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Quinoline 103.0 % 60-130 17-JUL-19 WG3103709-1 MB 1-Methyl Naphthalene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthylene <0.000020 mg/L 0.00002 17-JUL-19 Benzo(a)anthracene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)pyrene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)pyrene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)pyrene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)hiluoranthene <0.000011 mg/L 0.00001 17-JUL-19 Benzo(a)hiluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)hiluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)hiluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b,hiluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)hiluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(b,hiluoranthene <0.000010 mg/L 0.00001 17-JUL-19	• •								
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Dibenzo(a,h)anthracene 81.0 % 60-130 17-JUL-19 Fluoranthene 103.0 % 60-130 17-JUL-19 Fluorene 108.9 % 60-130 17-JUL-19 Indeno(1,2,3-cd)pyrene 80.1 % 60-130 17-JUL-19 Naphthalene 113.6 % 50-130 17-JUL-19 Phenanthrene 105.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Quinoline 103.0 % 60-130 17-JUL-19 WG3103709-1 MB MB 1-Methyl Naphthalene <0.000020	Benzo(k)fluoranthene			106.7		%		60-130	17-JUL-19
Fluoranthene 103.0 % 60-130 17-JUL-19 Fluorene 108.9 % 60-130 17-JUL-19 Indeno(1,2,3-cd)pyrene 80.1 % 60-130 17-JUL-19 Naphthalene 113.6 % 50-130 17-JUL-19 Phenanthrene 105.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Quinoline 103.0 % 60-130 17-JUL-19 WG3103709-1 MB 1-Methyl Naphthalene <0.000020	Chrysene			74.7		%		60-130	17-JUL-19
Fluorene 108.9 % 60-130 17-JUL-19 Indeno(1,2,3-cd)pyrene 80.1 % 60-130 17-JUL-19 Naphthalene 113.6 % 50-130 17-JUL-19 Phenanthrene 105.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Quinoline 103.0 % 60-130 17-JUL-19 WG3103709-1 MB 1-Methyl Naphthalene <0.000020 mg/L 0.00002 17-JUL-19 2-Methyl Naphthalene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthylene <0.000020 mg/L 0.00002 17-JUL-19 Acenaphthylene <0.000020 mg/L 0.00002 17-JUL-19 Actidine <0.000020 mg/L 0.00002 17-JUL-19 Benzo(a)anthracene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(a)pyrene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(băj)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Benzo(bāj)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19	Dibenzo(a,h)anthracene			81.0		%		60-130	17-JUL-19
Indeno(1,2,3-cd)pyrene	Fluoranthene			103.0		%		60-130	17-JUL-19
Naphthalene 113.6 % 50-130 17-JUL-19 Phenanthrene 105.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Quinoline 103.0 % 60-130 17-JUL-19 WG3103709-1 MB MB 0.000020 mg/L 0.00002 17-JUL-19 2-Methyl Naphthalene <0.000020	Fluorene			108.9		%		60-130	17-JUL-19
Phenanthrene 105.6 % 60-130 17-JUL-19 Pyrene 99.6 % 60-130 17-JUL-19 Quinoline 103.0 % 60-130 17-JUL-19 WG3103709-1 MB NB 1-Methyl Naphthalene <0.000020	Indeno(1,2,3-cd)pyrene			80.1		%		60-130	17-JUL-19
Pyrene 99.6 % 60-130 17-JUL-19 Quinoline 103.0 % 60-130 17-JUL-19 WG3103709-1 MB MB MG 60-130 17-JUL-19 1-Methyl Naphthalene <0.000020	Naphthalene			113.6		%		50-130	17-JUL-19
Quinoline 103.0 % 60-130 17-JUL-19 WG3103709-1 MB MB MB 1-Methyl Naphthalene <0.000020 mg/L 0.00002 17-JUL-19 2-Methyl Naphthalene <0.000020	Phenanthrene			105.6		%		60-130	17-JUL-19
WG3103709-1 MB 1-Methyl Naphthalene <0.000020	Pyrene			99.6		%		60-130	17-JUL-19
1-Methyl Naphthalene <0.000020	Quinoline			103.0		%		60-130	17-JUL-19
2-Methyl Naphthalene <0.000020	WG3103709-1 MB								
Acenaphthene <0.000020	1-Methyl Naphthalene			<0.000020)	mg/L		0.00002	17-JUL-19
Acenaphthylene <0.000020	2-Methyl Naphthalene			<0.000020)	mg/L		0.00002	17-JUL-19
Anthracene <0.000010	Acenaphthene			<0.000020)	mg/L		0.00002	17-JUL-19
Acridine <0.000020 mg/L 0.00002 17-JUL-19 Benzo(a)anthracene <0.000010	Acenaphthylene			<0.000020)	mg/L		0.00002	17-JUL-19
Benzo(a)anthracene <0.000010	Anthracene			<0.000010)	mg/L		0.00001	17-JUL-19
Benzo(a)pyrene <0.000005C	Acridine			<0.000020)	mg/L		0.00002	17-JUL-19
Benzo(b&j)fluoranthene <0.000010	Benzo(a)anthracene			<0.000010)	mg/L		0.00001	17-JUL-19
Benzo(g,h,i)perylene <0.000020	Benzo(a)pyrene			<0.000005	5C	mg/L		0.000005	17-JUL-19
Benzo(k)fluoranthene <0.000010 mg/L 0.00001 17-JUL-19 Chrysene <0.000020	Benzo(b&j)fluoranthene			<0.000010)	mg/L		0.00001	17-JUL-19
Chrysene <0.000020 mg/L 0.00002 17-JUL-19	Benzo(g,h,i)perylene			<0.000020)	mg/L		0.00002	17-JUL-19
	Benzo(k)fluoranthene			<0.000010)	mg/L		0.00001	17-JUL-19
Dibenzo(a,h)anthracene <0.000005C mg/L 0.000005 17-JUL-19	Chrysene			<0.000020)	mg/L		0.00002	17-JUL-19
	Dibenzo(a,h)anthracene			<0.000005	5C	mg/L		0.000005	17-JUL-19



Workorder: L2308289

Report Date: 25-JUL-19

Page 6 of 9

PAH,PANH-WP Batch R4715869 WG3103709-1 MB Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene	Water	<0.000020 <0.000020 <0.000011		mg/L	0.00000	
WG3103709-1 MB Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene		<0.00002		mg/L	0.00002	
Fluoranthene Fluorene Indeno(1,2,3-cd)pyrene		<0.00002		mg/L	0.00000	
Indeno(1,2,3-cd)pyrene			า		0.00002	17-JUL-19
		<0.00001	5	mg/L	0.00002	17-JUL-19
		<0.0000 N	0	mg/L	0.00001	17-JUL-19
Naphthalene		<0.00005	0	mg/L	0.00005	17-JUL-19
Phenanthrene		<0.00005	0	mg/L	0.00005	17-JUL-19
Pyrene		<0.00001	0	mg/L	0.00001	17-JUL-19
Quinoline		<0.000020	0	mg/L	0.00002	17-JUL-19
Surrogate: Acenaphthen	e d10	110.2		%	60-130	17-JUL-19
Surrogate: Acridine d9		89.1		%	60-130	17-JUL-19
Surrogate: Chrysene d12	2	104.1		%	60-130	17-JUL-19
Surrogate: Naphthalene	d8	103.8		%	50-130	17-JUL-19
Surrogate: Phenanthrene	e d10	116.7		%	60-130	17-JUL-19
PH-WP	Water					
Batch R4710828 WG3105128-17 LCS pH		7.40		pH units	7.3-7.5	12-JUL-19
PHENOLS-4AAP-WT Batch R4714834	Water					
WG3108592-6 LCS Phenols (4AAP)		105.0		%	85-115	18-JUL-19
WG3108592-5 MB Phenols (4AAP)		<0.0010		mg/L	0.001	18-JUL-19
SO4-IC-N-WP	Water					
Batch R4712449						
WG3103429-6 LCS Sulfate (SO4)		104.1		%	90-110	12-JUL-19
WG3103429-5 MB Sulfate (SO4)		<0.30		mg/L	0.3	12-JUL-19
SOLIDS-TOTSUS-WP	Water					
Batch R4715410						
WG3107798-2 LCS Total Suspended Solids		97.6		%	85-115	18-JUL-19
WG3107798-1 MB Total Suspended Solids		<2.0		mg/L	2	18-JUL-19



Workorder: L2308289 Report Date: 25-JUL-19

Page 7 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT97-WP	Water							
Batch R4708700 WG3102628-1 MB								
Total Coliforms			<1		MPN/100mL		1	11-JUL-19
Escherichia Coli			<1		MPN/100mL		1	11-JUL-19

Workorder: L2308289 Report Date: 25-JUL-19 Page 8 of 9

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
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
В	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

Workorder: L2308289 Report Date: 25-JUL-19 Page 9 of 9

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	Not provided	12-JUL-19 12:00	0.25	24	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 L2308289 were received on 11-JUL-19 12:20.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

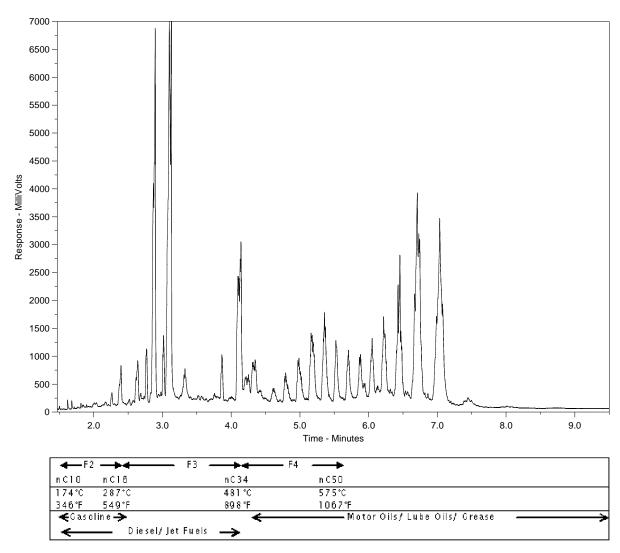
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2308289-1

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.

A		Chair	n of C	ustody /	Analytical Re	quest Form							CO	C# _	_			
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Company:	Nunavut CGS - Rankin Inlet (W8133)	į L2	23082	289-COF	-C						<u> </u>			isiness				
Contact:	SIMON DOIRON					Fax	ΟP	riority (2-4 Bu	siness	Days)	- 50%	Surcha	rge - C	ontact ,	ALS to	Confirm	TAT
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Lab V ⊴(lab	Vork Order # 5 o use only)	ALS Contact:	Craig	Riddell	Sampled By:	Amanda Anderson	F1-F4-WP	PAH, PANH-WP	NUNAVUT-WW-GRP1-WP	EC-QT97-ENDPT-WP	97-ENDPT-WP						-	Number of Containers
Sample #		rt)	N /	Sampled	Time Sampled	Sample Type	ВТХ, F	PAH,P	NUNAV	TC,EC	FC-QT97			. •				Numbe
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	Special Instructions / Regulations with water of																	
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix O



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 18-JUL-19

Report Date: 31-JUL-19 16:47 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2312572

Project P.O. #: NOT SUBMITTED

Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT

C of C Numbers: Legal Site Desc:

Hua Wo

Chemistry Laboratory Manager

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



L2312572 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2312572-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 16-JUL-19 @ 09:00							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		19-JUL-19	R4729929
Toluene	<0.0010		0.0010	mg/L		19-JUL-19	R4729929
Ethyl benzene	<0.00050		0.00050	mg/L		19-JUL-19	R4729929
o-Xylene	<0.00050		0.00050	mg/L		19-JUL-19	R4729929
m+p-Xylenes	<0.00040		0.00040	mg/L		19-JUL-19	R4729929
F1 (C6-C10)	<0.10		0.10	mg/L		19-JUL-19	R4729929
Surrogate: 4-Bromofluorobenzene (SS)	85.0		70-130	%		19-JUL-19	R4729929
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.49		0.10	mg/L	19-JUL-19	20-JUL-19	R4699009
F3 (C16-C34)	8.96		0.25	mg/L	19-JUL-19	20-JUL-19	R4699009
F4 (C34-C50)	2.66		0.25	mg/L	19-JUL-19	20-JUL-19	R4699009
Surrogate: 2-Bromobenzotrifluoride	121.5		60-140	%	19-JUL-19	20-JUL-19	R4699009
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		31-JUL-19	
F2-Naphth	0.49		0.10	mg/L		31-JUL-19	
F3-PAH	8.96		0.25	mg/L		31-JUL-19	
Total Hydrocarbons (C6-C50)	12.1		0.38	mg/L		31-JUL-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		31-JUL-19	
Miscellaneous Parameters							
Fecal Coliforms	3870000	PEHR	1	MPN/100mL		18-JUL-19	R4715829
Total and E. coli to endpoint by QT97		DELID		MENIMO		40 1111 40	
Total Coliforms Escherichia Coli	83600000 10900000	PEHR PEHR	1 1	MPN/100mL MPN/100mL		18-JUL-19 18-JUL-19	R4715814 R4715814
Note: MBEF: Microbiological test results for E. coli > Fecal coliforms due to sample heterogeneity. Both test results are within normal variability for MPN tests. Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000060	DLIS	0.000060	mg/L	19-JUL-19	23-JUL-19	R4727407
2-Methyl Naphthalene	<0.000060	DLIS	0.000060	mg/L	19-JUL-19	23-JUL-19	R4727407
Acenaphthene	<0.000060	DLIS	0.000060	mg/L	19-JUL-19	23-JUL-19	R4727407
Acenaphthylene	<0.000060	DLIS	0.000060	mg/L	19-JUL-19	23-JUL-19	R4727407
Anthracene	<0.000030	DLIS	0.000030	mg/L	19-JUL-19	23-JUL-19	R4727407
Acridine	<0.000060	DLIS	0.000060	mg/L	19-JUL-19	23-JUL-19	R4727407
Benzo(a)anthracene	<0.000030	DLIS DLIS	0.000030	mg/L	19-JUL-19	23-JUL-19	R4727407
Benzo(a)pyrene	<0.000015	DLIS	0.000015	mg/L	19-JUL-19	23-JUL-19	R4727407
Benzo(b&j)fluoranthene	<0.000030	DLIS	0.000030	mg/L	19-JUL-19	23-JUL-19	R4727407
Benzo(g,h,i)perylene Benzo(k)fluoranthene	<0.000060 <0.000030	DLIS	0.000060	mg/L	19-JUL-19 19-JUL-19	23-JUL-19 23-JUL-19	R4727407
Chrysene	<0.000030	DLIS	0.000030 0.000060	mg/L	19-JUL-19 19-JUL-19	23-JUL-19 23-JUL-19	R4727407 R4727407
Dibenzo(a,h)anthracene	<0.000015	DLIS	0.000000	mg/L mg/L	19-JUL-19	23-JUL-19 23-JUL-19	R4727407
Fluoranthene		DLIS			19-JUL-19	23-JUL-19 23-JUL-19	
Fluoranthene	<0.000060 <0.000060	DLIS	0.000060 0.000060	mg/L mg/L	19-JUL-19 19-JUL-19	23-JUL-19 23-JUL-19	R4727407 R4727407
Indeno(1,2,3-cd)pyrene	<0.000080	DLIS	0.000080	mg/L	19-JUL-19 19-JUL-19	23-JUL-19 23-JUL-19	R4727407 R4727407
Naphthalene	<0.00015	DLIS	0.000030	mg/L	19-JUL-19 19-JUL-19	23-JUL-19 23-JUL-19	R4727407
Phenanthrene	<0.00015	DLIS	0.00015	mg/L	19-JUL-19 19-JUL-19	23-JUL-19 23-JUL-19	R4727407 R4727407
Pyrene	<0.00015	DLIS	0.00015	mg/L	19-JUL-19 19-JUL-19	23-JUL-19 23-JUL-19	R4727407 R4727407
Quinoline	<0.000030	DLIS	0.000030	- 1	19-JUL-19 19-JUL-19	23-JUL-19 23-JUL-19	R4727407 R4727407
B(a)P Total Potency Equivalent	<0.000080	DLIG	0.000030	mg/L mg/l	19-JUL-19 19-JUL-19	23-JUL-19 23-JUL-19	R4727407 R4727407
Surrogate: Acenaphthene d10	92.8		60-130	mg/L %	19-JUL-19	23-JUL-19 23-JUL-19	R4727407 R4727407
Carregate. Accordant to the	92.0		00-130	70	10 00L-13	20 00L-19	114121401

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2312572-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 16-JUL-19 @ 09:00							
Matrix: WASTE							
Polyaromatic Hydrocarbons (PAHs)							
Surrogate: Acridine d9	104.7		60-130	%	19-JUL-19	23-JUL-19	R4727407
Surrogate: Chrysene d12	105.7		60-130	%	19-JUL-19	23-JUL-19	R4727407
Surrogate: Naphthalene d8	95.1		50-130	%	19-JUL-19	23-JUL-19	R4727407
Surrogate: Phenanthrene d10	98.3		60-130	%	19-JUL-19	23-JUL-19	R4727407
Nunavut WW Group 1							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	135		1.2	mg/L		22-JUL-19	
Alkalinity, Carbonate	133		1.2	IIIg/L		22-30L-19	
Carbonate (CO3)	<0.60		0.60	mg/L		22-JUL-19	
Alkalinity, Hydroxide				3			
Hydroxide (OH)	< 0.34		0.34	mg/L		22-JUL-19	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	110		1.0	mg/L		19-JUL-19	R4719748
Ammonia by colour Ammonia, Total (as N)	9.2		1.0	mg/L		22-JUL-19	R4721003
Biochemical Oxygen Demand (BOD)	9.2		1.0	IIIg/L		22-JUL-19	K4721003
Biochemical Oxygen Demand	113		20	mg/L		19-JUL-19	R4727945
Carbonaceous BOD	-						
BOD Carbonaceous	75		20	mg/L		19-JUL-19	R4727945
Chloride in Water by IC							
Chloride (CI)	43.7		0.50	mg/L		19-JUL-19	R4722635
Conductivity	400		4.0			40 1111 40	D 4740740
Conductivity Hardness Calculated	430		1.0	umhos/cm		19-JUL-19	R4719748
Hardness (as CaCO3)	77.9	нтс	0.20	mg/L		29-JUL-19	
Mercury Total			0.20				
Mercury (Hg)-Total	0.000610		0.0000050	mg/L	23-JUL-19	23-JUL-19	R4723870
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		19-JUL-19	R4722635
Nitrate+Nitrite Nitrate and Nitrite as N	-0.070		0.070	ma/l		24-JUL-19	
Nitrite in Water by IC	<0.070		0.070	mg/L		24-JUL-19	
Nitrite in water by iC Nitrite (as N)	<0.010		0.010	mg/L		19-JUL-19	R4722635
Oil & Grease - Gravimetric	.5.0.0		v	J -			
Oil and Grease	18.3		5.0	mg/L		23-JUL-19	R4720809
Phenol (4AAP)							
Phenols (4AAP)	0.0116		0.0010	mg/L		19-JUL-19	R4719699
Phosphorus, Total Phosphorus (P)-Total	2.97		0.030	mg/L		22-JUL-19	R4720390
Sulfate in Water by IC	2.91		0.030	ilig/L		ZZ-JUL-19	K4720390
Sulfate (SO4)	23.3		0.30	mg/L		19-JUL-19	R4722635
Total Metals in Water by CRC ICPMS							
Aluminum (AI)-Total	0.115		0.0030	mg/L	26-JUL-19	26-JUL-19	R4728936
Arsenic (As)-Total	0.00098		0.00010	mg/L	26-JUL-19	26-JUL-19	R4728936
Cadmium (Cd)-Total	0.0000744		0.0000050	mg/L	26-JUL-19	26-JUL-19	R4728936
Calcium (Ca)-Total	23.0		0.050	mg/L	26-JUL-19	26-JUL-19	R4728936
Chromium (Cr)-Total Cobalt (Co)-Total	0.00070		0.00010	mg/L	26-JUL-19 26-JUL-19	26-JUL-19 26-JUL-19	R4728936
Copper (Cu)-Total	0.00033 0.137		0.00010 0.00050	mg/L mg/L	26-JUL-19 26-JUL-19	26-JUL-19 26-JUL-19	R4728936 R4728936
Iron (Fe)-Total	0.137		0.00030	mg/L	26-JUL-19	26-JUL-19	R4728936
							20000
Lead (Pb)-Total	0.00107		0.000050	mg/L	26-JUL-19	26-JUL-19	R4728936

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2312572-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 16-JUL-19 @ 09:00							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS							
Manganese (Mn)-Total	0.0348	C	0.00010	mg/L	26-JUL-19	26-JUL-19	R4728936
Nickel (Ni)-Total	0.00667	C	0.00050	mg/L	26-JUL-19	26-JUL-19	R4728936
Potassium (K)-Total	6.48		0.050	mg/L	26-JUL-19	26-JUL-19	R4728936
Sodium (Na)-Total	25.6		0.050	mg/L	26-JUL-19	26-JUL-19	R4728936
Zinc (Zn)-Total	0.0830		0.0030	mg/L	26-JUL-19	26-JUL-19	R4728936
Total Organic Carbon by Combustion Total Organic Carbon	59.2		5.0	mg/L		23-JUL-19	R4722928
Total Suspended Solids Total Suspended Solids	111		2.0	mg/L		23-JUL-19	R4722808
pH							
pH	7.29		0.10	pH units		19-JUL-19	R4719748

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

L2312572 CONTD....

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Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2312572-1	RANKIN INLET WWTP - EFFI	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Sample Para	ameter Qualifier Key:
Qualifier	Description
DLIS	Detection Limit Adjusted: Insufficient Sample
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-CALCULATION Water Alkalinity, Bicarbonate

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 CALCULATION Alkalinity, Hydroxide

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.

Water ALK-TITR-WP 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.

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 EPA 8260C / EPA 5021A Water BTX plus F1 by GCMS

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 Total Organic Carbon by Combustion **APHA 5310 B-WP**

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

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

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

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

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

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

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

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

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

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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.

FC-QT97-ENDPT-WP Water Fecal Coliform to endpoint by MPN QT97 APHA 9223B QT97

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 44.5 – 0.2°C for 18 hours and then the number of wells exhibiting a positive response are counted. The final result is 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.

Grease is determined from the weight of the residue in the vial.

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

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

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

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

PH-WP Water pH APHA 4500H

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

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Reference Information

Test Method References:

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

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

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-ENDPT-WP Water Total and E. coli to endpoint 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 serial dilutions of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 - 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

XYLENES-SUM-CALC-

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.



Workorder: L2312572 Report Date: 31-JUL-19 Page 1 of 9

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP Water							
Batch R4719748							
WG3111568-24 LCS Alkalinity, Total (as CaCO3)		104.8		%		85-115	19-JUL-19
WG3111568-21 MB		104.0		70		00-110	19-30L-19
Alkalinity, Total (as CaCO3)		<1.0		mg/L		1	19-JUL-19
BOD-CBOD-WP Water							
Batch R4727945							
WG3110347-2 LCS		100 1		0.4			-
BOD Carbonaceous		106.1		%		85-115	19-JUL-19
WG3110347-1 MB BOD Carbonaceous		<2.0		mg/L		2	19-JUL-19
		~2.0		mg/L		۷	19-JUL-19
BOD-WP Water							
Batch R4727945							
WG3110347-2 LCS Biochemical Oxygen Demand		106.5		%		85-115	19-JUL-19
WG3110347-1 MB						00	.0 001 .0
Biochemical Oxygen Demand		<2.0		mg/L		2	19-JUL-19
BTEXS+F1-HSMS-WP Water							
Batch R4729929							
WG3113019-2 LCS		0.4.5		0.4			
Benzene		91.5		%		70-130	19-JUL-19
Toluene		94.5		%		70-130	19-JUL-19
Ethyl benzene		102.0		%		70-130	19-JUL-19
o-Xylene		103.3		%		70-130	19-JUL-19
m+p-Xylenes		96.3		%		70-130	19-JUL-19
WG3113019-3 LCS F1 (C6-C10)		120.8		%		70-130	19-JUL-19
WG3113019-1 MB		0.0				70 100	13-001-13
Benzene		<0.00050		mg/L		0.0005	19-JUL-19
Toluene		<0.0010		mg/L		0.001	19-JUL-19
Ethyl benzene		<0.00050		mg/L		0.0005	19-JUL-19
o-Xylene		<0.00030		mg/L		0.0003	19-JUL-19
m+p-Xylenes		<0.00040		mg/L		0.0004	19-JUL-19
F1 (C6-C10)		<0.10		mg/L		0.1	19-JUL-19
Surrogate: 4-Bromofluorobenzene (SS)		89.0		%		70-130	19-JUL-19
C-TOC-HTC-WP Water							



Workorder: L2312572

Report Date: 31-JUL-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
Batch R4722928 WG3113747-2 LCS								
Total Organic Carbon			101.9		%		80-120	23-JUL-19
WG3113747-1 MB Total Organic Carbon			<0.50		mg/L		0.5	23-JUL-19
CL-IC-N-WP	Water							
Batch R4722635								
WG3109097-6 LCS Chloride (Cl)			101.0		%		90-110	19-JUL-19
WG3109097-5 MB Chloride (CI)			<0.50		mg/L		0.5	19-JUL-19
EC-WP	Water							
Batch R4719748								
WG3111568-23 LCS Conductivity			97.9		%		90-110	19-JUL-19
WG3111568-21 MB Conductivity			<1.0		umhos/cm		1	19-JUL-19
F2-F4-FID-WP	Water							
Batch R4699009								
WG3109857-2 LCS			105.6		%		70.400	00 1111 40
F2 (C16-C16)			97.9		%		70-130	20-JUL-19
F3 (C16-C34) F4 (C34-C50)			101.7		%		70-130 70-130	20-JUL-19
WG3109857-1 MB			101.7		70		70-130	20-JUL-19
F2 (C10-C16)			<0.10		mg/L		0.1	20-JUL-19
F3 (C16-C34)			<0.25		mg/L		0.25	20-JUL-19
F4 (C34-C50)			<0.25		mg/L		0.25	20-JUL-19
Surrogate: 2-Bromobenz	otrifluoride		90.0		%		60-140	20-JUL-19
FC-QT97-ENDPT-WP	Water							
Batch R4715829								
WG3109206-2 DUP Fecal Coliforms		L2312572-1 3870000	2910000		MPN/100mL	28	65	18-JUL-19
WG3109206-1 MB Fecal Coliforms			<1		MPN/100mL		1	18-JUL-19
HG-T-CVAA-WP	Water							



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HG-T-CVAA-WP	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Marcury (Hg)-Total	HG-T-CVAA-WP	Water							
WG3113275-1 MB Mercury (Hg)-Total 40,000005C mg/L 0,000055 23-JUL-19 MET-T-CCMS-WP Batch A728936 WG3116414-2 LCS LCS AUMINITUM (Al)-Total 80-120 26-JUL-19 26-JUL-19 A/Issenic (As)-Total 100.7 % 80-120 80-120 26-JUL-19 Cadmium (Ca)-Total 103.8 % 80-120 80-120 26-JUL-19 Calcium (Ca)-Total 100.6 % 80-120 80-120 26-JUL-19 Cobalt (Ca)-Total 101.9 % 80-120 80-120 26-JUL-19 Cobalt (Ca)-Total 101.8 % 80-120 80-120 26-JUL-19 Copper (Cu)-Total 101.8 % 80-120 80-120 26-JUL-19 Lead (Pb)-Total 101.8 % 80-120 80-120 26-JUL-19 Magnesium (Mg)-Total 102.3 % 80-120 80-120 26-JUL-19 Magnesium (Mg)-Total 102.3 % 80-120 80-120 26-JUL-19 Nickel (Ni)-Total 104.8 % 80-120 80-120 26-JUL-19 Potassium (Ka)-Total 104.8 % 80-1	WG3113275-2 LCS			97.0		%		80-120	23- -10
Batch R472836 WG3116414-2 LCS Aluminum (A)-Total 100.7	WG3113275-1 MB				50				
MG3116414-2 LCS Aluminum (Al)-Total 100.7	MET-T-CCMS-WP	Water							
Aluminum (Al)-Total Arsenic (As)-Total 101.9 Arsenic (As)-Total 101.9 Cadinum (Cd)-Total 103.8 % 80-120 26-JUL-19 Cadinum (Cd)-Total 103.8 % 80-120 26-JUL-19 Calcinum (Ca)-Total 99.4 % 80-120 26-JUL-19 Chromium (Cf)-Total 100.6 % 80-120 26-JUL-19 Cobalt (Co)-Total 101.9 % 80-120 26-JUL-19 Coper (Cu)-Total 101.8 % 80-120 26-JUL-19 Iron (Fe)-Total 101.8 % 80-120 26-JUL-19 Iron (Fe)-Total 103.8 % 80-120 26-JUL-19 Magnesium (Mg)-Total 103.8 % 80-120 26-JUL-19 Magnesium (Mg)-Total 102.3 % 80-120 26-JUL-19 Manganese (Mn)-Total 101.9 % 80-120 26-JUL-19 Nickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Cadmium (A)-Total 40.00010 mg/L 0.0001 26-JUL-19 Cadmium (Ca)-Total 40.000050 mg/L 0.0001 26-JUL-19 Coper (Cu)-Total 40.00010 mg/L 0.0001 26-JUL-19 Coper (Cu)-Total 40.00010 mg/L 0.0001 26-JUL-19 Coper (Cu)-Total 40.00010 mg/L 0.0001 26-JUL-19 Coper (Cu)-Total 40.00010 mg/L 0.0001 26-JUL-19 Coper (Cu)-Total 40.00010 mg/L 0.0001 26-JUL-19 Coper (Cu)-Total 40.00010 mg/L 0.0001 26-JUL-19 Coper (Cu)-Total 40.00010 mg/L 0.0005 26-JUL-19 Coper (Cu)-Total 40.00050 mg/L 0.0005 26-JUL-19 Coper (Cu)-Total 40.00050 mg/L 0.0005 26-JUL-19 Coper (Cu)-Total 40.00010 mg/L 0.0005 26-JUL-19 Coper (Cu)-Total 40.00050 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total 40.00010 mg/L 0.0005 26-JUL-19	Batch R4728936								
Arsenic (As)-Total 101.9 % 80-120 26-JUL-19 Cadmium (Cd)-Total 103.8 % 80-120 26-JUL-19 Calcium (Ca)-Total 99.4 % 80-120 26-JUL-19 Chormium (Cr)-Total 100.6 % 80-120 26-JUL-19 Cobalt (Co)-Total 101.9 % 80-120 26-JUL-19 Copper (Cu)-Total 101.8 % 80-120 26-JUL-19 Iron (Fe)-Total 96.9 % 80-120 26-JUL-19 Iron (Fe)-Total 103.8 % 80-120 26-JUL-19 Magnesium (Mg)-Total 114.0 % 80-120 26-JUL-19 Manganese (Mn)-Total 102.3 % 80-120 26-JUL-19 Nickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Nickel (Ni)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.2 % 80-120 26-JUL				100.7		%		80-120	26-JUL-19
Cadmium (Cd)-Total 103.8 % 80-120 26-JUL-19 Calcium (Ca)-Total 99.4 % 80-120 26-JUL-19 Chromium (Cr)-Total 100.6 % 80-120 26-JUL-19 Cobalt (Co)-Total 101.9 % 80-120 26-JUL-19 Copper (Cu)-Total 101.8 % 80-120 26-JUL-19 Iron (Fe)-Total 96.9 % 80-120 26-JUL-19 Lead (Pb)-Total 103.8 % 80-120 26-JUL-19 Magnesium (Mg)-Total 114.0 % 80-120 26-JUL-19 Manganese (Mn)-Total 102.3 % 80-120 26-JUL-19 Nickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Potassium (K)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Zinc (Zn)-Total 104.2 % 80-120 26-JUL-19 WG3116414-1 MB Aluminum (Al)-Total <0.003	Arsenic (As)-Total			101.9		%			
Calcium (Ca)-Total 99.4 % 80-120 26-JUL-19 Chromium (Cr)-Total 100.6 % 80-120 26-JUL-19 Cobalt (Co)-Total 101.9 % 80-120 26-JUL-19 Copper (Cu)-Total 101.8 % 80-120 26-JUL-19 Iron (Fe)-Total 96.9 % 80-120 26-JUL-19 Lead (Pb)-Total 103.8 % 80-120 26-JUL-19 Magnesium (Mg)-Total 114.0 % 80-120 26-JUL-19 Manganese (Mn)-Total 102.3 % 80-120 26-JUL-19 Nickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Potassium (K)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 WG3116414-1 MB Aluminum (A)-Total 0.0030 mg/L 0.003 26-JUL-19 Assenic (As)-Total <0.00000	Cadmium (Cd)-Total			103.8		%		80-120	
Cobalt (Co)-Total 101.9 % 80.120 26-JUL-19 Copper (Cu)-Total 101.8 % 80-120 26-JUL-19 Iron (Fe)-Total 96.9 % 80-120 26-JUL-19 Lead (Pb)-Total 103.8 % 80-120 26-JUL-19 Magnesium (Mg)-Total 114.0 % 80-120 26-JUL-19 Manganese (Mn)-Total 102.3 % 80-120 26-JUL-19 Mickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Potassium (K)-Total 99.2 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.2 % 80-120 26-JUL-19 WG31f6414-1 MB Malinium (Al)-Total 0.0030 mg/L 0.003 26-JUL-19 Arsenic (As)-Total <0.00010	Calcium (Ca)-Total			99.4		%		80-120	
Copper (Cu)-Total 101.8 % 80-120 26-JUL-19 Iron (Fe)-Total 96.9 % 80-120 26-JUL-19 Lead (Pb)-Total 103.8 % 80-120 26-JUL-19 Magnesium (Mg)-Total 114.0 % 80-120 26-JUL-19 Manganese (Mn)-Total 102.3 % 80-120 26-JUL-19 Nickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Potassium (K)-Total 99.2 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Variation (Zn)-Total 104.2 % 80-120 26-JUL-19 WG3116414-1 MB Malminum (Al)-Total <0.0030	Chromium (Cr)-Total			100.6		%		80-120	26-JUL-19
Iron (Fe)-Total	Cobalt (Co)-Total			101.9		%		80-120	26-JUL-19
Lead (Pb)-Total 103.8 % 80-120 26-JUL-19 Magnesium (Mg)-Total 114.0 % 80-120 26-JUL-19 Manganese (Mn)-Total 102.3 % 80-120 26-JUL-19 Nickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Potassium (K)-Total 99.2 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Zinc (Zn)-Total 104.2 % 80-120 26-JUL-19 WG3116414-1 MB MB Aluminum (Al)-Total <0.0030	Copper (Cu)-Total			101.8		%		80-120	26-JUL-19
Magnesium (Mg)-Total 114.0 % 80-120 26-JUL-19 Manganese (Mn)-Total 102.3 % 80-120 26-JUL-19 Nickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Potassium (K)-Total 99.2 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Zinc (Zn)-Total 104.2 % 80-120 26-JUL-19 WG3116414-1 MB MB Nation (Al)-Total 0.003 26-JUL-19 Arsenic (As)-Total <0.00010	Iron (Fe)-Total			96.9		%		80-120	26-JUL-19
Manganese (Mn)-Total 102.3 % 80-120 26-JUL-19 Nickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Potassium (K)-Total 99.2 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Zinc (Zn)-Total 104.2 % 80-120 26-JUL-19 WG3116414-1 MB Aluminum (Al)-Total <0.0030	Lead (Pb)-Total			103.8		%		80-120	26-JUL-19
Nickel (Ni)-Total 101.9 % 80-120 26-JUL-19 Potassium (K)-Total 99.2 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Zinc (Zn)-Total 104.2 % 80-120 26-JUL-19 WG3116414-1 MB Aluminum (Al)-Total < 0.0030 mg/L 0.003 26-JUL-19 Arsenic (As)-Total < 0.00010 mg/L 0.0001 26-JUL-19 Cadmium (Cd)-Total < 0.00005c mg/L 0.00005 26-JUL-19 Calcium (Ca)-Total < 0.00010 mg/L 0.0001 26-JUL-19 Chromium (C1)-Total < 0.00010 mg/L 0.0001 26-JUL-19 Chromium (C1)-Total < 0.00010 mg/L 0.0001 26-JUL-19 Cobalt (C0)-Total < 0.00010 mg/L 0.0001 26-JUL-19 Copper (Cu)-Total < 0.00050 mg/L 0.0001 26-JUL-19 Lead (Pb)-Total < 0.00050 mg/L 0.0005 26-JUL-19 Magnesium (Mg)-Total < 0.00050 mg/L 0.0005 26-JUL-19 Magnesium (Mg)-Total < 0.00050 mg/L 0.0005 26-JUL-19 Manganese (Mn)-Total < 0.00010 mg/L 0.0005 26-JUL-19 Mickel (Ni)-Total < 0.0005 26-JUL-19 Nickel (Ni)-Total < 0.00050 mg/L 0.0005 26-JUL-19	Magnesium (Mg)-Total			114.0		%		80-120	26-JUL-19
Potassium (K)-Total 99.2 % 80-120 26-JUL-19 Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Zinc (Zn)-Total 104.2 % 80-120 26-JUL-19 WG3116414-1 MB Aluminum (Al)-Total <0.0030	Manganese (Mn)-Total			102.3		%		80-120	26-JUL-19
Sodium (Na)-Total 104.8 % 80-120 26-JUL-19 Zinc (Zn)-Total 104.2 % 80-120 26-JUL-19 WG3116414-1 MB Aluminum (Al)-Total <0.0030	Nickel (Ni)-Total			101.9		%		80-120	26-JUL-19
Zinc (Zn)-Total 104.2 % 80-120 26-JUL-19 WG3116414-1 MB Aluminum (Al)-Total 80-120 26-JUL-19 Arsenic (As)-Total <0.0030	Potassium (K)-Total			99.2		%		80-120	26-JUL-19
WG3116414-1 MB Aluminum (Al)-Total <0.0030	Sodium (Na)-Total			104.8		%		80-120	26-JUL-19
Aluminum (Al)-Total <0.0030	Zinc (Zn)-Total			104.2		%		80-120	26-JUL-19
Arsenic (As)-Total <0.00010				~0 0030		ma/l		0.002	00 1111 40
Cadmium (Cd)-Total <0.000005C					1	-			
Calcium (Ca)-Total <0.050	` '								
Chromium (Cr)-Total <0.00010						-			
Cobalt (Co)-Total <0.00010					1				
Copper (Cu)-Total <0.00050 mg/L 0.0005 26-JUL-19 Iron (Fe)-Total <0.010						_			
Iron (Fe)-Total <0.010									
Lead (Pb)-Total <0.000050									
Magnesium (Mg)-Total <0.0050					0				
Manganese (Mn)-Total <0.00010									
Nickel (Ni)-Total <0.00050 mg/L 0.0005 26-JUL-19)				
						mg/L		0.05	26-JUL-19



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Test Test	Matrix	Reference	Result	Qualifier L	Inits R	PD Limit	Analyzed
MET-T-CCMS-WP	Water						
Batch R4728936 WG3116414-1 MB Sodium (Na)-Total			<0.050	r	ng/L	0.05	26-JUL-19
Zinc (Zn)-Total			<0.0030		ng/L	0.003	
NH3-COL-WP	Water						
Batch R4721003 WG3113131-10 LCS Ammonia, Total (as N)			100.8	ç	%	85-11	5 22-JUL-19
WG3113131-9 MB Ammonia, Total (as N)			<0.010	r	ng/L	0.01	22-JUL-19
NO2-IC-N-WP	Water						
Batch R4722635 WG3109097-6 LCS Nitrite (as N)			100.3	g	⁄ ₆	90-11	0 19-JUL-19
WG3109097-5 MB Nitrite (as N)			<0.010		ng/L	0.01	19-JUL-19
NO3-IC-N-WP	Water						
Batch R4722635 WG3109097-6 LCS Nitrate (as N)			100.1	ç	⁄ ₆	90-11	0 19-JUL-19
WG3109097-5 MB Nitrate (as N)			<0.020		ng/L	0.02	19-JUL-19
OG-GRAV-WP	Water						
Batch R4720809 WG3110326-2 LCS Oil and Grease			90.7	ç	%	70-13	0 23-JUL-19
WG3110326-1 MB Oil and Grease			<5.0		ng/L	5	23-JUL-19
P-T-COL-WP	Water						
Batch R4720390 WG3110374-2 LCS							
Phosphorus (P)-Total WG3110374-1 MB Phosphorus (P)-Total			100.8 <0.0030		% ng/L	80-12 0.003	
PAH,PANH-WP	Water		<0.0030	'	119/ –	0.003	22-JUL-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4727407								
WG3110428-2 LCS			404.0		0.4			
1-Methyl Naphthalene			101.9		%		60-130	22-JUL-19
2-Methyl Naphthalene			94.5		%		60-130	22-JUL-19
Acenaphthene			102.6		%		60-130	22-JUL-19
Acenaphthylene			89.1		%		60-130	22-JUL-19
Anthracene			94.4		%		60-130	22-JUL-19
Acridine			99.1		%		60-130	22-JUL-19
Benzo(a)anthracene			90.9		%		60-130	22-JUL-19
Benzo(a)pyrene			99.7		%		60-130	22-JUL-19
Benzo(b&j)fluoranthene			80.1		%		60-130	22-JUL-19
Benzo(g,h,i)perylene			105.0		%		60-130	22-JUL-19
Benzo(k)fluoranthene			93.4		%		60-130	22-JUL-19
Chrysene			93.6		%		60-130	22-JUL-19
Dibenzo(a,h)anthracene			97.8		%		60-130	22-JUL-19
Fluoranthene			100.8		%		60-130	22-JUL-19
Fluorene			109.1		%		60-130	22-JUL-19
Indeno(1,2,3-cd)pyrene			92.9		%		60-130	22-JUL-19
Naphthalene			113.7		%		50-130	22-JUL-19
Phenanthrene			112.6		%		60-130	22-JUL-19
Pyrene			99.0		%		60-130	22-JUL-19
Quinoline			102.4		%		60-130	22-JUL-19
WG3110428-1 MB								
1-Methyl Naphthalene			< 0.000020)	mg/L		0.00002	23-JUL-19
2-Methyl Naphthalene			< 0.000020)	mg/L		0.00002	23-JUL-19
Acenaphthene			< 0.000020)	mg/L		0.00002	23-JUL-19
Acenaphthylene			< 0.000020)	mg/L		0.00002	23-JUL-19
Anthracene			<0.000010)	mg/L		0.00001	23-JUL-19
Acridine			< 0.000020)	mg/L		0.00002	23-JUL-19
Benzo(a)anthracene			<0.000010)	mg/L		0.00001	23-JUL-19
Benzo(a)pyrene			<0.000005	5C	mg/L		0.000005	23-JUL-19
Benzo(b&j)fluoranthene			<0.000010)	mg/L		0.00001	23-JUL-19
Benzo(g,h,i)perylene			<0.000020)	mg/L		0.00002	23-JUL-19
Benzo(k)fluoranthene			<0.000010)	mg/L		0.00001	23-JUL-19
Chrysene			<0.000020)	mg/L		0.00002	23-JUL-19
Dibenzo(a,h)anthracene			<0.000005	5C	mg/L		0.000005	23-JUL-19
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4727407								
WG3110428-1 MB Fluoranthene			.0.0000	2			0.0000	
			<0.00002		mg/L		0.00002	23-JUL-19
Fluorene			<0.00002		mg/L		0.00002	23-JUL-19
Indeno(1,2,3-cd)pyrene			<0.00001		mg/L		0.00001	23-JUL-19
Naphthalene			<0.00005		mg/L		0.00005	23-JUL-19
Phenanthrene			<0.00005		mg/L		0.00005	23-JUL-19
Pyrene			<0.00001		mg/L		0.00001	23-JUL-19
Quinoline			<0.00002	0	mg/L		0.00002	23-JUL-19
Surrogate: Acenaphthe	ne d10		101.5		%		60-130	23-JUL-19
Surrogate: Acridine d9			89.2		%		60-130	23-JUL-19
Surrogate: Chrysene d	12		104.9		%		60-130	23-JUL-19
Surrogate: Naphthalene	e d8		99.98		%		50-130	23-JUL-19
Surrogate: Phenanthre	ne d10		98.1		%		60-130	23-JUL-19
PH-WP	Water							
Batch R4719748								
WG3111568-22 LCS								
рН			7.36		pH units		7.3-7.5	19-JUL-19
PHENOLS-4AAP-WT	Water							
Batch R4719699								
WG3109768-38 LCS								
Phenols (4AAP)			104.3		%		85-115	19-JUL-19
WG3109768-37 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	19-JUL-19
SO4-IC-N-WP	Water							
Batch R4722635								
WG3109097-6 LCS								
Sulfate (SO4)			102.0		%		90-110	19-JUL-19
WG3109097-5 MB			-0.00				0.0	40 1111 15
Sulfate (SO4)			<0.30		mg/L		0.3	19-JUL-19
SOLIDS-TOTSUS-WP	Water							
Batch R4722808								
WG3111829-26 LCS Total Suspended Solids	•		95.6		%		0E 44E	22 11 11 42
	•		90.0		/0		85-115	23-JUL-19
WG3111829-25 MB Total Suspended Solids	3		<2.0		mg/L		2	23-JUL-19
					9, =		_	20.001.10



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT97-ENDPT-WP	Water							
Batch R4715814								
WG3109207-2 DUP Total Coliforms		L2312572-1 83600000	58100000		MPN/100mL	36	65	18-JUL-19
Escherichia Coli		10900000	8500000		MPN/100mL	25	65	18-JUL-19
WG3109207-1 MB Total Coliforms			<1		MPN/100mL		1	18-JUL-19
Escherichia Coli			<1		MPN/100mL		1	18-JUL-19

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Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID [.]	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	16-JUL-19 09:00	19-JUL-19 12:00	0.25	75	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform to endpoint b	by MPN QT9	7					
	1	16-JUL-19 09:00	18-JUL-19 16:20	30	55	hours	EHTR
Total and E. coli to endpoint	t by QT97						
	1	16-JUL-19 09:00	18-JUL-19 16:25	30	55	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Demai	nd (BOD)						
	1	16-JUL-19 09:00	19-JUL-19 07:00	48	70	hours	EHTR
Carbonaceous BOD							
	1	16-JUL-19 09:00	19-JUL-19 07:00	48	70	hours	EHTR
Laward & Ovalities Definition							

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 L2312572 were received on 18-JUL-19 13:00.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

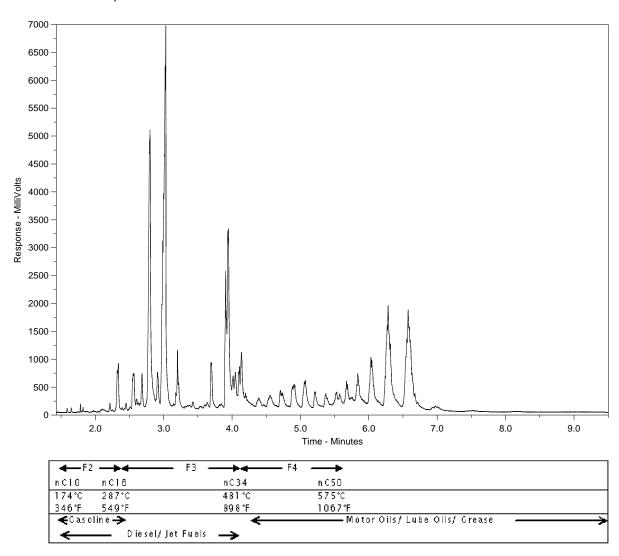
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2312572-1

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.

