Building Nunavut Together
Nunavuliuqatigiingniq
Bâtir le Nunavut ensemble

May 7, 2021

Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1L0

Attention: Richard Dwyer, Manager of Licensing

Dear Richard,

The Hamlet of Baker Lake is pleased to submit the 2020 Annual Report for water use and disposal of waste as required under the 3BM-BAK-1526 water license from January 1-December 31, 2020.

The estimated water use in 2020 was 75,283 m^3 which is below the 100,000m^3 allowable limit. The 2019 water consumption data was incomplete and the annual increase could not be reliably calculated. Sampling of sewage effluent was tested at the ALS Laboratory in Winnipeg. The effluent sampled at the wetland discharge point BAK-5 was below the allowable limits for BOD and TSS. The Licensee is interested in expanding their Solid Waste site and may undertake a planning study to inform the expansion.

Thank you for your consideration. Please do not hesitate to contact me with any questions or concerns.

Regards,

S. Collins

Sarah Collins, P. Eng.
Municipal Planning Engineer
Government of Nunavut
Community and Government Services
Phone: 867-975-5478
Email: scollins@gov.nu.ca

ANNUAL REPORT
FOR THE HAMLET OF BAKER LAKE

YEAR BEING REPORTED: 2020

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. 3BM-BAK1526 issued to the Hamlet of Baker Lake.

a) **tabular summaries of all data generated under the "Monitoring Program" and an indication of wastewater treatment levels upstream and downstream of the Wetland Area;**
b) **summary of modifications to the "Monitoring Program" in accordance with Part H, Item 10;**
c) **the daily, monthly, and annual quantities in cubic metres of fresh water obtained at the Water Treatment Facility;**

Attached are quantities of water used as reported in our On Tap Water Delivery System and the estimated discharge of sewage waste based on quantities used.

Month Reported	Quantity of Water Obtained from all sources (m^3)	Quantity of Sewage Waste Discharged (Estimated, m^3)
January	6,374.381	Same
February	5,989.768	Same
March	6,609.527	Same
April	5,916.472	Same
May	5,989.937	Same
June	6,075.404	Same
July	6,414.212	Same
August	6,459.154	Same
September	6,376,632	Same
October	6,431,249	Same
November	6,312,643	Same
December	6,333,394	Same
ANNUAL TOTAL	**75,282,773**	**Same**

Note: There is no meter at the Sewage discharge pipe. Therefore, the monthly discharge volume is considered as equal to the monthly water consumption volume. Daily water use is estimated as 206 m^3/day.

d) the annual quantity in cubic metres and tonnes of sludge removed from the Sewage Disposal Facility along with the treatment, storage, and disposal provided as required in Part H Item 5;

- The licensee did sludge removal from the sewage lagoon in 2020. The volumes of sludge removal were not reported to CGS at the time of this report, once obtained they will be submitted to the NWB.

e) a summary of modifications and/or major maintenance work carried out on the Water Treatment and Waste Disposal Facilities, including all associated structures and facilities;

- None

f) a list of unauthorized discharges and summary of follow-up action taken;

Spill No.	Date	Site Description	Commodity	Quantity
2020361	01/01/20	800m from Kiyuk Lake	Petroleum – crude oil	10.00 L
2020043	01/28/20	VOR	Petroleum-fuel oil (jet A, diesel, turbo A, heat)	3.00 L
2020094	09/10/20	North shore of Baker Lake	Petroleum-fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity
2020326	10/15/20	Unit #202	Petroleum-fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity

g) a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

- None

h) any updates or revisions for manuals and plans (i.e., *Operations and Maintenance Manual*) as required by changes in operation and/or technology, may be subject to Board approval;

- None

i) detailed minutes of any public consultation and participation with local organizations and the residents of the community regarding licence amendments;

- None

j) a summary of any studies or reports requested by the Board that relate to water use and waste disposal or restoration, and a brief description of any future studies planned;

- None currently being undertaken. The licensee is interested in expanding their solid waste site and may undertake a planning study to inform the site plan.

k) any other details on water use or waste disposal requested by the Board by 1st of November of the year being reported; and

- None

l) The monthly and annual quantities in cubic metres of backwash water disposed of at the Sewage Disposal Facility.