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Contact:	SIMON DOIRON				سعدعات المتا		cxcei	Diğital	Fax	O P	riority	(2-4 B	usiness	Days)	- 50%	Surcha	arge - C	ontact	ALS to	Confir	rm TAT	
Address:	Box 490				Email 1:	sdoiron@	gov.nı	u.ca		O E	merge	ncy (1-	2 Bus.	Days)	- 100%	6 Surch	arge -	Contact	t ALS t	o Conf	îrm TAT	Г
	Rankin Inlet , NU,	X0C 0G0			Email 2:	mlusty@				O s	ame D	ay or \	Veeker	nd Eme	rgency	- Cont	act ALS	to Cor	nfirm T	AT		
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Sample #	4	Sample ! is description w	dentification ill appear on the	e report)		Date Sa	mpled	Time Sampled	Sample Type	BTX,F1	PAH,P/	NUNAV	TC,EC-	FC-QT			1			,		Numbe
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix P



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 23-JUL-19

Report Date: 01-AUG-19 08:04 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2314912

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.]

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



L2314912 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2314912-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 22-JUL-19 @ 09:15							
Matrix: WASTE							
BTEX							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		25-JUL-19	R4727342
Toluene	<0.0010		0.0010	mg/L		25-JUL-19	R4727342
Ethyl benzene	<0.00050		0.00050	mg/L		25-JUL-19	R4727342
o-Xylene	<0.00050		0.00050	mg/L		25-JUL-19	R4727342
m+p-Xylenes	<0.00040		0.00040	mg/L		25-JUL-19	R4727342
F1 (C6-C10)	<0.10		0.10	mg/L		25-JUL-19	R4727342
Surrogate: 4-Bromofluorobenzene (SS)	82.7		70-130	%		25-JUL-19	R4727342
CCME Total Hydrocarbons F1-BTEX	0.40		0.40	/1		00 1111 40	
F2-Naphth	<0.10		0.10	mg/L		29-JUL-19	
F3-PAH	<0.10 0.78		0.10 0.25	mg/L mg/L		29-JUL-19 29-JUL-19	
Total Hydrocarbons (C6-C50)	1.28		0.25	mg/L		29-JUL-19 29-JUL-19	
Sum of Xylene Isomer Concentrations	1.20		0.50	1119/L		20 00L-19	
Xylenes (Total)	<0.00064		0.00064	mg/L		26-JUL-19	
Miscellaneous Parameters							
Fecal Coliforms	13000000	MBEF	1	MPN/100mL		23-JUL-19	R4722496
Total and E. coli to endpoint by QT97							
Total Coliforms	248000000		1	MPN/100mL		23-JUL-19	R4722508
Escherichia Coli	26900000		1	MPN/100mL		23-JUL-19	R4722508
F2-F4 (O.Reg.153/04)							
F2 (C10-C16)	<100	OWP	100	ug/L	24-JUL-19	25-JUL-19	R4726354
F3 (C16-C34)	780	OWP	250	ug/L	24-JUL-19	25-JUL-19	R4726354
F4 (C34-C50)	500	OWP	250	ug/L	24-JUL-19	25-JUL-19	R4726354
Chrom. to baseline at nC50 Surrogate: 2-Bromobenzotrifluoride	YES		00.440	0/	24-JUL-19 24-JUL-19	25-JUL-19	R4726354
CCME PAHs in mg/L	88.3		60-140	%	24-JUL-19	25-JUL-19	R4726354
1-Methyl Naphthalene	0.000083		0.000020	mg/L	24-JUL-19	29-JUL-19	R4729324
2-Methyl Naphthalene	0.000084		0.000020	mg/L	24-JUL-19	29-JUL-19	R4729324
Acenaphthene	<0.000020		0.000020	mg/L	24-JUL-19	29-JUL-19	R4729324
Acenaphthylene	<0.000020		0.000020	mg/L	24-JUL-19	29-JUL-19	R4729324
Anthracene	<0.00010		0.000010	mg/L	24-JUL-19	29-JUL-19	R4729324
Acridine	<0.000020		0.000020	mg/L	24-JUL-19	29-JUL-19	R4729324
Benzo(a)anthracene	<0.000010		0.000010	mg/L	24-JUL-19	29-JUL-19	R4729324
Benzo(a)pyrene	<0.000050		0.0000050	mg/L	24-JUL-19	29-JUL-19	R4729324
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	24-JUL-19	29-JUL-19	R4729324
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	24-JUL-19	29-JUL-19	R4729324
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	24-JUL-19	29-JUL-19	R4729324
Chrysene	<0.000020		0.000020	mg/L	24-JUL-19	29-JUL-19	R4729324
Dibenzo(a,h)anthracene Fluoranthene	0.0000093		0.0000050	mg/L	24-JUL-19	29-JUL-19 29-JUL-19	R4729324
Fluorene	<0.000020	R	0.000020	mg/L	24-JUL-19 24-JUL-19	29-JUL-19 29-JUL-19	R4729324
Indeno(1,2,3-cd)pyrene	0.000037 <0.000010	'`	0.000020	mg/L mg/L	24-JUL-19 24-JUL-19	29-JUL-19 29-JUL-19	R4729324 R4729324
Naphthalene	0.000010		0.000010	mg/L	24-JUL-19	29-JUL-19 29-JUL-19	R4729324 R4729324
Phenanthrene	<0.000099		0.000050	mg/L	24-JUL-19	29-JUL-19	R4729324
Pyrene	<0.000030		0.000030	mg/L	24-JUL-19	29-JUL-19	R4729324
Quinoline	0.000021		0.000020	mg/L	24-JUL-19	29-JUL-19	R4729324
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	24-JUL-19	29-JUL-19	R4729324
Surrogate: d8-Naphthalene	131.8		50-150	%	24-JUL-19	29-JUL-19	R4729324
Surrogate: d10-Phenanthrene	99.9		50-150	%	24-JUL-19	29-JUL-19	R4729324
Surrogate: d12-Chrysene	103.1		50-150	%	24-JUL-19	29-JUL-19	R4729324
Surrogate: d10-Acenaphthene	92.3		50-150	%	24-JUL-19	29-JUL-19	R4729324

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

L2314912 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2314912-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 22-JUL-19 @ 09:15							
Matrix: WASTE							
CCME PAHs in mg/L							
Surrogate: d9-Acridine (SS)	96.4		50-150	%	24-JUL-19	29-JUL-19	R4729324
Nunavut WW Group 1	00.1		00 100	,,	2.002.0	2002.0	111120021
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	151		1.2	mg/L		24-JUL-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		24-JUL-19	
Alkalinity, Hydroxide	0.24		0.04			24 1111 40	
Hydroxide (OH)	<0.34		0.34	mg/L		24-JUL-19	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	124		1.0	mg/L		23-JUL-19	R4723131
Ammonia by colour	127		1.0	1119/12		20 002 10	114723131
Ammonia, Total (as N)	1.90		0.20	mg/L		23-JUL-19	R4723915
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	108		50	mg/L		24-JUL-19	R4730556
Carbonaceous BOD	444		20	, //		04 1111 40	D4700550
BOD Carbonaceous	114		20	mg/L		24-JUL-19	R4730556
Chloride in Water by IC Chloride (Cl)	49.9		0.50	mg/L		23-JUL-19	R4724448
Conductivity	40.0		0.00	9/ =		20 002 10	1(4)24440
Conductivity	491		1.0	umhos/cm		23-JUL-19	R4723131
Hardness Calculated							
Hardness (as CaCO3)	91.4	HTC	0.20	mg/L		01-AUG-19	
Mercury Total	0.0000470				00 1111 40	00 1111 40	D 4704400
Mercury (Hg)-Total	0.0000170		0.0000050	mg/L	30-JUL-19	30-JUL-19	R4731130
Nitrate in Water by IC Nitrate (as N)	<0.020		0.020	mg/L		23-JUL-19	R4724448
Nitrate+Nitrite				3			
Nitrate and Nitrite as N	<0.070		0.070	mg/L		25-JUL-19	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		23-JUL-19	R4724448
Oil & Grease - Gravimetric Oil and Grease	17.5		5.0	mg/L		25-JUL-19	R4725510
Phenol (4AAP)	17.5		3.0	IIIg/L		25-30L-19	K4725510
Phenois (4AAP)	0.0117		0.0010	mg/L		26-JUL-19	R4727957
Phosphorus, Total							
Phosphorus (P)-Total	3.94		0.030	mg/L		25-JUL-19	R4727317
Sulfate in Water by IC	05 -					00 11 11 46	D. 470 /
Sulfate (SO4)	28.7		0.30	mg/L		23-JUL-19	R4724448
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.112		0.0030	mg/L	31-JUL-19	31-JUL-19	R4734210
Arsenic (As)-Total	0.00105		0.0030	mg/L	31-JUL-19	31-JUL-19	R4734210
Cadmium (Cd)-Total	0.000136		0.0000050	mg/L	31-JUL-19	31-JUL-19	R4734210
Calcium (Ca)-Total	27.4		0.050	mg/L	31-JUL-19	31-JUL-19	R4734210
Chromium (Cr)-Total	0.00057		0.00010	mg/L	31-JUL-19	31-JUL-19	R4734210
Cobalt (Co)-Total	0.00053		0.00010	mg/L	31-JUL-19	31-JUL-19	R4734210
Copper (Cu)-Total	0.157		0.00050	mg/L	31-JUL-19	31-JUL-19	R4734210
Iron (Fe)-Total	0.284		0.010	mg/L	31-JUL-19	31-JUL-19	R4734210
Lead (Pb)-Total	0.00124		0.000050	mg/L	31-JUL-19	31-JUL-19	R4734210
Magnesium (Mg)-Total Manganese (Mn)-Total	5.59 0.0517		0.0050 0.00010	mg/L mg/L	31-JUL-19 31-JUL-19	31-JUL-19 31-JUL-19	R4734210 R4734210
Nickel (Ni)-Total	0.0517		0.00010	mg/L	31-JUL-19	31-JUL-19 31-JUL-19	R4734210 R4734210
Potassium (K)-Total	11.7		0.0000	mg/L	31-JUL-19	31-JUL-19	R4734210
, ,							5 .2 .5

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

L2314912 CONTD.... PAGE 4 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2314912-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 22-JUL-19 @ 09:15							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS Sodium (Na)-Total	28.0		0.050	mg/L	31-JUL-19	31-JUL-19	R4734210
Zinc (Zn)-Total	0.104		0.0030	mg/L	31-JUL-19	31-JUL-19	R4734210
Total Organic Carbon by Combustion							
Total Organic Carbon Total Suspended Solids	68.8		5.0	mg/L		25-JUL-19	R4727520
Total Suspended Solids	78.0		2.7	mg/L		29-JUL-19	R4730574
pH pH	7.23		0.10	pH units		23-JUL-19	R4723131

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

L2314912 CONTD....

PAGE 5 of 7 Version: FINAL

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MBEF	Microbiological test results for E. coli > Fecal Coliforms due to sample heterogeneity. Both test results are within normal variability for MPN tests.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
OWP	Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.
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-Water Alkalinity, Bicarbonate **CALCULATION** WP

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 APHA 5210 B Water Carbonaceous BOD

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.

ROD-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 Chloride in Water by IC EPA 300.1 (mod)

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

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

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

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

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

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

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

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH

L2314912 CONTD....

PAGE 6 of 7 Version: FINAL

Reference Information

Test Method References:

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

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 (O.Reg.153/04) MOE DECPH-E3421/CCME TIER 1 F2-F4-WT Water

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.

FC-QT97-ENDPT-WP Water Fecal Coliform to endpoint by MPN QT97 **APHA 9223B QT97**

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 44.5 - 0.2°C for 18 hours and then the number of wells exhibiting a positive response are counted. The final result is 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 Total Metals in Water by CRC ICPMS EPA 200.2/6020B (mod.) Water

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 Nitrite in Water by IC EPA 300.1 (mod) Water

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 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.

APHA 4500 P PHOSPHORUS-L

Water

P-T-COL-WP

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.

APHA 4500H

Phosphorus, Total

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.

PHENOI S-4AAP-WT FPA 9066 Water Phenol (4AAP)

L2314912 CONTD....

PAGE 7 of 7 Version: FINAL

Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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-ENDPT-WP Water Total and E. coli to endpoint 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 serial dilutions of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 – 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

CALCULATED RESULT

XYLENES-SUM-CALC- Water Sum of Xylene Isomer Concentrations

WP

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

 $\mbox{\it mg/L}\,$ - 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.



Workorder: L2314912 Report Date: 01-AUG-19 Page 1 of 9

Nunavut Community & Government Services - Rankin Inlet Client:

P.O. Box 490

Rankin Inlet NU X0C 0G0

SIMON DOIRON Contact:

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R47231	131							
WG3113895-15 DU Alkalinity, Total (as 0		L2314912-1 124	124		mg/L	0.2	20	23-JUL-19
WG3113895-14 LC Alkalinity, Total (as 0			102.0		%		85-115	23-JUL-19
WG3113895-11 ME Alkalinity, Total (as 0			<1.0		mg/L		1	23-JUL-19
BOD-CBOD-WP	Water							
Batch R47305 WG3113688-7 LC BOD Carbonaceous	s		101.9		%		85-115	24-JUL-19
WG3113688-6 ME BOD Carbonaceous	3		<2.0		mg/L		2	24-JUL-19
BOD-WP	Water				J		_	2.002.0
Batch R47305								
WG3113688-7 LC Biochemical Oxyger	s		106.4		%		85-115	24-JUL-19
WG3113688-6 ME Biochemical Oxyger			<2.0		mg/L		2	24-JUL-19
BTEXS+F1-HSMS-WP	Water							
Batch R47273	342							
WG3114967-2 LC	s							
Benzene			93.5		%		70-130	25-JUL-19
Toluene			87.7		%		70-130	25-JUL-19
Ethyl benzene			89.7		%		70-130	25-JUL-19
o-Xylene			98.3		%		70-130	25-JUL-19
m+p-Xylenes			95.9		%		70-130	25-JUL-19
WG3114967-3 LC F1 (C6-C10)	S		113.0		%		70-130	25-JUL-19
WG3114967-1 ME Benzene	3		<0.00050		mg/L		0.0005	25-JUL-19
Toluene			<0.0010		mg/L		0.001	25-JUL-19
Ethyl benzene			<0.00050		mg/L		0.0005	25-JUL-19
o-Xylene			<0.00030		mg/L		0.0003	25-JUL-19
m+p-Xylenes			<0.00040		mg/L		0.0004	25-JUL-19
F1 (C6-C10)			<0.10		mg/L		0.1	25-JUL-19
Surrogate: 4-Bromo	fluorobenzene (SS	6)	80.1		%		70-130	25-JUL-19
C-TOC-HTC-WP	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
Batch R4727520 WG3116296-2 LCS Total Organic Carbon	0		102.1		%		80-120	25-JUL-19
WG3116296-1 MB Total Organic Carbon			<0.50		mg/L		0.5	25-JUL-19
CL-IC-N-WP	Water							
Batch R4724444 WG3112856-6 LCS Chloride (CI)	В		99.1		%		90-110	23-JUL-19
WG3112856-5 MB Chloride (CI)			<0.50		mg/L		0.5	23-JUL-19
EC-WP	Water							
Batch R472313 WG3113895-15 DUP Conductivity	1	L2314912-1 491	490		umhos/cm	0.2	10	02 40
WG3113895-13 LCS Conductivity		431	96.9		%	0.2	90-110	23-JUL-19 23-JUL-19
WG3113895-11 MB Conductivity			<1.0		umhos/cm		1	23-JUL-19
F2-F4-WT	Water							
Batch R4726354 WG3114663-2 LCS F2 (C10-C16)	4		99.6		%		65-135	25-JUL-19
F3 (C16-C34)			97.5		%		65-135	25-JUL-19
F4 (C34-C50)			105.3		%		65-135	25-JUL-19
WG3114663-1 MB F2 (C10-C16)			<100		ug/L		100	25-JUL-19
F3 (C16-C34)			<250		ug/L		250	25-JUL-19
F4 (C34-C50)			<250		ug/L		250	25-JUL-19
Surrogate: 2-Bromobe	nzotrifluoride		84.7		%		60-140	25-JUL-19
FC-QT97-ENDPT-WP	Water							
Batch R472249	6							
WG3113017-2 DUP Fecal Coliforms		L2314912-1 13000000	11200000		MPN/100mL	15	65	23-JUL-19
WG3113017-1 MB Fecal Coliforms			<1		MPN/100mL		1	23-JUL-19
HG-T-CVAA-WP	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WP	Water							
Batch R4731130 WG3119636-2 LCS Mercury (Hg)-Total			95.0		%		80-120	30-JUL-19
WG3119636-1 MB Mercury (Hg)-Total			<0.00000	50	mg/L		0.000005	30-JUL-19
MET-T-CCMS-WP	Water							
Batch R4734210								
WG3120363-2 LCS Aluminum (Al)-Total			106.7		%		80-120	31-JUL-19
Arsenic (As)-Total			101.8		%		80-120	31-JUL-19
Cadmium (Cd)-Total			101.4		%		80-120	31-JUL-19
Calcium (Ca)-Total			100.2		%		80-120	31-JUL-19
Chromium (Cr)-Total			106.5		%		80-120	31-JUL-19
Cobalt (Co)-Total			102.4		%		80-120	31-JUL-19
Copper (Cu)-Total			103.2		%		80-120	31-JUL-19
Iron (Fe)-Total			94.2		%		80-120	31-JUL-19
Lead (Pb)-Total			104.0		%		80-120	31-JUL-19
Magnesium (Mg)-Total			112.9		%		80-120	31-JUL-19
Manganese (Mn)-Total			104.0		%		80-120	31-JUL-19
Nickel (Ni)-Total			103.0		%		80-120	31-JUL-19
Potassium (K)-Total			108.1		%		80-120	31-JUL-19
Sodium (Na)-Total			104.5		%		80-120	31-JUL-19
Zinc (Zn)-Total			102.4		%		80-120	31-JUL-19
WG3120363-1 MB Aluminum (Al)-Total			<0.0030		mg/L		0.003	31-JUL-19
Arsenic (As)-Total			<0.00010		mg/L		0.003	31-JUL-19
Cadmium (Cd)-Total			<0.00000		mg/L		0.00001	31-JUL-19
Calcium (Ca)-Total			<0.050		mg/L		0.000	31-JUL-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	31-JUL-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	31-JUL-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	31-JUL-19
Iron (Fe)-Total			<0.010		mg/L		0.01	31-JUL-19
Lead (Pb)-Total			<0.00005	0	mg/L		0.00005	31-JUL-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	31-JUL-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	31-JUL-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	31-JUL-19
Potassium (K)-Total			<0.050		mg/L		0.05	31-JUL-19
					J. –		0.00	3. 002 10



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4734210 WG3120363-1 MB Sodium (Na)-Total			<0.050		mg/L		0.05	31-JUL-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	31-JUL-19
NH3-COL-WP	Water							
Batch R4723915 WG3114259-14 LCS Ammonia, Total (as N)			102.3		%		85-115	23-JUL-19
WG3114259-13 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	23-JUL-19
NO2-IC-N-WP	Water							
Batch R4724448 WG3112856-6 LCS Nitrite (as N)			100.8		%		90-110	23-JUL-19
WG3112856-5 MB Nitrite (as N)			<0.010		mg/L		0.01	23-JUL-19
NO3-IC-N-WP	Water							
Batch R4724448 WG3112856-6 LCS Nitrate (as N)			99.1		%		90-110	23-JUL-19
WG3112856-5 MB Nitrate (as N)			<0.020		mg/L		0.02	23-JUL-19
OG-GRAV-WP	Water							
Batch R4725510 WG3113910-2 LCS Oil and Grease			97.1		%		70-130	25-JUL-19
WG3113910-1 MB Oil and Grease			<5.0		mg/L		5	25-JUL-19
P-T-COL-WP	Water							
Batch R4727317 WG3114346-6 LCS Phosphorus (P)-Total			97.7		%		80-120	25-JUL-19
WG3114346-5 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	25-JUL-19
PAH-CCME-PPM-WT	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R4729324								
WG3114663-2 LCS			404.0		0.4			
1-Methyl Naphthalene			101.9		%		50-150	23-JUL-19
2-Methyl Naphthalene			92.9		%		50-150	23-JUL-19
Acenaphthene			99.2		%		50-150	23-JUL-19
Acenaphthylene			112.3		%		50-150	23-JUL-19
Anthracene			106.3		%		50-150	23-JUL-19
Acridine			98.3		%		50-150	23-JUL-19
Benzo(a)anthracene			129.4		%		50-150	23-JUL-19
Benzo(a)pyrene			106.8		%		50-150	23-JUL-19
Benzo(b&j)fluoranthene			109.7		%		50-150	23-JUL-19
Benzo(g,h,i)perylene			112.6		%		50-150	23-JUL-19
Benzo(k)fluoranthene			114.3		%		50-150	23-JUL-19
Chrysene			130.4		%		50-150	23-JUL-19
Dibenzo(a,h)anthracene)		112.7		%		50-150	23-JUL-19
Fluoranthene			112.2		%		50-150	23-JUL-19
Fluorene			109.1		%		50-150	23-JUL-19
Indeno(1,2,3-cd)pyrene			127.3		%		50-150	23-JUL-19
Naphthalene			95.3		%		50-150	23-JUL-19
Phenanthrene			113.5		%		50-150	23-JUL-19
Pyrene			118.4		%		50-150	23-JUL-19
Quinoline			123.3		%		50-150	23-JUL-19
WG3114663-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	23-JUL-19
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	23-JUL-19
Acenaphthene			<0.000020		mg/L		0.00002	23-JUL-19
Acenaphthylene			<0.000020		mg/L		0.00002	23-JUL-19
Anthracene			<0.000010		mg/L		0.00001	23-JUL-19
Acridine			<0.000020		mg/L		0.00002	23-JUL-19
Benzo(a)anthracene			<0.000010		mg/L		0.00001	23-JUL-19
Benzo(a)pyrene			<0.00005	С	mg/L		0.000005	23-JUL-19
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	23-JUL-19
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	23-JUL-19
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	23-JUL-19
Chrysene			<0.000020		mg/L		0.00001	23-JUL-19
Dibenzo(a,h)anthracene	2		<0.000025		mg/L		0.00002	23-JUL-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R472932	4							
WG3114663-1 MB								
Fluoranthene			<0.000020		mg/L		0.00002	23-JUL-19
Fluorene			<0.000020		mg/L		0.00002	23-JUL-19
Indeno(1,2,3-cd)pyren	е		<0.000010		mg/L		0.00001	23-JUL-19
Naphthalene			<0.000050		mg/L		0.00005	23-JUL-19
Phenanthrene			<0.000050)	mg/L		0.00005	23-JUL-19
Pyrene			<0.000010)	mg/L		0.00001	23-JUL-19
Quinoline			<0.000020)	mg/L		0.00002	23-JUL-19
Surrogate: d8-Naphth	alene		99.5		%		50-150	23-JUL-19
Surrogate: d10-Phena	inthrene		101.7		%		50-150	23-JUL-19
Surrogate: d12-Chrys	ene		106.0		%		50-150	23-JUL-19
Surrogate: d10-Acena	phthene		89.8		%		50-150	23-JUL-19
Surrogate: d9-Acridine	e (SS)		84.0		%		50-150	23-JUL-19
PH-WP	Water							
Batch R472313	1							
WG3113895-15 DUP	1	L2314912-1						
рН		7.23	7.24	J	pH units	0.01	0.2	23-JUL-19
WG3113895-12 LCS			7.00					
рН			7.38		pH units		7.3-7.5	23-JUL-19
PHENOLS-4AAP-WT	Water							
Batch R472795								
WG3116725-10 LCS Phenols (4AAP)			105.7		%		85-115	00 1111 40
, ,			103.7		76		00-110	26-JUL-19
WG3116725-9 MB Phenols (4AAP)			< 0.0010		mg/L		0.001	26-JUL-19
SO4-IC-N-WP	Water				ŭ			
Batch R472444								
WG3112856-6 LCS								
Sulfate (SO4)			99.8		%		90-110	23-JUL-19
WG3112856-5 MB								
Sulfate (SO4)			< 0.30		mg/L		0.3	23-JUL-19
SOLIDS-TOTSUS-WP	Water							
Batch R473057	4							
WG3116376-2 LCS								
Total Suspended Solid	ds		88.0		%		85-115	29-JUL-19
WG3116376-1 MB								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-WP	Water							
Batch R4730574 WG3116376-1 MB Total Suspended Solids			<2.0		mg/L		2	29-JUL-19
TC,EC-QT97-ENDPT-WP	Water							
Batch R4722508 WG3113018-2 DUP Total Coliforms		L2314912-1 248000000	23600000)	MPN/100mL	5.0	65	23-JUL-19
Escherichia Coli		26900000	20300000		MPN/100mL	28	65	23-JUL-19
WG3113018-1 MB Total Coliforms			<1		MPN/100mL		1	23-JUL-19
Escherichia Coli			<1		MPN/100mL		1	23-JUL-19

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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.

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	22-JUL-19 09:15	23-JUL-19 12:00	0.25	27	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 L2314912 were received on 23-JUL-19 11:25.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

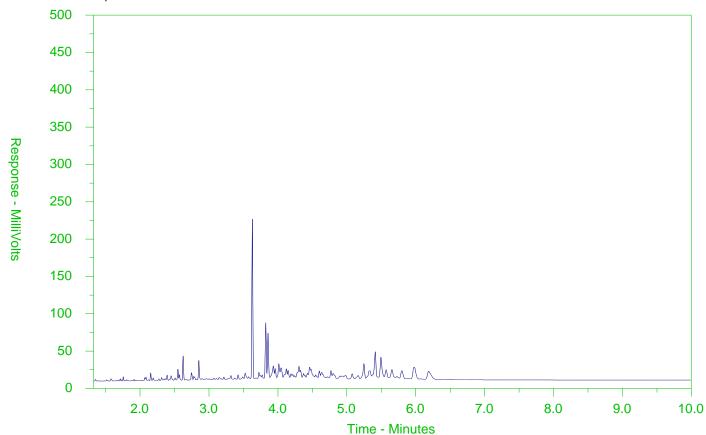
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2314912-1

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/Je	t 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.

Released by:

Amanda Anderson

Date (dd-mmm-yy) Time (hh-mm)

07-201-19 9:15

Received by:

Date:

JUL 2 3 2019

Remperature:

GENF 18.01 Front

LJUL 2 3 2019 D 🐼

Observations:

If Yes add SIF

Yes / (NØ)?

ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix Q



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 30-JUL-19

Report Date: 12-AUG-19 07:30 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2319681

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.]

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



L2319681 CONTD.... PAGE 2 of 6 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2319681-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 29-JUL-19 @ 13:15							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		03-AUG-19	R4739804
Toluene Ethyl benzene	<0.0010 <0.00050		0.0010 0.00050	mg/L mg/L		03-AUG-19 03-AUG-19	R4739804 R4739804
o-Xylene	<0.00050		0.00050	mg/L		03-AUG-19 03-AUG-19	R4739804
m+p-Xylenes	<0.00040		0.00040	mg/L		03-AUG-19	R4739804
F1 (C6-C10)	<0.10		0.10	mg/L		03-AUG-19	R4739804
Surrogate: 4-Bromofluorobenzene (SS)	96.3		70-130	%		03-AUG-19	R4739804
CCME PHC F2-F4 in Water	0.05		0.40		04 4110 40	00 4110 40	D 4700004
F2 (C10-C16) F3 (C16-C34)	0.25 4.45		0.10 0.25	mg/L mg/L	01-AUG-19 01-AUG-19	02-AUG-19 02-AUG-19	R4739024 R4739024
F4 (C34-C50)	2.58		0.25	mg/L	01-AUG-19 01-AUG-19	02-AUG-19 02-AUG-19	R4739024 R4739024
Surrogate: 2-Bromobenzotrifluoride	97.9		60-140	%	01-AUG-19	02-AUG-19	R4739024
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		06-AUG-19	
Total Hydrocarbons (C6-C50)	7.28		0.38	mg/L		06-AUG-19	
Sum of Xylene Isomer Concentrations Xylenes (Total)	<0.00064		0.00064	mg/L		06-AUG-19	
Miscellaneous Parameters	10.00001		0.00001	9/ =		007.00	
Fecal Coliforms	2140000	MBEF	1	MPN/100mL		30-JUL-19	R4732091
Total and E. coli to endpoint by QT97							
Total Coliforms	56500000		1	MPN/100mL		30-JUL-19	R4732068
Escherichia Coli Nunavut WW Group 1	5200000		1	MPN/100mL		30-JUL-19	R4732068
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	78.9		1.2	mg/L		01-AUG-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		01-AUG-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		01-AUG-19	
Alkalinity, Total (as CaCO3)	V0.54		0.54	mg/L		01-400-15	
Alkalinity, Total (as CaCO3)	64.7		1.0	mg/L		31-JUL-19	R4734401
Ammonia by colour							
Ammonia, Total (as N)	3.70		0.20	mg/L		31-JUL-19	R4735088
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	65		20	mg/L		31-JUL-19	R4739685
Carbonaceous BOD				y/ L		31 33 L 13	1147 00000
BOD Carbonaceous	46		20	mg/L		31-JUL-19	R4739685
Chloride in Water by IC						04 11 11 15	
Chloride (CI)	44.2		0.50	mg/L		31-JUL-19	R4738653
Conductivity Conductivity	336		1.0	umhos/cm		31-JUL-19	R4734401
Hardness Calculated				230, 5.11		3. 332 13	
Hardness (as CaCO3)	78.2	нтс	0.20	mg/L		12-AUG-19	
Mercury Total					07 4110 15	00 4110 15	
Mercury (Hg)-Total	0.000050		0.0000050	mg/L	07-AUG-19	08-AUG-19	R4744895
Nitrate in Water by IC Nitrate (as N)	<0.020		0.020	mg/L		31-JUL-19	R4738653
Nitrate+Nitrite	15.025		0.320				
Nitrate and Nitrite as N	<0.070		0.070	mg/L		03-AUG-19	
Nitrite in Water by IC	2 2 4 -					04 "" :5	D. 4700000
Nitrite (as N)	<0.010		0.010	mg/L		31-JUL-19	R4738653

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

L2319681 CONTD.... PAGE 3 of 6 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2319681-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 29-JUL-19 @ 13:15							
Matrix: WASTE							
Oil & Grease - Gravimetric							
Oil and Grease	15.3		5.0	mg/L		02-AUG-19	R4738743
Phenol (4AAP)							
Phenols (4AAP)	0.0057		0.0010	mg/L		01-AUG-19	R4737245
Phosphorus, (P) Total	1.28		0.0000			02-AUG-19	D 4707000
Phosphorus (P)-Total Sulfate in Water by IC	1.20		0.0060	mg/L		02-A0G-19	R4737930
Sulfate (SO4)	22.8		0.30	mg/L		31-JUL-19	R4738653
Total Metals in Water by CRC ICPMS							
Aluminum (AI)-Total	0.106		0.0030	mg/L	08-AUG-19	08-AUG-19	R4746362
Arsenic (As)-Total	0.00085		0.00010	mg/L	08-AUG-19	08-AUG-19	R4746362
Cadmium (Cd)-Total Calcium (Ca)-Total	0.0000465		0.0000050	mg/L	08-AUG-19	08-AUG-19	R4746362
Chromium (Cr)-Total	22.7 0.00047		0.050 0.00010	mg/L mg/L	08-AUG-19 08-AUG-19	08-AUG-19 08-AUG-19	R4746362 R4746362
Cobalt (Co)-Total	0.00047		0.00010	mg/L	08-AUG-19	08-AUG-19	R4746362
Copper (Cu)-Total	0.0911		0.00010	mg/L	08-AUG-19	08-AUG-19	R4746362
Iron (Fe)-Total	0.162		0.010	mg/L	08-AUG-19	08-AUG-19	R4746362
Lead (Pb)-Total	0.00123		0.000050	mg/L	08-AUG-19	08-AUG-19	R4746362
Magnesium (Mg)-Total	5.21		0.0050	mg/L	08-AUG-19	08-AUG-19	R4746362
Manganese (Mn)-Total	0.0476		0.00010	mg/L	08-AUG-19	08-AUG-19	R4746362
Nickel (Ni)-Total Potassium (K)-Total	0.00403 5.71		0.00050 0.050	mg/L mg/L	08-AUG-19 08-AUG-19	08-AUG-19 08-AUG-19	R4746362 R4746362
Sodium (Na)-Total	25.6		0.050	mg/L	08-AUG-19	08-AUG-19 08-AUG-19	R4746362
Zinc (Zn)-Total	0.0487		0.0030	mg/L	08-AUG-19	08-AUG-19	R4746362
Total Organic Carbon by Combustion							
Total Organic Carbon	46.8		0.50	mg/L		06-AUG-19	R4742609
Total Suspended Solids				,,		05 4110 40	D.
Total Suspended Solids	63.5		2.0	mg/L		05-AUG-19	R4740066
pH pH	6.95		0.10	pH units		31-JUL-19	R4734401
- r	0.00		0.10	F			
	1	L	l		1	1	·

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

L2319681 CONTD....

Reference Information

PAGE 4 of 6 Version: FINAL

Sample Parameter Qualifier Key:

Qualifier	Description
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MBEF	Microbiological test results for E. coli > Fecal Coliforms due to sample heterogeneity. Both test results are within normal variability for MPN tests.
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- Water Alkalinity, Bicarbonate CALCULATION WP

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

L2319681 CONTD....

PAGE 5 of 6 Version: FINAL Reference Information

Test Method References:

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

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.

FC-QT97-ENDPT-WP

Water

Fecal Coliform to endpoint by MPN QT97

APHA 9223B QT97

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 44.5 - 0.2°C for 18 hours and then the number of wells exhibiting a positive response are counted. The final result is 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.

PH-WP

Water

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.

L2319681 CONTD....

PAGE 6 of 6 Version: FINAL

Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

TC,EC-QT97-ENDPT-WP Water Total and E. coli to endpoint 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 serial dilutions of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at $35.0 - 0.5^{\circ}$ 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- Water Sum of Xylene Isomer Concentrations CALCULATED RESULT

WP

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.



Workorder: L2319681 Report Date: 12-AUG-19 Page 1 of 7

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

C-TOC-HTC-WP

Water

Test M	atrix Reference	Result Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP W	/ater					
Batch R4734401						
WG3121523-4 LCS						
Alkalinity, Total (as CaCO3)		100.3	%		85-115	31-JUL-19
WG3121523-1 MB		.4.0			4	04 !!!! 40
Alkalinity, Total (as CaCO3)		<1.0	mg/L		1	31-JUL-19
	/ater					
Batch R4739685						
WG3120103-7 LCS BOD Carbonaceous		98.1	%		85-115	31-JUL-19
		30.1	70		00-110	31-JUL-19
WG3120103-6 MB BOD Carbonaceous		<2.0	mg/L		2	31-JUL-19
OD WD M	/ater		J			0.002.0
	rater					
Batch R4739685 WG3120103-7 LCS						
Biochemical Oxygen Demai	nd	104.1	%		85-115	31-JUL-19
WG3120103-6 MB						
Biochemical Oxygen Demai	nd	<2.0	mg/L		2	31-JUL-19
BTEXS+F1-HSMS-WP W	/ater					
Batch R4739804						
WG3123237-2 LCS						
Benzene		86.7	%		70-130	03-AUG-19
Toluene		94.7	%		70-130	03-AUG-19
Ethyl benzene		94.5	%		70-130	03-AUG-19
o-Xylene		102.9	%		70-130	03-AUG-19
m+p-Xylenes		100.2	%		70-130	03-AUG-19
WG3123237-3 LCS			0/			
F1 (C6-C10)		96.1	%		70-130	03-AUG-19
WG3123237-1 MB Benzene		<0.00050	mg/L		0.0005	03-AUG-19
Toluene		<0.0010	mg/L			
Ethyl benzene		<0.0010	_		0.001	03-AUG-19
o-Xylene		<0.00030	mg/L		0.0005	03-AUG-19
-			mg/L		0.0003	03-AUG-19
m+p-Xylenes		<0.00040	mg/L		0.0004	03-AUG-19
F1 (C6-C10)	(22)	<0.10	mg/L		0.1	03-AUG-19
Surrogate: 4-Bromofluorobe	enzene (SS)	94.0	%		70-130	03-AUG-19



Workorder: L2319681 Rep

Report Date: 12-AUG-19 Page 2 of 7

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
Batch R474260	9							
WG3125745-2 LCS Total Organic Carbon			103.5		%		00.400	06 AUG 40
WG3125745-1 MB			103.3		/0		80-120	06-AUG-19
Total Organic Carbon			<0.50		mg/L		0.5	06-AUG-19
CL-IC-N-WP	Water							
Batch R473865								
WG3120477-6 LCS Chloride (CI)			99.9		%		90-110	24 1111 40
WG3120477-5 MB			55.5		<i>7</i> 0		30-110	31-JUL-19
Chloride (CI)			<0.50		mg/L		0.5	31-JUL-19
EC-WP	Water							
Batch R473440	1							
WG3121523-3 LCS			100.0		0/		00.440	04 1111 40
Conductivity WG3121523-1 MB			100.8		%		90-110	31-JUL-19
Conductivity			<1.0		umhos/cm		1	31-JUL-19
F2-F4-FID-WP	Water							
Batch R473902								
WG3121638-2 LCS F2 (C10-C16)			99.0		%		70 420	02 AUC 40
F3 (C16-C34)			99.0		% %		70-130 70-130	02-AUG-19 02-AUG-19
F4 (C34-C50)			99.3		%		70-130 70-130	02-AUG-19 02-AUG-19
WG3121638-1 MB			00.0		,,		70-130	02-A00-19
F2 (C10-C16)			<0.10		mg/L		0.1	02-AUG-19
F3 (C16-C34)			<0.25		mg/L		0.25	02-AUG-19
F4 (C34-C50)			<0.25		mg/L		0.25	02-AUG-19
Surrogate: 2-Bromobe	enzotrifluoride		94.3		%		60-140	02-AUG-19
FC-QT97-ENDPT-WP	Water							
Batch R473209								
WG3119749-2 DUF Fecal Coliforms	•	L2319681-1 2140000	1430000		MPN/100mL	40	65	30-JUL-19
WG3119749-1 MB Fecal Coliforms			<1		MPN/100mL		1	30-JUL-19
HG-T-CVAA-WP	Water							



Workorder: L2319681 Report Date: 12-AUG-19 Page 3 of 7

est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WP	Water							
Batch R4744895								
WG3127888-2 LCS								
Mercury (Hg)-Total			99.0		%		80-120	08-AUG-19
WG3127888-1 MB Mercury (Hg)-Total			<0.000005	ſ	mg/L		0.000005	00 1110 10
,			<0.000003	C	IIIg/L		0.000005	08-AUG-19
MET-T-CCMS-WP	Water							
Batch R4746362								
WG3127038-2 LCS Aluminum (Al)-Total			98.9		%		80-120	08-AUG-19
Arsenic (As)-Total			96.9		%		80-120	08-AUG-19
Cadmium (Cd)-Total			98.1		%		80-120	08-AUG-19
Calcium (Ca)-Total			96.8		%		80-120	08-AUG-19
Chromium (Cr)-Total			96.5		%		80-120	08-AUG-19
Cobalt (Co)-Total			95.2		%		80-120	08-AUG-19
Copper (Cu)-Total			96.6		%		80-120	08-AUG-19
Iron (Fe)-Total			102.6		%		80-120	08-AUG-19
Lead (Pb)-Total			94.7		%		80-120	08-AUG-19
Magnesium (Mg)-Total			111.8		%		80-120	08-AUG-19
Manganese (Mn)-Total			99.5		%		80-120	08-AUG-19
Nickel (Ni)-Total			93.8		%		80-120	08-AUG-19
Potassium (K)-Total			93.1		%		80-120	08-AUG-19
Sodium (Na)-Total			101.5		%		80-120	08-AUG-19
Zinc (Zn)-Total			101.4		%		80-120	08-AUG-19
WG3127038-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	08-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	08-AUG-19
Cadmium (Cd)-Total			< 0.000005	С	mg/L		0.000005	08-AUG-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	08-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	08-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	08-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	08-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	08-AUG-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	08-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	08-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	08-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	08-AUG-19
Potassium (K)-Total			< 0.050		mg/L		0.05	08-AUG-19



Workorder: L2319681

Report Date: 12-AUG-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4746362 WG3127038-1 MB Sodium (Na)-Total			<0.050		mg/L		0.05	08-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	08-AUG-19
NH3-COL-WP	Water							
Batch R4735088 WG3121920-6 LCS Ammonia, Total (as N)			98.4		%		85-115	31-JUL-19
WG3121920-5 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	31-JUL-19
NO2-IC-N-WP	Water							
Batch R4738653								
WG3120477-6 LCS Nitrite (as N)			100.5		%		90-110	31-JUL-19
WG3120477-5 MB Nitrite (as N)			<0.010		mg/L		0.01	31-JUL-19
NO3-IC-N-WP	Water							
Batch R4738653								
WG3120477-6 LCS Nitrate (as N)			99.2		%		90-110	31-JUL-19
WG3120477-5 MB Nitrate (as N)			<0.020		mg/L		0.02	31-JUL-19
OG-GRAV-WP	Water							
Batch R4738743 WG3122012-2 LCS								
Oil and Grease			97.5		%		70-130	02-AUG-19
WG3122012-1 MB Oil and Grease			<5.0		mg/L		5	02-AUG-19
P-T-COL-WP	Water							
Batch R4737930								
WG3122069-6 LCS Phosphorus (P)-Total			98.6		%		80-120	02-AUG-19
WG3122069-5 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	02-AUG-19
PH-WP	Water							



Workorder: L2319681 Rep

Report Date: 12-AUG-19

Page 5 of 7

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WP Batch R4734401 WG3121523-2 LCS	Water							
рН			7.37		pH units		7.3-7.5	31-JUL-19
PHENOLS-4AAP-WT	Water							
Batch R4737245								
WG3121581-6 LCS Phenols (4AAP)			101.2		%		85-115	01-AUG-19
WG3121581-5 MB Phenols (4AAP)			<0.0010		mg/L		0.001	01-AUG-19
SO4-IC-N-WP	Water							
Batch R4738653 WG3120477-6 LCS								
Sulfate (SO4)			100.8		%		90-110	31-JUL-19
WG3120477-5 MB Sulfate (SO4)			<0.30		mg/L		0.3	31-JUL-19
SOLIDS-TOTSUS-WP	Water							
Batch R4740066 WG3123253-6 LCS								
Total Suspended Solids			89.3		%		85-115	05-AUG-19
WG3123253-5 MB Total Suspended Solids			<2.0		mg/L		2	05-AUG-19
TC,EC-QT97-ENDPT-WP	Water							
Batch R4732068								
WG3119754-2 DUP Total Coliforms		L2319681-1 56500000	55400000		MPN/100mL	2.0	65	30-JUL-19
Escherichia Coli		5200000	5100000		MPN/100mL	1.9	65	30-JUL-19
WG3119754-1 MB Total Coliforms			<1		MPN/100mL		1	30-JUL-19
Escherichia Coli			<1		MPN/100mL		1	30-JUL-19

Report Date: 12-AUG-19 Workorder: L2319681 Page 6 of 7

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2319681 Report Date: 12-AUG-19 Page 7 of 7

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	29-JUL-19 13:15	31-JUL-19 12:00	0.25	47	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 L2319681 were received on 30-JUL-19 16:25.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

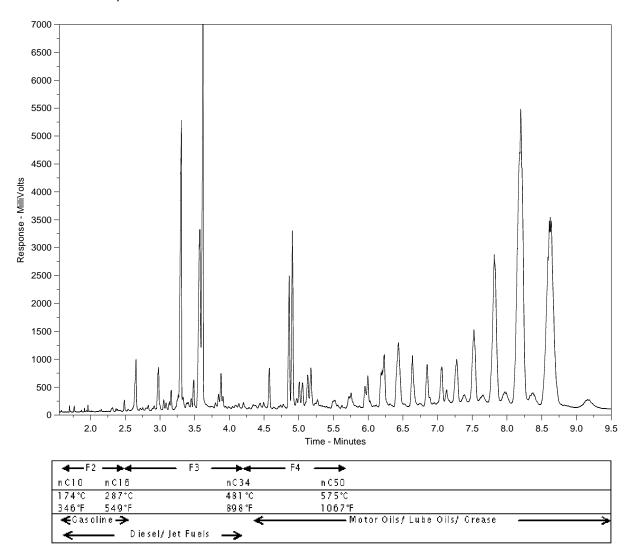
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2319681-1

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.

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ALS Environmental		n ii iiiiiiiiiiiii i []			Page1_of				<u>1</u> of .							
Report To	Report	II II IBIBBBBBBint in	19681-COF		ervice Requested (Rush for routine analysis subject to availability)											
Company: Nunavut CGS - Rankin Inlet (W8133)	✓ Stanc	L23	1966 1-00.		Regular (Standard Turnaround Times - Business Days)											
Contact: SIMON DOIRON	☑ PDF			Fax									tact ALS			
Address: Box 490	Email 1:	sdoiron@gov.nu	i.ca										ntact AL		nfirm TA	ī.
Rankin Inlet , NU, X0C 0G0	Email 2:	mlusty@gov.nu.	ca		O s	ame Da	y or V	Veeken					Confirm	1 TAT		
Phone: 867-645-8155 Cell# :	Email 3:															
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Hardcopy of Invoice with Report? Yes No	Job #:	Rankin Inlet WW	/TP- Monthly E	ffluent	 					-			+	4-	 	•
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Lab Work Order # (lab use only)	ALS Craig Riddell Sampled By: Amanda Anderson				BTX,F1-F4-WP	PAH,PÄNH-WP	NUNAVUT-WW-GRP1-WP	TC, EC-Q197-ENDPT-WP	FC-QT97-ENDPT-WP							₽
Sample . Sample Identification (This description will appear on the report)		Date Sampled	Time Sampled	Sample Type	BTX,F	PAH,P	NUNA	TC,EC	FC-01							Number
Rankin Inlet WWTP - Effluent		JU1 29	1:15	Waste	Х	×	х	×	х							15
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Special Instructions / Regulations with water or la	nd use (CCN	IE-Freshwater A	quatic Life/BC	CSR - Commerc	ial/Al	3 Tier	1 - N	latura	al, etc) / Ha	zardo	ous De	tails			
Nunavut-WW-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine, 250 r bottles) + 5 Vials for BTX,F1-F4 and 1 L Amber for PAH's = Total of 15 Bo			, 250 ml Amber	Nutrient , 250 ml	Ambe	r Phe	enols,	2 x 2	50 ml	Amb	er Oil	& Grea	ase , 2	50 ml	Bacter	ia (9
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manda Anderson 29/101/2019 1:15 5	ナツ	13	<u> </u>	(r) °C	<u>L</u>									† Y	es ado	i SiF

ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix R



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 07-AUG-19

Report Date: 16-AUG-19 15:11 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2323983

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.]