- This information was not provided to CGS at the time of this submission, once obtained this data will be submitted to NWB.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- A report was completed in June 2020 to address freezing intake and pumping system issue that has occurred each year since commissioning at the water treatment plant. The report included information from a review of the treatment process, recommendation for intake improvements, and a hydraulic assessment of the plant. The findings suggest that the treatment process should be upgraded, and the intake and pumping system should be replaced. NWB will be notified in advance of any modifications taking place.

- The Licensee submitted an application for landfill fencing that would extend the footprint of the current site. Though the funding was approved, the licensee will go through the proper regulatory approvals prior to installation.

- De-sludging of the receiving wastewater cell in 2020 took place.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- A copy of the CIRNAC inspection report has not been received at the time of this submission.

List of Appendices
Appendix A: BAK-5 Effluent Quality Limits – 1 page
Appendix B: Laboratory Certificate of Analysis

- **Certificate of Analysis July 14, 2020 – 13 pages**
- **Certificate of Analysis July 30, 2020 – 7 pages**
- **Certificate of Analysis August 25, 2020 – 7 pages**
- **Certificate of Analysis September 23, 2020 – 7 pages**

Appendix C: Hazardous Materials Spill Database, Baker Lake 2020 – 1 page
Appendix D: Baker Lake 2020 Sampling Summary – 4 pages
Appendix E: CIRNAC Inspection Report - 1 pages
Appendix F : Licensee Representative Annual Inspection Report – 1 page

Appendix A : BAK-5 Effluent Quality Limits

3BM-BAK1526 Monitoring Program Results 2020 for Effluent Quality

Parameter	Limit	BAK-5
		14-Jul-20
BOD_5	80 mg/L	12.6
Total Suspended Solids	100 mg/L	12.4
Fecal Coliforms	$1x10^4$ CFU/100mL	2910
Oil + Grease	no visible sheen	5
pH	between 6 and 9	7.4

Appendix B: Laboratory Certificate of Analysis

Hamlet of Baker Lake
ATTN: PAUL NARKYAGIK
Public Works Foreman - Wastewater
PO Box 149
Baker Lake NU X0C 0A0

Date Received: 15-JUL-20
Report Date: 24-JUL-20 14:29 (MT)
Version: FINAL

Client Phone: 867-793-2881

Certificate of Analysis

Lab Work Order #: L2474594

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF BAKER LAKE - WASTE WATERS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2474594-1 BAK-2							
Sampled By: PN on 14-JUL-20 @ 07:15							
Matrix: WATER							
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	290	MBHT	10	MPN/100mL		15-JUL-20	R5154797
Escherichia Coli	<10	MBHT	10	MPN/100mL		15-JUL-20	R5154797
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	28.3		1.2	mg/L		20-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		20-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	23.2		1.0	mg/L		17-JUL-20	R5158036
Ammonia by colour							
Ammonia, Total (as N)	<0.010		0.010	mg/L		21-JUL-20	R5161278
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	3.1		2.0	mg/L		16-JUL-20	R5159745
Carbonaceous BOD							
BOD Carbonaceous	2.0		2.0	mg/L		16-JUL-20	R5159745
Chloride in Water by IC							
Chloride (Cl)	10.1		0.50	mg/L		15-JUL-20	R5160806
Conductivity							
Conductivity	80.4		1.0	umhos/cm		17-JUL-20	R5158036
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	<10	MBHT	10	MPN/100mL		15-JUL-20	R5154800
Hardness Calculated							
Hardness (as CaCO3)	26.7	HTC	0.20	mg/L		20-JUL-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156978
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		15-JUL-20	R5160806
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		22-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		15-JUL-20	R5160806
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		20-JUL-20	R5159794
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		17-JUL-20	R5158557
Phosphorus, Total							
Phosphorus (P)-Total	0.0852		0.0030	mg/L		22-JUL-20	R5161476
Sulfate in Water by IC							
Sulfate (SO4)	3.38		0.30	mg/L		15-JUL-20	R5160806
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0264		0.0030	mg/L	17-JUL-20	17-JUL-20	R5158577
Arsenic (As)-Total	0.00050		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Cadmium (Cd)-Total	0.0000062		0.0000050	mg/L	17-JUL-20	17-JUL-20	R5158577
Calcium (Ca)-Total	8.01		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Chromium (Cr)-Total	0.00012		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Cobalt (Co)-Total	0.00015		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Copper (Cu)-Total	0.00135		0.00050	mg/L	17-JUL-20	17-JUL-20	R5158577
Iron (Fe)-Total	0.650		0.010	mg/L	17-JUL-20	17-JUL-20	R5158577
Lead (Pb)-Total	0.000077		0.000050	mg/L	17-JUL-20	17-JUL-20	R5158577