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



L2323983 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2323983-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 06-AUG-19 @ 10:30							
Matrix: WASTE							
BTEX							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		09-AUG-19	R4756835
Toluene	<0.0010		0.0010	mg/L		09-AUG-19	R4756835
Ethyl benzene	<0.00050		0.00050	mg/L		09-AUG-19	R4756835
o-Xylene	<0.00050		0.00050	mg/L		09-AUG-19	R4756835
m+p-Xylenes	<0.00040		0.00040	mg/L		09-AUG-19	R4756835
F1 (C6-C10)	<0.10		0.10	mg/L		09-AUG-19	R4756835
Surrogate: 4-Bromofluorobenzene (SS)	93.0		70-130	%		09-AUG-19	R4756835
CCME Total Hydrocarbons	0.40		0.40			45 4110 40	
F1-BTEX F2-Naphth	<0.10		0.10	mg/L		15-AUG-19	
F3-PAH	<0.10 <0.25		0.10 0.25	mg/L mg/L		15-AUG-19 15-AUG-19	
Total Hydrocarbons (C6-C50)	<0.25		0.25	mg/L		15-AUG-19 15-AUG-19	
Sum of Xylene Isomer Concentrations	\U.50		0.50	,g/ L		10 / 100-19	
Xylenes (Total)	<0.00064		0.00064	mg/L		15-AUG-19	
Miscellaneous Parameters							
Fecal Coliforms	1720000	MBHT	1	MPN/100mL		07-AUG-19	R4744013
Total and E. coli to endpoint by QT97							
Total Coliforms	>24200000	MBHT	1	MPN/100mL		07-AUG-19	R4744249
Escherichia Coli	3260000	MBHT	1	MPN/100mL		07-AUG-19	R4744249
F2-F4 (O.Reg.153/04)							
F2 (C10-C16)	<100		100	ug/L	09-AUG-19	12-AUG-19	R4746599
F3 (C16-C34)	<250		250	ug/L	09-AUG-19	12-AUG-19	R4746599
F4 (C34-C50)	<250		250	ug/L	09-AUG-19	12-AUG-19	R4746599
Chrom. to baseline at nC50	YES		00.440	0/	09-AUG-19	12-AUG-19	R4746599
Surrogate: 2-Bromobenzotrifluoride CCME PAHs in mg/L	90.1		60-140	%	09-AUG-19	12-AUG-19	R4746599
1-Methyl Naphthalene	0.000060		0.000020	mg/L	09-AUG-19	13-AUG-19	R4746580
2-Methyl Naphthalene	0.000062		0.000020	mg/L	09-AUG-19	13-AUG-19	R4746580
Acenaphthene	<0.000020		0.000020	mg/L	09-AUG-19	13-AUG-19	R4746580
Acenaphthylene	<0.000020		0.000020	mg/L	09-AUG-19	13-AUG-19	R4746580
Anthracene	<0.000010		0.000010	mg/L	09-AUG-19	13-AUG-19	R4746580
Acridine	<0.000020		0.000020	mg/L	09-AUG-19	13-AUG-19	R4746580
Benzo(a)anthracene	<0.000010		0.000010	mg/L	09-AUG-19	13-AUG-19	R4746580
Benzo(a)pyrene	0.0000051		0.0000050		09-AUG-19	13-AUG-19	R4746580
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	09-AUG-19	13-AUG-19	R4746580
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	09-AUG-19	13-AUG-19	R4746580
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	09-AUG-19	13-AUG-19	R4746580
Chrysene	<0.000020		0.000020	mg/L	09-AUG-19	13-AUG-19	R4746580
Dibenzo(a,h)anthracene Fluoranthene	0.0000147 <0.000020		0.0000050	mg/L	09-AUG-19 09-AUG-19	13-AUG-19 13-AUG-19	R4746580 R4746580
Fluorene	<0.000020		0.000020	mg/L mg/L	09-AUG-19 09-AUG-19	13-AUG-19 13-AUG-19	R4746580 R4746580
Indeno(1,2,3-cd)pyrene	<0.000020		0.000020	mg/L	09-AUG-19	13-AUG-19 13-AUG-19	R4746580
Naphthalene	0.000010		0.000010	mg/L	09-AUG-19	13-AUG-19	R4746580
Phenanthrene	<0.000050		0.000050	mg/L	09-AUG-19	13-AUG-19	R4746580
Pyrene	<0.000010		0.000010	mg/L	09-AUG-19	13-AUG-19	R4746580
Quinoline	<0.000020		0.000020	mg/L	09-AUG-19	13-AUG-19	R4746580
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	09-AUG-19	13-AUG-19	R4746580
Surrogate: d8-Naphthalene	135.4		50-150	%	09-AUG-19	13-AUG-19	R4746580
Surrogate: d10-Phenanthrene	106.0		50-150	%	09-AUG-19	13-AUG-19	R4746580
Surrogate: d12-Chrysene	92.3		50-150	%	09-AUG-19	13-AUG-19	R4746580
Surrogate: d10-Acenaphthene	123.1		50-150	%	09-AUG-19	13-AUG-19	R4746580

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

L2323983 CONTD.... PAGE 3 of 7 Version: FINAL

L2323983-1 RANKIN INIET WWTP - EFFLUENT Sampled By: CLIENT on 06-AUG-19 @ 10:30 Martin: WASTE COME PANS in mg/L Surrogate: 04-Audinie (SS) 100.2 50-150 % 09-AUG-19 13-AUG-19 R4746580 R4746680 R4746580 R4746680 R4746580 R4746680 R47466	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Sampled By: CUENT on 06-AUG-19 ® 10:30 Mailsix WASTE SUENT STATE	L 2323983-1 RANKIN INLET WWTP - FEELLENT							
Marker: WASTE CCME PANE in mg/L Surgepte: 48 Academs (SS) 100.2 50.150 56.150 58.4 08-AUG-19 13-AUG-19 R4746580 Nunavut WW Group 1 Alkalinity, Bleathonate Blearbonate (FCO3) 63.9 1.2 mg/L 09-AUG-19 FAR6580 Malanity, Protein (CO3) 40.60 60.60 mg/L 09-AUG-19 FAR6580 Malanity, Protein (as CaCO3) 40.60 40.34 mg/L 09-AUG-19 FAR6580 Malanity, Total (as CaCO3) 40.60 40.6								
Comparison Com								
Surrogate: d9-Acridine (SS) 100.2 50.160 % 09-AUG-19 13-AUG-19 R4746580 Nutravut WW forcup 1 Alkalinity, Bicarbonate Bicarbonate (PCO3) 63.9 1.2 mg/L 09-AUG-19 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R4746580 R476665	-							
Numawut WW Group 1		100.2		50-150	%	09-AUG-19	13-AUG-19	R4746580
Alkalinity, Carbonate Ga.9 1.2 mg/L Ga.9	` ,	100.2		00 100	,,	007.00		111110000
Bicarboniste (HCO3)	-							
Carbonaie (CO3)		63.9		1.2	mg/L		09-AUG-19	
Alkalinity, hydroxide Hydroxide (OH)	Alkalinity, Carbonate							
Hydroxide (OH)	, ,	<0.60		0.60	mg/L		09-AUG-19	
Alkalinity, Total (as CaCO3)		0.04		0.04			00 4110 40	
Alkalinity, Total (as CaCO3)	, ,	<0.34		0.34	mg/L		09-AUG-19	
Ammonia Py colour Ammonia, Total (as N) 2.95 0.10 mg/L 07-AUG-19 R4744419 Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand 49 20 mg/L 08-AUG-19 R4753016 Carbonaceous BOD BOD Carbonaceous 40 20 mg/L 08-AUG-19 R4753016 Chloride in Water by IC Chloride (CI) 38.0 0.50 mg/L 08-AUG-19 R4746733 R4746733 Conductivity 271 1.0 umhos/cm 08-AUG-19 R4744874 Hardness Calculated Hardness (as CaCO3) 62.5 HTC 0.20 mg/L 16-AUG-19 R474685 R4746		52.4		1.0	ma/l		08-ALIG-19	P4744874
Ammonia, Total (as N) 2.95 0.10 mg/L 07-AUG-19 R474419		32.4		1.0	1119/2		00 A00 13	114744074
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand 49 20 mg/L 08-AUG-19 R4753016 Carbonaceous BOD BOD Carbonaceous BOD BOD Carbonaceous 40 20 mg/L 08-AUG-19 R4753016 R4753016 Chloride in Water by IC Chloride (CI) 38.0 0.50 mg/L 08-AUG-19 R476733 R4767	l •	2.95		0.10	mg/L		07-AUG-19	R4744419
Biochemical Oxygen Demand								
BOD Carbonaceous		49		20	mg/L		08-AUG-19	R4753016
Chloride in Water by IC Chloride (CI) 38.0 0.50 mg/L mg/L 08-AUG-19 R4746733 Conductivity Condu								
Chloride (CI) 38.0 0.50 mg/L 08-AUG-19 R4746733		40		20	mg/L		08-AUG-19	R4753016
Conductivity Cond		39.0		0.50	ma/l		08-Δ11G-10	P4746722
Conductivity	, ,	36.0		0.50	IIIg/L		00-A00-19	K4740733
Hardness Calculated Hardness (as CaCO3)		271		1.0	umhos/cm		08-AUG-19	R4744874
Mercury Total Co.000050 mg/L 08-AUG-19 09-AUG-19 R4746685 Nitrate in Water by IC Nitrate (as N) <0.020 0.020 mg/L 08-AUG-19 R4746633 Nitrate-Nitrite Nitrate and Nitrite as N <0.070 0.070 mg/L 13-AUG-19 R4746733 Nitrate withit in Water by IC Nitrite (as N) <0.010 0.010 mg/L 08-AUG-19 R4746733 Oil & Grease - Gravimetric Oil and Grease 11.2 5.0 mg/L 08-AUG-19 R4746733 Phenol (4AAP) Phenol (4AAP) Phosphorus (P)-Total 0.0034 0.0010 mg/L 09-AUG-19 R4746535 Phosphorus (P)-Total 1.01 0.0060 mg/L 09-AUG-19 R4746535 Sulfate in Water by IC Sulfate (SO4) 20.7 0.30 mg/L 09-AUG-19 R4746733 Total Metals in Water by CC CICPMS 0.0962 0.0030 mg/L 15-AUG-19 R4746733 Aluminum (Al)-Total 0.0062 0.0003 0.0011 mg/L 15-AUG-19 15-AUG-19 R4757095 Cadium (Co)-Total 0.00052	_							
Mercury (Hg)-Total		62.5	HTC	0.20	mg/L		16-AUG-19	
Nitrate in Water by IC Nitrate (as N)								
Nitrate+Nitrite Nitrate+Nitrite Nitrate+Nitrite Nitrate+Nitrite Nitrate+Nitrite Nitrate+Nitrite Nitrate+Nitrite Nitrate+Nitrite Nitrate+Nitrite Nitrate+Nitrite Nitrate Nitr		<0.000050		0.0000050	mg/L	08-AUG-19	09-AUG-19	R4746685
Nitrate+Nitrite Nitrate and Nitrite as N <0.070 0.070 mg/L 13-AUG-19 Nitrite in Water by IC Nitrite (as N) <0.010 0.010 mg/L 08-AUG-19 R4746733 Oil & Grease - Gravimetric 11.2 5.0 mg/L 12-AUG-19 R4746733 Phenol (4AAP) Phenols (4AAP) 0.0034 0.0010 mg/L 09-AUG-19 R4746535 Phosphorus, Total 1.01 0.0060 mg/L 09-AUG-19 R4746535 Phosphorus (P)-Total 1.01 0.0060 mg/L 09-AUG-19 R4746535 Phosphorus (P)-Total 20.7 0.30 mg/L 09-AUG-19 R4746535 Phosphorus (P)-Total 20.7 0.30 mg/L 15-AUG-19 R4746733 Total Metals in Water by CRC ICPMS Aluminum (Al)-Total 0.0962 0.0030 mg/L 15-AUG-19 R4757095 Arsenic (As)-Total 0.000029 0.00000 mg/L 15-AUG-19 15-AUG-19 R4757095 Calcium (Ca)-Total 0.000025 0.00000 mg		0.000		0.000	/1		00 4110 40	D 47 40700
Nitrite in Water by IC Nitrite (as N) Oil & Grease - Gravimetric Oil and Grease Phenol (4AAP) Phenols (4AAP) Phosphorus, Total Phosphorus (P)-Total Sulfate in Water by IC Sulfate (SO4) Total Metals in Water by CRC ICPMS Aluminum (Al)-Total Cadmium (Cd)-Total Calcium (Ca)-Total Calcium (Cj-Total Calcium (Cj-Total Calcium (Cj-Total Chromium (Cf)-Total Chromium (Cf)-Total Copper (Cu)-Total Copper (Cu)-Total Lead (Pb)-Total Manganese (Mn)-Total Manganese (Mn)-Total Manganese (Mn)-Total Milke (SN)-Total Nitrite in Water by IC Sulfate (Ni)-Total Copper (Cu)-Total Condition Mary L 13-AUG-19 R4746733 R4746733 R4746535 R4746		<0.020		0.020	mg/L		06-AUG-19	R4/46/33
Nitrite in Water by IC Nitrite (as N) <0.010 0.010 mg/L 08-AUG-19 R4746733 Oil & Grease - Gravimetric Oil and Grease 11.2 5.0 mg/L 12-AUG-19 R4747276 Phenol (4AAP) Phenols (4AAP) 0.0034 0.0010 mg/L 09-AUG-19 R4746535 Phosphorus, Total Phosphorus (P)-Total 1.01 0.0060 mg/L 09-AUG-19 R4745230 Sulfate in Water by IC Sulfate in Water by CRC ICPMS Aluminum (Al)-Total 20.7 0.30 mg/L 15-AUG-19 R4746733 Total Metals in Water by CRC ICPMS Aluminum (Al)-Total 0.0962 0.0030 mg/L 15-AUG-19 15-AUG-19 R4757095 Cadmium (Cd)-Total 0.00093 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Calcium (Ca)-Total 0.00022 0.000050 mg/L 15-AUG-19 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Copper (Cu)-Total 0.00714 0.00050 mg/L 15-AUG-19 15-AUG-19		<0.070		0.070	ma/L		13-AUG-19	
Nitrite (as N)	Nitrite in Water by IC							
Oil and Grease 11.2 5.0 mg/L 12-AUG-19 R4747276 Phenol (4AAP) 0.0034 0.0010 mg/L 09-AUG-19 R4746535 Phosphorus (P)-Total 1.01 0.0060 mg/L 09-AUG-19 R4745230 Sulfate in Water by IC Sulfate (SO4) 20.7 0.30 mg/L 08-AUG-19 R4746733 Total Metals in Water by CRC ICPMS 0.0962 0.0030 mg/L 15-AUG-19 R4757095 Arsenic (As)-Total 0.00093 0.00010 mg/L 15-AUG-19 R4757095 Cadrium (Cd)-Total 0.0000299 0.000050 mg/L 15-AUG-19 15-AUG-19 R4757095 Calcium (Ca)-Total 17.9 0.050 mg/L 15-AUG-19 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Copper (Cu)-Total 0.00012 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Lead (Pb)-Total 0.196 0.010 mg/L 15-AUG-19<		<0.010		0.010	mg/L		08-AUG-19	R4746733
Phenol (4AAP) 0.0034 0.0010 mg/L 09-AUG-19 R4746535 Phosphorus, Total 1.01 0.0060 mg/L 09-AUG-19 R4746535 Sulfate in Water by IC Sulfate (SO4) 20.7 0.30 mg/L 15-AUG-19 R4746733 Total Metals in Water by CRC ICPMS Aluminum (Al)-Total 0.0962 0.0030 mg/L 15-AUG-19 15-AUG-19 R4757095 Arsenic (As)-Total 0.00093 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Calcium (Ca)-Total 0.0000299 0.00000000 mg/L 15-AUG-19 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 R4757095 Cobalt (Co)-Total 0.00052 0.00010 mg/L 15-AUG-19 R4757095 Copper (Cu)-Total 0.00052 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095 Lead (Pb)-Total <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Phenols (4AAP) 0.0034 0.0010 mg/L 09-AUG-19 R4746535		11.2		5.0	mg/L		12-AUG-19	R4747276
Phosphorus, Total Phosphorus (P)-Total 1.01 0.0060 mg/L 09-AUG-19 R4745230 Sulfate in Water by IC Sulfate (SO4) 20.7 0.30 mg/L 08-AUG-19 R4746733 Total Metals in Water by CRC ICPMS Aluminum (Al)-Total 0.0962 0.0030 mg/L 15-AUG-19 15-AUG-19 R4757095 Arsenic (As)-Total 0.00093 0.00010 mg/L 15-AUG-19 R4757095 Cadmium (Cd)-Total 0.0000299 0.000050 mg/L 15-AUG-19 15-AUG-19 R4757095 Calcium (Ca)-Total 17.9 0.050 mg/L 15-AUG-19 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Cobalt (Co)-Total 0.00021 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095 Lead (Pb)-Total 0.014 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095	· ,	0.0004		0.0040	/1		00 4110 40	D 47 40505
Phosphorus (P)-Total	, ,	0.0034		0.0010	mg/L		09-AUG-19	K4746535
Sulfate in Water by IC 20.7 0.30 mg/L 08-AUG-19 R4746733 Total Metals in Water by CRC ICPMS 0.0962 0.0030 mg/L 15-AUG-19 R4757095 Arsenic (As)-Total 0.00093 0.00010 mg/L 15-AUG-19 R4757095 Cadmium (Cd)-Total 0.0000299 0.000050 mg/L 15-AUG-19 R4757095 Calcium (Ca)-Total 17.9 0.050 mg/L 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 R4757095 Cobalt (Co)-Total 0.00021 0.00010 mg/L 15-AUG-19 R4757095 Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 R4757095 Iron (Fe)-Total 0.196 0.010 mg/L 15-AUG-19 R4757095 Lead (Pb)-Total 0.00114 0.00050 mg/L 15-AUG-19 R4757095 Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 R4757095 Manganese (Mn)-Total 0.00435 </td <td></td> <td>1.01</td> <td></td> <td>0.0060</td> <td>ma/L</td> <td></td> <td>09-AUG-19</td> <td>R4745230</td>		1.01		0.0060	ma/L		09-AUG-19	R4745230
Sulfate (SO4) 20.7 0.30 mg/L 08-AUG-19 R4746733 Total Metals in Water by CRC ICPMS 0.0962 0.0030 mg/L 15-AUG-19 R4757095 Arsenic (As)-Total 0.00093 0.00010 mg/L 15-AUG-19 R4757095 Cadmium (Cd)-Total 0.0000299 0.0000050 mg/L 15-AUG-19 R4757095 Calcium (Ca)-Total 17.9 0.050 mg/L 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 R4757095 Cobalt (Co)-Total 0.00021 0.00010 mg/L 15-AUG-19 R4757095 Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 R4757095 Iron (Fe)-Total 0.196 0.010 mg/L 15-AUG-19 R4757095 Lead (Pb)-Total 0.00114 0.00050 mg/L 15-AUG-19 R4757095 Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 R4757095 Manganese (Mn)-Total 0.00247	, ,	_						
Aluminum (Al)-Total 0.0962 0.0030 mg/L 15-AUG-19 15-AUG-19 R4757095 Arsenic (As)-Total 0.00093 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Cadmium (Cd)-Total 0.0000299 0.000050 mg/L 15-AUG-19 15-AUG-19 R4757095 Calcium (Ca)-Total 17.9 0.050 mg/L 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 R4757095 Cobalt (Co)-Total 0.00021 0.00010 mg/L 15-AUG-19 R4757095 Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 R4757095 Iron (Fe)-Total 0.196 0.010 mg/L 15-AUG-19 R4757095 Lead (Pb)-Total 0.00114 0.00050 mg/L 15-AUG-19 R4757095 Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 R4757095 Manganese (Mn)-Total 0.0435 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Nickel (Ni)-Total 0.00247 0.00050 mg/L		20.7		0.30	mg/L		08-AUG-19	R4746733
Arsenic (As)-Total 0.00093 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Cadmium (Cd)-Total 0.0000299 0.0000050 mg/L 15-AUG-19 15-AUG-19 R4757095 Calcium (Ca)-Total 17.9 0.050 mg/L 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 R4757095 Cobalt (Co)-Total 0.00021 0.00010 mg/L 15-AUG-19 R4757095 Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 R4757095 Iron (Fe)-Total 0.196 0.010 mg/L 15-AUG-19 R4757095 Lead (Pb)-Total 0.00114 0.00050 mg/L 15-AUG-19 R4757095 Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 R4757095 Manganese (Mn)-Total 0.00247 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095								
Cadmium (Cd)-Total 0.0000299 0.000050 mg/L 15-AUG-19 R4757095 Calcium (Ca)-Total 17.9 0.050 mg/L 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 R4757095 Cobalt (Co)-Total 0.00021 0.00010 mg/L 15-AUG-19 R4757095 Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 R4757095 Iron (Fe)-Total 0.196 0.010 mg/L 15-AUG-19 R4757095 Lead (Pb)-Total 0.00114 0.00050 mg/L 15-AUG-19 R4757095 Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 R4757095 Manganese (Mn)-Total 0.0435 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Nickel (Ni)-Total 0.00247 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095					_			
Calcium (Ca)-Total 17.9 0.050 mg/L 15-AUG-19 15-AUG-19 R4757095 Chromium (Cr)-Total 0.00052 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Cobalt (Co)-Total 0.00021 0.00010 mg/L 15-AUG-19 R4757095 Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 R4757095 Iron (Fe)-Total 0.196 0.010 mg/L 15-AUG-19 R4757095 Lead (Pb)-Total 0.00114 0.00050 mg/L 15-AUG-19 R4757095 Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 R4757095 Manganese (Mn)-Total 0.0435 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Nickel (Ni)-Total 0.00247 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095					_			
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Cobalt (Co)-Total 0.00021 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 R4757095 Iron (Fe)-Total 0.196 0.010 mg/L 15-AUG-19 R4757095 Lead (Pb)-Total 0.00114 0.00050 mg/L 15-AUG-19 R4757095 Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 R4757095 Manganese (Mn)-Total 0.0435 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Nickel (Ni)-Total 0.00247 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095					_			
Copper (Cu)-Total 0.0714 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095 Iron (Fe)-Total 0.196 0.010 mg/L 15-AUG-19 15-AUG-19 R4757095 Lead (Pb)-Total 0.00114 0.00050 mg/L 15-AUG-19 R4757095 Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 R4757095 Manganese (Mn)-Total 0.0435 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Nickel (Ni)-Total 0.00247 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095	` '				_			
Iron (Fe)-Total 0.196 0.010 mg/L 15-AUG-19 15-AUG-19 R4757095 Lead (Pb)-Total 0.00114 0.000050 mg/L 15-AUG-19 15-AUG-19 R4757095 Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 R4757095 Manganese (Mn)-Total 0.0435 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Nickel (Ni)-Total 0.00247 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095	· '				_			
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Magnesium (Mg)-Total 4.34 0.0050 mg/L 15-AUG-19 15-AUG-19 R4757095 Manganese (Mn)-Total 0.00435 0.00010 mg/L 15-AUG-19 15-AUG-19 R4757095 Nickel (Ni)-Total 0.00247 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095					_			
Nickel (Ni)-Total 0.00247 0.00050 mg/L 15-AUG-19 15-AUG-19 R4757095	Magnesium (Mg)-Total				_			
	Manganese (Mn)-Total	0.0435		0.00010	mg/L	15-AUG-19	15-AUG-19	
Potaggium (K)-Total 0.050 0.050 0.050 45 AUO 40 0.47572005				0.00050	mg/L			R4757095
10.030300111 (17)-1000 Mg/L 15-AUG-19 15-AUG-19 R4/5/095	Potassium (K)-Total	4.03		0.050	mg/L	15-AUG-19	15-AUG-19	R4757095

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2323983-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 06-AUG-19 @ 10:30							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS Sodium (Na)-Total	20.1		0.050	mg/L	15-AUG-19	15-AUG-19	R4757095
Zinc (Zn)-Total	0.0506		0.0030	mg/L	15-AUG-19	15-AUG-19	R4757095
Total Organic Carbon by Combustion	07.0		0.50	/1		45 410 40	D 4757704
Total Organic Carbon Total Suspended Solids	37.9		0.50	mg/L		15-AUG-19	R4757724
Total Suspended Solids	45.9		2.0	mg/L		13-AUG-19	R4752484
pH pH	7.02		0.10	pH units		08-AUG-19	R4744874
	7.02		0.10	priamo		007.00 10	114744074

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

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Reference Information

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Sample Parameter Qualifier Key:

Qualifier	Description
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may be valid in some cases (refer to Health Canada guidance).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

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- Water Alkalinity, Bicarbonate CALCULATION WP

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

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Reference Information

Test Method References:

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

- 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.

MOE DECPH-E3421/CCME TIER 1 F2-F4-WT F2-F4 (O.Reg.153/04) Water

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.

FC-QT97-ENDPT-WP Water Fecal Coliform to endpoint by MPN QT97 **APHA 9223B QT97**

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 44.5 - 0.2°C for 18 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the number of positive responses to a probability table.

Hardness Calculated HARDNESS-CALC-WP Water **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 Mercury Total

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

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

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 EPA 1664 (modified) Oil & Grease - Gravimetric

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.

APHA 4500 P PHOSPHORUS-L Phosphorus, Total

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.

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 **EPA 9066** Phenol (4AAP) Water

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)

L2323983 CONTD....

PAGE 7 of 7 Version: FINAL

Reference Information

Test Method References:

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

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-ENDPT-WP Water Total and E. coli to endpoint 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 serial dilutions of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 - 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

XYLENES-SUM-CALC-

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.

ma/ka - 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.



Workorder: L2323983 Report Date: 16-AUG-19 Page 1 of 9

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R47448	374							
WG3127828-5 DU Alkalinity, Total (as 0		L2323983-1 52.4	52.3		mg/L	0.2	20	08-AUG-19
WG3127828-4 LC Alkalinity, Total (as 0			100.8		%		85-115	08-AUG-19
WG3127828-1 ME Alkalinity, Total (as 0			<1.0		mg/L		1	08-AUG-19
BOD-CBOD-WP	Water							
Batch R47530 WG3126648-2 LC BOD Carbonaceous	S		106.1		%		85-115	08-AUG-19
WG3126648-1 ME BOD Carbonaceous	3		<2.0		mg/L		2	08-AUG-19
BOD-WP	Water		\ 2.0		mg/L		2	00-A0G-19
Batch R47530								
WG3126648-2 LC Biochemical Oxygen	S		109.7		%		85-115	08-AUG-19
WG3126648-1 ME Biochemical Oxygen			<2.0		mg/L		2	08-AUG-19
BTEXS+F1-HSMS-WP	Water							
Batch R47568	335							
WG3126980-2 LC Benzene	S		89.0		%		70-130	08-AUG-19
Toluene			90.8		%		70-130	08-AUG-19
Ethyl benzene			99.9		%		70-130	08-AUG-19
o-Xylene			90.3		%		70-130	08-AUG-19
m+p-Xylenes			90.5		%		70-130	08-AUG-19
WG3126980-3 LC F1 (C6-C10)	S		95.5		%		70-130	08-AUG-19
WG3126980-1 ME Benzene	3		<0.00050)	mg/L		0.0005	08-AUG-19
Toluene			<0.0010		mg/L		0.001	08-AUG-19
Ethyl benzene			<0.00050)	mg/L		0.0005	08-AUG-19
o-Xylene			<0.00030)	mg/L		0.0003	08-AUG-19
m+p-Xylenes			<0.00040)	mg/L		0.0004	08-AUG-19
F1 (C6-C10)			<0.10		mg/L		0.1	08-AUG-19
Surrogate: 4-Bromof	fluorobenzene (SS))	90.0		%		70-130	08-AUG-19
C-TOC-HTC-WP	Water							



Workorder: L2323983

Report Date: 16-AUG-19

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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP		Water							
Batch R4 WG3134703-6 Total Organic Ca	757724 LCS arbon			105.5		%		80-120	15-AUG-19
WG3134703-5 Total Organic Ca	MB arbon			<0.50		mg/L		0.5	15-AUG-19
CL-IC-N-WP		Water							
Batch R4 WG3127304-10 Chloride (Cl)	746733 LCS			98.2		%		90-110	08-AUG-19
WG3127304-9 Chloride (Cl)	MB			<0.50		mg/L		0.5	08-AUG-19
EC-WP		Water							
Batch R4	744874								
WG3127828-5 Conductivity	DUP		L2323983-1 271	273		umhos/cm	0.7	10	08-AUG-19
WG3127828-3 Conductivity	LCS			98.0		%		90-110	08-AUG-19
WG3127828-1 Conductivity	MB			<1.0		umhos/cm		1	08-AUG-19
F2-F4-WT		Water							
Batch R47 WG3128165-2	746599 LCS								
F2 (C10-C16)				95.2		%		65-135	12-AUG-19
F3 (C16-C34)				95.7		%		65-135	12-AUG-19
F4 (C34-C50)				101.7		%		65-135	12-AUG-19
WG3128165-1 F2 (C10-C16)	MB			<100		ug/L		100	12-AUG-19
F3 (C16-C34)				<250		ug/L		250	12-AUG-19
F4 (C34-C50)				<250		ug/L		250	12-AUG-19
Surrogate: 2-Bro	omobenz	otrifluoride		86.8		%		60-140	12-AUG-19
FC-QT97-ENDPT-W	/P	Water							
Batch R4	744013								
WG3126323-2 Fecal Coliforms	DUP		L2323983-1 1720000	1500000		MPN/100mL	14	65	07-AUG-19
WG3126323-1 Fecal Coliforms	MB			<1		MPN/100mL		1	07-AUG-19
HG-T-CVAA-WP		Water							



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est	Matrix	Reference	Result Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WP	Water						
Batch R4746685							
WG3130097-2 LCS							
Mercury (Hg)-Total			105.0	%		80-120	09-AUG-19
WG3130097-1 MB			-0.00000EC	ma/l		0.000005	00 1110 10
Mercury (Hg)-Total			<0.0000050	mg/L		0.000005	09-AUG-19
MET-T-CCMS-WP	Water						
Batch R4757095							
WG3133852-2 LCS Aluminum (Al)-Total			100.9	%		80-120	15-AUG-19
Arsenic (As)-Total			98.3	%		80-120	15-AUG-19
Cadmium (Cd)-Total			96.2	%		80-120	15-AUG-19
Calcium (Ca)-Total			93.7	%		80-120	15-AUG-19
Chromium (Cr)-Total			98.6	%		80-120	15-AUG-19
Cobalt (Co)-Total			94.4	%		80-120	15-AUG-19
Copper (Cu)-Total			95.9	%		80-120	15-AUG-19
Iron (Fe)-Total			88.0	%		80-120	15-AUG-19
Lead (Pb)-Total			97.1	%		80-120	15-AUG-19
Magnesium (Mg)-Total			106.3	%		80-120	15-AUG-19
Manganese (Mn)-Total			99.6	%		80-120	15-AUG-19
Nickel (Ni)-Total			94.2	%		80-120	15-AUG-19
Potassium (K)-Total			92.0	%		80-120	15-AUG-19
Sodium (Na)-Total			96.8	%		80-120	15-AUG-19
Zinc (Zn)-Total			98.0	%		80-120	15-AUG-19
WG3133852-1 MB							
Aluminum (Al)-Total			<0.0030	mg/L		0.003	15-AUG-19
Arsenic (As)-Total			<0.00010	mg/L		0.0001	15-AUG-19
Cadmium (Cd)-Total			<0.0000050	mg/L		0.000005	15-AUG-19
Calcium (Ca)-Total			<0.050	mg/L		0.05	15-AUG-19
Chromium (Cr)-Total			<0.00010	mg/L		0.0001	15-AUG-19
Cobalt (Co)-Total			<0.00010	mg/L		0.0001	15-AUG-19
Copper (Cu)-Total			<0.00050	mg/L		0.0005	15-AUG-19
Iron (Fe)-Total			<0.010	mg/L		0.01	15-AUG-19
Lead (Pb)-Total			<0.000050	mg/L		0.00005	15-AUG-19
Magnesium (Mg)-Total			<0.0050	mg/L		0.005	15-AUG-19
Manganese (Mn)-Total			<0.00010	mg/L		0.0001	15-AUG-19
Nickel (Ni)-Total			<0.00050	mg/L		0.0005	15-AUG-19
Potassium (K)-Total			<0.050	mg/L		0.05	15-AUG-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4757095 WG3133852-1 MB Sodium (Na)-Total			<0.050		mg/L		0.05	15-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	15-AUG-19
NH3-COL-WP	Water							
Batch R4744419 WG3127188-14 LCS Ammonia, Total (as N)			104.2		%		85-115	07-AUG-19
WG3127188-13 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	07-AUG-19
NO2-IC-N-WP	Water							
Batch R4746733 WG3127304-10 LCS Nitrite (as N)			99.0		%		90-110	08-AUG-19
WG3127304-9 MB Nitrite (as N)			<0.010		mg/L		0.01	08-AUG-19
NO3-IC-N-WP	Water							
Batch R4746733 WG3127304-10 LCS Nitrate (as N)			98.6		%		90-110	08-AUG-19
WG3127304-9 MB Nitrate (as N)			<0.020		mg/L		0.02	08-AUG-19
OG-GRAV-WP	Water							
Batch R4747276 WG3128574-2 LCS Oil and Grease			93.6		%		70-130	12-AUG-19
WG3128574-1 MB Oil and Grease			<5.0		mg/L		5	12-AUG-19
P-T-COL-WP	Water							
Batch R4745230 WG3127329-18 LCS Phosphorus (P)-Total			103.2		%		80-120	09-AUG-19
WG3127329-17 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	09-AUG-19
PAH-CCME-PPM-WT	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R4746580								
WG3128165-2 LCS			444.0		0.4			
1-Methyl Naphthalene			114.6		%		50-150	12-AUG-19
2-Methyl Naphthalene			103.8		%		50-150	12-AUG-19
Acenaphthene			115.5		%		50-150	12-AUG-19
Acenaphthylene			111.0		%		50-150	12-AUG-19
Anthracene			103.9		%		50-150	12-AUG-19
Acridine			100.5		%		50-150	12-AUG-19
Benzo(a)anthracene			113.1		%		50-150	12-AUG-19
Benzo(a)pyrene			113.0		%		50-150	12-AUG-19
Benzo(b&j)fluoranthene			120.4		%		50-150	12-AUG-19
Benzo(g,h,i)perylene			104.1		%		50-150	12-AUG-19
Benzo(k)fluoranthene			126.0		%		50-150	12-AUG-19
Chrysene			119.3		%		50-150	12-AUG-19
Dibenzo(a,h)anthracene			110.9		%		50-150	12-AUG-19
Fluoranthene			116.8		%		50-150	12-AUG-19
Fluorene			112.0		%		50-150	12-AUG-19
Indeno(1,2,3-cd)pyrene			107.8		%		50-150	12-AUG-19
Naphthalene			106.3		%		50-150	12-AUG-19
Phenanthrene			116.3		%		50-150	12-AUG-19
Pyrene			110.5		%		50-150	12-AUG-19
Quinoline			114.2		%		50-150	12-AUG-19
WG3128165-1 MB								
1-Methyl Naphthalene			< 0.00002	0	mg/L		0.00002	12-AUG-19
2-Methyl Naphthalene			< 0.00002	0	mg/L		0.00002	12-AUG-19
Acenaphthene			< 0.00002	0	mg/L		0.00002	12-AUG-19
Acenaphthylene			< 0.00002	0	mg/L		0.00002	12-AUG-19
Anthracene			<0.00001	0	mg/L		0.00001	12-AUG-19
Acridine			<0.00002	0	mg/L		0.00002	12-AUG-19
Benzo(a)anthracene			<0.00001	0	mg/L		0.00001	12-AUG-19
Benzo(a)pyrene			<0.00000	5C	mg/L		0.000005	12-AUG-19
Benzo(b&j)fluoranthene			<0.00001	0	mg/L		0.00001	12-AUG-19
Benzo(g,h,i)perylene			<0.00002	0	mg/L		0.00002	12-AUG-19
Benzo(k)fluoranthene			<0.00001	0	mg/L		0.00001	12-AUG-19
Chrysene			<0.00002	0	mg/L		0.00002	12-AUG-19
Dibenzo(a,h)anthracene			<0.00000	5C	mg/L		0.000005	12-AUG-19



Workorder: L2323983

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R4746580	0							
WG3128165-1 MB								
Fluoranthene			<0.000020		mg/L		0.00002	12-AUG-19
Fluorene			<0.000020		mg/L		0.00002	12-AUG-19
Indeno(1,2,3-cd)pyrene	е		<0.000010		mg/L		0.00001	12-AUG-19
Naphthalene			<0.000050		mg/L		0.00005	12-AUG-19
Phenanthrene			<0.000050		mg/L		0.00005	12-AUG-19
Pyrene			<0.000010		mg/L		0.00001	12-AUG-19
Quinoline			<0.000020		mg/L		0.00002	12-AUG-19
Surrogate: d8-Naphtha	alene		99.1		%		50-150	12-AUG-19
Surrogate: d10-Phenai	nthrene		103.2		%		50-150	12-AUG-19
Surrogate: d12-Chryse	ene		101.1		%		50-150	12-AUG-19
Surrogate: d10-Acenar	ohthene		104.4		%		50-150	12-AUG-19
Surrogate: d9-Acridine	(SS)		80.8		%		50-150	12-AUG-19
PH-WP	Water							
Batch R4744874	4							
WG3127828-5 DUP		L2323983-1						
рН		7.02	7.02	J	pH units	0.00	0.2	08-AUG-19
WG3127828-2 LCS			7.40		1.1 21			
pН			7.40		pH units		7.3-7.5	08-AUG-19
PHENOLS-4AAP-WT	Water							
Batch R4746535	5							
WG3128502-2 LCS			405.5		0/			
Phenols (4AAP)			105.5		%		85-115	09-AUG-19
WG3128502-1 MB Phenols (4AAP)			<0.0010		mg/L		0.004	00 ALIC 10
			<0.0010		mg/L		0.001	09-AUG-19
SO4-IC-N-WP	Water							
Batch R4746733	3							
WG3127304-10 LCS Sulfate (SO4)			99.8		%		00 110	00 110 10
			99.0		70		90-110	08-AUG-19
WG3127304-9 MB Sulfate (SO4)			<0.30		mg/L		0.3	08-AUG-19
, ,	Motor				J		0.0	007.00 10
SOLIDS-TOTSUS-WP	Water							
Batch R4752484 WG3130115-30 LCS	4							
Total Suspended Solid	ls		91.1		%		85-115	13-AUG-19
WG3130115-29 MB			···		, .		00 110	10 / 100-10
1100100110-23 IVID								



Workorder: L2323983

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-WP	Water							
Batch R4752484 WG3130115-29 MB Total Suspended Solids			<2.0		mg/L		2	13-AUG-19
TC,EC-QT97-ENDPT-WP	Water							
Batch R4744249								
WG3126324-2 DUP Total Coliforms		L2323983-1 >24200000	24200000		MPN/100mL	0.1	65	07-AUG-19
Escherichia Coli		3260000	2250000		MPN/100mL	37	65	07-AUG-19
WG3126324-1 MB								
Total Coliforms			<1		MPN/100mL		1	07-AUG-19
Escherichia Coli			<1		MPN/100mL		1	07-AUG-19

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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.

Workorder: L2323983 Report Date: 16-AUG-19 Page 9 of 9

Hold Time Exceedances:

	Sample						
ALS Product Description	ID [.]	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	06-AUG-19 10:30	08-AUG-19 12:00	0.25	49	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform to endpoint	by MPN QT9	7					
	1	06-AUG-19 10:30	07-AUG-19 18:50	30	32	hours	EHTL
Total and E. coli to endpoir	nt by QT97						
	1	06-AUG-19 10:30	07-AUG-19 18:50	30	32	hours	EHTL
Lagand & Qualifier Definition							

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 L2323983 were received on 07-AUG-19 14:00.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

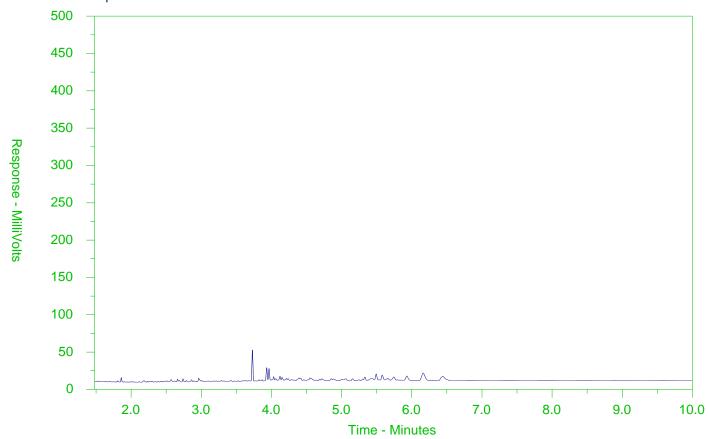
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2323983-1

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
Gasolin	e →	← Mot	or Oils/Lube Oils/Grease-
←	-Diesel/Je	et 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.

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	Amanda Anderson	Released by:				bottles) + 5 Vials for BTX,F1-F4 and 1 L Amber for PAH's = Total of 15 Bottles per sample.	Nunavut-WW														Sample #	(lab	Lab V	Phone:	Address:	iitact:	vany:	dcopy of	DICE TO	. je:		SS:	7:	any:	Report To	(ALS)
	erson	-	SHIPMENT RELEASE (client use)	Also provi		lais for BIX,	Nunavut-WW-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine,	Speci										1.0		Rankin Inlet WWTP - Effluent		(lab use only)	Lab Work Order#					dcopy of Invoice with Report?	Same as Report ?	867-645-8155	Rankin Inlet, NU, X0C 0G0	Box 490	SIMON DOIRON	Nunavut CGS - Rankin Inlet		ALS) Environmental
			RELEA	ded on		+1-F4 ar	pkg inclu	al Instru	-	7										t WWTP	(This					(Report?	eport?	55	t, NU, X		RON	S - Rankii		
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		Date	HIPMEN	sses, ph	es and a	sample	, 40 ml	CME-F												P	Da	A CONTRACTOR)	#			Ë		t / Proje					_		
	富	te:	T RECE	one nun	s form m agrees w		Mercury \	reshwate							7				C	UD (S	Date Sampled	Craig Kiddell						nkin Inlet	Client / Project Information	aanderson@gov.nu.ca	mlusty@gov.nu.ca	sdoiron@gov.nu.ca	ř	2323983-COFC		
	07	Tin	NOIT	bers a	ay dela		/ial, 250	r Aquat																				WWTP	ation	gov.nu	.nu.ca	v.nu.ca		3-COF		
			SHIPMENT RECEPTION (lab use only)	Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.	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		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	Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR -						70						10:30	Time Sampled	Sampled By:	,					Rankin Inlet WWTP- Monthly Efflue		.ca				Ö'		
	3)	Temperature:	≤	containe	Please		Nutrient	CSR - C			X.									W	Samp	Amanda Anderson						ffluent						;		
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix S



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 13-AUG-19

Report Date: 23-AUG-19 11:42 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2327566

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.]

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



L2327566 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2327566-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 12-AUG-19 @ 13:15							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		16-AUG-19	R4762569
Toluene	<0.0010		0.0010	mg/L		16-AUG-19	R4762569
Ethyl benzene	<0.00050		0.00050	mg/L		16-AUG-19	R4762569
o-Xylene	<0.00050		0.00050	mg/L		16-AUG-19	R4762569
m+p-Xylenes	<0.00040		0.00040	mg/L		16-AUG-19	R4762569
F1 (C6-C10)	<0.10		0.10	mg/L		16-AUG-19	R4762569
Surrogate: 4-Bromofluorobenzene (SS)	89.0		70-130	%		16-AUG-19	R4762569
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.12		0.10	mg/L	15-AUG-19	15-AUG-19	R4757751
F3 (C16-C34)	1.86		0.25	mg/L	15-AUG-19	15-AUG-19	R4757751
F4 (C34-C50)	0.78		0.25	mg/L	15-AUG-19	15-AUG-19	R4757751
Surrogate: 2-Bromobenzotrifluoride	96.6		60-140	%	15-AUG-19	15-AUG-19	R4757751
CCME Total Hydrocarbons F1-BTEX	-0.40		0.40	m c /l		21 ALIC 10	
F2-Naphth	<0.10 0.11		0.10 0.10	mg/L		21-AUG-19 21-AUG-19	
F3-PAH	1.86		0.10	mg/L mg/L		21-AUG-19 21-AUG-19	
Total Hydrocarbons (C6-C50)	2.76		0.25	mg/L		21-AUG-19 21-AUG-19	
Sum of Xylene Isomer Concentrations	2.70		0.50	IIIg/L		2170015	
Xylenes (Total)	<0.00064		0.00064	mg/L		21-AUG-19	
Miscellaneous Parameters							
Fecal Coliforms	677000		1	MPN/100mL		13-AUG-19	R4752760
Total and E. coli to endpoint by QT97							
Total Coliforms	15500000		1	MPN/100mL		13-AUG-19	R4752766
Escherichia Coli	1020000		1	MPN/100mL		13-AUG-19	R4752766
Polyaromatic Hydrocarbons (PAHs)	0.00007		0.000000		40 4110 40	40 4110 40	D 4757070
1-Methyl Naphthalene	0.00327		0.000020	mg/L	16-AUG-19	16-AUG-19	R4757673
2-Methyl Naphthalene Acenaphthene	0.00692 0.000114	EMPC	0.000020	mg/L	16-AUG-19 16-AUG-19	16-AUG-19 16-AUG-19	R4757673 R4757673
Acenaphthylene	0.000114	LIVIEC	0.000020	mg/L mg/L	16-AUG-19 16-AUG-19	16-AUG-19	R4757673 R4757673
Anthracene	<0.000026		0.000020	mg/L	16-AUG-19	16-AUG-19	R4757673 R4757673
Acridine	<0.000010		0.000010	mg/L	16-AUG-19	16-AUG-19	R4757673
Benzo(a)anthracene	<0.000020		0.000020	mg/L	16-AUG-19	16-AUG-19	R4757673
Benzo(a)pyrene	<0.000010		0.000000		16-AUG-19	16-AUG-19	R4757673
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	16-AUG-19	16-AUG-19	R4757673
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	16-AUG-19	16-AUG-19	R4757673
Benzo(k)fluoranthene	<0.00010		0.000010	mg/L	16-AUG-19	16-AUG-19	R4757673
Chrysene	<0.000020		0.000020	mg/L	16-AUG-19	16-AUG-19	R4757673
Dibenzo(a,h)anthracene	<0.000050		0.0000050	mg/L	16-AUG-19	16-AUG-19	R4757673
Fluoranthene	<0.000020		0.000020	mg/L	16-AUG-19	16-AUG-19	R4757673
Fluorene	0.000210		0.000020	mg/L	16-AUG-19	16-AUG-19	R4757673
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	16-AUG-19	16-AUG-19	R4757673
Naphthalene	0.00376		0.000050	mg/L	16-AUG-19	16-AUG-19	R4757673
Phenanthrene	<0.000050		0.000050	mg/L	16-AUG-19	16-AUG-19	R4757673
Pyrene	<0.000010		0.000010	mg/L	16-AUG-19	16-AUG-19	R4757673
Quinoline	<0.000020		0.000020	mg/L	16-AUG-19	16-AUG-19	R4757673
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	16-AUG-19	16-AUG-19	R4757673
Surrogate: Acriding do	102.1		60-130	%	16-AUG-19	16-AUG-19	R4757673
Surrogate: Acridine d9 Surrogate: Chrysene d12	91.2		60-130	%	16-AUG-19	16-AUG-19	R4757673
Surrogate: Chrysene d12 Surrogate: Naphthalene d8	94.9 93.4		60-130 50-130	% %	16-AUG-19 16-AUG-19	16-AUG-19 16-AUG-19	R4757673 R4757673
Surrogate: Napriliaerie do Surrogate: Phenanthrene d10				%	16-AUG-19	16-AUG-19	1
Surroyate. Frienantillene uto	100.5		60-130	70	10-AUG-19	10-AUG-19	R4757673

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

L2327566 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2327566-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 12-AUG-19 @ 13:15							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	53.4		1.2	mg/L		16-AUG-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		16-AUG-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		16-AUG-19	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	43.8		1.0	mg/L		15-AUG-19	R4757241
Ammonia by colour Ammonia, Total (as N)	1.99		0.10	mg/L		14-AUG-19	R4756488
Biochemical Oxygen Demand (BOD)	1.55		0.10	1119/12		147.00 10	114730400
Biochemical Oxygen Demand	16.7		6.0	mg/L		14-AUG-19	R4759527
Carbonaceous BOD							
BOD Carbonaceous	13.8		6.0	mg/L		14-AUG-19	R4759527
Chloride in Water by IC	25.0		0.50			45 410 40	D.4757000
Chloride (CI)	35.8		0.50	mg/L		15-AUG-19	R4757306
Conductivity Conductivity	241		1.0	umhos/cm		15-AUG-19	R4757241
Hardness Calculated	271		1.0	diffilos/offi		107.00 10	14707241
Hardness (as CaCO3)	63.8	HTC	0.20	mg/L		22-AUG-19	
Mercury Total							
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L	19-AUG-19	22-AUG-19	R4765809
Nitrate in Water by IC Nitrate (as N)	<0.020		0.020	ma/l		15-AUG-19	D4757206
Nitrate+Nitrite	<0.020		0.020	mg/L		15-AUG-19	R4757306
Nitrate and Nitrite as N	<0.070		0.070	mg/L		19-AUG-19	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		15-AUG-19	R4757306
Oil & Grease - Gravimetric				,,		00 4110 40	D 1
Oil and Grease	7.4		5.0	mg/L		20-AUG-19	R4759566
Phenol (4AAP) Phenols (4AAP)	0.0021		0.0010	mg/L		14-AUG-19	R4753047
Phosphorus, Total	0.0021		0.0010	9/ =			111100011
Phosphorus (P)-Total	0.482		0.0030	mg/L		15-AUG-19	R4755950
Sulfate in Water by IC							
Sulfate (SO4)	19.3		0.30	mg/L		15-AUG-19	R4757306
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.0841		0.0030	ma/l	21-AUG-19	21-AUG-19	R4762873
Arsenic (As)-Total	0.0041		0.0030	mg/L mg/L	21-AUG-19 21-AUG-19	21-AUG-19 21-AUG-19	R4762873
Cadmium (Cd)-Total	0.00076		0.000000	mg/L	21-AUG-19	21-AUG-19	R4762873
Calcium (Ca)-Total	18.4		0.050	mg/L	21-AUG-19	21-AUG-19	R4762873
Chromium (Cr)-Total	0.00037		0.00010	mg/L	21-AUG-19	21-AUG-19	R4762873
Cobalt (Co)-Total	0.00019		0.00010	mg/L	21-AUG-19	21-AUG-19	R4762873
Copper (Cu)-Total	0.0549		0.00050	mg/L	21-AUG-19	21-AUG-19	R4762873
Iron (Fe)-Total	0.126		0.010	mg/L	21-AUG-19	21-AUG-19	R4762873
Lead (Pb)-Total Magnesium (Mg)-Total	0.00109 4.33		0.000050 0.0050	mg/L mg/L	21-AUG-19 21-AUG-19	21-AUG-19 21-AUG-19	R4762873 R4762873
Manganese (Mn)-Total	0.0438		0.0050	mg/L	21-AUG-19 21-AUG-19	21-AUG-19 21-AUG-19	R4762873
Nickel (Ni)-Total	0.00099		0.00010	mg/L	21-AUG-19 21-AUG-19	21-AUG-19 21-AUG-19	R4762873
Potassium (K)-Total	3.46		0.050	mg/L	21-AUG-19	21-AUG-19	R4762873
Sodium (Na)-Total	21.3		0.050	mg/L	21-AUG-19	21-AUG-19	R4762873
Zinc (Zn)-Total	0.0265		0.0030	mg/L	21-AUG-19	21-AUG-19	R4762873

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

L2327566 CONTD.... PAGE 4 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2327566-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 12-AUG-19 @ 13:15							
Matrix: WASTE							
Total Organic Carbon by Combustion Total Organic Carbon	18.2		0.50	mg/L		16-AUG-19	R4758901
Total Suspended Solids Total Suspended Solids	43.5		2.0	mg/L		19-AUG-19	R4759865
pH							
pH	7.27		0.10	pH units		15-AUG-19	R4757241

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

L2327566 CONTD....

Reference Information

PAGE 5 of 7 Version: FINAL

Sample Parameter Qualifier Key:

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

Test Method References:

Test metriou Nerei errors.								
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- Water Alkalinity, Bicarbonate CALCULATION WP

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.

L2327566 CONTD....

PAGE 6 of 7 Version: FINAL

Reference Information

Test Method References:

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

- 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.

FC-QT97-ENDPT-WP Water Fecal Coliform to endpoint by MPN QT97 APHA 9223B QT97

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 44.5 - 0.2°C for 18 hours and then the number of wells exhibiting a positive response are counted. The final result is 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 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 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.

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

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.

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.

Polyaromatic Hydrocarbons (PAHs) EPA 3511/8270D (mod)

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

PH-WP Water **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.

PHENOI S-4AAP-WT Phenol (4AAP) **EPA 9066** Water

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.

Sulfate in Water by IC EPA 300.1 (mod) Water

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

L2327566 CONTD....

PAGE 7 of 7 Version: FINAL

Reference Information

Test Method References:

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

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-ENDPT-WP Water Total and E. coli to endpoint 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 serial dilutions of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 - 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

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

WP

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.



Workorder: L2327566 Report Date: 23-AUG-19 Page 1 of 9

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R47572	241							
WG3134736-30 DU Alkalinity, Total (as C		L2327566-1 43.8	43.6		mg/L	0.5	20	15-AUG-19
WG3134736-29 LC Alkalinity, Total (as C			100.9		%		85-115	15-AUG-19
WG3134736-26 MB Alkalinity, Total (as C			<1.0		mg/L		1	15-AUG-19
BOD-CBOD-WP	Water							
Batch R47595 WG3132087-7 LC BOD Carbonaceous	s		95.2		%		85-115	14-AUG-19
WG3132087-6 MB BOD Carbonaceous	3		<2.0		mg/L		2	14-AUG-19
BOD-WP	Water				ŭ			,
Batch R47595								
WG3132087-7 LC Biochemical Oxygen	S		96.0		%		85-115	14-AUG-19
WG3132087-6 MB Biochemical Oxygen			<2.0		mg/L		2	14-AUG-19
BTEXS+F1-HSMS-WP	Water							
Batch R47625	669							
WG3134039-2 LC	s							
Benzene			90.3		%		70-130	15-AUG-19
Toluene			91.8		%		70-130	15-AUG-19
Ethyl benzene			99.7		%		70-130	15-AUG-19
o-Xylene			93.4		%		70-130	15-AUG-19
m+p-Xylenes			96.8		%		70-130	15-AUG-19
WG3134039-3 LC F1 (C6-C10)	S		105.3		%		70-130	16-AUG-19
WG3134039-1 MB Benzene	3		<0.00050)	mg/L		0.0005	16-AUG-19
Toluene			<0.0010		mg/L		0.001	16-AUG-19
Ethyl benzene			<0.00050)	mg/L		0.0005	16-AUG-19
o-Xylene			<0.00050		mg/L		0.0005	16-AUG-19
m+p-Xylenes			<0.00040		mg/L		0.0004	16-AUG-19
F1 (C6-C10)			<0.10	•	mg/L		0.0004	16-AUG-19
Surrogate: 4-Bromof	luorobenzene (SS)		91.0		%		70-130	16-AUG-19
_			01.0		,,		70-130	10-700-19
C-TOC-HTC-WP	Water							



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Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP		Water							
	758901 LCS arbon			101.5		%		80-120	16-AUG-19
WG3136582-5 Total Organic Ca	МВ			<0.50		mg/L		0.5	16-AUG-19
CL-IC-N-WP		Water							
Batch R47	757306								
WG3133622-2 Chloride (CI)	LCS			99.0		%		90-110	15-AUG-19
WG3133622-1 Chloride (CI)	MB			<0.50		mg/L		0.5	15-AUG-19
EC-WP		Water							
Batch R47	757241								
WG3134736-30 Conductivity	DUP		L2327566-1 241	240		umhos/cm	0.4	10	15-AUG-19
WG3134736-28 Conductivity	LCS			98.0		%		90-110	15-AUG-19
WG3134736-26 Conductivity	MB			<1.0		umhos/cm		1	15-AUG-19
F2-F4-FID-WP		Water							
Batch R47	757751								
WG3133697-2 F2 (C10-C16)	LCS			89.6		%		70-130	15-AUG-19
F3 (C16-C34)				89.9		%		70-130	15-AUG-19
F4 (C34-C50)				94.7		%		70-130	15-AUG-19
WG3133697-1 F2 (C10-C16)	MB			<0.10		mg/L		0.1	15-AUG-19
F3 (C16-C34)				<0.25		mg/L		0.25	15-AUG-19
F4 (C34-C50)				<0.25		mg/L		0.25	15-AUG-19
Surrogate: 2-Bro	mobenz	otrifluoride		97.5		%		60-140	15-AUG-19
FC-QT97-ENDPT-W	P	Water							
Batch R47	752760								
WG3131725-2 Fecal Coliforms	DUP		L2327566-1 677000	546000		MPN/100mL	21	65	13-AUG-19
WG3131725-1 Fecal Coliforms	MB			<1		MPN/100mL		1	13-AUG-19
HG-T-CVAA-WP		Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WP	Water							
Batch R4765809 WG3141537-2 LCS Mercury (Hg)-Total			98.0		%		80-120	22-AUG-19
WG3141537-1 MB Mercury (Hg)-Total			<0.00000	5C	mg/L		0.000005	22-AUG-19
MET-T-CCMS-WP	Water							
Batch R4762873								
WG3139155-2 LCS Aluminum (Al)-Total			106.4		%		80-120	21-AUG-19
Arsenic (As)-Total			105.1		%		80-120	21-AUG-19
Cadmium (Cd)-Total			106.1		%		80-120	21-AUG-19
Calcium (Ca)-Total			107.7		%		80-120	21-AUG-19
Chromium (Cr)-Total			109.2		%		80-120	21-AUG-19
Cobalt (Co)-Total			109.0		%		80-120	21-AUG-19
Copper (Cu)-Total			112.1		%		80-120	21-AUG-19
Iron (Fe)-Total			102.5		%		80-120	21-AUG-19
Lead (Pb)-Total			96.3		%		80-120	21-AUG-19
Magnesium (Mg)-Total			117.0		%		80-120	21-AUG-19
Manganese (Mn)-Total			106.2		%		80-120	21-AUG-19
Nickel (Ni)-Total			103.2		%		80-120	21-AUG-19
Potassium (K)-Total			102.6		%		80-120	21-AUG-19
Sodium (Na)-Total			115.0		%		80-120	21-AUG-19
Zinc (Zn)-Total			108.7		%		80-120	21-AUG-19
WG3139155-1 MB Aluminum (Al)-Total			<0.0030		mg/L		0.003	21-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.003	21-AUG-19 21-AUG-19
Cadmium (Cd)-Total			<0.00000		mg/L		0.0001	21-AUG-19 21-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	21-AUG-19 21-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	21-AUG-19 21-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	21-AUG-19 21-AUG-19
Copper (Cu)-Total			<0.00050		mg/L		0.0001	21-AUG-19 21-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.000	21-AUG-19 21-AUG-19
Lead (Pb)-Total			<0.00005	0	mg/L		0.00005	21-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	21-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	21-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	21-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	21-AUG-19
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Workorder: L2327566

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4762873 WG3139155-1 MB Sodium (Na)-Total			<0.050		mg/L		0.05	21-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	21-AUG-19
NH3-COL-WP	Water							
Batch R4756488 WG3133870-14 LCS Ammonia, Total (as N)			102.1		%		85-115	14-AUG-19
WG3133870-13 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	14-AUG-19
NO2-IC-N-WP	Water							
Batch R4757306 WG3133622-2 LCS Nitrite (as N)			99.2		%		90-110	15-AUG-19
WG3133622-1 MB Nitrite (as N)			<0.010		mg/L		0.01	15-AUG-19
NO3-IC-N-WP	Water							
Batch R4757306 WG3133622-2 LCS Nitrate (as N)			98.6		%		90-110	15-AUG-19
WG3133622-1 MB Nitrate (as N)			<0.020		mg/L		0.02	15-AUG-19
OG-GRAV-WP	Water							
Batch R4759566 WG3134989-2 LCS Oil and Grease			95.1		%		70-130	20-AUG-19
WG3134989-1 MB Oil and Grease			<5.0		mg/L		5	20-AUG-19
P-T-COL-WP	Water							
Batch R4755950 WG3132843-2 LCS Phosphorus (P)-Total			102.0		%		80-120	15-AUG-19
WG3132843-1 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	15-AUG-19
PAH,PANH-WP	Water							



Workorder: L2327566 Report Date: 23-AUG-19 Page 5 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4757673								
WG3135233-2 LCS			00.4		0.4			
1-Methyl Naphthalene			92.4		%		60-130	16-AUG-19
2-Methyl Naphthalene			85.3		%		60-130	16-AUG-19
Acenaphthene			94.0		%		60-130	16-AUG-19
Acenaphthylene			83.9		%		60-130	16-AUG-19
Anthracene			77.7		%		60-130	16-AUG-19
Acridine			90.8		%		60-130	16-AUG-19
Benzo(a)anthracene			90.6		%		60-130	16-AUG-19
Benzo(a)pyrene			87.6		%		60-130	16-AUG-19
Benzo(b&j)fluoranthene			88.0		%		60-130	16-AUG-19
Benzo(g,h,i)perylene			102.7		%		60-130	16-AUG-19
Benzo(k)fluoranthene			94.6		%		60-130	16-AUG-19
Chrysene			87.6		%		60-130	16-AUG-19
Dibenzo(a,h)anthracene			96.1		%		60-130	16-AUG-19
Fluoranthene			93.6		%		60-130	16-AUG-19
Fluorene			93.8		%		60-130	16-AUG-19
Indeno(1,2,3-cd)pyrene			87.8		%		60-130	16-AUG-19
Naphthalene			105.1		%		50-130	16-AUG-19
Phenanthrene			104.9		%		60-130	16-AUG-19
Pyrene			91.6		%		60-130	16-AUG-19
Quinoline			93.3		%		60-130	16-AUG-19
WG3135233-1 MB								
1-Methyl Naphthalene			<0.000020	0	mg/L		0.00002	16-AUG-19
2-Methyl Naphthalene			<0.000020	0	mg/L		0.00002	16-AUG-19
Acenaphthene			< 0.000020	0	mg/L		0.00002	16-AUG-19
Acenaphthylene			< 0.000020	0	mg/L		0.00002	16-AUG-19
Anthracene			<0.00001	0	mg/L		0.00001	16-AUG-19
Acridine			< 0.000020	0	mg/L		0.00002	16-AUG-19
Benzo(a)anthracene			<0.000010	0	mg/L		0.00001	16-AUG-19
Benzo(a)pyrene			<0.00000	5 C	mg/L		0.000005	16-AUG-19
Benzo(b&j)fluoranthene			<0.00001	0	mg/L		0.00001	16-AUG-19
Benzo(g,h,i)perylene			<0.000020	0	mg/L		0.00002	16-AUG-19
Benzo(k)fluoranthene			<0.000010	0	mg/L		0.00001	16-AUG-19
Chrysene			<0.000020	0	mg/L		0.00002	16-AUG-19
Dibenzo(a,h)anthracene			<0.00000	50	mg/L		0.000005	16-AUG-19
(-,-)					5 . –		2.200000	107.00 10



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Report Date: 23-AUG-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R475767	3							
WG3135233-1 MB Fluoranthene			<0.000020)	mg/L		0.00002	16-AUG-19
Fluorene			<0.000020)	mg/L		0.00002	16-AUG-19
Indeno(1,2,3-cd)pyren	е		<0.000010)	mg/L		0.00001	16-AUG-19
Naphthalene			<0.000050)	mg/L		0.00005	16-AUG-19
Phenanthrene			<0.000050)	mg/L		0.00005	16-AUG-19
Pyrene			<0.000010)	mg/L		0.00001	16-AUG-19
Quinoline			<0.000020)	mg/L		0.00002	16-AUG-19
Surrogate: Acenaphth	ene d10		85.3		%		60-130	16-AUG-19
Surrogate: Acridine d9)		75.4		%		60-130	16-AUG-19
Surrogate: Chrysene of	112		94.3		%		60-130	16-AUG-19
Surrogate: Naphthaler	ne d8		83.7		%		50-130	16-AUG-19
Surrogate: Phenanthre	ene d10		78.9		%		60-130	16-AUG-19
PH-WP	Water							
Batch R475724	1							
WG3134736-30 DUP pH		L2327566-1 7.27	7.28	J	pH units	0.01	0.2	15-AUG-19
WG3134736-27 LCS pH			7.41		pH units		7.3-7.5	15-AUG-19
PHENOLS-4AAP-WT	Water				·			
Batch R475304	7							
WG3132612-2 LCS Phenols (4AAP)			99.2		%		85-115	14-AUG-19
WG3132612-1 MB Phenols (4AAP)			<0.0010		mg/L		0.001	14-AUG-19
SO4-IC-N-WP	Water				-			
Batch R475730								
WG3133622-2 LCS								
Sulfate (SO4)			100.4		%		90-110	15-AUG-19
WG3133622-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	15-AUG-19
SOLIDS-TOTSUS-WP	Water							
Batch R475986	5							
WG3135103-6 LCS Total Suspended Solid			96.1		%		85-115	19-AUG-19
WG3135103-5 MB								



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-WP	Water							
Batch R4759865 WG3135103-5 MB Total Suspended Solids			<2.0		mg/L		2	19-AUG-19
TC,EC-QT97-ENDPT-WP	Water							
Batch R4752766 WG3131726-2 DUP Total Coliforms		L2327566-1 15500000	8660000		MPN/100mL	57	65	13-AUG-19
Escherichia Coli		1020000	727000		MPN/100mL	33	65	13-AUG-19
WG3131726-1 MB Total Coliforms			<1		MPN/100mL		1	13-AUG-19
Escherichia Coli			<1		MPN/100mL		1	13-AUG-19

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Legend:

ALS Control Limit (Data Quality Objectives)
Duplicate
Relative Percent Difference
Not Available
Laboratory Control Sample
Standard Reference Material
Matrix Spike
Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank
Internal Reference Material
Certified Reference Material
Continuing Calibration Verification
Calibration Verification Standard
Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

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

Workorder: L2327566 Report Date: 23-AUG-19 Page 9 of 9

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	12-AUG-19 13:15	15-AUG-19 12:00	0.25	71	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2327566 were received on 13-AUG-19 13:15.

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

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

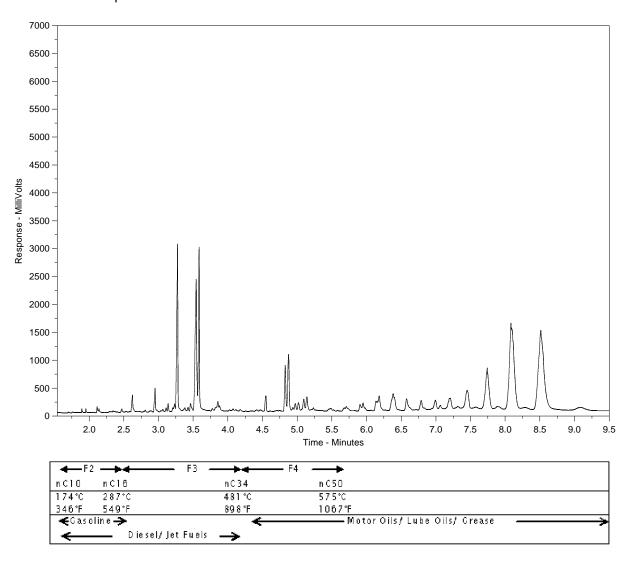
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2327566-1

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.

•		Chai	n of Custody /	Analytical Re	quest For	m							CO	C#				_
ALS	Environmental														Pa	ge _	1_o	of
Report To			L2327566				Serv	ice R	eque	sted	(Rush	for ro	utine :	analys	is sub	ject to	availat	bility)
Company:	Nunavut CGS - Rankin Inlet (W8133)	<u> </u>	L2321300	-COFC		ļ	● R	egular	(Stan	dard Tu	ırnarou	nd Tin	nes - Bu	usiness	Days)			
Contact:	SIMON DOIRON			The state of the s		ax	O Pi	riority	(2-4 Bı	usiness	Days)	- 50%	Surcha	rge - C	ontact	ALS to	Confirm	1 TAT
Address:	Box 490	Email 1:	sdoiron@gov.ni	u.ca			Ö	merge	ncy (1-	2 Bus.	Days)	- 100%	Surch	arge - I	Contact	t ALS to	Confirm	m TAT
	Rankin Inlet , NU, X0C 0G0	Email 2:	mlusty@gov.nu				Ó Si	ame D	ay or V	Veeker	d Eme	rgency	- Conti	act ALS	to Cor	nfirm TA	.	
Phone:	867-645-8155 Cell#:	Email 3:	aanderson@go	v.nu.ca							A	naly	sis Re	eques	st			
Invoice To	Same as Report ?	Client / Pr	roject Informatio	on			Plea	ase ir	ndica	te bel	ow Fil	tered	, Pres	serve	or b	oth (F	, P, F/	P)
Hardcopy of	Invoice with Report? : Yes No	Job #:	Rankin Inlet WV	WTP- Monthly E	ffluent													
Company:		PO / AFE:																\neg
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Lab V V (la	Work Order # b use only) k	ALS Contact:	Craig Riddell	Sampled By:	Amanda And	erson	-F4-WF	PAH,PANH-WP	NUNAVUT-WW-GRP1-WP	TC,EC-QT97-ENDPT-WP	FC-QT97-ENDPT-WP				. :			Number of Containers
Sample :			Date Sampled	Time Sampled	Sample	Туре	втх, F1	PAH,P,	NUNAV	TC,EC	FC-QT							Numbe
70.5	Rankin Inlet WWTP - Effluent		Aug 12	1:15	Wast	te	х	х	х	х	х				. 1	a.		174
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\$500 St 24	Special Instructions / Regulations with water or lar	d use (CCM	 F-Freshwater Δ	uatic Life/BC	CSR - Con	nmerci	al/AB	Tier	1 - N	latura	al, etc) / Ha	zard	ous D	etails	 s		-
	Special instructions / Neguriations with water or far											<u> </u>						
Nunavut-WV bottles) + 5 \	V-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine, 250 n	ni Metals , 40) ml Mercury Vial			50 ml A	Ambe	r Phe	nols,	2 x 2	50 m1	Amb	er Oil	& Gr	ease	, 250 r	ni Bad	oteria (9
Nunavut-WV bottles) + 5 \		nl Metals , 40 ottles per san) ml Mercury Vial	, 250 ml Amber	Nutrient , 2						50 ml	Amb	er Oil	& Gr	ease	, 250 r	ni Bad	cteria (§
Nunavut-WV bottles) + 5 \	V-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine, 250 n Vials for BTX,F1-F4 and 1 L Amber for PAH's = Total of 15 Bo	nl Metals , 40 ottles per san I portions o lowledges a) ml Mercury Vial nple. f this form may nd agrees with	, 250 ml Amber delay analysis the Terms and	Nutrient , 2 Please fil Conditions	in this	s for	n LE	GIBL a se	Y. para	te Ex	cel ta	b.				ni Bad	cteria (§
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix T



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 21-AUG-19

Report Date: 30-AUG-19 09:06 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2332810

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.]

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



L2332810 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2332810-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 19-AUG-19 @ 09:15							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		23-AUG-19	R4765656
Toluene	<0.0010		0.0010	mg/L		23-AUG-19	R4765656
Ethyl benzene	<0.00050		0.00050	mg/L		23-AUG-19	R4765656
o-Xylene	<0.00050		0.00050	mg/L		23-AUG-19	R4765656
m+p-Xylenes	<0.00040		0.00040	mg/L		23-AUG-19	R4765656
F1 (C6-C10)	<0.10		0.10	mg/L		23-AUG-19	R4765656
Surrogate: 4-Bromofluorobenzene (SS)	87.0		70-130	%		23-AUG-19	R4765656
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.54		0.10	mg/L	22-AUG-19	22-AUG-19	R4766908
F3 (C16-C34)	13.8		0.25	mg/L	22-AUG-19	22-AUG-19	R4766908
F4 (C34-C50)	4.91		0.25	mg/L	22-AUG-19	22-AUG-19	R4766908
Surrogate: 2-Bromobenzotrifluoride	116.4		60-140	%	22-AUG-19	22-AUG-19	R4766908
CCME Total Hydrocarbons	2.15					00 4110 15	
F1-BTEX	<0.10		0.10	mg/L		29-AUG-19	
F2-Naphth	0.54		0.10	mg/L		29-AUG-19	
F3-PAH	13.8		0.25	mg/L		29-AUG-19	
Total Hydrocarbons (C6-C50)	19.3		0.38	mg/L		29-AUG-19	
Sum of Xylene Isomer Concentrations Xylenes (Total)	<0.00064		0.00064	mg/L		27-AUG-19	
Miscellaneous Parameters	<0.0004		0.00004	IIIg/L		27-400-19	
Fecal Coliforms	81600	PEHR	1	MPN/100mL		21-AUG-19	R4764012
Total and E. coli to endpoint by QT97	81000	I LINX	1	IVII TV/TOOTTIL		21-400-19	K4704012
Total Coliforms	4110000	PEHR	1	MPN/100mL		21-AUG-19	R4764034
Escherichia Coli	146000	PEHR	1	MPN/100mL		21-AUG-19	R4764034
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	22-AUG-19	26-AUG-19	R4770079
2-Methyl Naphthalene	<0.000030	DLM	0.000030	mg/L	22-AUG-19	26-AUG-19	R4770079
Acenaphthene	<0.000020		0.000020	mg/L	22-AUG-19	26-AUG-19	R4770079
Acenaphthylene	<0.000020		0.000020	mg/L	22-AUG-19	26-AUG-19	R4770079
Anthracene	<0.000010		0.000010	mg/L	22-AUG-19	26-AUG-19	R4770079
Acridine	<0.000020		0.000020	mg/L	22-AUG-19	26-AUG-19	R4770079
Benzo(a)anthracene	<0.000010		0.000010	mg/L	22-AUG-19	26-AUG-19	R4770079
Benzo(a)pyrene	<0.0000050		0.0000050	-	22-AUG-19	26-AUG-19	R4770079
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	22-AUG-19	26-AUG-19	R4770079
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	22-AUG-19	26-AUG-19	R4770079
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	22-AUG-19	26-AUG-19	R4770079
Chrysene	<0.000020		0.000020	mg/L	22-AUG-19	26-AUG-19	R4770079
Dibenzo(a,h)anthracene Fluoranthene	<0.0000050		0.0000050	mg/L	22-AUG-19 22-AUG-19	26-AUG-19	R4770079
Fluorene	<0.000020		0.000020	mg/L		26-AUG-19	R4770079
Indeno(1,2,3-cd)pyrene	<0.000020 <0.000010		0.000020 0.000010	mg/L mg/L	22-AUG-19 22-AUG-19	26-AUG-19 26-AUG-19	R4770079 R4770079
Naphthalene	<0.000010		0.000010	mg/L	22-AUG-19 22-AUG-19	26-AUG-19 26-AUG-19	R4770079
Phenanthrene	<0.000050		0.000050	mg/L	22-AUG-19 22-AUG-19	26-AUG-19 26-AUG-19	R4770079
Pyrene	<0.000030		0.000030	mg/L	22-AUG-19 22-AUG-19	26-AUG-19	R4770079
Quinoline	<0.000010		0.000010	mg/L	22-AUG-19	26-AUG-19	R4770079
B(a)P Total Potency Equivalent	<0.000020		0.000020	mg/L	22-AUG-19	26-AUG-19	R4770079
Surrogate: Acenaphthene d10	93.6		60-130	%	22-AUG-19	26-AUG-19	R4770079
Surrogate: Acridine d9	109.4		60-130	%	22-AUG-19	26-AUG-19	R4770079
Surrogate: Chrysene d12	104.8		60-130	%	22-AUG-19	26-AUG-19	R4770079
Surrogate: Naphthalene d8	89.0		50-130	%	22-AUG-19	26-AUG-19	R4770079
Surrogate: Phenanthrene d10	112.3		60-130	%	22-AUG-19	26-AUG-19	R4770079

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

L2332810 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2332810-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 19-AUG-19 @ 09:15							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	43.6		1.2	mg/L		23-AUG-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		23-AUG-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		23-AUG-19	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	35.7		1.0	mg/L		22-AUG-19	R4765529
Ammonia by colour				_			
Ammonia, Total (as N)	1.26		0.10	mg/L		21-AUG-19	R4765054
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	11.8		2.0	mg/L		21-AUG-19	R4769412
Carbonaceous BOD							
BOD Carbonaceous Chloride in Water by IC	9.9		2.0	mg/L		21-AUG-19	R4769412
Chloride (CI)	33.1		0.50	mg/L		22-AUG-19	R4769733
Conductivity Conductivity	216		1.0	umhos/cm		22-AUG-19	R4765529
Hardness Calculated Hardness (as CaCO3)	117	нтс	0.20	mg/L		30-AUG-19	
Mercury Total							
Mercury (Hg)-Total	<0.000025	DLM	0.000025	mg/L	23-AUG-19	24-AUG-19	R4768415
Nitrate in Water by IC Nitrate (as N)	<0.020		0.020	mg/L		22-AUG-19	R4769733
Nitrate+Nitrite Nitrate and Nitrite as N	<0.070		0.070	mg/L		28-AUG-19	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		22-AUG-19	R4769733
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		27-AUG-19	R4769771
Phenol (4AAP) Phenols (4AAP)	0.0026		0.0010	mg/L		26-AUG-19	R4769626
Phosphorus, Total	0.0020		0.0010	1119/12		207.00 10	114703020
Phosphorus (P)-Total	0.395		0.0030	mg/L		23-AUG-19	R4766335
Sulfate in Water by IC							
Sulfate (SO4)	17.8		0.30	mg/L		22-AUG-19	R4769733
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.150		0.0030	mg/L	29-AUG-19	29-AUG-19	R4777903
Arsenic (As)-Total	0.00172		0.0030	mg/L	29-AUG-19 29-AUG-19	29-AUG-19 29-AUG-19	R4777903
Cadmium (Cd)-Total	0.00172		0.000010	mg/L	29-AUG-19	29-AUG-19	R4777903
Calcium (Ca)-Total	34.9		0.050	mg/L	29-AUG-19	29-AUG-19	R4777903
Chromium (Cr)-Total	0.00113		0.00010	mg/L	29-AUG-19	29-AUG-19	R4777903
Cobalt (Co)-Total	0.00054		0.00010	mg/L	29-AUG-19	29-AUG-19	R4777903
Copper (Cu)-Total	0.178		0.00050	mg/L	29-AUG-19	29-AUG-19	R4777903
Iron (Fe)-Total	0.359		0.010	mg/L	29-AUG-19	29-AUG-19	R4777903
Lead (Pb)-Total	0.00207		0.000050	mg/L	29-AUG-19	29-AUG-19	R4777903
Magnesium (Mg)-Total	7.12		0.0050	mg/L	29-AUG-19	29-AUG-19	R4777903
Manganese (Mn)-Total	0.0893		0.00010	mg/L	29-AUG-19	29-AUG-19	R4777903
Nickel (Ni)-Total	0.00607		0.00050	mg/L	29-AUG-19	29-AUG-19	R4777903
Potassium (K)-Total	10.2		0.050	mg/L	29-AUG-19	29-AUG-19	R4777903
Sodium (Na)-Total	31.9		0.050	mg/L	29-AUG-19	29-AUG-19	R4777903
Zinc (Zn)-Total	0.123		0.0030	mg/L	29-AUG-19	29-AUG-19	R4777903

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

L2332810 CONTD.... PAGE 4 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2332810-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: AA on 19-AUG-19 @ 09:15							
Matrix: WASTE Total Organic Carbon by Combustion							
Total Organic Carbon by Combustion Total Organic Carbon	8.84		0.50	mg/L		27-AUG-19	R4771648
Total Suspended Solids Total Suspended Solids	7.9		2.0	mg/L		26-AUG-19	R4769437
pH							
pH	7.68		0.10	pH units		22-AUG-19	R4765529

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

L2332810 CONTD....

PAGE 5 of 7 Version: FINAL

Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2332810-1	RANKIN INLET WWTP - EFFI	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

sample Parameter Qualifier Key:						
Description						
Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).						
Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).						
Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.						
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-CALCULATION Water Alkalinity, Bicarbonate

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 CALCULATION Alkalinity, Hydroxide

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.

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 EPA 8260C / EPA 5021A Water BTX plus F1 by GCMS

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 Total Organic Carbon by Combustion **APHA 5310 B-WP**

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

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

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

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

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

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

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

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

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

L2332810 CONTD....

PAGE 6 of 7 Version: FINAL

Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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.

FC-QT97-ENDPT-WP Water Fecal Coliform to endpoint by MPN QT97 APHA 9223B QT97

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 44.5 – 0.2°C for 18 hours and then the number of wells exhibiting a positive response are counted. The final result is 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.

Grease is determined from the weight of the residue in the vial.

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

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

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

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

PH-WP Water pH APHA 4500H

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

L2332810 CONTD....

PAGE 7 of 7 Version: FINAL

Reference Information

Test Method References:

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

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

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-ENDPT-WP Water Total and E. coli to endpoint 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 serial dilutions of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 - 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

XYLENES-SUM-CALC-

Water

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

Sum of Xylene Isomer Concentrations

CALCULATED RESULT

** 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.



Workorder: L2332810 Report Date: 30-AUG-19 Page 1 of 9

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

C-TOC-HTC-WP

Water

est N	/latrix	Reference	Result Qualifie	r Units	RPD	Limit	Analyzed
ALK-TITR-WP V	Nater						
Batch R4765529							
WG3141365-24 LCS							
Alkalinity, Total (as CaCO3	3)		108.5	%		85-115	22-AUG-19
WG3141365-21 MB	»\		-1.0			4	00 4110 40
Alkalinity, Total (as CaCO3	5)		<1.0	mg/L		1	22-AUG-19
	Nater						
Batch R4769412							
WG3138274-12 LCS BOD Carbonaceous			97.7	%		05 445	04 4110 40
			91.1	70		85-115	21-AUG-19
WG3138274-11 MB BOD Carbonaceous			<2.0	mg/L		2	21-AUG-19
				9, =		-	Z1-A00-19
	Nater						
Batch R4769412							
WG3138274-12 LCS Biochemical Oxygen Dema	and		104.7	%		85-115	21-AUG-19
WG3138274-11 MB	aria		104.7	70		00-110	21-A0G-19
Biochemical Oxygen Dema	and		<2.0	mg/L		2	21-AUG-19
BTEXS+F1-HSMS-WP V	N ater						
Batch R4765656							
WG3140670-2 LCS							
Benzene			85.2	%		70-130	22-AUG-19
Toluene			91.7	%		70-130	22-AUG-19
Ethyl benzene			103.4	%		70-130	22-AUG-19
o-Xylene			92.7	%		70-130	22-AUG-19
m+p-Xylenes			100.1	%		70-130	22-AUG-19
WG3140670-3 LCS							
F1 (C6-C10)			103.9	%		70-130	23-AUG-19
WG3140670-1 MB							
Benzene			<0.00050	mg/L		0.0005	22-AUG-19
Toluene			<0.0010	mg/L		0.001	22-AUG-19
Ethyl benzene			<0.00050	mg/L		0.0005	22-AUG-19
o-Xylene			<0.00050	mg/L		0.0005	22-AUG-19
m+p-Xylenes			<0.00040	mg/L		0.0004	22-AUG-19
E4 (00 040)			<0.10	mg/L		0.1	22-AUG-19
F1 (C6-C10)			101.10	9/ =		• • •	



FC-QT97-ENDPT-WP

Water

Quality Control Report

Workorder: L2332810

Report Date: 30-AUG-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
Batch R47716 WG3145817-3 DU Total Organic Carbo	IP	L2332810-1 8.84	8.79		mg/L	0.6	20	27-AUG-19
WG3145817-2 LC Total Organic Carbo	_		102.4		%		80-120	27-AUG-19
WG3145817-1 ME Total Organic Carbo			<0.50		mg/L		0.5	27-AUG-19
CL-IC-N-WP	Water							
Batch R47697 WG3140209-3 DU		L2332810-1						
Chloride (CI)		33.1	32.5		mg/L	1.7	20	22-AUG-19
WG3140209-2 LC Chloride (CI)	S		97.8		%		90-110	22-AUG-19
WG3140209-1 ME Chloride (CI)	3		<0.50		mg/L		0.5	22-AUG-19
WG3140209-4 MS Chloride (CI)	3	L2332810-1	100.6		%		75-125	22-AUG-19
EC-WP	Water							
Batch R47655 WG3141365-23 LC Conductivity	-		99.1		%		90-110	22-AUG-19
WG3141365-21 ME Conductivity	3		<1.0		umhos/cm		1	22-AUG-19
F2-F4-FID-WP	Water							
Batch R47669	908							
WG3140141-2 LC F2 (C10-C16)	S		87.8		%		70-130	00 4110 40
F3 (C16-C34)			89.2		%		70-130 70-130	22-AUG-19 22-AUG-19
F4 (C34-C50)			89.8		%		70-130	22-AUG-19 22-AUG-19
WG3140141-1 ME F2 (C10-C16)	3		<0.10		mg/L		0.1	22-AUG-19
F3 (C16-C34)			<0.25		mg/L		0.25	22-AUG-19
F4 (C34-C50)			<0.25		mg/L		0.25	22-AUG-19
Surrogate: 2-Bromol	benzotrifluoride		94.5		%		60-140	22-AUG-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC-QT97-ENDPT-WP	Water							
Batch R4764012 WG3139598-2 DUP Fecal Coliforms		L2332810-1 81600	54800		MPN/100mL	39	65	21-AUG-19
WG3139598-1 MB Fecal Coliforms			<1		MPN/100mL		1	21-AUG-19
HG-T-CVAA-WP	Water							
Batch R4768415 WG3143109-2 LCS Mercury (Hg)-Total			97.0		%		80-120	24-AUG-19
WG3143109-1 MB Mercury (Hg)-Total			<0.00000	50	mg/L		0.000005	24-AUG-19
MET-T-CCMS-WP	Water							
Batch R4777903								
WG3147396-2 LCS Aluminum (Al)-Total			107.4		%		80-120	29-AUG-19
Arsenic (As)-Total			105.3		%		80-120	29-AUG-19
Cadmium (Cd)-Total			104.5		%		80-120	29-AUG-19
Calcium (Ca)-Total			96.4		%		80-120	29-AUG-19
Chromium (Cr)-Total			103.5		%		80-120	29-AUG-19
Cobalt (Co)-Total			101.4		%		80-120	29-AUG-19
Copper (Cu)-Total			102.3		%		80-120	29-AUG-19
Iron (Fe)-Total			90.9		%		80-120	29-AUG-19
Lead (Pb)-Total			99.2		%		80-120	29-AUG-19
Magnesium (Mg)-Total			117.1		%		80-120	29-AUG-19
Manganese (Mn)-Total			105.6		%		80-120	29-AUG-19
Nickel (Ni)-Total			100.8		%		80-120	29-AUG-19
Potassium (K)-Total			102.4		%		80-120	29-AUG-19
Sodium (Na)-Total			105.2		%		80-120	29-AUG-19
Zinc (Zn)-Total			103.4		%		80-120	29-AUG-19
WG3147396-1 MB Aluminum (Al)-Total			<0.0030		mg/L		0.003	29-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	29-AUG-19
Cadmium (Cd)-Total			<0.00000		mg/L		0.00001	29-AUG-19 29-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	29-AUG-19 29-AUG-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	29-AUG-19 29-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	29-AUG-19 29-AUG-19
Copper (Cu)-Total			<0.00010		mg/L		0.0001	29-AUG-19 29-AUG-19
Copper (Ou)-Total			~0.00030		mg/L		0.0003	29-AUG-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4777903 WG3147396-1 MB Iron (Fe)-Total			<0.010		mg/L		0.01	29-AUG-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	29-AUG-19 29-AUG-19
Magnesium (Mg)-Total			< 0.0050		mg/L		0.005	29-AUG-19
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	29-AUG-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	29-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	29-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	29-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	29-AUG-19
NH3-COL-WP	Water							
Batch R4765054								
WG3140556-18 LCS Ammonia, Total (as N)			102.3		%		85-115	21-AUG-19
WG3140556-17 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	21-AUG-19
NO2-IC-N-WP	Water							
Batch R4769733								
WG3140209-3 DUP Nitrite (as N)		L2332810-1 <0.010	<0.010	RPD-NA	mg/L	N/A	20	22-AUG-19
WG3140209-2 LCS Nitrite (as N)			99.8		%		90-110	22-AUG-19
WG3140209-1 MB Nitrite (as N)			<0.010		mg/L		0.01	22-AUG-19
WG3140209-4 MS Nitrite (as N)		L2332810-1	100.4		%		75-125	22-AUG-19
NO3-IC-N-WP	Water							
Batch R4769733 WG3140209-3 DUP Nitrate (as N)		L2332810-1 <0.020	<0.020	RPD-NA	mg/L	N/A	20	22-AUG-19
WG3140209-2 LCS Nitrate (as N)		1818-2	98.9	5	%	1471	90-110	22-AUG-19
WG3140209-1 MB Nitrate (as N)			<0.020		mg/L		0.02	22-AUG-19
WG3140209-4 MS Nitrate (as N)		L2332810-1	101.0		%		75-125	22-AUG-19
OG-GRAV-WP	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OG-GRAV-WP	Water							
Batch R4769771 WG3143509-2 LCS Oil and Grease			83.3		%		70-130	27-AUG-19
WG3143509-1 MB Oil and Grease			<5.0		mg/L		5	27-AUG-19
P-T-COL-WP	Water							
Batch R4766335 WG3140690-2 LCS Phosphorus (P)-Total			103.0		%		80-120	23-AUG-19
WG3140690-1 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	23-AUG-19
PAH,PANH-WP	Water							
Batch R4770079								
WG3140873-2 LCS 1-Methyl Naphthalene			116.9		%		60-130	26-AUG-19
2-Methyl Naphthalene			108.3		%		60-130	26-AUG-19
Acenaphthene			118.1		%		60-130	26-AUG-19
Acenaphthylene			105.3		%		60-130	26-AUG-19
Anthracene			98.6		%		60-130	26-AUG-19
Acridine			100.3		%		60-130	26-AUG-19
Benzo(a)anthracene			105.5		%		60-130	26-AUG-19
Benzo(a)pyrene			111.5		%		60-130	26-AUG-19
Benzo(b&j)fluoranthene			105.5		%		60-130	26-AUG-19
Benzo(g,h,i)perylene			100.6		%		60-130	26-AUG-19
Benzo(k)fluoranthene			100.9		%		60-130	26-AUG-19
Chrysene			89.6		%		60-130	26-AUG-19
Dibenzo(a,h)anthracene			89.2		%		60-130	26-AUG-19
Fluoranthene			115.3		%		60-130	26-AUG-19
Fluorene			109.0		%		60-130	26-AUG-19
Indeno(1,2,3-cd)pyrene			98.5		%		60-130	26-AUG-19
Naphthalene			99.7		%		50-130	26-AUG-19
Phenanthrene			121.6		%		60-130	26-AUG-19
Pyrene			123.3		%		60-130	26-AUG-19
Quinoline			100.4		%		60-130	26-AUG-19
WG3140873-1 MB			_	_	_			
1-Methyl Naphthalene			<0.00002		mg/L		0.00002	26-AUG-19
2-Methyl Naphthalene			<0.00002	0	mg/L		0.00002	26-AUG-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4770079)							
WG3140873-1 MB								
Acenaphthene			<0.000020		mg/L		0.00002	26-AUG-19
Acenaphthylene			<0.000020		mg/L		0.00002	26-AUG-19
Anthracene			<0.000010		mg/L		0.00001	26-AUG-19
Acridine			<0.000020		mg/L		0.00002	26-AUG-19
Benzo(a)anthracene			<0.000010		mg/L		0.00001	26-AUG-19
Benzo(a)pyrene			<0.000005		mg/L		0.000005	26-AUG-19
Benzo(b&j)fluoranthene	е		<0.000010		mg/L		0.00001	26-AUG-19
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	26-AUG-19
Benzo(k)fluoranthene			<0.000010)	mg/L		0.00001	26-AUG-19
Chrysene			<0.000020)	mg/L		0.00002	26-AUG-19
Dibenzo(a,h)anthracen	е		<0.000005	5C	mg/L		0.000005	26-AUG-19
Fluoranthene			<0.000020)	mg/L		0.00002	26-AUG-19
Fluorene			<0.000020)	mg/L		0.00002	26-AUG-19
Indeno(1,2,3-cd)pyrene	e		<0.000010)	mg/L		0.00001	26-AUG-19
Naphthalene			<0.000050)	mg/L		0.00005	26-AUG-19
Phenanthrene			<0.000050)	mg/L		0.00005	26-AUG-19
Pyrene			<0.000010)	mg/L		0.00001	26-AUG-19
Quinoline			<0.000020)	mg/L		0.00002	26-AUG-19
Surrogate: Acenaphthe	ene d10		117.1		%		60-130	26-AUG-19
Surrogate: Acridine d9			119.3		%		60-130	26-AUG-19
Surrogate: Chrysene d	12		111.2		%		60-130	26-AUG-19
Surrogate: Naphthalen	e d8		117.3		%		50-130	26-AUG-19
Surrogate: Phenanthre	ne d10		123.5		%		60-130	26-AUG-19
PH-WP	Water							
Batch R4765529)							
WG3141365-22 LCS								
рН			7.40		pH units		7.3-7.5	22-AUG-19
PHENOLS-4AAP-WT	Water							
Batch R4769626	5							
WG3143546-2 LCS			105.9		%		05.445	00 4110 40
Phenols (4AAP)			105.8		70		85-115	26-AUG-19
WG3143546-1 MB Phenols (4AAP)			<0.0010		mg/L		0.001	26-AUG-19
SO4-IC-N-WP	Water				g , <u>-</u>		0.001	20 7.00-10



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	Water							
Batch R4769733								
WG3140209-3 DUP Sulfate (SO4)		L2332810-1 17.8	17.5		mg/L	1.5	20	22-AUG-19
WG3140209-2 LCS Sulfate (SO4)			98.6		%		90-110	22-AUG-19
WG3140209-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	22-AUG-19
WG3140209-4 MS Sulfate (SO4)		L2332810-1	100.2		%		75-125	22-AUG-19
SOLIDS-TOTSUS-WP	Water							
Batch R4769437								
WG3141927-6 LCS Total Suspended Solids			105.5		%		85-115	26-AUG-19
WG3141927-5 MB Total Suspended Solids			<2.0		mg/L		2	26-AUG-19
TC,EC-QT97-ENDPT-WP	Water							
Batch R4764034								
WG3139603-2 DUP		L2332810-1						
Total Coliforms		4110000	2190000		MPN/100mL	61	65	21-AUG-19
Escherichia Coli		146000	146000		MPN/100mL	0.0	65	21-AUG-19
WG3139603-1 MB Total Coliforms			<1		MPN/100mL		1	21-AUG-19
Escherichia Coli			<1		MPN/100mL		1	21-AUG-19

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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.

Workorder: L2332810 Report Date: 30-AUG-19 Page 9 of 9

Hold Time Exceedances:

Sample						
ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
1	19-AUG-19 09:15	22-AUG-19 12:00	0.25	75	hours	EHTR-FM
oy MPN QTS	97					
1	19-AUG-19 09:15	21-AUG-19 18:20	30	57	hours	EHTR
t by QT97						
1	19-AUG-19 09:15	21-AUG-19 18:20	30	57	hours	EHTR
	ID 1	1 19-AUG-19 09:15 by MPN QT97 1 19-AUG-19 09:15 t by QT97	1 19-AUG-19 09:15 22-AUG-19 12:00 by MPN QT97 1 19-AUG-19 09:15 21-AUG-19 18:20 t by QT97	1 19-AUG-19 09:15 22-AUG-19 12:00 0.25 by MPN QT97 1 19-AUG-19 09:15 21-AUG-19 18:20 30 t by QT97	1 19-AUG-19 09:15 22-AUG-19 12:00 0.25 75 by MPN QT97 1 19-AUG-19 09:15 21-AUG-19 18:20 30 57 t by QT97	ID Sampling Date Date Processed Rec. HT Actual HT Units 1 19-AUG-19 09:15 22-AUG-19 12:00 0.25 75 hours by MPN QT97 1 19-AUG-19 09:15 21-AUG-19 18:20 30 57 hours t by QT97

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 L2332810 were received on 21-AUG-19 10:35.