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2474594-1 BAK-2							
Sampled By: PN on 14-JUL-20 @ 07:15							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Magnesium (Mg)-Total	1.63		0.0050	mg/L	17-JUL-20	17-JUL-20	R5158577
Manganese (Mn)-Total	0.0460		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Nickel (Ni)-Total	0.00058		0.00050	mg/L	17-JUL-20	17-JUL-20	R5158577
Potassium (K)-Total	1.14		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Sodium (Na)-Total	6.07		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Zinc (Zn)-Total	0.0061		0.0030	mg/L	17-JUL-20	17-JUL-20	R5158577
Total Organic Carbon by Combustion							
Total Organic Carbon	6.16		0.50	mg/L		22-JUL-20	R5166668
Total Suspended Solids							
Total Suspended Solids	6.6		3.0	mg/L		21-JUL-20	R5165797
pH							
pH	7.25		0.10	pH units		17-JUL-20	R5158036
L2474594-2 BAK-3							
Sampled By: PN on 14-JUL-20 @ 07:30							
Matrix: WATER							
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	340	MBHT	10	MPN/100mL		15-JUL-20	R5154797
Escherichia Coli	<10	MBHT	10	MPN/100mL		15-JUL-20	R5154797
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	40.0		1.2	mg/L		20-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		20-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	32.8		1.0	mg/L		17-JUL-20	R5158036
Ammonia by colour							
Ammonia, Total (as N)	0.124		0.010	mg/L		21-JUL-20	R5161278
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	4.4		2.0	mg/L		16-JUL-20	R5159745
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		16-JUL-20	R5159745
Chloride in Water by IC							
Chloride (Cl)	13.4		0.50	mg/L		15-JUL-20	R5160806
Conductivity							
Conductivity	133		1.0	umhos/cm		17-JUL-20	R5158036
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	<10	MBHT	10	MPN/100mL		15-JUL-20	R5154800
Hardness Calculated							
Hardness (as CaCO3)	39.2	HTC	0.20	mg/L		20-JUL-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156978
Nitrate in Water by IC							
Nitrate (as N)	0.962		0.020	mg/L		15-JUL-20	R5160806
Nitrate+Nitrite							
Nitrate and Nitrite as N	1.02		0.070	mg/L		22-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	0.057		0.010	mg/L		15-JUL-20	R5160806
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		20-JUL-20	R5159794