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

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

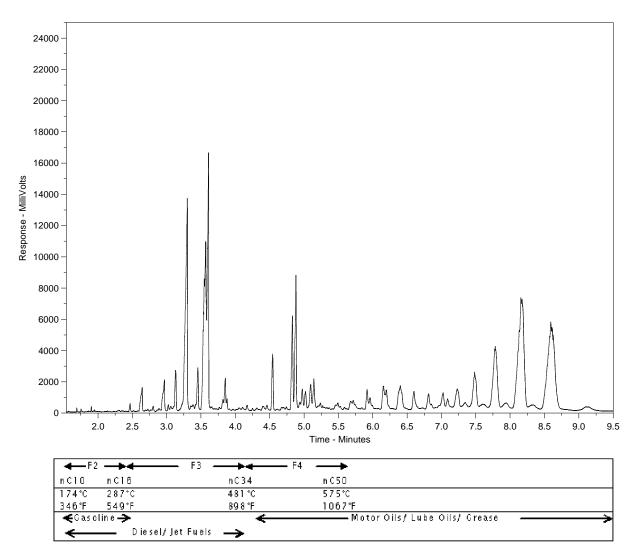
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2332810-1

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.

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Phone:	867-645-8155	Cell#:			Email 3:	aanderson@go						_	Α	nalys	sis Re	ques	t				
Invoice To	Same as Report ?	✓ Yes	☐ No		Client / P	roject Information			Ple	ase ir	ndicat	te bel	ow Fil	tered	, Pres	erved	or bo	oth (F	, P, F	/P)	
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Sample ::		-	dentification ill appear on the	e report)		Date Sampled	Time Sampled	Sample Type	BTX,F1	PAH,P,	NUNAV	TC,EC	FC-QT97								Numbe
	Rankin Inlet WWTF	P - Effluent				An 19	9:15	Waste	x	х	х	х	х					:			15
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	/-GRP1-WP pkg incl /ials for BTX,F1-F4 a	udes 1 L BOD/	CBOD, 1 L Rou	tine, 250 ml	Metals , 40	ml Mercury Vial													mi Ba	cteria	(9
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix U



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 30-AUG-19

Report Date: 11-SEP-19 13:58 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2339485

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.]

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



L2339485 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339485-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 26-AUG-19 @ 13:15							
Matrix: wastewater							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene Benzene	<0.00050		0.00050	mg/L		04-SEP-19	R4794128
Toluene	<0.0010		0.0010	mg/L		04-SEP-19	R4794128
Ethyl benzene	<0.00050		0.00050	mg/L		04-SEP-19	R4794128
o-Xylene	<0.00050		0.00050	mg/L		04-SEP-19	R4794128
m+p-Xylenes	0.00041		0.00040	mg/L		04-SEP-19	R4794128
F1 (C6-C10)	<0.10		0.10	mg/L		04-SEP-19	R4794128
Surrogate: 4-Bromofluorobenzene (SS)	89.0		70-130	%		04-SEP-19	R4794128
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.34		0.10	mg/L	05-SEP-19	06-SEP-19	R4786789
F3 (C16-C34)	6.63		0.25	mg/L	05-SEP-19	06-SEP-19	R4786789
F4 (C34-C50)	4.18		0.25	mg/L	05-SEP-19	06-SEP-19	R4786789
Surrogate: 2-Bromobenzotrifluoride	99.3		60-140	%	05-SEP-19	06-SEP-19	R4786789
CCME Total Hydrocarbons	-0.40		0.40	m c /l		11 CED 10	
F1-BTEX F2-Naphth	<0.10 0.34		0.10 0.10	mg/L mg/L		11-SEP-19 11-SEP-19	
F3-PAH	6.63		0.10	mg/L		11-SEP-19 11-SEP-19	
Total Hydrocarbons (C6-C50)	11.2		0.25	mg/L		11-SEP-19 11-SEP-19	
Sum of Xylene Isomer Concentrations	11.2		0.50	IIIg/L		11-021-13	
Xylenes (Total)	<0.00064		0.00064	mg/L		11-SEP-19	
Miscellaneous Parameters							
Fecal Coliforms	8660000	PEHR	1	MPN/100mL		30-AUG-19	R4781416
Total and E. coli to endpoint by QT97							
Total Coliforms	88800000	PEHR	1	MPN/100mL		30-AUG-19	R4781424
Escherichia Coli	12100000	PEHR	1	MPN/100mL		30-AUG-19	R4781424
Polyaromatic Hydrocarbons (PAHs)	0.00005				04 4110 40	00.050.40	D.4700000
1-Methyl Naphthalene	0.000205		0.000020	mg/L	31-AUG-19	06-SEP-19	R4789969
2-Methyl Naphthalene Acenaphthene	0.000217 0.000070		0.000020	mg/L	31-AUG-19 31-AUG-19	06-SEP-19 06-SEP-19	R4789969 R4789969
Acenaphthylene	<0.000070		0.000020	mg/L mg/L	31-AUG-19 31-AUG-19	06-SEP-19 06-SEP-19	R4789969 R4789969
Anthracene	<0.000020		0.000020	mg/L	31-AUG-19	06-SEP-19	R4789969 R4789969
Acridine	<0.000010		0.000010	mg/L	31-AUG-19	06-SEP-19	R4789969
Benzo(a)anthracene	<0.000020		0.000020	mg/L	31-AUG-19	06-SEP-19	R4789969
Benzo(a)pyrene	<0.000050		0.0000050		31-AUG-19	06-SEP-19	R4789969
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	31-AUG-19	06-SEP-19	R4789969
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	31-AUG-19	06-SEP-19	R4789969
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	31-AUG-19	06-SEP-19	R4789969
Chrysene	<0.000020		0.000020	mg/L	31-AUG-19	06-SEP-19	R4789969
Dibenzo(a,h)anthracene	0.0000100		0.0000050	mg/L	31-AUG-19	06-SEP-19	R4789969
Fluoranthene	<0.000020		0.000020	mg/L	31-AUG-19	06-SEP-19	R4789969
Fluorene	0.000041	EMPC	0.000020	mg/L	31-AUG-19	06-SEP-19	R4789969
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	31-AUG-19	06-SEP-19	R4789969
Naphthalene	0.000270		0.000050	mg/L	31-AUG-19	06-SEP-19	R4789969
Phenanthrene	<0.000050		0.000050	mg/L	31-AUG-19	06-SEP-19	R4789969
Pyrene	<0.000010		0.000010	mg/L	31-AUG-19	06-SEP-19	R4789969
Quinoline P(a)P Total Potonov Equivalent	<0.000020		0.000020	mg/L	31-AUG-19	06-SEP-19	R4789969
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	31-AUG-19	06-SEP-19	R4789969
Surrogate: Acenaphthene d10 Surrogate: Acridine d9	120.1		60-130	%	31-AUG-19 31-AUG-19	06-SEP-19 06-SEP-19	R4789969
Surrogate: Acridine d9 Surrogate: Chrysene d12	111.0 118.7		60-130 60-130	% %	31-AUG-19 31-AUG-19	06-SEP-19 06-SEP-19	R4789969 R4789969
Surrogate: Naphthalene d8	117.0		50-130	%	31-AUG-19 31-AUG-19	06-SEP-19 06-SEP-19	R4789969 R4789969
Surrogate: Phenanthrene d10	117.0		60-130	%	31-AUG-19	06-SEP-19	R4789969 R4789969
Carrogato. I fiorialitificito aro	110.0		00-130	/0	01-700-18	00-061-18	1171 03303

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

L2339485 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339485-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 26-AUG-19 @ 13:15							
Matrix: wastewater							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	114		1.2	mg/L		05-SEP-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		05-SEP-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		05-SEP-19	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	93.7		1.0	mg/L		04-SEP-19	R4783324
Ammonia by colour Ammonia, Total (as N)	5.69		0.20	mg/L		09-SEP-19	R4795431
Biochemical Oxygen Demand (BOD)	3.03		0.20	1119/ =		00 021 10	1(4735451
Biochemical Oxygen Demand	124		20	mg/L		31-AUG-19	R4784617
Carbonaceous BOD							
BOD Carbonaceous	99		20	mg/L		31-AUG-19	R4784617
Chloride in Water by IC Chloride (Cl)	55.7		0.50	mg/L		31-AUG-19	R4783564
Conductivity	55.7		0.50	1119/6		31-400-18	134703304
Conductivity	416		1.0	umhos/cm		04-SEP-19	R4783324
Hardness Calculated	400	LITO	0.00	,,		40.050.40	
Hardness (as CaCO3)	100	HTC	0.20	mg/L		10-SEP-19	
Mercury Total Mercury (Hg)-Total	0.0000070		0.0000050	mg/L	05-SEP-19	09-SEP-19	R4792194
Nitrate in Water by IC	0.00000.0		0.000000				
Nitrate (as N)	<0.020		0.020	mg/L		31-AUG-19	R4783564
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		05-SEP-19	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		31-AUG-19	R4783564
Oil & Grease - Gravimetric							
Oil and Grease	24.7		5.0	mg/L		09-SEP-19	R4791490
Phenol (4AAP)		5					
Phenols (4AAP)	0.0097	DLM	0.0050	mg/L		04-SEP-19	R4783340
Phosphorus, Total Phosphorus (P)-Total	1.81		0.0060	mg/L		05-SEP-19	R4783693
Sulfate in Water by IC			0.0000			55 521 15	
Sulfate (SO4)	28.7		0.30	mg/L		31-AUG-19	R4783564
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.275		0.0030	mg/L	09-SEP-19	09-SEP-19	R4791470
Arsenic (As)-Total Cadmium (Cd)-Total	0.00115		0.00010	mg/L	09-SEP-19 09-SEP-19	09-SEP-19 09-SEP-19	R4791470
Cadrillum (Ca)-Total Calcium (Ca)-Total	0.0000700 29.8		0.0000050 0.050	mg/L mg/L	09-SEP-19 09-SEP-19	09-SEP-19 09-SEP-19	R4791470 R4791470
Chromium (Cr)-Total	0.00079		0.00010	mg/L	09-SEP-19	09-SEP-19	R4791470
Cobalt (Co)-Total	0.00044		0.00010	mg/L	09-SEP-19	09-SEP-19	R4791470
Copper (Cu)-Total	0.140		0.00050	mg/L	09-SEP-19	09-SEP-19	R4791470
Iron (Fe)-Total	0.285		0.010	mg/L	09-SEP-19	09-SEP-19	R4791470
Lead (Pb)-Total	0.00251		0.000050	mg/L	09-SEP-19	09-SEP-19	R4791470
Magnesium (Mg)-Total	6.32		0.0050	mg/L	09-SEP-19	09-SEP-19	R4791470
Manganese (Mn)-Total Nickel (Ni)-Total	0.0811 0.00454		0.00010 0.00050	mg/L	09-SEP-19 09-SEP-19	09-SEP-19 09-SEP-19	R4791470
Potassium (K)-Total	8.02		0.00050	mg/L mg/L	09-SEP-19 09-SEP-19	09-SEP-19 09-SEP-19	R4791470 R4791470
Sodium (Na)-Total	31.7		0.050	mg/L	09-SEP-19	09-SEP-19	R4791470
Zinc (Zn)-Total	0.0628		0.0030	mg/L	09-SEP-19	09-SEP-19	R4791470
<u> </u>					-		

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

L2339485 CONTD.... PAGE 4 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339485-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: CLIENT on 26-AUG-19 @ 13:15							
Matrix: wastewater							
Total Organic Carbon by Combustion Total Organic Carbon	71.8		2.5	mg/L		09-SEP-19	R4793368
Total Suspended Solids	07.4		2.2			00.050.40	D 4700545
Total Suspended Solids pH	87.4		3.0	mg/L		03-SEP-19	R4782515
pH	7.22		0.10	pH units		04-SEP-19	R4783324

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

L2339485 CONTD....

PAGE 5 of 7 Version: FINAL

Reference Information

Sample Parameter Qualifier Key:

<u>-</u>	
Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
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- Water Alkalinity, Bicarbonate CALCULATION

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph.

Target compound concentrations are measured using mass spectrometry detection.

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

L2339485 CONTD....

PAGE 6 of 7 Version: FINAL Reference Information

Test Method References:

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

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.

FC-QT97-ENDPT-WP Water Fecal Coliform to endpoint by MPN QT97 APHA 9223B QT97

This analysis is carried out using procedures adapted from APHA Method 9223B "Enzyme Substrate Coliform Test". The sample is mixed with a mixture of hydrolyzable substrates and then sealed in a 97-well packet. The packet is incubated at 44.5 - 0.2°C for 18 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the number of positive responses to a probability table.

Hardness Calculated HARDNESS-CALC-WP Water **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 Mercury Total

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

MET-T-CCMS-WP Total Metals in Water by CRC ICPMS Water 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 EPA 1664 (modified) Oil & Grease - Gravimetric

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.

APHA 4500 P PHOSPHORUS-L Phosphorus, Total

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

after persulphate digestion of the sample.

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

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

PH-WP Water **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. PHENOI S-4AAP-WT

Phenol (4AAP) Water

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)

L2339485 CONTD....

PAGE 7 of 7 Version: FINAL

Reference Information

Test Method References:

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

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-ENDPT-WP Water Total and E. coli to endpoint 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 serial dilutions of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 - 0.5°C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

XYLENES-SUM-CALC-

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.

ma/ka - 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.



Workorder: L2339485 Report Date: 11-SEP-19 Page 1 of 9

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R47833	24							
WG3152408-10 DUI Alkalinity, Total (as C		L2339485-1 93.7	95.3		mg/L	1.7	20	04-SEP-19
WG3152408-9 LC3 Alkalinity, Total (as C			102.6		%		85-115	04-SEP-19
WG3152408-6 MB Alkalinity, Total (as C	aCO3)		<1.0		mg/L		1	04-SEP-19
BOD-CBOD-WP	Water							
Batch R47846 WG3149313-2 LCS BOD Carbonaceous			103.9		%		85-115	31-AUG-19
WG3149313-1 MB			100.0		70		03-113	31-400-19
BOD Carbonaceous			<2.0		mg/L		2	31-AUG-19
BOD-WP	Water							
Batch R47846 WG3149313-2 LCS	3							
Biochemical Oxygen	Demand		108.6		%		85-115	31-AUG-19
WG3149313-1 MB Biochemical Oxygen	Demand		<2.0		mg/L		2	31-AUG-19
BTEXS+F1-HSMS-WP	Water							
Batch R47941	28							
WG3151995-10 DUI Benzene	•	L2339485-1 <0.00050	<0.00050	RPD-NA	mg/L	N/A	30	04-SEP-19
Toluene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	04-SEP-19
Ethyl benzene		< 0.00050	<0.00050	RPD-NA	mg/L	N/A	30	04-SEP-19
o-Xylene		< 0.00050	<0.00050	RPD-NA	mg/L	N/A	30	04-SEP-19
m+p-Xylenes		0.00041	0.00041		mg/L	1.4	30	04-SEP-19
F1 (C6-C10)		<0.10	<0.10	RPD-NA	mg/L	N/A	30	04-SEP-19
WG3151995-8 LCS Benzene	5		89.9		%		70-130	05-SEP-19
Toluene			89.2		%		70-130	05-SEP-19
Ethyl benzene			98.3		%		70-130	05-SEP-19
o-Xylene			89.1		%		70-130	05-SEP-19
m+p-Xylenes			94.3		%		70-130	05-SEP-19
WG3151995-9 LCS F1 (C6-C10)	3		103.5		%		70-130	05-SEP-19
WG3151995-7 MB Benzene			<0.00050		mg/L		0.0005	05-SEP-19



Workorder: L2339485

Report Date: 11-SEP-19 Page 2 of 9

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	Water							
Batch R47941	28							
WG3151995-7 ME Toluene			<0.0010		mg/L		0.001	05-SEP-19
Ethyl benzene			<0.00050		mg/L		0.0005	05-SEP-19
o-Xylene			<0.00050		mg/L		0.0005	05-SEP-19
m+p-Xylenes			<0.00040		mg/L		0.0004	05-SEP-19
F1 (C6-C10)			<0.10		mg/L		0.1	05-SEP-19
Surrogate: 4-Bromof	luorobenzene (SS)		84.0		%		70-130	05-SEP-19
C-TOC-HTC-WP	Water							
Batch R47933	68							
WG3157291-2 LC Total Organic Carbo			102.2		%		80-120	09-SEP-19
WG3157291-1 ME Total Organic Carbo			<0.50		mg/L		0.5	09-SEP-19
CL-IC-N-WP	Water							
Batch R47835	64							
WG3149385-2 LC Chloride (CI)	S		100.0		%		90-110	31-AUG-19
WG3149385-1 ME Chloride (CI)			<0.50		mg/L		0.5	31-AUG-19
EC-WP	Water							
Batch R47833	24							
WG3152408-10 DU Conductivity	P	L2339485-1 416	415		umhos/cm	0.2	10	04-SEP-19
WG3152408-8 LC Conductivity	S		98.0		%		90-110	04-SEP-19
WG3152408-6 ME Conductivity	:		<1.0		umhos/cm		1	04-SEP-19
F2-F4-FID-WP	Water							
Batch R47867	89							
WG3152656-2 LC F2 (C10-C16)	S		94.8		%		70.400	06 SED 40
F2 (C16-C16) F3 (C16-C34)			94.8 91.2		%		70-130	06-SEP-19
F4 (C34-C50)			101.4		%		70-130 70-130	06-SEP-19 06-SEP-19
WG3152656-1 ME			101.4		70		10-130	00-SEP-19
F2 (C10-C16)	•		<0.10		mg/L		0.1	06-SEP-19
F3 (C16-C34)			<0.25		mg/L		0.25	06-SEP-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-FID-WP	Water							
Batch R4786789								
WG3152656-1 MB F4 (C34-C50)			<0.25		mg/L		0.25	06-SEP-19
Surrogate: 2-Bromobenz	zotrifluoride		104.9		%		60-140	06-SEP-19
FC-QT97-ENDPT-WP	Water							
Batch R4781416								
WG3149047-2 DUP		L2339485-1						
Fecal Coliforms		8660000	6870000		MPN/100mL	23	65	30-AUG-19
WG3149047-1 MB					MDN//400			
Fecal Coliforms			<1		MPN/100mL		1	30-AUG-19
HG-T-CVAA-WP	Water							
Batch R4792194								
WG3156852-2 LCS Mercury (Hg)-Total			96.0		%		80-120	00 850 40
			90.0		70		6U-12U	09-SEP-19
WG3156852-1 MB Mercury (Hg)-Total			<0.00000	5C	mg/L		0.000005	09-SEP-19
MET-T-CCMS-WP	Water				Ü			00 02. 10
Batch R4791470								
WG3155977-2 LCS								
Aluminum (Al)-Total			105.2		%		80-120	09-SEP-19
Arsenic (As)-Total			102.6		%		80-120	09-SEP-19
Cadmium (Cd)-Total			101.7		%		80-120	09-SEP-19
Calcium (Ca)-Total			101.3		%		80-120	09-SEP-19
Chromium (Cr)-Total			104.0		%		80-120	09-SEP-19
Cobalt (Co)-Total			102.5		%		80-120	09-SEP-19
Copper (Cu)-Total			102.7		%		80-120	09-SEP-19
Iron (Fe)-Total			94.8		%		80-120	09-SEP-19
Lead (Pb)-Total			101.7		%		80-120	09-SEP-19
Magnesium (Mg)-Total			115.2		%		80-120	09-SEP-19
Manganese (Mn)-Total			104.8		%		80-120	09-SEP-19
Nickel (Ni)-Total			100.3		%		80-120	09-SEP-19
Potassium (K)-Total			93.6		%		80-120	09-SEP-19
Sodium (Na)-Total			103.5		%		80-120	09-SEP-19
Zinc (Zn)-Total			103.2		%		80-120	09-SEP-19
WG3155977-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-SEP-19



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Workorder: L2339485 Report Date: 11-SEP-19

Test Matrix Reference Result Qualifier Units **RPD** Limit Analyzed MET-T-CCMS-WP Water **Batch** R4791470 WG3155977-1 MB Cadmium (Cd)-Total < 0.0000050 mg/L 0.000005 09-SEP-19 Calcium (Ca)-Total < 0.050 mg/L 0.05 09-SEP-19 Chromium (Cr)-Total <0.00010 mg/L 0.0001 09-SEP-19 Cobalt (Co)-Total < 0.00010 mg/L 0.0001 09-SEP-19 Copper (Cu)-Total < 0.00050 mg/L 0.0005 09-SEP-19 Iron (Fe)-Total <0.010 mg/L 0.01 09-SEP-19 Lead (Pb)-Total < 0.000050 mg/L 0.00005 09-SEP-19 Magnesium (Mg)-Total < 0.0050 mg/L 0.005 09-SEP-19 Manganese (Mn)-Total < 0.00010 mg/L 0.0001 09-SEP-19 Nickel (Ni)-Total < 0.00050 mg/L 0.0005 09-SEP-19 Potassium (K)-Total < 0.050 mg/L 0.05 09-SEP-19 Sodium (Na)-Total <0.050 mg/L 0.05 09-SEP-19 Zinc (Zn)-Total <0.0030 mg/L 0.003 09-SEP-19 NH3-COL-WP Water Batch R4795431 WG3157733-2 LCS Ammonia, Total (as N) 99.6 % 85-115 09-SEP-19 WG3157733-1 Ammonia, Total (as N) < 0.010 mg/L 0.01 09-SEP-19 NO2-IC-N-WP Water **Batch** R4783564 WG3149385-2 LCS 102.4 Nitrite (as N) % 31-AUG-19 90-110 WG3149385-1 MB Nitrite (as N) < 0.010 mg/L 0.01 31-AUG-19 NO3-IC-N-WP Water **Batch** R4783564 WG3149385-2 LCS Nitrate (as N) 100.4 % 90-110 31-AUG-19 WG3149385-1 MB Nitrate (as N) < 0.020 mg/L 0.02 31-AUG-19 **OG-GRAV-WP** Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OG-GRAV-WP	Water							
Batch R4791490 WG3153149-2 LCS								
Oil and Grease			89.8		%		70-130	09-SEP-19
WG3153149-1 MB Oil and Grease			<5.0		mg/L		5	09-SEP-19
P-T-COL-WP	Water							
Batch R4783693 WG3150683-6 LCS Phosphorus (P)-Total			100.6		%		80-120	05-SEP-19
WG3150683-5 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	05-SEP-19
WG3150683-8 MS Phosphorus (P)-Total		L2339485-1	N/A	MS-B	%		-	05-SEP-19
PAH,PANH-WP	Water							
Batch R4789969								
WG3150142-2 LCS								
1-Methyl Naphthalene			117.5		%		60-130	06-SEP-19
2-Methyl Naphthalene			110.3		%		60-130	06-SEP-19
Acenaphthene			116.3		%		60-130	06-SEP-19
Acenaphthylene			97.3		%		60-130	06-SEP-19
Anthracene			83.0		%		60-130	06-SEP-19
Acridine			95.7		%		60-130	06-SEP-19
Benzo(a)anthracene			91.6		%		60-130	06-SEP-19
Benzo(a)pyrene			96.7		%		60-130	06-SEP-19
Benzo(b&j)fluoranthene			102.2		%		60-130	06-SEP-19
Benzo(g,h,i)perylene			101.4		%		60-130	06-SEP-19
Benzo(k)fluoranthene			115.9		%		60-130	06-SEP-19
Chrysene			105.3		%		60-130	06-SEP-19
Dibenzo(a,h)anthracene			99.3		%		60-130	06-SEP-19
Fluoranthene			116.6		%		60-130	06-SEP-19
Fluorene			99.2		%		60-130	06-SEP-19
Indeno(1,2,3-cd)pyrene			84.1		%		60-130	06-SEP-19
Naphthalene			119.0		%		50-130	06-SEP-19
Phenanthrene			113.7		%		60-130	06-SEP-19
Pyrene			116.8		%		60-130	06-SEP-19
Quinoline			101.8		%		60-130	06-SEP-19
WG3150142-1 MB								



Workorder: L2339485 Report Date: 11-SEP-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP	Water							
Batch R4789969								
WG3150142-1 MB				_	,,			
1-Methyl Naphthalene			<0.00002		mg/L		0.00002	06-SEP-19
2-Methyl Naphthalene			<0.00002		mg/L		0.00002	06-SEP-19
Acenaphthene			<0.00002		mg/L		0.00002	06-SEP-19
Acenaphthylene			<0.00002	0	mg/L		0.00002	06-SEP-19
Anthracene			<0.00001	0	mg/L		0.00001	06-SEP-19
Acridine			<0.00002	0	mg/L		0.00002	06-SEP-19
Benzo(a)anthracene			<0.00001	0	mg/L		0.00001	06-SEP-19
Benzo(a)pyrene			<0.00000	5C	mg/L		0.000005	06-SEP-19
Benzo(b&j)fluoranthene			<0.00001	0	mg/L		0.00001	06-SEP-19
Benzo(g,h,i)perylene			< 0.00002	0	mg/L		0.00002	06-SEP-19
Benzo(k)fluoranthene			<0.00001	0	mg/L		0.00001	06-SEP-19
Chrysene			< 0.00002	0	mg/L		0.00002	06-SEP-19
Dibenzo(a,h)anthracene			<0.00000	5C	mg/L		0.000005	06-SEP-19
Fluoranthene			<0.00002	0	mg/L		0.00002	06-SEP-19
Fluorene			<0.00002	0	mg/L		0.00002	06-SEP-19
Indeno(1,2,3-cd)pyrene			<0.00001	0	mg/L		0.00001	06-SEP-19
Naphthalene			<0.00005	0	mg/L		0.00005	06-SEP-19
Phenanthrene			<0.00005	0	mg/L		0.00005	06-SEP-19
Pyrene			<0.00001	0	mg/L		0.00001	06-SEP-19
Quinoline			<0.00002	0	mg/L		0.00002	06-SEP-19
Surrogate: Acenaphthene	e d10		117.9		%		60-130	06-SEP-19
Surrogate: Acridine d9			105.6		%		60-130	06-SEP-19
Surrogate: Chrysene d12	2		107.4		%		60-130	06-SEP-19
Surrogate: Naphthalene	d8		116.7		%		50-130	06-SEP-19
Surrogate: Phenanthrene	d10		113.0		%		60-130	06-SEP-19
PH-WP	Water							
Batch R4783324								
WG3152408-10 DUP		L2339485-1						
рН		7.22	7.23	J	pH units	0.01	0.2	04-SEP-19
WG3152408-7 LCS pH			7.36		pH units		7.3-7.5	04-SEP-19
PHENOLS-4AAP-WT	Water							



Workorder: L2339485

Report Date: 11-SEP-19

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est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	Water							
Batch R4783340								
WG3151296-6 LCS Phenols (4AAP)			96.9		%		85-115	04-SEP-19
WG3151296-5 MB Phenols (4AAP)			<0.0010		mg/L		0.001	04-SEP-19
604-IC-N-WP	Water							
Batch R4783564								
WG3149385-2 LCS Sulfate (SO4)			101.0		%		90-110	31-AUG-19
WG3149385-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	31-AUG-19
OLIDS-TOTSUS-WP	Water							
Batch R4782515								
WG3148717-14 LCS Total Suspended Solids			109.6		%		85-115	03-SEP-19
WG3148717-13 MB Total Suspended Solids			<2.0		mg/L		2	03-SEP-19
C,EC-QT97-ENDPT-WP	Water							
Batch R4781424								
WG3149048-2 DUP Total Coliforms		L2339485-1 88800000	67700000		MPN/100mL	27	65	30-AUG-19
Escherichia Coli		12100000	10800000		MPN/100mL	11	65	30-AUG-19
WG3149048-1 MB Total Coliforms			<1		MPN/100mL		1	30-AUG-19
Escherichia Coli			<1		MPN/100mL		1	30-AUG-19

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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.

Workorder: L2339485 Report Date: 11-SEP-19 Page 9 of 9

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Total Suspended Solids							
	1	26-AUG-19 13:15	03-SEP-19 14:00	7	8	days	EHT
рН							
	1	26-AUG-19 13:15	04-SEP-19 12:00	0.25	215	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC							
	1	26-AUG-19 13:15	31-AUG-19 15:00	3	5	days	EHTR
Nitrite in Water by IC							
	1	26-AUG-19 13:15	31-AUG-19 15:00	3	5	days	EHTR
Bacteriological Tests							
Fecal Coliform to endpoint	by MPN QT9	7					
	1	26-AUG-19 13:15	30-AUG-19 18:25	30	101	hours	EHTR
Total and E. coli to endpoin	t by QT97						
	1	26-AUG-19 13:15	30-AUG-19 18:25	30	101	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Dema	ind (BOD)						
	1	26-AUG-19 13:15	31-AUG-19 07:00	48	114	hours	EHTR
Carbonaceous BOD							
	1	26-AUG-19 13:15	31-AUG-19 07:00	48	114	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 L2339485 were received on 30-AUG-19 16:25.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

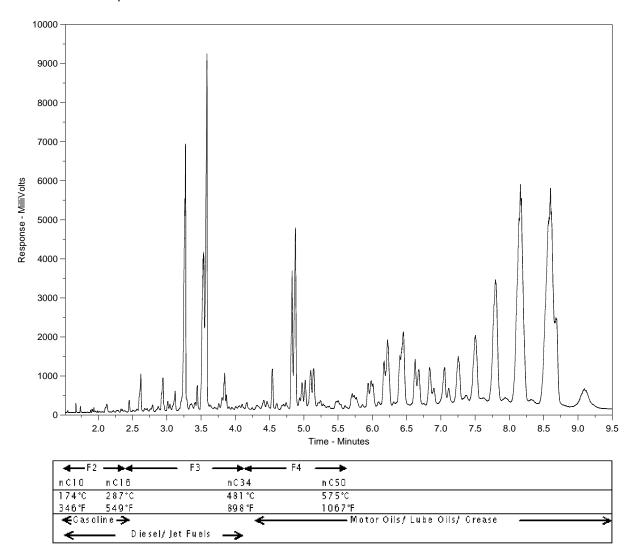
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2339485-1

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.

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coc# L2339485

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Company:	Nunavut CGS - Rankin Inlet (V	V8133)	_ ,	LZJ	33466 5 2		<u> </u>	●	Regular	(Stand	dard To	urnarour	nd Times -	Busines	Days)			
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Address:	Box 490		Er	mail 1:	sdoiron@gov.nt	u.ca											onfirm TA	<u>т</u>
	Rankin Inlet, NU, X0C 0G0		Er	mail 2:	mlusty@gov.nu	<u>.ca</u>		O:	ame D	ay or V	Veeker	nd Erner	gency - Co	ntact AL	S to Con	irm TAT		
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	Vork Order #		0000 0000 0000 0000 0000 0000 0000 0000 0000	LS ontact:	Craig Riddell	Sampled By:	Amanda Anderson	1-F4-W	PANH-WP	NUNAVUT-WW-GRP	QT97	1 .7 1						Number of Containers
Sample :	4	nple Identification ion will appear on the	e report)		Date Sampled	¹Time Sampled	Sample Type	ВТХ,Е	PAH,P	NUNA	TC,EC-	FC-QT97						Numb
	Rankin Inlet WWTP - Effluent		· · · · · · · · · · · · · · · · · · ·		Aug 26	1:15	Waste	x	х	х	х	х		1.				15
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Nunavut-WV bottles) + 5 V	V-GRP1-WP pkg includes 1 L E Vials for BTX,F1-F4 and 1 L Am	BOD/CBOD, 1 L Rou nber for PAH's = Tot	tine, 250 ml Me al of 15 Bottles	etals , 40 per sam	ml Mercury Vial	, 250 ml Amber	Nutrient , 250 ml	Ambe	er Phe	nols,	2 x 2	!50 ml	Amber (Oll & G	rease ,	250 m	l Bacter	ia (9
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix V



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 03-OCT-19

Report Date: 18-OCT-19 14:11 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2359342
Project P.O. #: NOT SUBMITTED

Job Reference: C of C Numbers: Legal Site Desc:

Mhl

Hua Wo

Chemistry Laboratory Manager

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

ADDRESS: 1329 Niakwa Road East, Unit 12, Winnipeg, MB R2J 3T4 Canada | Phone: +1 204 255 9720 | Fax: +1 204 255 9721

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L 2250242 4 M/M/TD							
L2359342-1 WWTP Sampled By: CLIENT on 02-OCT-19 @ 14:00							
Matrix: WASTE WATER BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		17-OCT-19	R4873346
Toluene	0.0041		0.0010	mg/L		17-OCT-19	R4873346
Ethyl benzene	<0.00050		0.00050	mg/L		17-OCT-19	R4873346
o-Xylene	<0.00050		0.00050	mg/L		17-OCT-19	R4873346
m+p-Xylenes	<0.00040		0.00040	mg/L		17-OCT-19	R4873346
F1 (C6-C10)	<0.10		0.10	mg/L		17-OCT-19	R4873346
Surrogate: 4-Bromofluorobenzene (SS)	87.0		70-130	%		17-OCT-19	R4873346
CCME PHC F2-F4 in Water							
F2 (C10-C16)	2.04		0.10	mg/L	07-OCT-19	10-OCT-19	R4871231
F3 (C16-C34)	11.4		0.25	mg/L	07-OCT-19	10-OCT-19	R4871231
F4 (C34-C50)	9.46		0.25	mg/L	07-OCT-19	10-OCT-19	R4871231
Surrogate: 2-Bromobenzotrifluoride	128.1		60-140	%	07-OCT-19	10-OCT-19	R4871231
CCME Total Hydrocarbons F1-BTEX	<0.10		0.10	mg/L		18-OCT-19	
F2-Naphth	2.04		0.10	mg/L		18-OCT-19	
F3-PAH	11.4		0.10	mg/L		18-OCT-19	
Total Hydrocarbons (C6-C50)	22.9		0.38	mg/L		18-OCT-19	
Sum of Xylene Isomer Concentrations				Ü			
Xylenes (Total)	<0.00064		0.00064	mg/L		18-OCT-19	
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000163		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
2-Methyl Naphthalene	0.000196		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Acenaphthylana	0.000047		0.000020	mg/L	08-OCT-19 08-OCT-19	18-OCT-19 18-OCT-19	R4867488
Acenaphthylene Anthracene	<0.000020 <0.000010		0.000020 0.000010	mg/L mg/L	08-OCT-19 08-OCT-19	18-OCT-19	R4867488 R4867488
Acridine	<0.000010		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(a)anthracene	<0.000010		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(a)pyrene	<0.000050		0.0000050	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Benzo(k)fluoranthene	<0.00010		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Chrysene	<0.000020		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	08-OCT-19	18-OCT-19	R4867488
Fluoranthene	<0.000020		0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Fluorene	0.000027	EMPC	0.000020	mg/L	08-OCT-19	18-OCT-19	R4867488
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	08-OCT-19	18-OCT-19	R4867488
Naphthalene	0.000486		0.000050	mg/L	08-OCT-19	18-OCT-19	R4867488
Phenanthrene	<0.000050		0.000050	mg/L	08-OCT-19	18-OCT-19	R4867488
Pyrene Quinoline	0.000015 <0.000020		0.000010 0.000020	mg/L	08-OCT-19 08-OCT-19	18-OCT-19 18-OCT-19	R4867488 R4867488
B(a)P Total Potency Equivalent	<0.000020		0.000020	mg/L mg/L	08-OCT-19 08-OCT-19	18-OCT-19	R4867488
Surrogate: Acenaphthene d10	122.8		60-130	111g/L %	08-OCT-19	18-OCT-19	R4867488
Surrogate: Acridine d9	117.9		60-130	%	08-OCT-19	18-OCT-19	R4867488
Surrogate: Chrysene d12	120.2		60-130	%	08-OCT-19	18-OCT-19	R4867488
Surrogate: Naphthalene d8	118.0		50-130	%	08-OCT-19	18-OCT-19	R4867488
Surrogate: Phenanthrene d10	122.6		60-130	%	08-OCT-19	18-OCT-19	R4867488
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	75.6		1.2	mg/L		07-OCT-19	
Alkalinity, Carbonate					L		

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

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2359342-1 WWTP							
L2359342-1 WWTP Sampled By: CLIENT on 02-OCT-19 @ 14:00							
Matrix: WASTE WATER							
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		07-OCT-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		07-OCT-19	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	62.0		1.0	mg/L		04-OCT-19	R4860614
Ammonia by colour Ammonia, Total (as N)	2.38		0.10	mg/L		11-OCT-19	R4869837
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	68		20	mg/L		04-OCT-19	R4865393
Carbonaceous BOD							
BOD Carbonaceous Chloride in Water by IC	86		20	mg/L		04-OCT-19	R4865393
Chloride (CI) Conductivity	46.6		0.50	mg/L		04-OCT-19	R4859929
Conductivity	325		1.0	umhos/cm		04-OCT-19	R4860614
Fecal Coliforms, 1:10 dilution by QT97 Fecal Coliforms	>24200		10	MPN/100mL		03-OCT-19	R4859135
Hardness Calculated Hardness (as CaCO3)	90.1	HTC	0.20	mg/L		16-OCT-19	
Mercury Total Mercury (Hg)-Total	0.0000050		0.0000050	mg/L	10-OCT-19	10-OCT-19	R4866644
Nitrate in Water by IC Nitrate (as N)	0.029		0.020	mg/L		04-OCT-19	R4859929
Nitrate+Nitrite Nitrate and Nitrite as N	<0.070		0.070	mg/L		08-OCT-19	111000020
Nitrite in Water by IC							
Nitrite (as N) Oil & Grease - Gravimetric	<0.010		0.010	mg/L		04-OCT-19	R4859929
Oil and Grease Phenol (4AAP)	41.1		5.0	mg/L		11-OCT-19	R4867520
Phenols (4AAP)	0.0065		0.0010	mg/L		07-OCT-19	R4861668
Phosphorus, Total Phosphorus (P)-Total	1.05		0.0060	mg/L		08-OCT-19	R4861381
Sulfate in Water by IC Sulfate (SO4)	24.9		0.30	mg/L		04-OCT-19	R4859929
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.128		0.0030	mg/L	10-OCT-19	11-OCT-19	R4869129
Arsenic (As)-Total	0.00114		0.0030	mg/L	10-OCT-19	11-OCT-19	R4869129
Cadmium (Cd)-Total	0.000174		0.000000	mg/L	10-OCT-19	11-OCT-19	R4869129
Calcium (Ca)-Total	27.1		0.050	mg/L	10-OCT-19	11-OCT-19	R4869129
Chromium (Cr)-Total	0.00086		0.00010	mg/L	10-OCT-19	11-OCT-19	R4869129
Cobalt (Co)-Total	0.00035		0.00010	mg/L	10-OCT-19	11-OCT-19	R4869129
Copper (Cu)-Total	0.0843		0.00050	mg/L	10-OCT-19	11-OCT-19	R4869129
Iron (Fe)-Total	0.420		0.010	mg/L	10-OCT-19	11-OCT-19	R4869129
Lead (Pb)-Total	0.00318		0.000050	mg/L	10-OCT-19	11-OCT-19	R4869129
Magnesium (Mg)-Total	5.47		0.0050	mg/L	10-OCT-19	11-OCT-19	R4869129
Manganese (Mn)-Total	0.0478		0.00010	mg/L	10-OCT-19	11-OCT-19	R4869129
Nickel (Ni)-Total	0.00301		0.00050	mg/L	10-OCT-19	11-OCT-19	R4869129
Potassium (K)-Total	5.39		0.050	mg/L	10-OCT-19	11-OCT-19	R4869129
Sodium (Na)-Total	24.8		0.050	mg/L	10-OCT-19	11-OCT-19	R4869129
Zinc (Zn)-Total	0.0483		0.0030	mg/L	10-OCT-19	11-OCT-19	R4869129
Total Organic Carbon by Combustion							

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

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2359342-1 WWTP							
Sampled By: CLIENT on 02-OCT-19 @ 14:00 Matrix: WASTE WATER							
Total Organic Carbon by Combustion Total Organic Carbon	44.5		0.50	mg/L		09-OCT-19	R4866495
Total Suspended Solids Total Suspended Solids	83.2		2.0	mg/L		09-OCT-19	R4865716
pH pH	6.88		0.10	pH units		04-OCT-19	R4860614

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

Reference Information

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Sample Parameter Qualifier Key:

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

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALS Test Code	Widuix	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- Water Alkalinity, Bicarbonate CALCULATION WP

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.

3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.

2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.

3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.

4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

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

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to

capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

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

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

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents.

Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

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

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

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

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

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

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

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

nitroprusside and measured colourmetrically.

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

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

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

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

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

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

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

Grease is determined from the weight of the residue in the vial.

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

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

after persulphate digestion of the sample.

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

PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily

separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

PH-WP Water pH APHA 4500H

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

reference electrode.

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

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

red complex which is measured colorimetrically.

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

L2359342 CONTD....

PAGE 7 of 7 Version: FINAL

Reference Information

Test Method References:

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

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-

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.



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Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R4860614 WG3183951-9 LCS Alkalinity, Total (as CaC	O3)		99.4		%		85-115	04-OCT-19
WG3183951-6 MB Alkalinity, Total (as CaC	O3)		<1.0		mg/L		1	04-OCT-19
BOD-CBOD-WP	Water							
Batch R4865393 WG3181736-7 LCS BOD Carbonaceous			108.0		%		85-115	04-OCT-19
WG3181736-6 MB BOD Carbonaceous			<2.0		mg/L		2	04-OCT-19
BOD-WP	Water							
Batch R4865393 WG3181736-7 LCS Biochemical Oxygen De	mand		108.3		%		85-115	04-OCT-19
WG3181736-6 MB Biochemical Oxygen De			<2.0		mg/L		2	04-OCT-19
BTEXS+F1-HSMS-WP	Water							
Batch R4873346								
WG3188057-17 LCS F1 (C6-C10)			105.2		%		70-130	17-OCT-19
WG3188057-8 LCS Benzene			86.2		%		70-130	17-OCT-19
Toluene			89.7		%		70-130	17-OCT-19
Ethyl benzene			95.0		%		70-130	17-OCT-19
o-Xylene			96.7		%		70-130	17-OCT-19
m+p-Xylenes			88.4		%		70-130	17-OCT-19
WG3188057-7 MB Benzene			<0.00050	1	mg/L		0.0005	17-OCT-19
Toluene			<0.0010		mg/L		0.001	17-OCT-19
Ethyl benzene			<0.00050)	mg/L		0.0005	17-OCT-19
o-Xylene			<0.00050)	mg/L		0.0005	17-OCT-19
m+p-Xylenes			<0.00040)	mg/L		0.0004	17-OCT-19
F1 (C6-C10)			<0.10		mg/L		0.1	17-OCT-19
Surrogate: 4-Bromofluor	obenzene (SS)		91.0		%		70-130	17-OCT-19



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Report Date: 18-OCT-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
Batch R4866495								
WG3187943-2 LCS Total Organic Carbon			102.2		%		80-120	09-OCT-19
WG3187943-1 MB Total Organic Carbon			<0.50		mg/L		0.5	09-OCT-19
CL-IC-N-WP	Water							
Batch R4859929								
WG3182278-2 LCS Chloride (Cl)			100.2		%		90-110	04-OCT-19
WG3182278-1 MB Chloride (CI)			<0.50		mg/L		0.5	04-OCT-19
EC-WP	Water							
Batch R4860614								
WG3183951-8 LCS								
Conductivity			99.3		%		90-110	04-OCT-19
WG3183951-6 MB Conductivity			<1.0		umhos/cm		1	04-OCT-19
F2-F4-FID-WP	Water							
Batch R4871231								
WG3183711-2 LCS								
F2 (C10-C16)			100.6		%		70-130	09-OCT-19
F3 (C16-C34)			92.9		%		70-130	09-OCT-19
F4 (C34-C50)			93.8		%		70-130	09-OCT-19
WG3183711-1 MB			<0.10		ma/l		0.4	00 OOT 40
F2 (C10-C16)			<0.10		mg/L		0.1	09-OCT-19
F3 (C16-C34)					mg/L		0.25	09-OCT-19
F4 (C34-C50)			<0.25		mg/L		0.25	09-OCT-19
Surrogate: 2-Bromober			116.1		%		60-140	09-OCT-19
FC10-QT97-WP	Water							
Batch R4859135								
WG3181337-1 MB Fecal Coliforms			<1		MPN/100mL		1	03-OCT-19
HG-T-CVAA-WP	Water							
Batch R4866644								
WG3189293-2 LCS Mercury (Hg)-Total			92.0		%		80-120	10-OCT-19
WG3189293-1 MB								



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HG-T-CVAA-WP	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
WG3189293-1 MB Mercury (Hg)-Total colomotosc mg/L 0.000005 10-OCT-19 MET-T-CCMS-WP Water Batch R4869129 R4869129 WG31877222 LCS Aluminum (Al)-Total 103.7 % 80-120 11-OCT-19 Cadmium (C9)-Total 103.1 % 80-120 11-OCT-19 Calcium (C9)-Total 104.8 % 80-120 11-OCT-19 Cobalt (Co)-Total 104.8 % 80-120 11-OCT-19 Cobalt (Co)-Total 104.9 % 80-120 11-OCT-19 Iron (Fe)-Total 98.6 % 80-120 11-OCT-19 Iron (Fe)-Total 107.3 % 80-120 11-OCT-19 Magnasium (Mg)-Total 102.9 % 80-120 11-OCT-19 Magnasium (Mg)-Total 102.5 % 80-120 11-OCT-19 Nickel (Ni)-Total 104.2 % 80-120	HG-T-CVAA-WP	Water							
Nation N	WG3189293-1 MB			<0.00000	5 C	mg/L		0.000005	10-OCT-19
NG3187722-2 LCS Aluminum (Al)-Total 103.7	MET-T-CCMS-WP	Water							
Aluminum (Al)-Total Arsenic (As)-Total 103.1 Arsenic (As)-Total 104.2 Assenic (As)-Total 104.2 Assenic (As)-Total 104.2 Assenic (As)-Total 104.2 Bo-120 Calcium (CG)-Total 104.8 Bo-120 11-OCT-19 Chromium (Cr)-Total 104.8 Bo-120 11-OCT-19 Chromium (Cr)-Total 104.8 Bo-120 11-OCT-19 Cobait (Co)-Total 104.8 Bo-120 11-OCT-19 Coper (Cu)-Total 104.9 Bo-120 I1-OCT-19 Iron (Fe)-Total Inon	Batch R4869129								
Cadmium (Cd)-Total 104.2 % 80-120 11-OCT-19 Calcium (Ca)-Total 103.1 % 80-120 11-OCT-19 Chromium (Cr)-Total 104.8 % 80-120 11-OCT-19 Cobalt (Co)-Total 103.1 % 80-120 11-OCT-19 Copper (Cu)-Total 104.9 % 80-120 11-OCT-19 Iron (Fe)-Total 98.6 % 80-120 11-OCT-19 Lead (Pb)-Total 107.3 % 80-120 11-OCT-19 Magnesium (Mg)-Total 109.6 % 80-120 11-OCT-19 Mickel (Ni)-Total 102.9 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.5 % 80-120 11-OCT-19 Potassium (K)-Total 102.6 % 80-120 11-OCT-19 Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG318772-1 MB Aluminum (Al)-Total 0.0000 m				103.7		%		80-120	11-OCT-19
Calcium (Ca)-Total 103.1 % 80-120 11-OCT-19 Chromium (Cr)-Total 104.8 % 80-120 11-OCT-19 Cobalt (Co)-Total 103.1 % 80-120 11-OCT-19 Copper (Cu)-Total 104.9 % 80-120 11-OCT-19 Iron (Fe)-Total 98.6 % 80-120 11-OCT-19 Lead (Pb)-Total 107.3 % 80-120 11-OCT-19 Magnesium (Mg)-Total 109.6 % 80-120 11-OCT-19 Manganese (Mn)-Total 102.9 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.5 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.6 % 80-120 11-OCT-19 Sodium (Na)-Total 104.5 % 80-120 11-OCT-19 VG3187722-1 MB Aluminum (Al)-Total 0.003 mg/L 0.003 11-OCT-19 WG3187722-1 MB Aluminum (Al)-Total 0.00000 mg/L 0.0001 11-OCT-19 <td< td=""><td>Arsenic (As)-Total</td><td></td><td></td><td>103.1</td><td></td><td>%</td><td></td><td>80-120</td><td>11-OCT-19</td></td<>	Arsenic (As)-Total			103.1		%		80-120	11-OCT-19
Chromium (Cr)-Total 104.8 % 80-120 11-OCT-19 Cobalt (Co)-Total 103.1 % 80-120 11-OCT-19 Copper (Cu)-Total 104.9 % 80-120 11-OCT-19 Iron (Fe)-Total 98.6 % 80-120 11-OCT-19 Lead (Pb)-Total 107.3 % 80-120 11-OCT-19 Magnesium (Mg)-Total 109.6 % 80-120 11-OCT-19 Manganese (Mn)-Total 102.9 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.5 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.6 % 80-120 11-OCT-19 Potassium (K)-Total 104.2 % 80-120 11-OCT-19 Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB Maluminum (Al)-Total <0.0030	Cadmium (Cd)-Total			104.2		%		80-120	11-OCT-19
Cobalt (Co)-Total 103.1 % 80-120 11-OCT-19 Copper (Cu)-Total 104.9 % 80-120 11-OCT-19 Iron (Fe)-Total 98.6 % 80-120 11-OCT-19 Lead (Pb)-Total 107.3 % 80-120 11-OCT-19 Magnesium (Mg)-Total 109.6 % 80-120 11-OCT-19 Manganese (Mn)-Total 102.9 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.5 % 80-120 11-OCT-19 Potassium (K)-Total 102.6 % 80-120 11-OCT-19 Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Sodium (Na)-Total 104.5 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB Aluminum (Al)-Total <0.0030	Calcium (Ca)-Total			103.1		%		80-120	11-OCT-19
Copper (Cu)-Total 104.9 % 80-120 11-OCT-19 Iron (Fe)-Total 98.6 % 80-120 11-OCT-19 Lead (Pb)-Total 107.3 % 80-120 11-OCT-19 Magnesium (Mg)-Total 109.6 % 80-120 11-OCT-19 Manganese (Mn)-Total 102.9 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.5 % 80-120 11-OCT-19 Potassium (K)-Total 102.6 % 80-120 11-OCT-19 Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Sodium (Na)-Total 104.5 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB Aluminum (Al)-Total <0.0030	Chromium (Cr)-Total			104.8		%		80-120	11-OCT-19
Iron (Fe)-Total	Cobalt (Co)-Total			103.1		%		80-120	11-OCT-19
Lead (Pb)-Total 107.3 % 80-120 11-OCT-19 Magnesium (Mg)-Total 109.6 % 80-120 11-OCT-19 Manganese (Mn)-Total 102.9 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.5 % 80-120 11-OCT-19 Potassium (K)-Total 102.6 % 80-120 11-OCT-19 Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB Name (Al)-Total 0.0030 mg/L 0.003 11-OCT-19 WG3187722-1 MB Name (Al)-Total 0.0030 mg/L 0.003 11-OCT-19 WG3187722-1 MB Name (Al)-Total 0.0001 mg/L 0.003 11-OCT-19 Aluminum (Al)-Total <0.0001	Copper (Cu)-Total			104.9		%		80-120	11-OCT-19
Magnesium (Mg)-Total 109.6 % 80-120 11-OCT-19 Manganese (Mn)-Total 102.9 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.5 % 80-120 11-OCT-19 Potassium (K)-Total 102.6 % 80-120 11-OCT-19 Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB MB MS 80-120 11-OCT-19 WG3187722-1 MB MB Nasenic (As)-Total 0.0030 mg/L 0.003 11-OCT-19 VG3187722-1 MB Aluminum (A)-Total <0.0001	Iron (Fe)-Total			98.6		%		80-120	11-OCT-19
Manganese (Mn)-Total 102.9 % 80-120 11-OCT-19 Nickel (Ni)-Total 102.5 % 80-120 11-OCT-19 Potassium (K)-Total 102.6 % 80-120 11-OCT-19 Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB MB Maluminum (Al)-Total <0.0030	Lead (Pb)-Total			107.3		%		80-120	11-OCT-19
Nickel (Ni)-Total 102.5 % 80-120 11-OCT-19 Potassium (K)-Total 102.6 % 80-120 11-OCT-19 Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB Aluminum (Al)-Total < 0.0030 mg/L 0.003 11-OCT-19 Arsenic (As)-Total < 0.00010 mg/L 0.0001 11-OCT-19 Cadmium (Cd)-Total < 0.000005C mg/L 0.00005 11-OCT-19 Calcium (Ca)-Total < 0.0050 mg/L 0.005 11-OCT-19 Chromium (Cr)-Total < 0.00010 mg/L 0.0001 11-OCT-19 Cobalt (Co)-Total < 0.00010 mg/L 0.0001 11-OCT-19 Copper (Cu)-Total < 0.00010 mg/L 0.0001 11-OCT-19 Copper (Cu)-Total < 0.00050 mg/L 0.0005 11-OCT-19 Iron (Fe)-Total < 0.00050 mg/L 0.0005 11-OCT-19 Lead (Pb)-Total < 0.00050 mg/L 0.0005 11-OCT-19 Magnesium (Mg)-Total < 0.00050 mg/L 0.0005 11-OCT-19 Magnese (Mn)-Total < 0.00050 mg/L 0.0005 11-OCT-19 Manganese (Mn)-Total < 0.00050 mg/L 0.0005 11-OCT-19 Nickel (Ni)-Total < 0.0005 mg/L 0.0005 11-OCT-19 Nickel (Ni)-Total < 0.0005 mg/L 0.0005 11-OCT-19 Nickel (Ni)-Total < 0.0005 mg/L 0.0005 11-OCT-19 Nickel (Ni)-Total < 0.0005 mg/L 0.0005 11-OCT-19 Nickel (Ni)-Total < 0.0005 mg/L 0.0005 11-OCT-19 Nickel (Ni)-Total < 0.0005 mg/L 0.0005 11-OCT-19	Magnesium (Mg)-Total			109.6		%		80-120	11-OCT-19
Potassium (K)-Total 102.6 % 80-120 11-OCT-19 Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB Aluminum (Al)-Total <0.0030	Manganese (Mn)-Total			102.9		%		80-120	11-OCT-19
Sodium (Na)-Total 104.2 % 80-120 11-OCT-19 Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB Aluminum (Al)-Total <0.0030	Nickel (Ni)-Total			102.5		%		80-120	11-OCT-19
Zinc (Zn)-Total 104.5 % 80-120 11-OCT-19 WG3187722-1 MB Aluminum (Al)-Total <0.0030	Potassium (K)-Total			102.6		%		80-120	11-OCT-19
WG3187722-1 MB Aluminum (Al)-Total <0.0030	Sodium (Na)-Total			104.2		%		80-120	11-OCT-19
Aluminum (Al)-Total <0.0030	Zinc (Zn)-Total			104.5		%		80-120	11-OCT-19
Arsenic (As)-Total <0.00010				<0.0030		ma/L		0.003	11-∩CT-19
Cadmium (Cd)-Total <0.000005C mg/L 0.000005 11-OCT-19 Calcium (Ca)-Total <0.050)	-			
Calcium (Ca)-Total <0.050						-			
Chromium (Cr)-Total <0.00010 mg/L 0.0001 11-OCT-19 Cobalt (Co)-Total <0.00010	` ,								
Cobalt (Co)-Total <0.00010	Chromium (Cr)-Total			<0.00010)	mg/L			
Copper (Cu)-Total <0.00050 mg/L 0.0005 11-OCT-19 Iron (Fe)-Total <0.010	Cobalt (Co)-Total			<0.00010	1	mg/L		0.0001	
Iron (Fe)-Total <0.010				<0.00050	1	-			
Lead (Pb)-Total <0.000050				<0.010					
Magnesium (Mg)-Total <0.0050	Lead (Pb)-Total			<0.00005	0	mg/L			
Manganese (Mn)-Total <0.00010	Magnesium (Mg)-Total			<0.0050				0.005	
Nickel (Ni)-Total <0.00050 mg/L 0.0005 11-OCT-19 Potassium (K)-Total <0.050	Manganese (Mn)-Total			<0.00010)	mg/L		0.0001	
Potassium (K)-Total <0.050 mg/L 0.05 11-OCT-19	Nickel (Ni)-Total			<0.00050)	mg/L		0.0005	
	Potassium (K)-Total			< 0.050		mg/L		0.05	
	Sodium (Na)-Total			< 0.050		mg/L			



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



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est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AH,PANH-WP	Water							
Batch R4867488								
WG3186197-2 LCS			100.0		0/		00.400	44 OOT 40
1-Methyl Naphthalene			122.2		%		60-130	11-OCT-19
2-Methyl Naphthalene			114.6		%		60-130	11-OCT-19
Acenaphthene			116.6		%		60-130	11-OCT-19
Acenaphthylene			98.4		%		60-130	11-OCT-19
Anthracene			77.8		%		60-130	11-OCT-19
Acridine			93.9		%		60-130	11-OCT-19
Benzo(a)anthracene			85.3		%		60-130	11-OCT-19
Benzo(a)pyrene			90.9		%		60-130	11-OCT-19
Benzo(b&j)fluoranthene			87.8		%		60-130	11-OCT-19
Benzo(g,h,i)perylene			105.4		%		60-130	11-OCT-19
Benzo(k)fluoranthene			108.5		%		60-130	11-OCT-19
Chrysene			103.9		%		60-130	11-OCT-19
Dibenzo(a,h)anthracene			111.2		%		60-130	11-OCT-19
Fluoranthene			119.2		%		60-130	11-OCT-19
Fluorene			99.3		%		60-130	11-OCT-19
Indeno(1,2,3-cd)pyrene			83.2		%		60-130	11-OCT-19
Naphthalene			121.2		%		50-130	11-OCT-19
Phenanthrene			117.0		%		60-130	11-OCT-19
Pyrene			117.0		%		60-130	11-OCT-19
Quinoline			105.8		%		60-130	11-OCT-19
WG3186197-1 MB								
1-Methyl Naphthalene			<0.000020)	mg/L		0.00002	11-OCT-19
2-Methyl Naphthalene			< 0.000020)	mg/L		0.00002	11-OCT-19
Acenaphthene			<0.000020)	mg/L		0.00002	11-OCT-19
Acenaphthylene			<0.000020)	mg/L		0.00002	11-OCT-19
Anthracene			<0.000010)	mg/L		0.00001	11-OCT-19
Acridine			<0.000020)	mg/L		0.00002	11-OCT-19
Benzo(a)anthracene			<0.000010)	mg/L		0.00001	11-OCT-19
Benzo(a)pyrene			<0.000005	6C	mg/L		0.000005	11-OCT-19
Benzo(b&j)fluoranthene			<0.000010)	mg/L		0.00001	11-OCT-19
Benzo(g,h,i)perylene			<0.000020)	mg/L		0.00002	11-OCT-19
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	11-OCT-19
Chrysene			<0.000020		mg/L		0.00002	11-OCT-19
Dibenzo(a,h)anthracene			<0.000025		mg/L		0.00002	11-OCT-19



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Fluorene	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MG3186197-1 MB	PAH,PANH-WP	Water							
Fluoranthene	Batch R486748	38							
Indeno(1,2,3-cd)pyrene				<0.000020)	mg/L		0.00002	11-OCT-19
Naphthalene	Fluorene			<0.000020)	mg/L		0.00002	11-OCT-19
Phenanthrene	Indeno(1,2,3-cd)pyrer	ne		<0.000010)	mg/L		0.00001	11-OCT-19
Pyrene	Naphthalene			<0.000050)	mg/L		0.00005	11-OCT-19
Quinolline	Phenanthrene			<0.000050)	mg/L		0.00005	11-OCT-19
Surrogate: Acenaphthene d10 109.0 % 60-130 11-OCT-19 Surrogate: Acridine d9 94.0 % 60-130 11-OCT-19 Surrogate: Chrysene d12 118.0 % 60-130 11-OCT-19 Surrogate: Naphthalene d8 116.4 % 50-130 11-OCT-19 Surrogate: Naphthalene d8 116.4 % 50-130 11-OCT-19 Surrogate: Naphthalene d8 116.4 % 50-130 11-OCT-19 Surrogate: Phenanthrene d10 117.6 % 60-130 11-OCT-19 PH-WP Water Batch R4860614 WG3183951-7 LCS pH 7.38 pH units 7.3-7.5 04-OCT-19 PHENOLS-4AAP-WT Water Batch R4861668 WG3183904-2 LCS Phenols (4AAP) 113.7 % 85-115 07-OCT-19 WG3183904-1 MB Phenols (4AAP) 40-0010 mg/L 0.001 07-OCT-19 SO4-IC-N-WP Water Batch R4859929 WG318278-2 LCS Sulfate (SO4) 101.5 % 90-110 04-OCT-19 WG3182278-1 MB Sulfate (SO4) 40-0010 mg/L 0.3 04-OCT-19 SOLIDS-TOTSUS-WP Water Batch R4859716 WG3185052-9 MB	Pyrene			<0.000010)	mg/L		0.00001	11-OCT-19
Surrogate: Acridine d9 94.0 % 60-130 11-OCT-19 Surrogate: Chrysene d12 118.0 % 60-130 11-OCT-19 Surrogate: Naphthalene d8 116.4 % 50-130 11-OCT-19 Surrogate: Naphthalene d8 116.4 % 50-130 11-OCT-19 Surrogate: Phenanthrene d10 117.6 % 60-130 11-OCT-19 PH-WP Water Batch R4860614 WG3183951-7 LCS pH 7.38 pH units 7.3-7.5 04-OCT-19 PHENOLS-4AAP-WT Water Batch R4861668 WG3183904-1 MB Phenols (4AAP) 113.7 % 85-115 07-OCT-19 WG3183904-1 MB Phenols (4AAP) 40.0010 mg/L 0.001 07-OCT-19 SO4-IC-N-WP Water Batch R4859929 WG3182278-2 LCS Sulfate (SO4) 101.5 % 90-110 04-OCT-19 WG3182278-1 MB Sulfate (SO4) 101.5 % 90-110 04-OCT-19 SOLIDS-TOTSUS-WP Water Batch R4865716 WG3185052-9 MB	Quinoline			<0.000020)	mg/L		0.00002	11-OCT-19
Surrogate: Chrysene d12 118.0 % 60-130 11-OCT-19 Surrogate: Naphthalene d8 116.4 % 50-130 11-OCT-19 Surrogate: Phenanthrene d10 117.6 % 60-130 11-OCT-19 Surrogate: Phenanthrene d10 117.6 % 60-130 11-OCT-19 PH-WP Water Batch R4860614 WG3183951-7 LCS pH 7.38 pH units 7.3-7.5 04-OCT-19 PHENOLS-4AAP-WT Water Batch R4861668 WG3183904-1 MB Phenols (4AAP) 113.7 % 85-115 07-OCT-19 WG3183904-1 MB Phenols (4AAP) 40-0010 mg/L 0.001 07-OCT-19 SO4-IC-N-WP Water Batch R4859929 WG3182278-1 MB Sulfate (SO4) 101.5 % 90-110 04-OCT-19 WG3182278-1 MB Sulfate (SO4) 40-0010 mg/L 0.3 04-OCT-19 SOLIDS-TOTSUS-WP Water Batch R4865716 WG3185052-10 LCS Total Suspended Solids 102.3 % 85-115 09-OCT-19 WG3185052-9 MB	Surrogate: Acenaphth	nene d10		109.0		%		60-130	11-OCT-19
Surrogate: Naphthalene d8 116.4 % 50-130 11-OCT-19 Surrogate: Phenanthrene d10 117.6 % 60-130 11-OCT-19 PH-WP Water Batch R4860614 WG3183951-7 LCS pH 7.38 pH units 7.3-7.5 04-OCT-19 PHENOLS-4AAP-WT Water Batch R4861668 WG3183904-2 LCS Phenols (4AAP) 113.7 % 85-115 07-OCT-19 WG3183904-1 MB Phenols (4AAP) 40-0010 mg/L 0.001 07-OCT-19 SO4-IC-N-WP Water Batch R4859929 WG3182278-2 LCS Sulfate (SO4) 101.5 % 90-110 04-OCT-19 WG3182278-1 MB Sulfate (SO4) 40-0010 mg/L 0.3 04-OCT-19 SOLIDS-TOTSUS-WP Water Batch R4865716 WG3185052-10 LCS Total Suspended Solids 102.3 % 85-115 09-OCT-19 WG3185052-9 MB	Surrogate: Acridine de	9		94.0		%		60-130	11-OCT-19
Surrogate: Phenanthrene d10 117.6 % 60-130 11-OCT-19 PH-WP Water Batch R4860614 WG3183951-7 LCS pH 7.38 pH units 7.3-7.5 04-OCT-19 PHENOLS-4AAP-WT Water Batch R4861668 WG3183904-2 LCS Phenols (4AAP) 113.7 % 85-115 07-OCT-19 WG3183904-1 MB Phenols (4AAP) 40.0010 mg/L 0.001 07-OCT-19 SO4-IC-N-WP Water Batch R4859929 WG3182278-2 LCS Sulfate (SO4) 101.5 % 90-110 04-OCT-19 WG3182278-1 MB Sulfate (SO4) 40.000 mg/L 0.3 04-OCT-19 SOLIDS-TOTSUS-WP Water Batch R4865716 WG3185052-10 LCS Total Suspended Solids 102.3 % 85-115 09-OCT-19 WG3185052-9 MB	Surrogate: Chrysene	d12		118.0		%		60-130	11-OCT-19
PH-WP R4860614 WG3183951-7 LCS PH PH PH PH PH PH PH P	Surrogate: Naphthale	ne d8		116.4		%		50-130	11-OCT-19
Batch R4860614 WG3183951-7 LCS PH 7.38 PH units 7.3-7.5 04-OCT-19 PHENOLS-4AAP-WT Water Batch R4861668 WG3183904-2 LCS Phenols (4AAP) 113.7 % 85-115 07-OCT-19 WG3183904-1 MB Phenols (4AAP) Water Wat	Surrogate: Phenanthr	ene d10		117.6		%		60-130	11-OCT-19
WG3183951-7 LCS pH 7.38 pH units 7.3-7.5 04-OCT-19 PHENOLS-4AAP-WT Water Batch R4861668 WG3183904-1 MB Phenols (4AAP) 1113.7 % 85-115 07-OCT-19 SO4-IC-N-WP Water Batch R4859929 WG3182278-1 CS Sulfrate (SO4) 101.5 % 90-110 04-OCT-19 WG3182278-1 MB Sulfrate (SO4) 40.30 mg/L 0.3 04-OCT-19 SOLIDS-TOTSUS-WP Water Batch R4865716 WG3185052-10 LCS Total Suspended Solids 102.3 % 85-115 99-OCT-19 WG3185052-9 MB	PH-WP	Water							
Batch R4861668 WG3183904-2 Phenols (4AAP) LCS Phenols (4AAP) 113.7 % 85-115 07-OCT-19 WG3183904-1 Phenols (4AAP) MB Phenols (4AAP)	WG3183951-7 LCS			7.38		pH units		7.3-7.5	04-OCT-19
Phenols (4AAP)	Batch R486166	88							
Phenols (4AAP) Vater Vat		•		113.7		%		85-115	07-OCT-19
Batch R4859929 WG3182278-2 LCS LCS Sulfate (SO4) 101.5 % 90-110 04-OCT-19 WG3182278-1 MB MB Column (SO4) SOLIDS-TOTSUS-WP Water Batch R4865716 WG3185052-10 LCS Total Suspended Solids 102.3 % 85-115 09-OCT-19 WG3185052-9 MB MB 102.3 % 85-115 09-OCT-19				<0.0010		mg/L		0.001	07-OCT-19
WG3182278-2 LCS Sulfate (SO4) 101.5 % 90-110 04-OCT-19 WG3182278-1 MB Sulfate (SO4) <0.30	SO4-IC-N-WP	Water							
Sulfate (SO4) 101.5 % 90-110 04-OCT-19 WG3182278-1 MB <0.30	Batch R485992	29							
Sulfate (SO4) 0.3 04-OCT-19 SOLIDS-TOTSUS-WP Water Batch R4865716 WG3185052-10 LCS Total Suspended Solids 102.3 % 85-115 09-OCT-19 WG3185052-9 MB		;		101.5		%		90-110	04-OCT-19
Batch R4865716 WG3185052-10 LCS Total Suspended Solids 102.3 % 85-115 09-OCT-19 WG3185052-9 MB				<0.30		mg/L		0.3	04-OCT-19
WG3185052-10 LCS Total Suspended Solids 102.3 % 85-115 09-OCT-19 WG3185052-9 MB	SOLIDS-TOTSUS-WP	Water							
Total Suspended Solids 102.3 % 85-115 09-OCT-19 WG3185052-9 MB									
				102.3		%		85-115	09-OCT-19
	WG3185052-9 MB Total Suspended Soli	ds		<2.0		mg/L		2	09-OCT-19

Report Date: 18-OCT-19 Workorder: L2359342 Page 7 of 8

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2359342 Report Date: 18-OCT-19 Page 8 of 8

Hold Time Exceedances:

	Sample						
ALS Product Description	ID [']	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	02-OCT-19 14:00	04-OCT-19 12:00	0.25	46	hours	EHTR-FM
Volatile Organic Compounds							
BTX plus F1 by GCMS							
	1	02-OCT-19 14:00	17-OCT-19 18:12	14	15	days	EHT
Legend & Qualifier Definitions							

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2359342 were received on 03-OCT-19 15:00.

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

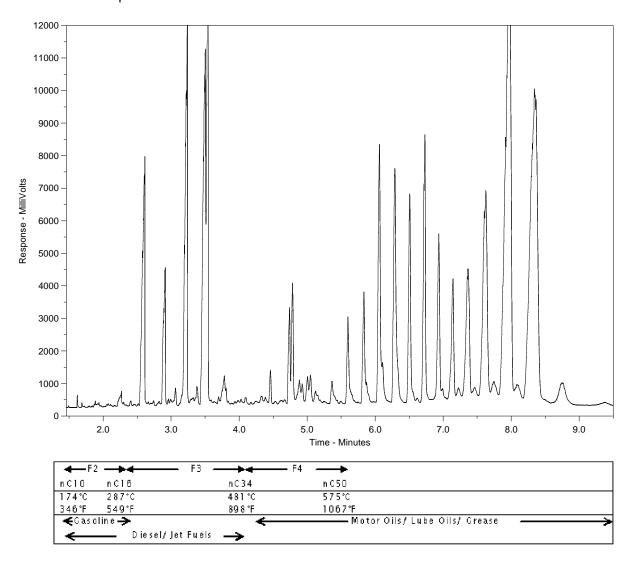
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



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



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

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

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

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



Chain of Custody (COC) / Analytical Request Form

12359342-COFC

coc Number: 17 - 750256

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Report To	Contact and company name below will appe	ear on the final report		Report Forma	t		1s	elect Serv	ice Level	Below - Co	tact your	AM to confirm	all E&P T	ATs (sur	charges m	ay apply)	
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Contact:	Simon Dotron		Quality Control (QC) Report with Rep	oort YES	NO	토 4 day [P4-20%]). []			
Phone:	867-645-815	<u> </u>	Compare Resu	ults to Criteria on Report -	provide details below if	box checked	Same Day, Weekend or Statutory holiday [E2 -200%						·				
	Company address below will appear on the fina	al report	Select Distribution	on: EMAIL	MAJL	FAX	2 day [P2-50%] [Laboratory opening fees may apply)]										
Street:			Email 1 or Fax				Date	and Time	Required fo	r all E&P TAT	8:		dd-n	mmm-yy	hh:mm		
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ALS Sample # (lab use only)	•	n and/or Coordinates appear on the report)	·• · · · · · · · · · · · · · · · · · ·	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMB							·_		SAM	SUSPEC
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Drinkir	ng Water (DW) Samples¹ (client use)	Special Instructions		add on report by clic ctronic COC only)	cking on the drop-do	own list below	F	•				AS RECEIV		ise only			_
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	YES NO	١, ,					Ice Packs Cooling In		ice Cubes	Cu	stody seal	intact 1	85 L	_	180		ш
	human consumption/ use?	\$5F,	3 (80)	and	14515	A	Obbining in	_		MPERATURE	S °C		FINAL	COOLER:	TEMPERATU	IRES °C	
Į į	YES V NO	**	· · · · · · · · · · · · · · · · · · ·		17 - 7	X)	1		T	2311070			in water	- SOCER		-	
 	SHIPMENT RELEASE (client use)		 -	INITIAL SHIPME	NT RECEPTION (Ia	ih uga anbrì	14.7	4		ALA	AL SHIPA	MENT RECEI	PTION (12	h use o			_
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REFER TO BACK	PAGE FOR ALS LOCATIONS AND SAMPLING IN	FORMATION %		WH	TE - LABORATORY	COPY YELLO	W - CLIENT	COPY		V		001	03	ZU19		JUNI	NE 2018 FRON

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

ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix W



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 01-NOV-19

Report Date: 14-NOV-19 13:48 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2375853

Project P.O. #: NOT SUBMITTED

Job Reference: RANKIN INLET WWTP - MONTHLY

C of C Numbers: Legal Site Desc:

Hua Wo

Chemistry Laboratory Manager

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

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



L2375853 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375853-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 31-OCT-19 @ 13:30							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050	VOCHS	0.00050	mg/L		06-NOV-19	R4900907
Toluene	0.0010	VOCHS	0.0010	mg/L		06-NOV-19	R4900907
Ethyl benzene	<0.00050	VOCHS	0.00050	mg/L		06-NOV-19	R4900907
o-Xylene	<0.00050	VOCHS	0.00050	mg/L		06-NOV-19	R4900907
m+p-Xylenes	<0.00040	VOCHS	0.00040	mg/L		06-NOV-19	R4900907
F1 (C6-C10)	<0.10	VOCHS	0.10	mg/L		06-NOV-19	R4900907
Surrogate: 4-Bromofluorobenzene (SS)	83.0		70-130	%		06-NOV-19	R4900907
CCME PHC F2-F4 in Water	0.54		0.40		05 NOV 40	00 NOV 40	D 4000000
F2 (C10-C16) F3 (C16-C34)	0.51		0.10	mg/L	05-NOV-19	06-NOV-19	R4900866
F4 (C34-C50)	12.9 4.23		0.25 0.25	mg/L mg/L	05-NOV-19 05-NOV-19	06-NOV-19 06-NOV-19	R4900866 R4900866
Surrogate: 2-Bromobenzotrifluoride	83.5		60-140	%	05-NOV-19	06-NOV-19	R4900866
CCME Total Hydrocarbons	00.0		00-140	/0	30 110 1-13	30 140 V-18	114500000
F1-BTEX	<0.10		0.10	mg/L		14-NOV-19	
F2-Naphth	0.51		0.10	mg/L		14-NOV-19	
F3-PAH	12.9		0.25	mg/L		14-NOV-19	
Total Hydrocarbons (C6-C50)	17.7		0.38	mg/L		14-NOV-19	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		13-NOV-19	
Miscellaneous Parameters							
Fluoride (F)	0.070		0.020	mg/L		02-NOV-19	R4898819
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200		10	MPN/100mL		01-NOV-19	R4896501
Escherichia Coli	>24200		10	MPN/100mL		01-NOV-19	R4896501
Polyaromatic Hydrocarbons (PAHs) 1-Methyl Naphthalene	0.000095		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
2-Methyl Naphthalene	0.000093		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Acenaphthene	0.000027	EMPC	0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Acenaphthylene	<0.00020		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Anthracene	<0.000010		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Acridine	<0.000020		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(a)anthracene	<0.000010		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(a)pyrene	0.0000323		0.0000050	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Chrysene	<0.000020		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Dibenzo(a,h)anthracene Fluoranthene	<0.000050		0.0000050		07-NOV-19 07-NOV-19	14-NOV-19	R4906524
Fluorene	<0.000020 0.000047	EMPC	0.000020 0.000020	mg/L mg/L	07-NOV-19 07-NOV-19	14-NOV-19 14-NOV-19	R4906524 R4906524
Indeno(1,2,3-cd)pyrene	0.00047		0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
Naphthalene	0.000233		0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Phenanthrene	<0.00050		0.000050	mg/L	07-NOV-19	14-NOV-19	R4906524
Pyrene	0.000013	EMPC	0.000010	mg/L	07-NOV-19	14-NOV-19	R4906524
Quinoline	0.000036	EMPC	0.000020	mg/L	07-NOV-19	14-NOV-19	R4906524
B(a)P Total Potency Equivalent	0.000060		0.000030	mg/L	07-NOV-19	14-NOV-19	R4906524
Surrogate: Acenaphthene d10	109.9		60-130	%	07-NOV-19	14-NOV-19	R4906524
Surrogate: Acridine d9	112.1		60-130	%	07-NOV-19	14-NOV-19	R4906524
Surrogate: Chrysene d12	112.4		60-130	%	07-NOV-19	14-NOV-19	R4906524
Surrogate: Naphthalene d8	113.2		50-130	%	07-NOV-19	14-NOV-19	R4906524
Surrogate: Phenanthrene d10	117.6		60-130	%	07-NOV-19	14-NOV-19	R4906524

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

L2375853 CONTD.... PAGE 3 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375853-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 31-OCT-19 @ 13:30							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	137		1.2	mg/L		04-NOV-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		04-NOV-19	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		04-NOV-19	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	112		1.0	mg/L		01-NOV-19	R4896808
Ammonia by colour	112		1.0	mg/L		01-100-15	114030000
Ammonia, Total (as N)	9.05		0.50	mg/L		04-NOV-19	R4898963
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	195		50	mg/L		01-NOV-19	R4901810
Carbonaceous BOD							
BOD Carbonaceous Chloride in Water by IC	158		50	mg/L		01-NOV-19	R4901810
Chloride (CI)	54.5		0.50	mg/L		02-NOV-19	R4898819
Conductivity Conductivity	463		1.0	umhos/cm		01-NOV-19	R4896808
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	>24200		10	MPN/100mL		01-NOV-19	R4896510
Hardness Calculated							
Hardness (as CaCO3)	473	HTC	0.20	mg/L		08-NOV-19	
Mercury Total Mercury (Hg)-Total	0.0000090		0.0000050	mg/L	05-NOV-19	06-NOV-19	R4901178
Nitrate in Water by IC Nitrate (as N)	<0.020		0.020	mg/L		02-NOV-19	R4898819
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		05-NOV-19	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		02-NOV-19	R4898819
Oil & Grease - Gravimetric							
Oil and Grease	35.7		5.0	mg/L		08-NOV-19	R4903191
Phenol (4AAP)	0.0450	DIM	0.0050			00 NOV 40	D 4004004
Phenols (4AAP)	0.0153	DLM	0.0050	mg/L		06-NOV-19	R4901001
Phosphorus, Total Phosphorus (P)-Total	3.28		0.015	mg/L		05-NOV-19	R4898746
Sulfate in Water by IC							
Sulfate (SO4)	27.0		0.30	mg/L		02-NOV-19	R4898819
Total Metals in Water by CRC ICPMS	0.000		0.0000	c- /I	07 NOV 40	07 NOV 40	D 40000 1 1
Aluminum (Al)-Total	<0.0030		0.0030	mg/L	07-NOV-19	07-NOV-19	R4903044
Antimony (Sb)-Total Arsenic (As)-Total	<0.00010 0.00077		0.00010 0.00010	mg/L mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044 R4903044
Barium (Ba)-Total	0.00077		0.00010	mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044 R4903044
Beryllium (Be)-Total	<0.0380		0.00010	mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044 R4903044
Bismuth (Bi)-Total	<0.00010		0.00010	mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044
Boron (B)-Total	0.139		0.000050	mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044
Cadmium (Cd)-Total	<0.000050		0.000050	mg/L	07-NOV-19	07-NOV-19	R4903044
Calcium (Ca)-Total	70.9		0.00000	mg/L	07-NOV-19	07-NOV-19	R4903044
Cesium (Cs)-Total	0.000010		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Chromium (Cr)-Total	0.00010		0.000010	mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044
Cobalt (Co)-Total	0.00014		0.00010	mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044
Copper (Cu)-Total	0.00022		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Support (Ou) Total	0.0271		0.00000	mg/L	J/ 110 V - 13	37-140V-13	114303044

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2375853-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 31-OCT-19 @ 13:30							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS Iron (Fe)-Total	0.191		0.010	mg/L	07-NOV-19	07-NOV-19	R4903044
Lead (Pb)-Total	0.000198		0.00050	mg/L	07-NOV-19	07-NOV-19	R4903044
Lithium (Li)-Total	0.0265		0.0010	mg/L	07-NOV-19	07-NOV-19	R4903044
Magnesium (Mg)-Total	71.8		0.0050	mg/L	07-NOV-19	07-NOV-19	R4903044
Manganese (Mn)-Total	0.00839		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Molybdenum (Mo)-Total	0.000434		0.000050	mg/L	07-NOV-19	07-NOV-19	R4903044
Nickel (Ni)-Total	0.00085		0.00050	mg/L	07-NOV-19	07-NOV-19	R4903044
Potassium (K)-Total	5.68		0.050	mg/L	07-NOV-19	07-NOV-19	R4903044
Phosphorus (P)-Total	<0.030		0.030	mg/L	07-NOV-19	07-NOV-19	R4903044
Rubidium (Rb)-Total	0.00343		0.00020	mg/L	07-NOV-19	07-NOV-19	R4903044
Selenium (Se)-Total	<0.000050		0.000050	mg/L	07-NOV-19	07-NOV-19	R4903044
Silicon (Si)-Total	5.71		0.10	mg/L	07-NOV-19	07-NOV-19	R4903044
Silver (Ag)-Total	<0.000010		0.000010	mg/L	07-NOV-19	07-NOV-19	R4903044
Sodium (Na)-Total	22.0		0.050	mg/L	07-NOV-19	07-NOV-19	R4903044
Strontium (Sr)-Total	0.252		0.00020	mg/L	07-NOV-19	07-NOV-19	R4903044
Sulfur (S)-Total Tellurium (Te)-Total	20.6		0.50	mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044
Thallium (TI)-Total	<0.00020 <0.000010		0.00020 0.000010	mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044 R4903044
Thorium (Th)-Total	<0.00010		0.000010	mg/L mg/L	07-NOV-19 07-NOV-19	07-NOV-19 07-NOV-19	R4903044 R4903044
Tin (Sn)-Total	<0.00010		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Titanium (Ti)-Total	<0.00010		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Tungsten (W)-Total	<0.00030		0.00030	mg/L	07-NOV-19	07-NOV-19	R4903044
Uranium (U)-Total	0.000283		0.00010	mg/L	07-NOV-19	07-NOV-19	R4903044
Vanadium (V)-Total	<0.00050		0.00050	mg/L	07-NOV-19	07-NOV-19	R4903044
Zinc (Zn)-Total	0.0052		0.0030	mg/L	07-NOV-19	07-NOV-19	R4903044
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	07-NOV-19	07-NOV-19	R4903044
Total Organic Carbon by Combustion Total Organic Carbon	86.7		5.0	mg/L		04-NOV-19	R4898931
Total Suspended Solids				_			
Total Suspended Solids	209		3.8	mg/L		06-NOV-19	R4902207
pH	7.00		0.10	n∐ unite		01-NOV-19	D4906909
pH	7.00		0.10	pH units		01-11001-19	R4896808
	<u> </u>					<u> </u>	

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

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Reference Information

Sample Parameter Qualifier Key:

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

Test Method References:

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

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

ALK-HCO3HCO3-CALC-Alkalinity, Bicarbonate CALCULATION Water

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 **CALCULATION** Water Alkalinity, Hydroxide

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.

Biochemical Oxygen Demand (BOD)

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.

BTFXS+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 Total Organic Carbon by Combustion **APHA 5310 B-WP** Water

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 APHA 2510 Conductivity Screen (Internal Use Only) 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

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Test Method References:

ALS Test Code Matrix Test Description Method Reference**

the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

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

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

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

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

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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Reference Information

Test Method References:

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

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 Phenol (4AAP) **EPA 9066** Water

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 Total Suspended Solids APHA 2540 D (modified) Water Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.

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

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

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

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.



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Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

C-TOC-HTC-WP

Water

Test	Matrix	Reference	Result Qualific	er Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water						
Batch R48	96808						
WG3209636-14			100.8	%		05.445	04 NOV 40
Alkalinity, Total (a			100.8	70		85-115	01-NOV-19
WG3209636-11 Alkalinity, Total (a			<1.0	mg/L		1	01-NOV-19
BOD-CBOD-WP	Water			3		·	01110110
	01810						
WG3208063-12							
BOD Carbonaced			104.3	%		85-115	01-NOV-19
WG3208063-11	MB						
BOD Carbonaced	ous		<2.0	mg/L		2	01-NOV-19
BOD-WP	Water						
Batch R49	01810						
WG3208063-13		L2375853-1					
Biochemical Oxy		195	240	mg/L	19	20	01-NOV-19
WG3208063-12 Biochemical Oxyg			111.8	%		85-115	04 NOV 40
WG3208063-11			111.0	70		00-110	01-NOV-19
Biochemical Oxy			<2.0	mg/L		2	01-NOV-19
BTEXS+F1-HSMS-W	/P Water						
	00907						
-	LCS						
Benzene			93.5	%		70-130	05-NOV-19
Toluene			93.0	%		70-130	05-NOV-19
Ethyl benzene			90.2	%		70-130	05-NOV-19
o-Xylene			92.6	%		70-130	05-NOV-19
m+p-Xylenes			93.3	%		70-130	05-NOV-19
	LCS		04.0	0/			
F1 (C6-C10)			94.9	%		70-130	05-NOV-19
WG3211351-1 Benzene	MB		<0.00050	mg/L		0.0005	05-NOV-19
Toluene			<0.0010	mg/L		0.0003	05-NOV-19 05-NOV-19
Ethyl benzene			<0.00050	mg/L		0.001	05-NOV-19 05-NOV-19
o-Xylene			<0.00050	mg/L		0.0005	05-NOV-19 05-NOV-19
-			<0.00040	mg/L		0.0005	
m+n-Xvlenes			~0.00040	1119/ =		0.0004	05-NOV-19
m+p-Xylenes F1 (C6-C10)			<0.10	mg/L		0.1	05-NOV-19



Workorder: L2375853

Report Date: 14-NOV-19

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Гest	Matrix	Reference	Result Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water						
Batch R48989	31						
WG3210721-2 LCS			04.7	0.4			
Total Organic Carbor			91.7	%		80-120	04-NOV-19
WG3210721-1 MB Total Organic Carbor			<0.50	mg/L		0.5	04-NOV-19
CL-IC-N-WP	Water						
Batch R48988	19						
WG3208962-2 LCS Chloride (CI)	5		99.6	%		90-110	02-NOV-19
WG3208962-1 MB						00 110	02110110
Chloride (CI)			<0.50	mg/L		0.5	02-NOV-19
EC-WP	Water						
Batch R48968	08						
WG3209636-13 LCS Conductivity	8		98.9	%		90-110	01-NOV-19
WG3209636-11 MB							
Conductivity			<1.0	umhos/cm		1	01-NOV-19
F-IC-N-WP	Water						
Batch R48988	19						
WG3208962-2 LCS	6		400.0	0/			
Fluoride (F)			102.3	%		90-110	02-NOV-19
WG3208962-1 MB Fluoride (F)			<0.020	mg/L		0.02	02-NOV-19
F2-F4-FID-WP	Water			Ü			02.101.10
Batch R49008							
WG3211137-2 LCS							
F2 (C10-C16)			106.9	%		70-130	06-NOV-19
F3 (C16-C34)			99.4	%		70-130	06-NOV-19
F4 (C34-C50)			102.1	%		70-130	06-NOV-19
WG3211137-1 MB F2 (C10-C16)			<0.10	mg/L		0.1	06-NOV-19
F3 (C16-C34)			<0.25	mg/L		0.25	06-NOV-19
F4 (C34-C50)			<0.25	mg/L		0.25	06-NOV-19
Surrogate: 2-Bromob	enzotrifluoride		85.3	%		60-140	06-NOV-19
	Water						



Workorder: L2375853 Report Date: 14-NOV-19 Page 3 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	Water			<u> </u>				
Batch R4896510 WG3208665-1 MB Fecal Coliforms			<1		MPN/100mL		1	01-NOV-19
HG-T-CVAA-WP	Water							
Batch R4901178 WG3212454-2 LCS Mercury (Hg)-Total			98.0		%		80-120	06-NOV-19
WG3212454-1 MB Mercury (Hg)-Total			<0.00000	5C	mg/L		0.000005	06-NOV-19
MET-T-CCMS-WP	Water							
Batch R4903044 WG3213018-2 LCS			400.0		0/			
Aluminum (Al)-Total			102.9		%		80-120	07-NOV-19
Antimony (Sb)-Total			102.7		%		80-120	07-NOV-19
Arsenic (As)-Total			100.1		%		80-120	07-NOV-19
Barium (Ba)-Total			102.1		%		80-120	07-NOV-19
Beryllium (Be)-Total			99.6		%		80-120	07-NOV-19
Bismuth (Bi)-Total			94.9		%		80-120	07-NOV-19
Boron (B)-Total			102.1		%		80-120	07-NOV-19
Cadmium (Cd)-Total			98.8		%		80-120	07-NOV-19
Calcium (Ca)-Total			99.3		%		80-120	07-NOV-19
Cesium (Cs)-Total			99.8		%		80-120	07-NOV-19
Chromium (Cr)-Total			101.3		%		80-120	07-NOV-19
Cobalt (Co)-Total			99.5		%		80-120	07-NOV-19
Copper (Cu)-Total			100.4		%		80-120	07-NOV-19
Iron (Fe)-Total			99.9		%		80-120	07-NOV-19
Lead (Pb)-Total			96.6		%		80-120	07-NOV-19
Lithium (Li)-Total			100.7		%		80-120	07-NOV-19
Magnesium (Mg)-Total			99.7		%		80-120	07-NOV-19
Manganese (Mn)-Total			102.3		%		80-120	07-NOV-19
Molybdenum (Mo)-Total			102.0		%		80-120	07-NOV-19
Nickel (Ni)-Total			99.8		%		80-120	07-NOV-19
Potassium (K)-Total			102.2		%		80-120	07-NOV-19
Phosphorus (P)-Total			103.0		%		80-120	07-NOV-19
Rubidium (Rb)-Total			99.2		%		80-120	07-NOV-19
Selenium (Se)-Total			99.5		%		80-120	07-NOV-19



Workorder: L2375853 Report Date: 14-NOV-19 Page 4 of 10

est	Matrix	Reference	Result Q	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4903044								
WG3213018-2 LCS Silicon (Si)-Total			104.6		%		80-120	07-NOV-19
Silver (Ag)-Total			103.2		%		80-120	07-NOV-19
Sodium (Na)-Total			101.2		%		80-120	07-NOV-19
Strontium (Sr)-Total			101.2		%		80-120	07-NOV-19
Sulfur (S)-Total			99.8		%		80-120	07-NOV-19
Tellurium (Te)-Total			101.4		%		80-120	07-NOV-19
Thallium (TI)-Total			98.6		%		80-120	
Thorium (Th)-Total			91.9		%			07-NOV-19 07-NOV-19
Tin (Sn)-Total			100.5		%		80-120	
Titanium (Ti)-Total			99.8		%		80-120 80-120	07-NOV-19 07-NOV-19
Tungsten (W)-Total			100.5		%			07-NOV-19 07-NOV-19
Uranium (U)-Total			94.6		%		80-120 80-120	07-NOV-19 07-NOV-19
Vanadium (V)-Total			102.2		%			
Zinc (Zn)-Total			99.4		%		80-120	07-NOV-19
Zirconium (Zr)-Total			98.9		%		80-120	07-NOV-19
			90.9		70		80-120	07-NOV-19
WG3213018-1 MB Aluminum (Al)-Total			<0.0030		mg/L		0.003	07-NOV-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	07-NOV-19
Boron (B)-Total			<0.010		mg/L		0.01	07-NOV-19
Cadmium (Cd)-Total			<0.000050		mg/L		0.000005	07-NOV-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	07-NOV-19
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	07-NOV-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	07-NOV-19
Iron (Fe)-Total			<0.010		mg/L		0.000	07-NOV-19
Lead (Pb)-Total			<0.00050		mg/L		0.00005	07-NOV-19
Lithium (Li)-Total			<0.0010		mg/L		0.0003	07-NOV-19
Magnesium (Mg)-Total			<0.0010		mg/L		0.001	07-NOV-19 07-NOV-19
Manganese (Mn)-Total			<0.00010		mg/L		0.005	07-NOV-19 07-NOV-19



Page 5 of 10

Workorder: L2375853 Report Date: 14-NOV-19

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4903044								
WG3213018-1 MB			0.00005	•				
Molybdenum (Mo)-Total			<0.00005	J	mg/L		0.00005	07-NOV-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	07-NOV-19
Potassium (K)-Total			<0.050		mg/L		0.05	07-NOV-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	07-NOV-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	07-NOV-19
Selenium (Se)-Total			<0.00005	0	mg/L		0.00005	07-NOV-19
Silicon (Si)-Total			<0.10		mg/L		0.1	07-NOV-19
Silver (Ag)-Total			<0.00001	0	mg/L		0.00001	07-NOV-19
Sodium (Na)-Total			<0.050		mg/L		0.05	07-NOV-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	07-NOV-19
Sulfur (S)-Total			<0.50		mg/L		0.5	07-NOV-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	07-NOV-19
Thallium (TI)-Total			<0.00001	0	mg/L		0.00001	07-NOV-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	07-NOV-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	07-NOV-19
Uranium (U)-Total			<0.00001	0	mg/L		0.00001	07-NOV-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	07-NOV-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	07-NOV-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	07-NOV-19
NH3-COL-WP	Water							
Batch R4898963								
WG3211108-10 LCS Ammonia, Total (as N)			98.6		%		85-115	04-NOV-19
WG3211108-9 MB							00 110	04110110
Ammonia, Total (as N)			<0.010		mg/L		0.01	04-NOV-19
NO2-IC-N-WP	Water							
Batch R4898819								
WG3208962-2 LCS Nitrite (as N)			99.6		%		90-110	02-NOV-19
WG3208962-1 MB Nitrite (as N)			<0.010		mg/L		0.01	02-NOV-19
NO3-IC-N-WP	Water							



Page 6 of 10

Workorder: L2375853 Report Date: 14-NOV-19

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



Workorder: L2375853 Report Date: 14-NOV-19 Page 7 of 10

est N	/latrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AH,PANH-WP	Nater							
Batch R4906524								
WG3216498-2 LCS								
Phenanthrene			106.4		%		60-130	13-NOV-19
Pyrene			115.3		%		60-130	13-NOV-19
Quinoline			113.5		%		60-130	13-NOV-19
WG3216498-1 MB 1-Methyl Naphthalene			<0.00002	0	mg/L		0.00002	13-NOV-19
2-Methyl Naphthalene			<0.00002		mg/L		0.00002	13-NOV-19
Acenaphthene			<0.00002		mg/L		0.00002	13-NOV-19
Acenaphthylene			<0.00002		mg/L		0.00002	13-NOV-19
Anthracene			<0.00001		mg/L		0.00002	13-NOV-19
Acridine			<0.00001		mg/L		0.00001	13-NOV-19
Benzo(a)anthracene			<0.00002		mg/L		0.00002	13-NOV-19
Benzo(a)pyrene			<0.000001		mg/L		0.00001	13-NOV-19
Benzo(b&j)fluoranthene			<0.00001		mg/L		0.000003	13-NOV-19
Benzo(g,h,i)perylene			<0.00001		mg/L		0.00001	13-NOV-19
Benzo(k)fluoranthene			<0.00001		mg/L		0.00002	13-NOV-19
Chrysene			<0.00002		mg/L		0.00001	13-NOV-19
Dibenzo(a,h)anthracene			<0.000002		mg/L		0.00002	13-NOV-19
Fluoranthene			<0.00002		mg/L		0.000003	13-NOV-19
Fluorene			<0.00002		mg/L		0.00002	13-NOV-19
Indeno(1,2,3-cd)pyrene			<0.00001		mg/L		0.00002	13-NOV-19
Naphthalene			<0.00005		mg/L		0.00001	13-NOV-19
Phenanthrene			<0.00005		mg/L		0.00005	13-NOV-19
Pyrene			<0.00001		mg/L		0.00003	13-NOV-19
Quinoline			<0.00001		mg/L		0.00001	13-NOV-19
Surrogate: Acenaphthene	d10		97.6	~	//g/∟ %		60-130	13-NOV-19
Surrogate: Acridine d9	~··		94.3		%		60-130	13-NOV-19
Surrogate: Chrysene d12			111.7		%		60-130	13-NOV-19
Surrogate: Naphthalene d8	R		98.8		%		50-130	13-NOV-19
Surrogate: Phenanthrene of			102.2		%		60-130	
_	<i>N</i> ater		102.2		,,		00-130	13-NOV-19
n-we Batch R4896808	water							
WG3209636-12 LCS								
pH			7.39		pH units		7.3-7.5	01-NOV-19

PHENOLS-4AAP-WT Water



Workorder: L2375853 Report Date: 14-NOV-19 Page 8 of 10

					•			9
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	Water							
Batch R4901001 WG3212127-14 LCS								
Phenols (4AAP)			95.4		%		85-115	06-NOV-19
WG3212127-13 MB Phenols (4AAP)			<0.0010		mg/L		0.001	06-NOV-19
SO4-IC-N-WP	Water							
Batch R4898819 WG3208962-2 LCS								
Sulfate (SO4)			101.9		%		90-110	02-NOV-19
WG3208962-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	02-NOV-19
SOLIDS-TOTSUS-WP	Water							
Batch R4902207								
WG3211709-17 LCS Total Suspended Solids			103.6		%		85-115	06-NOV-19
WG3211709-16 MB Total Suspended Solids			<2.0		mg/L		2	06-NOV-19
TC,EC10-QT97-WP	Water							
Batch R4896501								
WG3208672-2 DUP Total Coliforms		L2375853-1 >24200	>24200		MPN/100mL	0.0	65	01-NOV-19
Escherichia Coli		>24200	>24200		MPN/100mL	0.0	65	01-NOV-19
WG3208672-1 MB Total Coliforms			<1		MPN/100mL		1	01-NOV-19
Escherichia Coli			<1		MPN/100mL		1	01-NOV-19
					· -		•	31.1.01.10

Report Date: 14-NOV-19 Workorder: L2375853 Page 9 of 10

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

Not Available N/A

Laboratory Control Sample LCS Standard Reference Material SRM

MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank ADE

MB

Internal Reference Material IRM CRM Certified Reference Material Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2375853 Report Date: 14-NOV-19 Page 10 of 10

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	31-OCT-19 13:30	01-NOV-19 12:00	0.25	23	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2375853 were received on 01-NOV-19 13:15.