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2474594-2 BAK-3							
Sampled By: PN on 14-JUL-20 @ 07:30							
Matrix: WATER							
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		17-JUL-20	R5158557
Phosphorus, Total							
Phosphorus (P)-Total	0.920		0.0030	mg/L		22-JUL-20	R5161476
Sulfate in Water by IC							
Sulfate (SO4)	9.79		0.30	mg/L		15-JUL-20	R5160806
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0454		0.0030	mg/L	17-JUL-20	17-JUL-20	R5158577
Arsenic (As)-Total	0.00075		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Cadmium (Cd)-Total	0.0000050		0.0000050	mg/L	17-JUL-20	17-JUL-20	R5158577
Calcium (Ca)-Total	11.7		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Chromium (Cr)-Total	0.00015		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Cobalt (Co)-Total	0.00035		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Copper (Cu)-Total	0.00371		0.00050	mg/L	17-JUL-20	17-JUL-20	R5158577
Iron (Fe)-Total	0.938		0.010	mg/L	17-JUL-20	17-JUL-20	R5158577
Lead (Pb)-Total	0.000140		0.000050	mg/L	17-JUL-20	17-JUL-20	R5158577
Magnesium (Mg)-Total	2.46		0.0050	mg/L	17-JUL-20	17-JUL-20	R5158577
Manganese (Mn)-Total	0.115		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Nickel (Ni)-Total	0.00094		0.00050	mg/L	17-JUL-20	17-JUL-20	R5158577
Potassium (K)-Total	3.20		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Sodium (Na)-Total	10.5		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Zinc (Zn)-Total	0.0046		0.0030	mg/L	17-JUL-20	17-JUL-20	R5158577
Total Organic Carbon by Combustion							
Total Organic Carbon	10.2		0.50	mg/L		22-JUL-20	R5166668
Total Suspended Solids							
Total Suspended Solids	7.4		3.0	mg/L		21-JUL-20	R5165797
pH							
pH	7.36		0.10	pH units		17-JUL-20	R5158036
L2474594-3 BAK-4							
Sampled By: PN on 14-JUL-20 @ 08:25							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		16-JUL-20	R5154921
Toluene	<0.0010		0.0010	mg/L		16-JUL-20	R5154921
Ethyl benzene	<0.00050		0.00050	mg/L		16-JUL-20	R5154921
o-Xylene	<0.00050		0.00050	mg/L		16-JUL-20	R5154921
m+p-Xylenes	<0.00040		0.00040	mg/L		16-JUL-20	R5154921
F1 (C6-C10)	<0.10		0.10	mg/L		16-JUL-20	R5154921
Surrogate: 4-Bromofluorobenzene (SS)	86.8		70-130	%		16-JUL-20	R5154921
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	17-JUL-20	17-JUL-20	R5157575
F3 (C16-C34)	0.36		0.25	mg/L	17-JUL-20	17-JUL-20	R5157575
F4 (C34-C50)	<0.25		0.25	mg/L	17-JUL-20	17-JUL-20	R5157575
Surrogate: 2-Bromobenzotrifluoride	97.4		60-140	%	17-JUL-20	17-JUL-20	R5157575
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		20-JUL-20	
F2-Naphth	<0.10		0.10	mg/L		20-JUL-20	
F3-PAH	0.36		0.25	mg/L		20-JUL-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		20-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		16-JUL-20	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2474594-3 BAK-4							
Sampled By: PN on 14-JUL-20 @ 08:25							
Matrix: WATER							
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	MBHT	10	MPN/100mL		15-JUL-20	R5154797
Escherichia Coli	4350	MBHT	10	MPN/100mL		15-JUL-20	R5154797
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
Acenaphthene	<0.000020		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
Acenaphthylene	<0.000020		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
Anthracene	<0.000010		0.000010	mg/L	17-JUL-20	20-JUL-20	R5158199
Acridine	<0.000020		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
Benzo(a)anthracene	<0.000010		0.000010	mg/L	17-JUL-20	20-JUL-20	R5158199
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	17-JUL-20	20-JUL-20	R5158199
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	17-JUL-20	20-JUL-20	R5158199
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	17-JUL-20	20-JUL-20	R5158199
Chrysene	<0.000020		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	17-JUL-20	20-JUL-20	R5158199
Fluoranthene	<0.000020		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
Fluorene	<0.000020		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	17-JUL-20	20-JUL-20	R5158199
Naphthalene	<0.000050		0.000050	mg/L	17-JUL-20	20-JUL-20	R5158199
Phenanthrene	<0.000050		0.000050	mg/L	17-JUL-20	20-JUL-20	R5158199
Pyrene	<0.000010		0.000010	mg/L	17-JUL-20	20-JUL-20	R5158199
Quinoline	0.000029		0.000020	mg/L	17-JUL-20	20-JUL-20	R5158199
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	17-JUL-20	20-JUL-20	R5158199
Surrogate: d8-Naphthalene	100.7		50-150	%	17-JUL-20	20-JUL-20	R5158199
Surrogate: d10-Phenanthrene	99.1		50-150	%	17-JUL-20	20-JUL-20	R5158199
Surrogate: d12-Chrysene	96.0		50-150	%	17-JUL-20	20-JUL-20	R5158199
Surrogate: d10-Acenaphthene	94.6		50-150	%	17-JUL-20	20-JUL-20	R5158199
Surrogate: d9-Acridine (SS)	89.9		50-150	%	17-JUL-20	20-JUL-20	R5158199
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	53.9		1.2	mg/L		20-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		20-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	44.2		1.0	mg/L		17-JUL-20	R5158036
Ammonia by colour							
Ammonia, Total (as N)	3.26		0.10	mg/L		21-JUL-20	R5161278
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	14.5		6.0	mg/L		16-JUL-20	R5159745
Carbonaceous BOD							
BOD Carbonaceous	7.5		2.0	mg/L		16-JUL-20	R5159745
Chloride in Water by IC							
Chloride (Cl)	15.1		0.50	mg/L		15-JUL-20	R5160806
Conductivity							
Conductivity	148		1.0	umhos/cm		17-JUL-20	R5158036
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	5170	MBHT	10	MPN/100mL		15-JUL-20	R5154800
Hardness Calculated							
Hardness (as CaCO3)	32.7	HTC	0.20	mg/L		20-JUL-20	