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

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

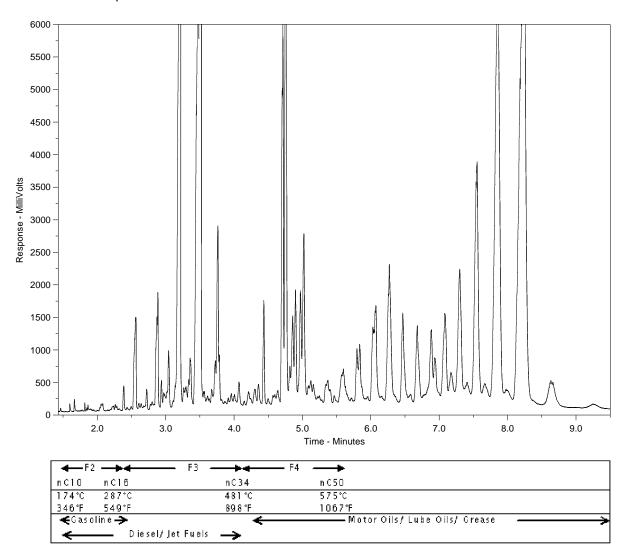
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2375853-1

Client Sample ID: RANKIN INLET WWTP - EFFLUENT



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

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

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

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

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COC #	ŧ

Page	of

(ALS)	Environmental				· ·									3	·		
Report To			L2375853-0	COPC		Serv	/ice F	leque	sted	(Rush	for ro	utine a	ınalysi	s subje	ct to av	ailability))
Company:	Nunavut CGS - Rankin Inlet (W8133)					◉	Regula	r (Stan	dard Tu	urnarou	and Tim	nes - Bu	usiness	Days)			
Contact:	SIMON DOIRON	☑ PDF	Excel	Digital Digital	☐ Fax	0	Priority	(2•4 B	usines	s Days)	- 50%	Surcha	arge - C	ontact /	LS to C	onfirm TA	¥Τ.
Address:	Box 490	Email 1:	sdoiron@gov.nu	ı.ca												Confirm T	AT
	Rankin Inlet , NU, X0C 0G0	Email 2:	scollins@gov.nu	ı.ca		\circ	Same D	ay or	Weeker	nd Eme	rgency	- Cont	act ALS	to Conf	firm TAT		
Phone:	867-645-8155 Cel#:	Email 3:	mlusty@gov.nu.	<u>ca</u>		<u> </u>					Analys	sis Re	ques	t			
Invoice To	Same as Report ? Yes No	Client / Pr	oject Informatio			Ple	ase i	ndica	te bel	low Fi	ltered	Pres	erved	or bo	th (F, F	², F/P)	╛╽
Hardcopy of	Invoice with Report?	Job #:		VTP- Monthly Eff	fluent	<u> </u>	<u> </u>	L.	<u> </u>	ļ							」
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	Vork Order # o use only) *	ALS Contact:	Craig Riddell	Sampled By:	Simon Doiron	BTX,F1-F4-WP	PAH,PANH-WP	NUNAVUT-WW-GRP1-WP	-WP	TC,EC-QT97-WP							Number of Containers
Sample &			Date Sampled	Time Sampled	Sample Type	ВТХ,F	PAH,P	NUNA	F-IC-N-WP	TC,EC							Numbe
(44),359	Rankin Inlet WWTP - Effluent		0431/19	1:30pm	Waste	x	х	х	x	х						\Box	15
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	V-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine, 250 ml /ials for BTX,F1-F4 and 1 L Amber for PAH's = Total of 15 Bott	les <u>p</u> er sam	ple.							0 ml /	Ambe	r Oil 8	& Grea	se,2	50 ml l	3acteria	э (9
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix X



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 26-NOV-19

Report Date: 05-DEC-19 14:54 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2387882

Project P.O. #: NOT SUBMITTED

Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT

C of C Numbers: Legal Site Desc:

Hua Wo

Chemistry Laboratory Manager

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

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



L2387882 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387882-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 25-NOV-19 @ 13:30							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050	VOCHS	0.00050	mg/L		27-NOV-19	R4929936
Toluene	0.0012	VOCHS	0.0010	mg/L		27-NOV-19	R4929936
Ethyl benzene	<0.00050	VOCHS	0.00050	mg/L		27-NOV-19	R4929936
o-Xylene	<0.00050	VOCHS	0.00050	mg/L		27-NOV-19	R4929936
m+p-Xylenes	<0.00040	VOCHS	0.00040	mg/L		27-NOV-19	R4929936
F1 (C6-C10)	<0.10	VOCHS	0.10	mg/L		27-NOV-19	R4929936
Surrogate: 4-Bromofluorobenzene (SS)	86.0		70-130	%		27-NOV-19	R4929936
CCME PHC F2-F4 in Water						=	
F2 (C10-C16)	1.51		0.10	mg/L	28-NOV-19	30-NOV-19	R4929054
F3 (C16-C34)	21.6		0.25	mg/L	28-NOV-19	30-NOV-19	R4929054
F4 (C34-C50)	6.41		0.25	mg/L	28-NOV-19	30-NOV-19	R4929054
Surrogate: 2-Bromobenzotrifluoride	97.3		60-140	%	28-NOV-19	30-NOV-19	R4929054
CCME Total Hydrocarbons F1-BTEX	-0.10		0.40	ma/l		05-DEC-19	
F2-Naphth	<0.10 1.51		0.10 0.10	mg/L mg/L		05-DEC-19 05-DEC-19	
F3-PAH	21.6		0.10	mg/L		05-DEC-19 05-DEC-19	
Total Hydrocarbons (C6-C50)	29.5		0.23	mg/L		05-DEC-19	
Sum of Xylene Isomer Concentrations	20.0		0.00	g/ _		00 220 10	
Xylenes (Total)	<0.00064		0.00064	mg/L		02-DEC-19	
Miscellaneous Parameters							
Fluoride (F)	0.155		0.020	mg/L		27-NOV-19	R4928444
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200		10	MPN/100mL		26-NOV-19	R4927006
Escherichia Coli	>24200		10	MPN/100mL		26-NOV-19	R4927006
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000291		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
2-Methyl Naphthalene	0.000287		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Acenaphthene	0.000044		0.000020	mg/L	03-DEC-19 03-DEC-19	04-DEC-19	R4934049
Acenaphthylene Anthracene	<0.000020	EMPC	0.000020	mg/L		04-DEC-19	R4934049
Acridine	0.000027 <0.000020	LIVIEC	0.000010	mg/L mg/L	03-DEC-19 03-DEC-19	04-DEC-19 04-DEC-19	R4934049 R4934049
Benzo(a)anthracene	0.000058		0.000020	mg/L	03-DEC-19 03-DEC-19	04-DEC-19 04-DEC-19	R4934049 R4934049
Benzo(a)pyrene	0.000038		0.000010		03-DEC-19	04-DEC-19	R4934049
Benzo(b&j)fluoranthene	0.000028		0.000000	mg/L	03-DEC-19	04-DEC-19	R4934049
Benzo(g,h,i)perylene	<0.000020		0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Chrysene	0.000058		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Dibenzo(a,h)anthracene	0.0000228	EMPC	0.0000050		03-DEC-19	04-DEC-19	R4934049
Fluoranthene	0.000097	EMPC	0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Fluorene	0.000073	EMPC	0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Naphthalene	0.000186	EMPC	0.000050	mg/L	03-DEC-19	04-DEC-19	R4934049
Phenanthrene	0.000127		0.000050	mg/L	03-DEC-19	04-DEC-19	R4934049
Pyrene	0.000123	EMPC	0.000010	mg/L	03-DEC-19	04-DEC-19	R4934049
Quinoline	0.000034		0.000020	mg/L	03-DEC-19	04-DEC-19	R4934049
B(a)P Total Potency Equivalent	0.000064		0.000030	mg/L	03-DEC-19	04-DEC-19	R4934049
Surrogate: Acriding d0	97.6		60-130	%	03-DEC-19	04-DEC-19	R4934049
Surrogate: Acridine d9 Surrogate: Chrysene d12	110.7		60-130	%	03-DEC-19	04-DEC-19	R4934049
Surrogate: Chrysene d12 Surrogate: Naphthalene d8	115.0 107.3		60-130 50-130	% %	03-DEC-19 03-DEC-19	04-DEC-19 04-DEC-19	R4934049 R4934049
Surrogate: Naphthalene do Surrogate: Phenanthrene d10				%	03-DEC-19 03-DEC-19	04-DEC-19 04-DEC-19	
Surrogate. Frieriantinene 010	104.2		60-130	70	03-DEC-19	U4-DEC-19	R4934049

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387882-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 25-NOV-19 @ 13:30							
Matrix: WASTE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	152		1.2	mg/L		28-NOV-19	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		28-NOV-19	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		28-NOV-19	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	124		1.0	mg/L		27-NOV-19	R4927641
Ammonia by colour	.2.		1.0	9/ =			1027011
Ammonia, Total (as N)	13.1		1.0	mg/L		03-DEC-19	R4934147
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	> 150		20	mg/L		27-NOV-19	R4930316
Carbonaceous BOD BOD Carbonaceous	- 160		20	ma/l		27-NOV-19	D4020246
Chloride in Water by IC	> 160		20	mg/L		Z1-NOV-18	R4930316
Chloride (Cl)	56.3		0.50	mg/L		27-NOV-19	R4928444
Conductivity							
Conductivity	492		1.0	umhos/cm		27-NOV-19	R4927641
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200		10	MPN/100mL		26-NOV-19	R4927011
Hardness Calculated Hardness (as CaCO3)	89.5	HTC	0.20	mg/L		05-DEC-19	
Mercury Total	05.5		0.20	1119/2		00 220 10	
Mercury (Hg)-Total	0.0000150		0.0000050	mg/L	04-DEC-19	04-DEC-19	R4935627
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		27-NOV-19	R4928444
Nitrate+Nitrite	0.070		0.070			00 NOV 40	
Nitrate and Nitrite as N	<0.070		0.070	mg/L		29-NOV-19	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		27-NOV-19	R4928444
Oil & Grease - Gravimetric	10.0.0		0.0.0				
Oil and Grease	44.7		5.0	mg/L		02-DEC-19	R4930010
Phenol (4AAP)							
Phenols (4AAP)	0.0191		0.0010	mg/L		29-NOV-19	R4929516
Phosphorus, Total Phosphorus (P)-Total	3.71		0.030	mg/L		28-NOV-19	R4927765
Sulfate in Water by IC	3.71		0.030	iiig/L		201101-19	114921100
Sulfate (SO4)	27.1		0.30	mg/L		27-NOV-19	R4928444
Total Metals in Water by CRC ICPMS							
Aluminum (AI)-Total	0.283		0.0030	mg/L	03-DEC-19	03-DEC-19	R4933220
Antimony (Sb)-Total	0.00020		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Arsenic (As)-Total	0.00085		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Barium (Ba)-Total Beryllium (Be)-Total	0.0290 <0.00010		0.00010 0.00010	mg/L mg/L	03-DEC-19 03-DEC-19	03-DEC-19 03-DEC-19	R4933220 R4933220
Bismuth (Bi)-Total	0.00258		0.00010	mg/L	03-DEC-19 03-DEC-19	03-DEC-19 03-DEC-19	R4933220 R4933220
Boron (B)-Total	0.128		0.000	mg/L	03-DEC-19	03-DEC-19	R4933220
Cadmium (Cd)-Total	0.000135		0.0000050	mg/L	03-DEC-19	03-DEC-19	R4933220
Calcium (Ca)-Total	25.4		0.050	mg/L	03-DEC-19	03-DEC-19	R4933220
Cesium (Cs)-Total	0.000109		0.000010	mg/L	03-DEC-19	03-DEC-19	R4933220
Chromium (Cr)-Total	0.00085		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Cobalt (Co)-Total	0.00024		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Copper (Cu)-Total	0.191		0.00050	mg/L	03-DEC-19	03-DEC-19	R4933220

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387882-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 25-NOV-19 @ 13:30							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS Iron (Fe)-Total	0.276		0.010	mg/L	03-DEC-19	03-DEC-19	R4933220
Lead (Pb)-Total	0.00279		0.000050	mg/L	03-DEC-19	03-DEC-19	R4933220
Lithium (Li)-Total	0.0032		0.0010	mg/L	03-DEC-19	03-DEC-19	R4933220
Magnesium (Mg)-Total	6.33		0.0050	mg/L	03-DEC-19	03-DEC-19	R4933220
Manganese (Mn)-Total	0.0378		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Molybdenum (Mo)-Total	0.00133		0.000050	mg/L	03-DEC-19	03-DEC-19	R4933220
Nickel (Ni)-Total	0.00298		0.00050	mg/L	03-DEC-19	03-DEC-19	R4933220
Potassium (K)-Total	12.1		0.050	mg/L	03-DEC-19	03-DEC-19	R4933220
Phosphorus (P)-Total	3.90		0.030	mg/L	03-DEC-19	03-DEC-19	R4933220
Rubidium (Rb)-Total	0.0132		0.00020	mg/L	03-DEC-19	03-DEC-19	R4933220
Selenium (Se)-Total	0.000329		0.000050	mg/L	03-DEC-19	03-DEC-19	R4933220
Silicon (Si)-Total	0.39		0.10	mg/L	03-DEC-19	03-DEC-19	R4933220
Silver (Ag)-Total	0.000068		0.000010	mg/L	03-DEC-19	03-DEC-19	R4933220
Sodium (Na)-Total	34.6		0.050	mg/L	03-DEC-19	03-DEC-19	R4933220
Strontium (Sr)-Total	0.116		0.00020	mg/L	03-DEC-19	03-DEC-19	R4933220
Sulfur (S)-Total	9.12		0.50	mg/L	03-DEC-19	03-DEC-19	R4933220
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	03-DEC-19	03-DEC-19	R4933220
Thallium (TI)-Total Thorium (Th)-Total	<0.000010		0.000010	mg/L	03-DEC-19	03-DEC-19	R4933220
Tin (Sn)-Total	<0.00010		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Titanium (Ti)-Total	0.00232 0.00291		0.00010 0.00030	mg/L mg/L	03-DEC-19 03-DEC-19	03-DEC-19 03-DEC-19	R4933220 R4933220
Tungsten (W)-Total	<0.00291		0.00030	mg/L	03-DEC-19 03-DEC-19	03-DEC-19 03-DEC-19	R4933220 R4933220
Uranium (U)-Total	0.000175		0.00010	mg/L	03-DEC-19	03-DEC-19	R4933220
Vanadium (V)-Total	0.000173		0.00050	mg/L	03-DEC-19	03-DEC-19	R4933220
Zinc (Zn)-Total	0.108		0.0030	mg/L	03-DEC-19	03-DEC-19	R4933220
Zirconium (Zr)-Total	0.00069		0.00020	mg/L	03-DEC-19	03-DEC-19	R4933220
Total Organic Carbon by Combustion Total Organic Carbon	129		5.0	mg/L		27-NOV-19	R4929906
Total Suspended Solids							
Total Suspended Solids	166		6.0	mg/L		28-NOV-19	R4929899
рН							
pH	7.30		0.10	pH units		28-NOV-19	R4928689

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

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Reference Information

Sample Parameter Qualifier Kev:

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

Test Method References:

Matrix	Test Description	Method Reference**								
\Mator	Alkalinity Carbonato	CALCULATION								
_	Matrix Nater									

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.

CALCULATION ALK-HCO3HCO3-CALC-Water Alkalinity, Bicarbonate

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-WF 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 FPA 8260C / FPA 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.

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.

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 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 Fluoride in Water by IC EPA 300.1 (mod)

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

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

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.

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP Water CCME PHC F2-F4 in Water EPA 351

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

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

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

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PH-WP Water pH APHA 4500H

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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

reference electrode.

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

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

red complex which is measured colorimetrically.

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

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

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

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

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

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

XYLENES-SUM-CALC-

WP

Water

Sum of Xylene Isomer Concentrations

CALCULATED RESULT

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

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

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

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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

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

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2387882 Report Date: 05-DEC-19 Page 1 of 10

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R49276	41							
WG3230521-5 DUI Alkalinity, Total (as C		L2387882-1 124	120		mg/L	3.5	20	27-NOV-19
WG3230521-4 LCS Alkalinity, Total (as C			104.1		%		85-115	27-NOV-19
WG3230521-1 MB Alkalinity, Total (as C			<1.0		mg/L		1	27-NOV-19
BOD-CBOD-WP	Water							
Batch R49303 WG3228792-12 LCS BOD Carbonaceous			100.1		%		85-115	27-NOV-19
WG3228792-11 MB			100.1		70		65-115	27-1100-19
BOD Carbonaceous			<2.0		mg/L		2	27-NOV-19
BOD-WP	Water							
Batch R49303 WG3228792-12 LCS Biochemical Oxygen	8		100.0		%		85-115	27-NOV-19
WG3228792-11 MB							00 110	27 110 7 10
Biochemical Oxygen	Demand		<2.0		mg/L		2	27-NOV-19
BTEXS+F1-HSMS-WP	Water							
Batch R49299	36							
WG3229963-2 LCS Benzene	8		87.7		%		70.400	07 NOV 40
Toluene			92.4		%		70-130	27-NOV-19
Ethyl benzene			92.4 87.7		%		70-130 70-130	27-NOV-19 27-NOV-19
o-Xylene			90.9		%		70-130 70-130	27-NOV-19 27-NOV-19
m+p-Xylenes			101.4		%		70-130	27-NOV-19 27-NOV-19
WG3229963-3 LCS	5							
F1 (C6-C10)			96.0		%		70-130	27-NOV-19
WG3229963-1 MB Benzene			<0.00050)	mg/L		0.0005	27-NOV-19
Toluene			<0.0010		mg/L		0.001	27-NOV-19
Ethyl benzene			<0.00050)	mg/L		0.0005	27-NOV-19
o-Xylene			<0.00050		mg/L		0.0005	27-NOV-19
m+p-Xylenes			<0.00040)	mg/L		0.0004	27-NOV-19
F1 (C6-C10)			<0.10		mg/L		0.1	27-NOV-19
Surrogate: 4-Bromofl	uorobenzene (SS))	92.0		%		70-130	27-NOV-19
C-TOC-HTC-WP	Water							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
	29906 LCS rbon		101.4		%		80-120	27-NOV-19
_	МВ		<0.50		mg/L		0.5	27-NOV-19
CL-IC-N-WP	Water							
Batch R49	28444							
WG3229533-2 Chloride (CI)	LCS		98.2		%		90-110	27-NOV-19
WG3229533-1 Chloride (CI)	МВ		<0.50		mg/L		0.5	27-NOV-19
EC-WP	Water							
Batch R49	27641							
WG3230521-5 Conductivity	DUP	L2387882-1 492	493		umhos/cm	0.2	10	27-NOV-19
WG3230521-3 Conductivity	LCS		98.4		%		90-110	27-NOV-19
WG3230521-1 Conductivity	МВ		<1.0		umhos/cm		1	27-NOV-19
F-IC-N-WP	Water							
Batch R49	28444							
WG3229533-2 Fluoride (F)	LCS		99.6		%		90-110	27-NOV-19
WG3229533-1 Fluoride (F)	МВ		<0.020		mg/L		0.02	27-NOV-19
F2-F4-FID-WP	Water							
Batch R49	29054							
	LCS							
F2 (C10-C16)			104.8		%		70-130	29-NOV-19
F3 (C16-C34)			96.5		%		70-130	29-NOV-19
F4 (C34-C50)			99.3		%		70-130	29-NOV-19
F2 (C10-C16)	МВ		<0.10		mg/L		0.1	29-NOV-19
F3 (C16-C34)			<0.25		mg/L		0.25	29-NOV-19
F4 (C34-C50)			<0.25		mg/L		0.25	29-NOV-19
Surrogate: 2-Bror	mobenzotrifluoride		98.7		%		60-140	29-NOV-19
FC10-QT97-WP	Water							



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FC10-QT97-WP Batch R4927011 MG2228978-2 DUP L2387882-1 Fecal Coliforms >24200 >24200 MPN/100mL 0.0 65 26-NOV-19 MG3228978-2 DUP Fecal Coliforms >24200 >24200 MPN/100mL 0.0 65 26-NOV-19 MG3228978-1 MB Fecal Coliforms < 1 MPN/100mL 1 26-NOV-19 MG228978-1 MB Fecal Coliforms < 1 MPN/100mL 1 26-NOV-19 MG228978-1 MB MG2028978-2 LCS Mercury (Hg)-Total 102.0 % 80-120 04-DEC-19 MG3223535-1 MB MG4024 Hg)-Total < <0.000005c mg/L 0.000005 04-DEC-19 MG22335320 MG2323920 MG23239220 LCS Aluminum (Al)-Total 101.6 % 80-120 03-DEC-19 MG2323920 MG	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NETT-COM-WP Water	FC10-QT97-WP	Water							
Fecal Coliforms Water Wa	WG3228979-2 DUP			>24200		MPN/100mL	0.0	65	26-NOV-19
Marcury (Hg)-Total 102.0 % 80.120 04-DEC.19 102.0 % 80.120 04-DEC.19 102.0 % 80.120 04-DEC.19 102.0 % 80.120 04-DEC.19 102.0 % 80.120 04-DEC.19 102.0 80.000055 80.120 03				<1		MPN/100mL		1	26-NOV-19
WG3235353-2 LCS Mercury (Hg)-Total 102.0 % 80-120 04-DEC-19 WG3235353-1 MB Mercury (Hg)-Total a0.000005C mg/L 0.000005 04-DEC-19 MET-T-CCMS-WP Batch R4933220 WG3233720-2 LCS Aluminum (Al)-Total W 80-120 03-DEC-19 Aluminum (Al)-Total 101.6 % 80-120 03-DEC-19 Arsenic (As)-Total 100.8 % 80-120 03-DEC-19 Arsenic (As)-Total 101.1 % 80-120 03-DEC-19 Beryllium (Be)-Total 102.5 % 80-120 03-DEC-19 Bismuth (Bi)-Total 101.9 % 80-120 03-DEC-19 Boron (B)-Total 97.5 % 80-120 03-DEC-19 Calcium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 105.1 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.	HG-T-CVAA-WP	Water							
Mercury (Hg)-Total <0.000005C mg/L 0.000005 04-DEC-19 MET-T-CCMS-WP Water Batch R4933220 VAID COMESTION Common Security	WG3235353-2 LCS			102.0		%		80-120	04-DEC-19
Batch R4933220 WG323770-2 LCS Aluminum (Al)-Total 101.6 % 80-120 03-DEC-19 Antimony (Sb)-Total 100.8 % 80-120 03-DEC-19 Arsenic (As)-Total 101.1 % 80-120 03-DEC-19 Barium (Ba)-Total 103.9 % 80-120 03-DEC-19 Beryllium (Be)-Total 102.5 % 80-120 03-DEC-19 Bismuth (Bi)-Total 101.9 % 80-120 03-DEC-19 Boron (B)-Total 97.5 % 80-120 03-DEC-19 Cadmium (Cd)-Total 103.5 % 80-120 03-DEC-19 Calcium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 108.4 % 80-120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19				<0.00000	5 C	mg/L		0.000005	04-DEC-19
WG323720-2 LCS Aluminum (Al)-Total 101.6 % 80-120 03-DEC-19 Antimony (Sb)-Total 100.8 % 80-120 03-DEC-19 Arsenic (As)-Total 101.1 % 80-120 03-DEC-19 Barlum (Ba)-Total 103.9 % 80-120 03-DEC-19 Beryllium (Be)-Total 101.9 % 80-120 03-DEC-19 Bismuth (Bi)-Total 101.9 % 80-120 03-DEC-19 Boron (B)-Total 97.5 % 80-120 03-DEC-19 Cadmium (Cd)-Total 103.5 % 80-120 03-DEC-19 Calcium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (C5)-Total 108.4 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Manganesum (Mg)-Total	MET-T-CCMS-WP	Water							
Aluminum (Al)-Total 101.6 % 80-120 03-DEC-19 Antimony (Sb)-Total 100.8 % 80-120 03-DEC-19 Arsenic (As)-Total 101.1 % 80-120 03-DEC-19 Barium (Ba)-Total 103.9 % 80-120 03-DEC-19 Beryllium (Be)-Total 102.5 % 80-120 03-DEC-19 Bismuth (Bi)-Total 101.9 % 80-120 03-DEC-19 Boron (B)-Total 101.9 % 80-120 03-DEC-19 Boron (B)-Total 103.5 % 80-120 03-DEC-19 Cadmium (Cd)-Total 103.5 % 80-120 03-DEC-19 Cadmium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 102.0 % 80-120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 101.2 % 80-120 03-DEC-19 Magnesium (Mg)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 101.4 % 80-120 03-DEC-19 Potassium (K)-Total 101.4 % 80-120 03-DEC-19 Potassium (K)-Total 101.4 % 80-120 03-DEC-19	Batch R4933220								
Arsenic (As)-Total 101.1 % 80-120 03-DEC-19 Barium (Ba)-Total 103.9 % 80-120 03-DEC-19 Beryllium (Be)-Total 102.5 % 80-120 03-DEC-19 Bismuth (Bi)-Total 101.9 % 80-120 03-DEC-19 Boron (B)-Total 97.5 % 80-120 03-DEC-19 Cadmium (Cd)-Total 103.5 % 80-120 03-DEC-19 Calcium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 108.4 % 80-120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 103.1 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 101.2 % 80-120 03-DEC-19 Magnesium (Mg)-Total 101.2 % 80-120 03-DEC-19 Magnesium (Mg)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 101.4 % 80-120 03-DEC-19 Potassium (K)-Total 101.4 % 80-120 03-DEC-19 Potassium (K)-Total 101.4 % 80-120 03-DEC-19				101.6		%		80-120	03-DEC-19
Barium (Ba)-Total 103.9 % 80-120 03-DEC-19 Beryllium (Be)-Total 102.5 % 80-120 03-DEC-19 Bismuth (Bi)-Total 101.9 % 80-120 03-DEC-19 Boron (B)-Total 97.5 % 80-120 03-DEC-19 Cadmium (Cd)-Total 103.5 % 80-120 03-DEC-19 Calcium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 108.4 % 80-120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 103.1 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 99.1 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 99.1 % 80-120 03-DEC-19	Antimony (Sb)-Total			100.8		%		80-120	03-DEC-19
Beryllium (Be)-Total 102.5 % 80.120 03-DEC-19 Bismuth (Bi)-Total 101.9 % 80.120 03-DEC-19 Boron (B)-Total 97.5 % 80.120 03-DEC-19 Cadmium (Cd)-Total 103.5 % 80.120 03-DEC-19 Calcium (Ca)-Total 104.0 % 80.120 03-DEC-19 Cesium (Cs)-Total 108.4 % 80.120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80.120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80.120 03-DEC-19 Copper (Cu)-Total 101.1 % 80.120 03-DEC-19 Iron (Fe)-Total 92.5 % 80.120 03-DEC-19 Lead (Pb)-Total 103.1 % 80.120 03-DEC-19 Lithium (Li)-Total 101.6 % 80.120 03-DEC-19 Magnesium (Mg)-Total 101.2 % 80.120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80.120 03-DEC-19 Nickel (Ni)-Total 99.1 % 80.120 <t< td=""><td>Arsenic (As)-Total</td><td></td><td></td><td>101.1</td><td></td><td>%</td><td></td><td>80-120</td><td>03-DEC-19</td></t<>	Arsenic (As)-Total			101.1		%		80-120	03-DEC-19
Bismuth (Bi)-Total 101.9 % 80-120 03-DEC-19 Boron (B)-Total 97.5 % 80-120 03-DEC-19 Cadmium (Cd)-Total 103.5 % 80-120 03-DEC-19 Calcium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 104.0 % 80-120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Chobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 101.2 % 80-120 03-DEC-19 Manganese (Mn)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 99.1 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 99.1 % 80-120 03-DEC-19	Barium (Ba)-Total			103.9		%		80-120	03-DEC-19
Boron (B)-Total 97.5 % 80-120 03-DEC-19 Cadmium (Cd)-Total 103.5 % 80-120 03-DEC-19 Calcium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 108.4 % 80-120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 99.1 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 <t< td=""><td>Beryllium (Be)-Total</td><td></td><td></td><td>102.5</td><td></td><td>%</td><td></td><td>80-120</td><td>03-DEC-19</td></t<>	Beryllium (Be)-Total			102.5		%		80-120	03-DEC-19
Cadmium (Cd)-Total 103.5 % 80-120 03-DEC-19 Calcium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 108.4 % 80-120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Molybdenum (Mg)-Total 101.2 % 80-120 03-DEC-19 Nickel (Ni)-Total 99.3 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Bismuth (Bi)-Total			101.9		%		80-120	03-DEC-19
Calcium (Ca)-Total 104.0 % 80-120 03-DEC-19 Cesium (Cs)-Total 108.4 % 80-120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Mangenesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 99.3 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Boron (B)-Total			97.5		%		80-120	03-DEC-19
Cesium (Cs)-Total 108.4 % 80-120 03-DEC-19 Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 101.2 % 80-120 03-DEC-19 Nickel (Ni)-Total 99.3 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Cadmium (Cd)-Total			103.5		%		80-120	03-DEC-19
Chromium (Cr)-Total 102.0 % 80-120 03-DEC-19 Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Manganese (Mn)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Calcium (Ca)-Total			104.0		%		80-120	03-DEC-19
Cobalt (Co)-Total 101.1 % 80-120 03-DEC-19 Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Manganese (Mn)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Cesium (Cs)-Total			108.4		%		80-120	03-DEC-19
Copper (Cu)-Total 101.1 % 80-120 03-DEC-19 Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Manganese (Mn)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Chromium (Cr)-Total			102.0		%		80-120	03-DEC-19
Iron (Fe)-Total 92.5 % 80-120 03-DEC-19 Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Manganese (Mn)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Cobalt (Co)-Total			101.1		%		80-120	03-DEC-19
Lead (Pb)-Total 103.1 % 80-120 03-DEC-19 Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Manganese (Mn)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Copper (Cu)-Total			101.1		%		80-120	03-DEC-19
Lithium (Li)-Total 101.6 % 80-120 03-DEC-19 Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Manganese (Mn)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Iron (Fe)-Total			92.5		%		80-120	03-DEC-19
Magnesium (Mg)-Total 114.4 % 80-120 03-DEC-19 Manganese (Mn)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Lead (Pb)-Total			103.1		%		80-120	03-DEC-19
Manganese (Mn)-Total 101.2 % 80-120 03-DEC-19 Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Lithium (Li)-Total			101.6		%		80-120	03-DEC-19
Molybdenum (Mo)-Total 99.3 % 80-120 03-DEC-19 Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Magnesium (Mg)-Total			114.4		%		80-120	03-DEC-19
Nickel (Ni)-Total 98.6 % 80-120 03-DEC-19 Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Manganese (Mn)-Total			101.2		%		80-120	03-DEC-19
Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Molybdenum (Mo)-Total			99.3		%		80-120	03-DEC-19
Potassium (K)-Total 99.1 % 80-120 03-DEC-19 Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Nickel (Ni)-Total			98.6		%		80-120	03-DEC-19
Phosphorus (P)-Total 101.4 % 80-120 03-DEC-19	Potassium (K)-Total			99.1		%		80-120	
Rubidium (Rb)-Total 100.8 % 80-120 03-DEC-19	Phosphorus (P)-Total			101.4		%		80-120	03-DEC-19
	Rubidium (Rb)-Total			100.8		%		80-120	03-DEC-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4933220								
WG3233720-2 LCS			104.4		0/		00.100	00 PEC 15
Selenium (Se)-Total			104.1		%		80-120	03-DEC-19
Silicon (Si)-Total			91.6		%		80-120	03-DEC-19
Silver (Ag)-Total			100.7		%		80-120	03-DEC-19
Sodium (Na)-Total			103.7		%		80-120	03-DEC-19
Strontium (Sr)-Total			108.7		%		80-120	03-DEC-19
Sulfur (S)-Total			91.4		%		80-120	03-DEC-19
Tellurium (Te)-Total			93.9		%		80-120	03-DEC-19
Thallium (Tl)-Total			104.3		%		80-120	03-DEC-19
Thorium (Th)-Total			104.5		%		80-120	03-DEC-19
Tin (Sn)-Total			98.4		%		80-120	03-DEC-19
Titanium (Ti)-Total			96.5		%		80-120	03-DEC-19
Tungsten (W)-Total			102.0		%		80-120	03-DEC-19
Uranium (U)-Total			110.2		%		80-120	03-DEC-19
Vanadium (V)-Total			102.4		%		80-120	03-DEC-19
Zinc (Zn)-Total			99.6		%		80-120	03-DEC-19
Zirconium (Zr)-Total			98.2		%		80-120	03-DEC-19
WG3233720-1 MB								
Aluminum (Al)-Total			< 0.0030		mg/L		0.003	03-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Bismuth (Bi)-Total			<0.000050)	mg/L		0.00005	03-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	03-DEC-19
Cadmium (Cd)-Total			<0.000005	5C	mg/L		0.000005	03-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-DEC-19
Cesium (Cs)-Total			<0.000010)	mg/L		0.00001	03-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	03-DEC-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	03-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-DEC-19



Workorder: L2387882 Report Date: 05-DEC-19

Page 5 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4933220								
WG3233720-1 MB					_			
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Potassium (K)-Total			<0.050		mg/L		0.05	03-DEC-19
Phosphorus (P)-Total			<0.030		mg/L		0.03	03-DEC-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	03-DEC-19
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-DEC-19
Silicon (Si)-Total			<0.10		mg/L		0.1	03-DEC-19
Silver (Ag)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Sodium (Na)-Total			< 0.050		mg/L		0.05	03-DEC-19
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	03-DEC-19
Sulfur (S)-Total			<0.50		mg/L		0.5	03-DEC-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	03-DEC-19
Thallium (TI)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-DEC-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	03-DEC-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-DEC-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-DEC-19
Zinc (Zn)-Total			< 0.0030		mg/L		0.003	03-DEC-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	03-DEC-19
NH3-COL-WP	Water							
Batch R4934147								
WG3235151-6 LCS								
Ammonia, Total (as N)			101.4		%		85-115	03-DEC-19
WG3235151-5 MB Ammonia, Total (as N)			-0.010		m a /I		0.04	00 050 40
Ammonia, rotai (as N)			<0.010		mg/L		0.01	03-DEC-19
NO2-IC-N-WP	Water							
Batch R4928444								
WG3229533-2 LCS Nitrite (as N)			101.4		%		90-110	27-NOV-19
WG3229533-1 MB Nitrite (as N)			<0.010		mg/L		0.01	27-NOV-19
NO3-IC-N-WP	Water							



Workorder: L2387882 Re

Report Date: 05-DEC-19

Page 6 of 10

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-WP	Water							
Batch R4928444								
WG3229533-2 LCS Nitrate (as N)			101.2		%		90-110	27-NOV-19
WG3229533-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	27-NOV-19
OG-GRAV-WP	Water							
Batch R4930010								
WG3231394-2 LCS Oil and Grease			94.1		%		70.400	00 DEC 40
WG3231394-1 MB			34.1		76		70-130	02-DEC-19
Oil and Grease			<5.0		mg/L		5	02-DEC-19
P-T-COL-WP	Water							
Batch R4927765								
WG3230456-14 LCS								
Phosphorus (P)-Total			101.0		%		80-120	28-NOV-19
WG3230456-13 MB Phosphorus (P)-Total			<0.0030		mg/L		0.003	28-NOV-19
	Water		10.0000		g/ _		0.000	20-1107-19
PAH,PANH-WP Batch R4934049	Water							
WG3235119-2 LCS								
1-Methyl Naphthalene			100.9		%		60-130	04-DEC-19
2-Methyl Naphthalene			92.4		%		60-130	04-DEC-19
Acenaphthene			100.0		%		60-130	04-DEC-19
Acenaphthylene			88.2		%		60-130	04-DEC-19
Anthracene			77.2		%		60-130	04-DEC-19
Acridine			91.9		%		60-130	04-DEC-19
Benzo(a)anthracene			107.5		%		60-130	04-DEC-19
Benzo(a)pyrene			106.1		%		60-130	04-DEC-19
Benzo(b&j)fluoranthene			106.1		%		60-130	04-DEC-19
Benzo(g,h,i)perylene			98.4		%		60-130	04-DEC-19
Benzo(k)fluoranthene			101.3		%		60-130	04-DEC-19
Chrysene			99.0		%		60-130	04-DEC-19
Dibenzo(a,h)anthracene			90.5		%		60-130	04-DEC-19
Fluoranthene			110.4		%		60-130	04-DEC-19
Fluorene			88.2		%		60-130	04-DEC-19
Indeno(1,2,3-cd)pyrene			92.4		%		60-130	04-DEC-19
Naphthalene			100.8		%		50-130	04-DEC-19



Workorder: L2387882 Report Date: 05-DEC-19 Page 7 of 10

	Reference	Result C	Qualifier	Units	RPD	Limit	Analyzed
PAH,PANH-WP Water							
Batch R4934049							
WG3235119-2 LCS							
Phenanthrene		104.3		%		60-130	04-DEC-19
Pyrene		116.2		%		60-130	04-DEC-19
Quinoline		105.4		%		60-130	04-DEC-19
WG3235119-1 MB 1-Methyl Naphthalene		<0.000020		mg/L		0.00002	04-DEC-19
2-Methyl Naphthalene		<0.000020		mg/L		0.00002	04-DEC-19 04-DEC-19
Acenaphthene		<0.000020		mg/L		0.00002	04-DEC-19 04-DEC-19
Acenaphthylene		<0.000020		mg/L		0.00002	04-DEC-19
Anthracene		<0.000010		mg/L		0.00002	04-DEC-19 04-DEC-19
Acridine		<0.000010		mg/L		0.00001	04-DEC-19 04-DEC-19
Benzo(a)anthracene		<0.000010		mg/L		0.00002	04-DEC-19 04-DEC-19
Benzo(a)pyrene		<0.0000000		mg/L		0.00001	04-DEC-19
Benzo(b&j)fluoranthene		<0.000010		mg/L		0.00000	04-DEC-19
Benzo(g,h,i)perylene		<0.000020		mg/L		0.00002	04-DEC-19
Benzo(k)fluoranthene		<0.000010		mg/L		0.00001	04-DEC-19
Chrysene		<0.000020		mg/L		0.00002	04-DEC-19
Dibenzo(a,h)anthracene		<0.0000050		mg/L		0.000005	04-DEC-19
Fluoranthene		<0.000020		mg/L		0.00002	04-DEC-19
Fluorene		<0.000020		mg/L		0.00002	04-DEC-19
Indeno(1,2,3-cd)pyrene		<0.000010		mg/L		0.00001	04-DEC-19
Naphthalene		<0.000050		mg/L		0.00005	04-DEC-19
Phenanthrene		<0.000050		mg/L		0.00005	04-DEC-19
Pyrene		<0.000010		mg/L		0.00001	04-DEC-19
Quinoline		<0.000020		mg/L		0.00002	04-DEC-19
Surrogate: Acenaphthene d10		97.0		%		60-130	04-DEC-19
Surrogate: Acridine d9		93.7		%		60-130	04-DEC-19
Surrogate: Chrysene d12		111.4		%		60-130	04-DEC-19
Surrogate: Naphthalene d8		92.8		%		50-130	04-DEC-19
Surrogate: Phenanthrene d10		96.6		%		60-130	04-DEC-19
PH-WP Water							
Batch R4928689							
WG3230521-5 DUP	L2387882-1						
рН	7.30	7.29	J	pH units	0.01	0.2	28-NOV-19
WG3231568-2 LCS pH		7.37		pH units		7.3-7.5	28-NOV-19



Workorder: L2387882

Report Date: 05-DEC-19

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								-
est	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	Water							
Batch R4929516								
WG3231641-6 LCS Phenols (4AAP)			108.3		%		85-115	29-NOV-19
WG3231641-5 MB Phenols (4AAP)			<0.0010		mg/L		0.001	29-NOV-19
SO4-IC-N-WP	Water							
Batch R4928444								
WG3229533-2 LCS Sulfate (SO4)			101.2		%		90-110	27-NOV-19
WG3229533-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	27-NOV-19
SOLIDS-TOTSUS-WP	Water							
Batch R4929899								
WG3231016-2 LCS Total Suspended Solids			93.4		%		85-115	28-NOV-19
WG3231016-1 MB Total Suspended Solids			<2.0		mg/L		2	28-NOV-19
TC,EC10-QT97-WP	Water							
Batch R4927006								
WG3229470-2 DUP Total Coliforms		L2387882-1 >24200	>24200		MPN/100mL	0.0	65	26-NOV-19
Escherichia Coli		>24200	>24200		MPN/100mL	0.0	65	26-NOV-19
WG3229470-1 MB			4		MDN/400			
Total Coliforms			<1		MPN/100mL		1	26-NOV-19
Escherichia Coli			<1		MPN/100mL		1	26-NOV-19

Workorder: L2387882 Report Date: 05-DEC-19 Page 9 of 10

Legend:

ALS Control Limit (Data Quality Objectives)
Duplicate
Relative Percent Difference
Not Available
Laboratory Control Sample
Standard Reference Material
Matrix Spike
Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank
Internal Reference Material
Certified Reference Material
Continuing Calibration Verification
Calibration Verification Standard
Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

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

Workorder: L2387882 Report Date: 05-DEC-19 Page 10 of 10

Hold Time Exceedances:

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

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2387882 were received on 26-NOV-19 13:35.

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

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

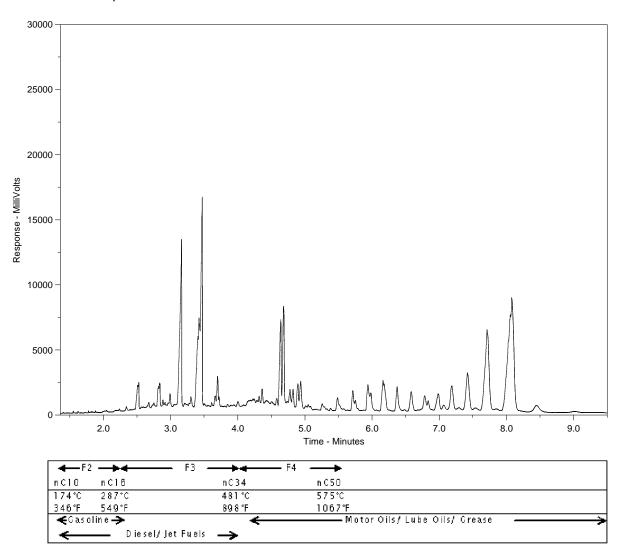
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2387882-1

Client Sample ID: RANKIN INLET WWTP - EFFLUENT



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

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

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

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

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and the second	Vork Order# ouse only)	ALS Contact:	Craig Riddell	Sampled By:	Simon Doiron	BTX,F1-F4-WP	PAH,PANH-WP	NUNAVUT-WW-GRP1-WP	-WP	EC-QT97-WP							Number of Containers
Sample **	Sample Identification (This description will appear on the report)		Date Sampled	Time Sampled	Sample Type	BTX,F	РАН,Р	NUNAV	F-IC-N-WP	TC,EC							Numbe
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4	/-GRP1-WP pkg includes 1 L BOD/CBOD, 1 L Routine, 250 n /ials for BTX,F1-F4 and 1 L Amber for PAH's = Total of 15 Bo	•		250 ml Amber N	lutrient , 250 ml A	mber	Phen	ols, 2	x 25	0 m1 A	mber	· Oil &	Grease	, 250	ml Bac	cteria (9
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ANNUAL REPORT FOR GN-CGS RANKIN INLET

Appendix Y



Nunavut Community & Government

Services - Rankin Inlet ATTN: SIMON DOIRON

P.O. Box 490

Rankin Inlet NU XOC 0G0

Date Received: 06-DEC-19

Report Date: 23-DEC-19 07:30 (MT)

Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L2393039

Project P.O. #: NOT SUBMITTED

Job Reference: RANKIN INLET WWTP - MONTHLY EFFLUENT

C of C Numbers: Legal Site Desc:

Hua Wo

Chemistry Laboratory Manager

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

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



L2393039 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2393039-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 04-DEC-19 @ 13:00							
Matrix: WASTE							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene Benzene	<0.00050		0.00050	mg/L		13-DEC-19	R4942527
Toluene	0.0023		0.0010	mg/L		13-DEC-19	R4942527
Ethyl benzene	<0.00050		0.00050	mg/L		13-DEC-19	R4942527
o-Xylene	0.00100		0.00050	mg/L		13-DEC-19	R4942527
m+p-Xylenes	0.00211		0.00040	mg/L		13-DEC-19	R4942527
F1 (C6-C10)	<0.10		0.10	mg/L		13-DEC-19	R4942527
Surrogate: 4-Bromofluorobenzene (SS)	84.3		70-130	%		13-DEC-19	R4942527
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.32		0.10	mg/L	07-DEC-19	07-DEC-19	R4939831
F3 (C16-C34)	8.33		0.25	mg/L	07-DEC-19	07-DEC-19	R4939831
F4 (C34-C50)	2.09		0.25	mg/L	07-DEC-19	07-DEC-19	R4939831
Surrogate: 2-Bromobenzotrifluoride	100.4		60-140	%	07-DEC-19	07-DEC-19	R4939831
CCME Total Hydrocarbons F1-BTEX	-0.10		0.40	ma/l		20-DEC-19	
F2-Naphth	<0.10 0.32		0.10 0.10	mg/L mg/L		20-DEC-19 20-DEC-19	
F3-PAH	8.33		0.10	mg/L		20-DEC-19 20-DEC-19	
Total Hydrocarbons (C6-C50)	10.7		0.23	mg/L		20-DEC-19	
Sum of Xylene Isomer Concentrations	10.7		0.00	g, _		20 220 10	
Xylenes (Total)	0.00311		0.00064	mg/L		17-DEC-19	
Miscellaneous Parameters							
Fluoride (F)	0.108		0.020	mg/L		07-DEC-19	R4941476
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	PEHR	10	MPN/100mL		06-DEC-19	R4937096
Escherichia Coli	>24200	PEHR	10	MPN/100mL		06-DEC-19	R4937096
Polyaromatic Hydrocarbons (PAHs)	0.00004				40 DEO 40	40 DEO 40	D 40 40 440
1-Methyl Naphthalene	0.000264		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
2-Methyl Naphthalene Acenaphthene	0.000413		0.000020	mg/L	12-DEC-19 12-DEC-19	19-DEC-19 19-DEC-19	R4949449 R4949449
Acenaphthylene	<0.000020 <0.000020		0.000020	mg/L mg/L	12-DEC-19 12-DEC-19	19-DEC-19 19-DEC-19	R4949449 R4949449
Anthracene	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449 R4949449
Acridine	0.000010	EMPC	0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Benzo(a)anthracene	<0.000010		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Benzo(a)pyrene	0.0000065	EMPC	0.0000050		12-DEC-19	19-DEC-19	R4949449
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Chrysene	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	12-DEC-19	19-DEC-19	R4949449
Fluoranthene	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Fluorene	0.000037	EMPC	0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Naphthalene	0.000302		0.000050	mg/L	12-DEC-19	19-DEC-19	R4949449
Phenanthrene	<0.000050		0.000050	mg/L	12-DEC-19	19-DEC-19	R4949449
Pyrene	0.000017		0.000010	mg/L	12-DEC-19	19-DEC-19	R4949449
Quinoline B(a)P Total Potonov Equivalent	<0.000020		0.000020	mg/L	12-DEC-19	19-DEC-19	R4949449
B(a)P Total Potency Equivalent Surrogate: Acenaphthene d10	<0.000030		0.000030	mg/L %	12-DEC-19 12-DEC-19	19-DEC-19	R4949449
Surrogate: Actinaphinene d10 Surrogate: Actinaphinene d10	112.6 115.0		60-130 60-130	% %	12-DEC-19 12-DEC-19	19-DEC-19 19-DEC-19	R4949449 R4949449
Surrogate: Achdine d9 Surrogate: Chrysene d12	122.0		60-130	%	12-DEC-19 12-DEC-19	19-DEC-19 19-DEC-19	R4949449 R4949449
Surrogate: Naphthalene d8	100.3		50-130	%	12-DEC-19 12-DEC-19	19-DEC-19	R4949449 R4949449
Surrogate: Phenanthrene d10	106.8		60-130	%	12-DEC-19	19-DEC-19	R4949449
	100.0	1	00 100	,0		10 220 10	117070770

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

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L2993039-1 RANKIN INLET WWTP - EFFLUENT Sampled By: SD no 04-DEC-19 8/13:00 Matric: WASTE Nanavut WW Group 1 Alkalinity, Blaschonate (HCO3) 71.1 1.2 mg/L 12-DEC-19 Alkalinity, Blaschonate (HCO3) 0.060 0.60 mg/L 12-DEC-19 Alkalinity, Hydroxide Hydroxide (DH) 0.004 0.34 mg/L 12-DEC-19 Alkalinity, Hydroxide (DH) 0.004 0.04 mg/L 11-DEC-19 R4941615 Markinity, Total (as CaCO3) 68.3 1.0 mg/L 11-DEC-19 R4941615 Markinity, Total (as CaCO3) 68.3 1.0 mg/L 11-DEC-19 R4941615 Markinity, Total (as CaCO3) Alkalinity, Total (as CaCO3) 63.3 2.0 mg/L 0.00-DEC-19 R4941416 Markinity, Total (as CaCO3) Markinity, Total (as CaCO3) 63.3 2.0 mg/L 0.00-DEC-19 R4941416 Markinity, Total (as CaCO3) Markinity, Total (as CaCO3) 63.3 2.0 mg/L 0.00-DEC-19 R4941416 Markinity, Total (as CaCO3) Markinity, Total (as CaCO3) Markinity, Total (as CaCO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Total (as CacO3) Markinity, Markinity	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Sampled By SD on 04-DEC-19 @ 13:00 Matrix WASTE Numavut WW Group 1 Alkalinity, Blearbonate Blearbonate (HC30) 71.1 1.2 mg/L 12-DEC-19 12-DEC	1 2303030-1 PANKIN INLET WWTD - EEELLENT							
Matrix WASTE Nunavut WM Group Alkalinity, Bicarbonate Bicarbonate (HCO3)								
Numavut WW Group 1								
Alkalinity, Bicarbonate	111101=							
Bicarbonate (HCO3)	•							
Alkalinity, Carbonate Co203 Alkalinity, Hydroxide Hydroxide (OH) Alkalinity, Hydroxide Co304 Co34 Co34 Mg/L 12-DEC-19	1	71.1		1.2	mg/L		12-DEC-19	
Alkalinity, Total (as GaCO3)								
Hydroxide (OH)	Carbonate (CO3)	<0.60		0.60	mg/L		12-DEC-19	
Akalinity, Total (as CaCO3) Akalinity, Total (as CaCO3) S8.3 1.0 mg/L 11-DEC-19 R4941815 R4941859 R4941		0.04		0.04			10.050.10	
Alkainity, Total (as CaCO3)	, ,	<0.34		0.34	mg/L		12-DEC-19	
Ammonia by colour Ammonia Total (as N) 1.97 0.10 mg/L 11-DEC-19 R4941415	Alkalinity, Total (as CaCO3)	58.3		1.0	ma/l		11-DFC-19	R4941615
Ammonia, Total (as N)		00.0		1.0	9/=			1011010
Biochemical Oxygen Demand 63		1.97		0.10	mg/L		11-DEC-19	R4941859
Carbonaceous BOD BOD Carbonaceous 53 20 mg/L 06-DEC-19 R4941414	Biochemical Oxygen Demand (BOD)							
BOD Carbonaceous		63		20	mg/L		06-DEC-19	R4941414
Chloride in Water by IC Chloride (CI) 47.5 0.50 mg/L mg/L 07-DEC-19 R4941476 Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Conductivity Fecal Coliforms >24200 PEHR 10 MPN/100mL MPN/100mL 06-DEC-19 R4941615 Hardness Calculated Hardness (as CaCO3) 82.1 HTC 0.20 mg/L 19-DEC-19 R4937094 Mercury (Hyl-Total Mercury (Hyl-Total Nitrate in Water by IC Nitrate (as N) 0.000070 0.0000050 mg/L 19-DEC-19 R4941476 Nitrate and Nitritie as N Nitrate and Nitritie as N Nitrate in Water by IC Nitritie (as N) <0.010 0.010 mg/L 12-DEC-19 R4941476 Nitritie (as N) <0.010 0.010 mg/L 0.7-DEC-19 R4941476 Nitritie (as N) <0.010 0.010 mg/L 12-DEC-19 R4941476 Nitritie (as N) <0.010 0.010 mg/L 13-DEC-19 R4942983 Phenol (4AAP) 0.0032 0.0010 mg/L 10-DEC-19 R4942983		50		20	ma/l		06 DEC 40	D4044444
Chloride (CI)		ეკ		20	IIIg/L		00-DEC-19	K4941414
Conductivity Cond		47.5		0.50	mg/L		07-DEC-19	R4941476
Conductivity	` '							
Fecal Coliforms		300		1.0	umhos/cm		11-DEC-19	R4941615
Hardness Calculated Hardness (as CaCO3)	· · · · · · · · · · · · · · · · · · ·							
Hardness (as CaCO3)		>24200	PEHR	10	MPN/100mL		06-DEC-19	R4937094
Mercury Total Mercury (Hg)-Total 0.0000070 0.0000050 mg/L 19-DEC-19 19-DEC-19 R4947031 Nitrate in Water by IC Nitrate and Nitrite as N <0.020		92.1	HTC	0.20	ma/l		12 DEC 10	
Mercury (Hg)-Total		02.1	1110	0.20	IIIg/L		13-DEC-19	
Nitrate in Water by IC Nitrate (as N)		0.0000070		0.0000050	mg/L	19-DEC-19	19-DEC-19	R4947031
Nitrate + Nitrite Nitrate and Nitrite as N								
Nitrate and Nitrite as N <0.070 0.070 mg/L 12-DEC-19 Nitrite in Water by IC Nitrite in Water by IC Nitrite (as N) <0.010 0.010 mg/L 07-DEC-19 R4941476 Nitrite (as N) 07-DEC-19 R4941476 Nitrite (as N) 07-DEC-19 R4941476 Nitrite (as N) 07-DEC-19 R4941476 Nitrite (as N) 07-DEC-19 R4941476 Nitrite (as N) Nitrite	Nitrate (as N)	<0.020		0.020	mg/L		07-DEC-19	R4941476
Nitrite in Water by IC Nitrite (as N) <0.010								
Nitrite (as N)		<0.070		0.070	mg/L		12-DEC-19	
Oil & Grease - Gravimetric 24.0 5.0 mg/L 13-DEC-19 R4942983 Phenol (4AAP) 0.0032 0.0010 mg/L 10-DEC-19 R4940476 Phosphorus (P)-Total 0.984 0.0030 mg/L 10-DEC-19 R4939913 Sulfate in Water by IC Sulfate (SO4) 24.6 0.30 mg/L 07-DEC-19 R4941476 Total Metals in Water by CRC ICPMS 0.118 0.0030 mg/L 12-DEC-19 R4942418 Aluminum (Al)-Total 0.00087 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Arsenic (As)-Total 0.00083 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Beryllium (Be)-Total 0.00118 0.00050 mg/L 12-DEC-19 12-DEC-19 R4942418 Boron (B)-Total 0.0056 0.010 mg/L 12-DEC-19 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.056 0.010		<0.010		0.010	ma/l		07-DEC-19	P4941476
Oil and Grease	, ,	<0.010		0.010	1119/1		07-02-13	104341470
Phenols (4AAP) 0.0032 0.0010 mg/L 10-DEC-19 R4940476 Phosphorus, Total Phosphorus (P)-Total 0.984 0.0030 mg/L 10-DEC-19 R4939913 Sulfate in Water by IC Sulfate (SO4) 24.6 0.30 mg/L 07-DEC-19 R4941476 Total Metals in Water by CRC ICPMS Aluminum (AI)-Total 0.118 0.0030 mg/L 12-DEC-19 R4942418 Antimony (Sb)-Total 0.00087 0.00010 mg/L 12-DEC-19 R4942418 Arsenic (As)-Total 0.00083 0.00010 mg/L 12-DEC-19 R4942418 Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 R4942418 Bismuth (Bi)-Total 0.00018 0.000050 mg/L 12-DEC-19 R4942418 Boron (B)-Total 0.056 0.010 mg/L 12-DEC-19 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.0000371 0.000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-1		24.0		5.0	mg/L		13-DEC-19	R4942983
Phosphorus, Total Phosphorus (P)-Total 0.984 0.0030 mg/L 10-DEC-19 R4939913 Sulfate in Water by IC Sulfate (SO4) 24.6 0.30 mg/L 07-DEC-19 R4941476 Total Metals in Water by CRC ICPMS Aluminum (AI)-Total 0.118 0.0030 mg/L 12-DEC-19 12-DEC-19 R4942418 Antimony (Sb)-Total 0.00087 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Arsenic (As)-Total 0.00083 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Beryllium (Be)-Total 0.00018 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Boron (B)-Total 0.0018 0.000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.000371 0.000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Calcium (Ca)-Total 0.000043 0.000010 mg/L 12-DEC-19 12-DEC-19								
Phosphorus (P)-Total 0.984 0.0030 mg/L 10-DEC-19 R4939913 Sulfate in Water by IC Sulfate (SO4) 24.6 0.30 mg/L 07-DEC-19 R4941476 Total Metals in Water by CRC ICPMS Aluminum (Al)-Total 0.118 0.0030 mg/L 12-DEC-19 R4942418 Antimony (Sb)-Total 0.00087 0.00010 mg/L 12-DEC-19 R4942418 Arsenic (As)-Total 0.00083 0.00010 mg/L 12-DEC-19 R4942418 Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 R4942418 Beryllium (Be)-Total 0.00010 0.00010 mg/L 12-DEC-19 R4942418 Bismuth (Bi)-Total 0.00118 0.000050 mg/L 12-DEC-19 R4942418 Boron (B)-Total 0.056 0.010 mg/L 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.0000371 0.000050 mg/L 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 <	Phenols (4AAP)	0.0032		0.0010	mg/L		10-DEC-19	R4940476
Sulfate in Water by IC Sulfate (SO4) 24.6 0.30 mg/L 07-DEC-19 R4941476 Total Metals in Water by CRC ICPMS Aluminum (Al)-Total 0.118 0.0030 mg/L 12-DEC-19 12-DEC-19 R4942418 Antimony (Sb)-Total 0.00087 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Arsenic (As)-Total 0.00083 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Beryllium (Be)-Total 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Bismuth (Bi)-Total 0.00118 0.000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Boron (B)-Total 0.056 0.010 mg/L 12-DEC-19 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.0000371 0.000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 12-DEC-19 R49424		0.004					40 050 40	D 4000040
Sulfate (SO4) 24.6 0.30 mg/L 07-DEC-19 R4941476 Total Metals in Water by CRC ICPMS 0.118 0.0030 mg/L 12-DEC-19 12-DEC-19 R4942418 Antimony (Sb)-Total 0.00087 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Arsenic (As)-Total 0.00083 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Bismuth (Bi)-Total 0.00011 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Boron (B)-Total 0.00118 0.000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.056 0.010 mg/L 12-DEC-19 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 12-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 <th></th> <th>0.984</th> <th></th> <th>0.0030</th> <th>rng/L</th> <th></th> <th>10-DEC-19</th> <th>K4939913</th>		0.984		0.0030	rng/L		10-DEC-19	K4939913
Total Metals in Water by CRC ICPMS 0.118 0.0030 mg/L 12-DEC-19 12-DEC-19 R4942418 Antimony (Sb)-Total 0.00087 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Arsenic (As)-Total 0.00083 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Beryllium (Be)-Total 0.00010 0.00010 mg/L 12-DEC-19 R4942418 Bismuth (Bi)-Total 0.00118 0.00050 mg/L 12-DEC-19 R4942418 Boron (B)-Total 0.056 0.010 mg/L 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.0000371 0.000050 mg/L 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 R2-DEC-19 R4942418		24.6		0.30	ma/L		07-DEC-19	R4941476
Aluminum (Al)-Total 0.118 0.0030 mg/L 12-DEC-19 12-DEC-19 R4942418 Antimony (Sb)-Total 0.00087 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Arsenic (As)-Total 0.00083 0.00010 mg/L 12-DEC-19 R4942418 Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Beryllium (Be)-Total 0.00010 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Bismuth (Bi)-Total 0.00118 0.000050 mg/L 12-DEC-19 R4942418 Boron (B)-Total 0.056 0.010 mg/L 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.0000371 0.0000050 mg/L 12-DEC-19 R4942418 Calcium (Ca)-Total 23.5 0.050 mg/L 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 R2-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L <th></th> <th></th> <th></th> <th> 5.00</th> <th></th> <th></th> <th> </th> <th></th>				5.00				
Arsenic (As)-Total 0.00083 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Beryllium (Be)-Total 0.00010 0.00010 mg/L 12-DEC-19 R4942418 Bismuth (Bi)-Total 0.00118 0.000050 mg/L 12-DEC-19 R4942418 Boron (B)-Total 0.056 0.010 mg/L 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.0000371 0.000050 mg/L 12-DEC-19 R4942418 Calcium (Ca)-Total 23.5 0.050 mg/L 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 R4942418	•	0.118		0.0030	mg/L	12-DEC-19	12-DEC-19	R4942418
Barium (Ba)-Total 0.0270 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Beryllium (Be)-Total <0.00010 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418 Bismuth (Bi)-Total 0.00118 0.000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Boron (B)-Total 0.056 0.010 mg/L 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.0000371 0.000050 mg/L 12-DEC-19 R4942418 Calcium (Ca)-Total 23.5 0.050 mg/L 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 R4942418		0.00087		0.00010	mg/L			I I
Beryllium (Be)-Total <0.00010								
Bismuth (Bi)-Total 0.00118 0.000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Boron (B)-Total 0.056 0.010 mg/L 12-DEC-19 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.0000371 0.0000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Calcium (Ca)-Total 23.5 0.050 mg/L 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 R4942418								
Boron (B)-Total 0.056 0.010 mg/L 12-DEC-19 R4942418 Cadmium (Cd)-Total 0.0000371 0.0000050 mg/L 12-DEC-19 R4942418 Calcium (Ca)-Total 23.5 0.050 mg/L 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 R4942418								
Cadmium (Cd)-Total 0.0000371 0.0000050 mg/L 12-DEC-19 12-DEC-19 R4942418 Calcium (Ca)-Total 23.5 0.050 mg/L 12-DEC-19 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 12-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418					-			
Calcium (Ca)-Total 23.5 0.050 mg/L 12-DEC-19 12-DEC-19 R4942418 Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 12-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418					-			
Cesium (Cs)-Total 0.000043 0.000010 mg/L 12-DEC-19 12-DEC-19 R4942418 Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418					-			
Chromium (Cr)-Total 0.00064 0.00010 mg/L 12-DEC-19 12-DEC-19 R4942418					-			
Cobalt (Co)-Total 0.00015 0.00010 mg/l 12-DEC-19 12-DEC-19 R4942418		0.00064		0.00010		12-DEC-19	12-DEC-19	
	Cobalt (Co)-Total	0.00015		0.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Copper (Cu)-Total 0.136 0.00050 mg/L 12-DEC-19 R4942418	Copper (Cu)-Total	0.136		0.00050	mg/L	12-DEC-19	12-DEC-19	R4942418

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2393039-1 RANKIN INLET WWTP - EFFLUENT							
Sampled By: SD on 04-DEC-19 @ 13:00							
Matrix: WASTE							
Total Metals in Water by CRC ICPMS							
Iron (Fe)-Total	0.240		0.010	mg/L	12-DEC-19	12-DEC-19	R4942418
Lead (Pb)-Total	0.00279		000050	mg/L	12-DEC-19	12-DEC-19	R4942418
Lithium (Li)-Total	0.0034		0.0010	mg/L	12-DEC-19	12-DEC-19	R4942418
Magnesium (Mg)-Total	5.71	0	0.0050	mg/L	12-DEC-19	12-DEC-19	R4942418
Manganese (Mn)-Total	0.0252		.00010	mg/L	12-DEC-19	12-DEC-19	R4942418
Molybdenum (Mo)-Total	0.00104	0.0	000050	mg/L	12-DEC-19	12-DEC-19	R4942418
Nickel (Ni)-Total	0.00293	0.	.00050	mg/L	12-DEC-19	12-DEC-19	R4942418
Potassium (K)-Total	4.83		0.050	mg/L	12-DEC-19	12-DEC-19	R4942418
Phosphorus (P)-Total	1.07		0.030	mg/L	12-DEC-19	12-DEC-19	R4942418
Rubidium (Rb)-Total	0.00466	0.	.00020	mg/L	12-DEC-19	12-DEC-19	R4942418
Selenium (Se)-Total	0.000129		000050	mg/L	12-DEC-19	12-DEC-19	R4942418
Silicon (Si)-Total	0.28		0.10	mg/L	12-DEC-19	12-DEC-19	R4942418
Silver (Ag)-Total	0.000027		000010	mg/L	12-DEC-19	12-DEC-19	R4942418
Sodium (Na)-Total	28.1		0.050	mg/L	12-DEC-19	12-DEC-19	R4942418
Strontium (Sr)-Total	0.115	_	.00020	mg/L	12-DEC-19	12-DEC-19	R4942418
Sulfur (S)-Total	9.69		0.50	mg/L	12-DEC-19	12-DEC-19	R4942418
Tellurium (Te)-Total Thallium (TI)-Total	<0.00020		.00020	mg/L	12-DEC-19 12-DEC-19	12-DEC-19	R4942418
Thorium (Th)-Total	<0.00010		000010	mg/L	12-DEC-19 12-DEC-19	12-DEC-19 12-DEC-19	R4942418 R4942418
Tin (Sn)-Total	<0.00010 0.00067		.00010	mg/L	12-DEC-19 12-DEC-19	12-DEC-19 12-DEC-19	R4942418 R4942418
Titanium (Ti)-Total	0.00067		.00010	mg/L mg/L	12-DEC-19 12-DEC-19	12-DEC-19 12-DEC-19	R4942418
Tungsten (W)-Total	<0.00107		.00030	mg/L	12-DEC-19	12-DEC-19	R4942418
Uranium (U)-Total	0.000162		000010	mg/L	12-DEC-19	12-DEC-19	R4942418
Vanadium (V)-Total	0.000102		.00050	mg/L	12-DEC-19	12-DEC-19	R4942418
Zinc (Zn)-Total	0.0473		0.0030	mg/L	12-DEC-19	12-DEC-19	R4942418
Zirconium (Zr)-Total	0.00020		.00020	mg/L	12-DEC-19	12-DEC-19	R4942418
Total Organic Carbon by Combustion Total Organic Carbon	28.6		0.50	mg/L		12-DEC-19	R4942510
Total Suspended Solids				-			
Total Suspended Solids	97.2		6.0	mg/L		11-DEC-19	R4941843
рН							
pH	7.14		0.10	pH units		11-DEC-19	R4941615

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

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Reference Information

Qualifiers for Individual Samples Listed:

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

Sample Parameter Qualifier Key:

Sample Farameter Qualifier Key.			
Qualifier	Description		
EMPC	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.		
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).		
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.		
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.		

Test Method References:

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

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

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

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 finel DO.

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.

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.

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Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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

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

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

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

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

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

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

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

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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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- Water Sum of Xylene Isomer Concentrations CALCULATED RESULT WP

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.



Workorder: L2393039 Report Date: 23-DEC-19 Page 1 of 10

Client: Nunavut Community & Government Services - Rankin Inlet

P.O. Box 490

Rankin Inlet NU X0C 0G0

Contact: SIMON DOIRON

Test I	Matrix Reference	Result Qualifier	Units	RPD Limit	Analyzed
ALK-TITR-WP	Water				
Batch R4941615 WG3239080-14 LCS Alkalinity, Total (as CaCO	3)	101.0	%	85-115	11-DEC-19
WG3239080-11 MB Alkalinity, Total (as CaCO	3)	<1.0	mg/L	1	11-DEC-19
BOD-CBOD-WP	Water				
Batch R4941414 WG3236928-7 LCS BOD Carbonaceous		110.7	%	85-115	06-DEC-19
WG3236928-6 MB BOD Carbonaceous		<2.0	mg/L	2	06-DEC-19
BOD-WP	Water				
Batch R4941414 WG3236928-7 LCS					
Biochemical Oxygen Dema	and	104.0	%	85-115	06-DEC-19
WG3236928-6 MB Biochemical Oxygen Dema	and	<2.0	mg/L	2	06-DEC-19
BTEXS+F1-HSMS-WP	Water				
Batch R4942527					
WG3239444-8 LCS Benzene		95.0	%	70-130	11-DEC-19
Toluene		94.7	%	70-130	11-DEC-19
Ethyl benzene		94.1	%	70-130	11-DEC-19
o-Xylene		98.7	%	70-130	11-DEC-19
m+p-Xylenes		93.0	%	70-130	11-DEC-19
WG3239444-9 LCS F1 (C6-C10)		107.4	%	70-130	11-DEC-19
WG3239444-7 MB Benzene		<0.00050	mg/L	0.0005	11-DEC-19
Toluene		<0.0010	mg/L	0.001	11-DEC-19
Ethyl benzene		<0.00050	mg/L	0.0005	11-DEC-19
o-Xylene		<0.00050	mg/L	0.0005	11-DEC-19
m+p-Xylenes		<0.00040	mg/L	0.0004	11-DEC-19
F1 (C6-C10)		<0.10	mg/L	0.1	11-DEC-19
Surrogate: 4-Bromofluorob	penzene (SS)	87.1	%	70-130	11-DEC-19
WG3239444-12 MS F1 (C6-C10)	L2393039-1	113.5	%	50-150	11-DEC-19
C-TOC-HTC-WP	Water				



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Report Date: 23-DEC-19

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
Batch R4942510 WG3241750-3 DUP Total Organic Carbon)	L2393039-1 28.6	27.7		mg/L	3.3	20	12-DEC-19
WG3241750-2 LCS Total Organic Carbon			94.2		%		80-120	12-DEC-19
WG3241750-1 MB Total Organic Carbon			<0.50		mg/L		0.5	12-DEC-19
CL-IC-N-WP	Water							
Batch R4941476 WG3237580-2 LCS	5							
Chloride (Cl) WG3237580-1 MB			100.3		%		90-110	07-DEC-19
Chloride (CI)			<0.50		mg/L		0.5	07-DEC-19
EC-WP Batch R4941615 WG3239080-13 LCS Conductivity	Water 5		97.4		%		90-110	11-DEC-19
WG3239080-11 MB Conductivity			<1.0		umhos/cm		1	11-DEC-19
F-IC-N-WP	Water							
Batch R4941476 WG3237580-2 LCS Fluoride (F)	5		103.0		%		90-110	07-DEC-19
WG3237580-1 MB Fluoride (F)			<0.020		mg/L		0.02	07-DEC-19
F2-F4-FID-WP	Water							
Batch R493983 ^o WG3237617-2 LCS	I		400.0		0/			
F2 (C10-C16)			106.3		%		70-130	07-DEC-19
F3 (C16-C34) F4 (C34-C50)			97.7 98.3		%		70-130 70-130	07-DEC-19 07-DEC-19
WG3237617-1 MB F2 (C10-C16)			<0.10		mg/L		0.1	07-DEC-19
F3 (C16-C34)			<0.16		mg/L		0.1	07-DEC-19 07-DEC-19
F4 (C34-C50)			<0.25		mg/L		0.25	07-DEC-19
Surrogate: 2-Bromobe	nzotrifluoride		103.2		%		60-140	07-DEC-19
FC10-QT97-WP	Water							



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FC10-QT97-WP Batch R4937094 MC20327315-1 MB Focal Coliforms >24200	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MG2337315-1	FC10-QT97-WP	Water							
Fecal Coliforms Water Wa	WG3237315-2 DUP			>24200		MPN/100mL	0.0	65	06-DEC-19
Marcury (Hg)-Total 99.0 % 80.120 19-DEC-19 19-				<1		MPN/100mL		1	06-DEC-19
MG3246670-1 LCS Mercury (Hg)-Total 99.0 % 80-120 19-DEC-19 MG3246670-1 MB Mercury (Hg)-Total 20.000005C mg/L 0.000005 19-DEC-19 MET-T-CCMS-WP Water Batch R4942418 WG3240862-2 LCS Aluminum (Al)-Total 103.7 % 80-120 12-DEC-19 Antimony (Sb)-Total 103.7 % 80-120 12-DEC-19 Arsenic (As)-Total 102.8 % 80-120 12-DEC-19 Barium (Ba)-Total 101.3 % 80-120 12-DEC-19 Beryllium (Be)-Total 100.3 % 80-120 12-DEC-19 Bismuth (Bi)-Total 100.3 % 80-120 12-DEC-19 Boron (B)-Total 104.8 % 80-120 12-DEC-19 Calcium (Ca)-Total 100.4 % 80-120 12-DEC-19 Cesum (Cs)-Total 100.4 % 80-120 12-DEC-19 Chromium (Cr)-Total 103.7 % 80-120 12-DEC	HG-T-CVAA-WP	Water							
MET-T-CCMS-WP Water Batch R4942418 R4942418 WG32408622 LCS Aluminum (Al)-Total 103.7 % 80-120 12-DEC-19 Antimony (Sb)-Total 105.9 % 80-120 12-DEC-19 Arsenic (As)-Total 102.8 % 80-120 12-DEC-19 Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Beryllium (CB)-Total 100.4 80-120 12-DEC-19 Boron (B)-Total 104.8 % 80-120 12-DEC-19 Cadraium (CG)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Cesium (Cr)-Total 100.4 % 80-120 12-DEC-19 Choalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.5 80-120 12-DEC-19	WG3246670-2 LCS			99.0		%		80-120	19-DEC-19
Batch R4942418 WG3240862-2 LCS Aluminum (Al)-Total 103.7 % 80-120 12-DEC-19 Antimony (Sb)-Total 105.9 % 80-120 12-DEC-19 Arsenic (As)-Total 103.7 % 80-120 12-DEC-19 Barium (Ba)-Total 102.8 % 80-120 12-DEC-19 Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Bismuth (Bi)-Total 100.3 % 80-120 12-DEC-19 Boron (B)-Total 104.8 % 80-120 12-DEC-19 Cadmium (Cd)-Total 102.6 % 80-120 12-DEC-19 Calcium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron				<0.00000	5 C	mg/L		0.000005	19-DEC-19
WG3240862-2 LCS Aluminum (Al)-Total 103.7 % 80-120 12-DEC-19 Antimony (Sb)-Total 105.9 % 80-120 12-DEC-19 Arsenic (As)-Total 103.7 % 80-120 12-DEC-19 Barium (Ba)-Total 102.8 % 80-120 12-DEC-19 Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Bismuth (Bi)-Total 100.3 % 80-120 12-DEC-19 Boron (B)-Total 104.8 % 80-120 12-DEC-19 Cadmium (Cd)-Total 102.6 % 80-120 12-DEC-19 Cadmium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Ca)-Total 100.4 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 104.	MET-T-CCMS-WP	Water							
Aluminum (Al)-Total 103.7 % 80-120 12-DEC-19 Antimony (Sb)-Total 105.9 % 80-120 12-DEC-19 Arsenic (As)-Total 103.7 % 80-120 12-DEC-19 Barium (Ba)-Total 102.8 % 80-120 12-DEC-19 Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Bismuth (Bi)-Total 100.3 % 80-120 12-DEC-19 Boron (B)-Total 100.3 % 80-120 12-DEC-19 Cadmium (Cd)-Total 102.6 % 80-120 12-DEC-19 Calcium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 104.5 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (L)-Total 103.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 103.6 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 103.6 % 80-120 12-DEC-19 Nickel (Ni)-Total 103.6 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19	Batch R4942418								
Arsenic (As)-Total 103.7 % 80-120 12-DEC-19 Barium (Ba)-Total 102.8 % 80-120 12-DEC-19 Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Bismuth (Bi)-Total 100.3 % 80-120 12-DEC-19 Boron (B)-Total 104.8 % 80-120 12-DEC-19 Cadmium (Cd)-Total 102.6 % 80-120 12-DEC-19 Calcium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 103.6 % 80-120 12-DEC-19 Nickel (Ni)-Total 103.6 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Potassium (F)-Total 104.4 % 80-120 12-DEC-19				103.7		%		80-120	12-DEC-19
Barium (Ba)-Total 102.8 % 80-120 12-DEC-19 Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Bismuth (Bi)-Total 100.3 % 80-120 12-DEC-19 Boron (B)-Total 104.8 % 80-120 12-DEC-19 Cadmium (Cd)-Total 102.6 % 80-120 12-DEC-19 Calcium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Manganesium (Mg)-Total 103.9 80-120 12-DEC-19 <td>Antimony (Sb)-Total</td> <td></td> <td></td> <td>105.9</td> <td></td> <td>%</td> <td></td> <td>80-120</td> <td>12-DEC-19</td>	Antimony (Sb)-Total			105.9		%		80-120	12-DEC-19
Beryllium (Be)-Total 101.3 % 80-120 12-DEC-19 Bismuth (Bi)-Total 100.3 % 80-120 12-DEC-19 Boron (B)-Total 104.8 % 80-120 12-DEC-19 Cadmium (Cd)-Total 102.6 % 80-120 12-DEC-19 Calcium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120	Arsenic (As)-Total			103.7		%		80-120	12-DEC-19
Bismuth (Bi)-Total 100.3 % 80-120 12-DEC-19 Boron (B)-Total 104.8 % 80-120 12-DEC-19 Cadmium (Cd)-Total 102.6 % 80-120 12-DEC-19 Calcium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 109.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 109.9 % 80-120 12-DEC-19 Molybdenum (Mg)-Total 105.3 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Barium (Ba)-Total			102.8		%		80-120	12-DEC-19
Boron (B)-Total 104.8 % 80-120 12-DEC-19 Cadmium (Cd)-Total 102.6 % 80-120 12-DEC-19 Calcium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Chobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 103.6 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Beryllium (Be)-Total			101.3		%		80-120	12-DEC-19
Cadmium (Cd)-Total 102.6 % 80-120 12-DEC-19 Calcium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 103.9 % 80-120 12-DEC-19 Nickel (Ni)-Total 105.3 % 80-120 12-DEC-19 Potassium (K)-Total 101.4 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Bismuth (Bi)-Total			100.3		%		80-120	12-DEC-19
Calcium (Ca)-Total 101.2 % 80-120 12-DEC-19 Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Boron (B)-Total			104.8		%		80-120	12-DEC-19
Cesium (Cs)-Total 109.0 % 80-120 12-DEC-19 Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Cadmium (Cd)-Total			102.6		%		80-120	12-DEC-19
Chromium (Cr)-Total 100.4 % 80-120 12-DEC-19 Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Phosphorus (P)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Calcium (Ca)-Total			101.2		%		80-120	12-DEC-19
Cobalt (Co)-Total 103.1 % 80-120 12-DEC-19 Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Cesium (Cs)-Total			109.0		%		80-120	12-DEC-19
Copper (Cu)-Total 103.7 % 80-120 12-DEC-19 Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Chromium (Cr)-Total			100.4		%		80-120	12-DEC-19
Iron (Fe)-Total 95.4 % 80-120 12-DEC-19 Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Cobalt (Co)-Total			103.1		%		80-120	12-DEC-19
Lead (Pb)-Total 104.5 % 80-120 12-DEC-19 Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Copper (Cu)-Total			103.7		%		80-120	12-DEC-19
Lithium (Li)-Total 103.6 % 80-120 12-DEC-19 Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Iron (Fe)-Total			95.4		%		80-120	12-DEC-19
Magnesium (Mg)-Total 110.9 % 80-120 12-DEC-19 Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Lead (Pb)-Total			104.5		%		80-120	12-DEC-19
Manganese (Mn)-Total 103.9 % 80-120 12-DEC-19 Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Lithium (Li)-Total			103.6		%		80-120	12-DEC-19
Molybdenum (Mo)-Total 105.3 % 80-120 12-DEC-19 Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Magnesium (Mg)-Total			110.9		%		80-120	12-DEC-19
Nickel (Ni)-Total 101.4 % 80-120 12-DEC-19 Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Manganese (Mn)-Total			103.9		%		80-120	12-DEC-19
Potassium (K)-Total 103.6 % 80-120 12-DEC-19 Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Molybdenum (Mo)-Total			105.3		%		80-120	12-DEC-19
Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Nickel (Ni)-Total			101.4		%		80-120	12-DEC-19
Phosphorus (P)-Total 104.4 % 80-120 12-DEC-19	Potassium (K)-Total			103.6		%		80-120	12-DEC-19
Rubidium (Rb)-Total 103.3 % 80-120 12-DEC-19	Phosphorus (P)-Total			104.4		%		80-120	12-DEC-19
	Rubidium (Rb)-Total			103.3		%		80-120	12-DEC-19



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R4942418								
WG3240862-2 LCS			102.0		0/		00.100	10 PEC 15
Selenium (Se)-Total			103.8		%		80-120	12-DEC-19
Silicon (Si)-Total			104.3		%		80-120	12-DEC-19
Silver (Ag)-Total			105.7		%		80-120	12-DEC-19
Sodium (Na)-Total			102.9		%		80-120	12-DEC-19
Strontium (Sr)-Total			109.3		%		80-120	12-DEC-19
Sulfur (S)-Total			110.1		%		80-120	12-DEC-19
Tellurium (Te)-Total			104.8		%		80-120	12-DEC-19
Thallium (Tl)-Total			100.8		%		80-120	12-DEC-19
Thorium (Th)-Total			104.6		%		80-120	12-DEC-19
Tin (Sn)-Total			101.6		%		80-120	12-DEC-19
Titanium (Ti)-Total			98.3		%		80-120	12-DEC-19
Tungsten (W)-Total			102.1		%		80-120	12-DEC-19
Uranium (U)-Total			102.5		%		80-120	12-DEC-19
Vanadium (V)-Total			104.3		%		80-120	12-DEC-19
Zinc (Zn)-Total			102.9		%		80-120	12-DEC-19
Zirconium (Zr)-Total			103.4		%		80-120	12-DEC-19
WG3240862-1 MB								
Aluminum (AI)-Total			< 0.0030		mg/L		0.003	12-DEC-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Bismuth (Bi)-Total			<0.00005	0	mg/L		0.00005	12-DEC-19
Boron (B)-Total			<0.010		mg/L		0.01	12-DEC-19
Cadmium (Cd)-Total			<0.00000	5C	mg/L		0.000005	12-DEC-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	12-DEC-19
Cesium (Cs)-Total			<0.000010	0	mg/L		0.00001	12-DEC-19
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	12-DEC-19
Copper (Cu)-Total			<0.00050		mg/L		0.0005	12-DEC-19
Iron (Fe)-Total			<0.010		mg/L		0.01	12-DEC-19
Lead (Pb)-Total			<0.000050	0	mg/L		0.00005	12-DEC-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	12-DEC-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	12-DEC-19



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



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est	Matrix	Reference	Result C	tualifier Units	RPD	Limit	Analyzed
NO3-IC-N-WP	Water						
Batch R4941476							
WG3237580-2 LCS Nitrate (as N)			100.1	%		00 110	07 DEC 10
WG3237580-1 MB			100.1	70		90-110	07-DEC-19
Nitrate (as N)			<0.020	mg/L		0.02	07-DEC-19
OG-GRAV-WP	Water			-			
Batch R4942983							
WG3241703-2 LCS							
Oil and Grease			101.6	%		70-130	13-DEC-19
WG3241703-1 MB							
Oil and Grease			<5.0	mg/L		5	13-DEC-19
P-T-COL-WP	Water						
Batch R4939913							
WG3238472-2 LCS							
Phosphorus (P)-Total			101.4	%		80-120	10-DEC-19
WG3238472-1 MB Phosphorus (P)-Total			<0.0030	mg/L		0.003	10 DEC 10
			10.0000	mg/L		0.003	10-DEC-19
PAH,PANH-WP	Water						
Batch R4949449							
WG3243349-2 LCS 1-Methyl Naphthalene			109.9	%		60-130	18-DEC-19
2-Methyl Naphthalene			103.1	%		60-130	18-DEC-19
Acenaphthene			112.8	%		60-130	18-DEC-19
Acenaphthylene			99.2	%		60-130	18-DEC-19
Anthracene			87.5	%		60-130	18-DEC-19
Acridine			101.9	%		60-130	18-DEC-19
Benzo(a)anthracene			104.6	%		60-130	18-DEC-19
Benzo(a)pyrene			88.1	%		60-130	18-DEC-19
Benzo(b&j)fluoranthene			123.4	%		60-130	18-DEC-19
Benzo(g,h,i)perylene			100.0	%		60-130	18-DEC-19
Benzo(k)fluoranthene			117.0	%		60-130	18-DEC-19
Chrysene			108.8	%		60-130	18-DEC-19
Dibenzo(a,h)anthracene			112.0	%		60-130	18-DEC-19
Fluoranthene			105.8	%		60-130	18-DEC-19
Fluorene			101.9	%		60-130	18-DEC-19
Indeno(1,2,3-cd)pyrene			103.9	%		60-130	18-DEC-19
Naphthalene			106.4	%		50-130	18-DEC-19



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Test Mati	rix Reference	Result Qualifie	r Units	RPD Limit	Analyzed
PAH,PANH-WP Wat	ter				
Batch R4949449					
WG3243349-2 LCS		440.0	0/		
Phenanthrene		113.3	%	60-130	18-DEC-19
Pyrene		111.0	%	60-130	18-DEC-19
Quinoline		98.6	%	60-130	18-DEC-19
WG3243349-1 MB 1-Methyl Naphthalene		<0.000020	mg/L	0.00002	18-DEC-19
2-Methyl Naphthalene		<0.000020	mg/L	0.00002	18-DEC-19
Acenaphthene		<0.000020	mg/L	0.00002	18-DEC-19
Acenaphthylene		<0.000020	mg/L	0.00002	18-DEC-19
Anthracene		<0.000010	mg/L	0.00001	18-DEC-19
Acridine		<0.000020	mg/L	0.00002	18-DEC-19
Benzo(a)anthracene		<0.000010	mg/L	0.00001	18-DEC-19
Benzo(a)pyrene		<0.000050	mg/L	0.000005	18-DEC-19
Benzo(b&j)fluoranthene		<0.000010	mg/L	0.00001	18-DEC-19
Benzo(g,h,i)perylene		<0.000020	mg/L	0.00002	18-DEC-19
Benzo(k)fluoranthene		<0.000010	mg/L	0.00001	18-DEC-19
Chrysene		<0.000020	mg/L	0.00002	18-DEC-19
Dibenzo(a,h)anthracene		<0.0000050	mg/L	0.000005	18-DEC-19
Fluoranthene		<0.000020	mg/L	0.00002	18-DEC-19
Fluorene		<0.000020	mg/L	0.00002	18-DEC-19
Indeno(1,2,3-cd)pyrene		<0.000010	mg/L	0.00001	18-DEC-19
Naphthalene		<0.000050	mg/L	0.00005	18-DEC-19
Phenanthrene		<0.000050	mg/L	0.00005	18-DEC-19
Pyrene		<0.000010	mg/L	0.00001	18-DEC-19
Quinoline		<0.000020	mg/L	0.00002	18-DEC-19
Surrogate: Acenaphthene d10)	87.6	%	60-130	18-DEC-19
Surrogate: Acridine d9		83.8	%	60-130	18-DEC-19
Surrogate: Chrysene d12		109.2	%	60-130	18-DEC-19
Surrogate: Naphthalene d8		75.6	%	50-130	18-DEC-19
Surrogate: Phenanthrene d10		81.2	%	60-130	18-DEC-19
PH-WP Wat	ter				
Batch R4941615					
WG3239080-12 LCS					
рН		7.42	pH units	7.3-7.5	11-DEC-19

PHENOLS-4AAP-WT Water



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-WT	Water							
Batch R4940476								
WG3239134-2 LCS Phenols (4AAP)			110.7		%		85-115	10-DEC-19
WG3239134-1 MB Phenols (4AAP)			<0.0010		mg/L		0.001	10-DEC-19
SO4-IC-N-WP	Water							
Batch R4941476								
WG3237580-2 LCS Sulfate (SO4)			101.8		%		90-110	07-DEC-19
WG3237580-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	07-DEC-19
SOLIDS-TOTSUS-WP	Water							
Batch R4941843								
WG3239020-14 LCS Total Suspended Solids			95.6		%		85-115	11-DEC-19
WG3239020-13 MB Total Suspended Solids			<2.0		mg/L		2	11-DEC-19
TC,EC10-QT97-WP	Water							
Batch R4937096								
WG3237333-2 DUP Total Coliforms		L2393039-1	- 24200		MDNI/400ml	0.0	05	00 850 40
		>24200	>24200		MPN/100mL	0.0	65	06-DEC-19
Escherichia Coli		>24200	>24200		MPN/100mL	0.0	65	06-DEC-19
WG3237333-1 MB Total Coliforms			<1		MPN/100mL		1	06-DEC-19
Escherichia Coli			<1		MPN/100mL		1	06-DEC-19

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Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP Duplicate

Relative Percent Difference RPD

N/A Not Available

Laboratory Control Sample LCS Standard Reference Material

SRM MS Matrix Spike

MSD

Matrix Spike Duplicate
Average Desorption Efficiency
Method Blank ADE

MB

Internal Reference Material IRM Certified Reference Material CRM Continuing Calibration Verification CCV CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

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Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
рН							
	1	04-DEC-19 13:00	11-DEC-19 12:00	0.25	167	hours	EHTR-FN
Bacteriological Tests							
Fecal coliforms, 1:10 dilution	on by QT97						
	1	04-DEC-19 13:00	06-DEC-19 17:45	30	53	hours	EHTR
Total and E. coli, 1:10 diluti	on by QT97						
	1	04-DEC-19 13:00	06-DEC-19 17:45	30	53	hours	EHTR
Logand & Qualifier Definition							

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2393039 were received on 06-DEC-19 13:45.

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

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

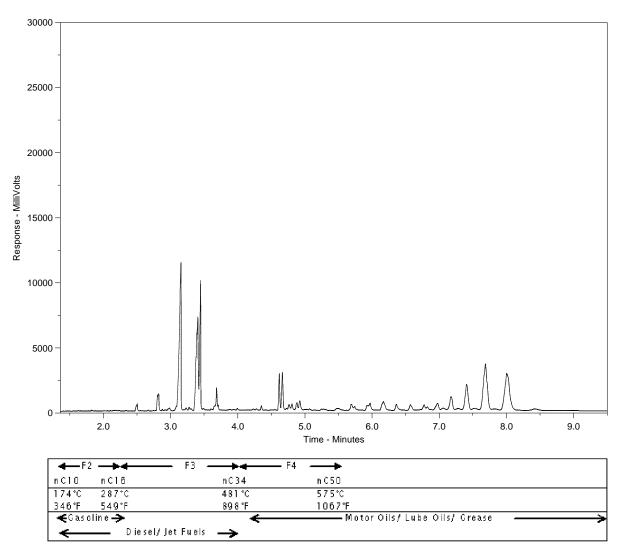
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2393039-1

Client Sample ID: RANKIN INLET WWTP - EFFLUENT



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

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

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

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

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Company:	Nunavut CGS - Rani	kin Irilet (W8133)								Service Requested (Rush for routine analysis subject to availability) Regular (Standard Turnstround Times - Business Days)														
Contact:	the day of the state of the sta				PDP Excel Digital Fax O Priority (2-4 Business Days) = 50% Surcharge = Contact ALS to Confirm TAT																			
Address:	ddress: Box 490				sdoiron@gov.nu	J.ca		O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT																
	Rankin Inlet, NU,	X0C 0G0	<u> </u>		Email 1: sdoiron@gov.nu.ca Email 2: mlusty@gov.nu.ca						Same Day or Weekend Emergency - Contact ALS to Confirm TAT													
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