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2474594-3 BAK-4							
Sampled By: PN on 14-JUL-20 @ 08:25							
Matrix: WATER							
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156978
Nitrate in Water by IC							
Nitrate (as N)	0.462		0.020	mg/L		15-JUL-20	R5160806
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.612		0.070	mg/L		22-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	0.151		0.010	mg/L		15-JUL-20	R5160806
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		20-JUL-20	R5159794
Phenol (4AAP)							
Phenols (4AAP)	0.0014		0.0010	mg/L		17-JUL-20	R5158557
Phosphorus, Total							
Phosphorus (P)-Total	1.13		0.0060	mg/L		22-JUL-20	R5161476
Sulfate in Water by IC							
Sulfate (SO4)	4.49		0.30	mg/L		15-JUL-20	R5160806
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.198		0.0030	mg/L	17-JUL-20	17-JUL-20	R5158577
Arsenic (As)-Total	0.00070		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Cadmium (Cd)-Total	0.0000119		0.0000050	mg/L	17-JUL-20	17-JUL-20	R5158577
Calcium (Ca)-Total	9.60		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Chromium (Cr)-Total	0.00040		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Cobalt (Co)-Total	0.00039		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Copper (Cu)-Total	0.00823		0.00050	mg/L	17-JUL-20	17-JUL-20	R5158577
Iron (Fe)-Total	0.980		0.010	mg/L	17-JUL-20	17-JUL-20	R5158577
Lead (Pb)-Total	0.000456		0.000050	mg/L	17-JUL-20	17-JUL-20	R5158577
Magnesium (Mg)-Total	2.12		0.0050	mg/L	17-JUL-20	17-JUL-20	R5158577
Manganese (Mn)-Total	0.0818		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Nickel (Ni)-Total	0.00121		0.00050	mg/L	17-JUL-20	17-JUL-20	R5158577
Potassium (K)-Total	3.63		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Sodium (Na)-Total	11.5		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Zinc (Zn)-Total	0.0162		0.0030	mg/L	17-JUL-20	17-JUL-20	R5158577
Total Organic Carbon by Combustion							
Total Organic Carbon	12.6		0.50	mg/L		22-JUL-20	R5166668
Total Suspended Solids							
Total Suspended Solids	26.4		3.0	mg/L		21-JUL-20	R5165797
pH							
pH	7.45		0.10	pH units		17-JUL-20	R5158036
L2474594-4 BAK-5							
Sampled By: PN on 14-JUL-20 @ 08:15							
Matrix: WATER							
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	MBHT	10	MPN/100mL		15-JUL-20	R5154797
Escherichia Coli	3650	MBHT	10	MPN/100mL		15-JUL-20	R5154797
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	89.7		1.2	mg/L		20-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		20-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		20-JUL-20	
Alkalinity, Total (as CaCO3)							

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2474594-4 BAK-5							
Sampled By: PN on 14-JUL-20 @ 08:15							
Matrix: WATER							
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	73.5		1.0	mg/L		17-JUL-20	R5158036
Ammonia by colour							
Ammonia, Total (as N)	3.55		0.10	mg/L		21-JUL-20	R5161278
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	12.6		2.0	mg/L		16-JUL-20	R5159745
Carbonaceous BOD							
BOD Carbonaceous	8.6		2.0	mg/L		16-JUL-20	R5159745
Chloride in Water by IC							
Chloride (Cl)	12.3		0.50	mg/L		15-JUL-20	R5160806
Conductivity							
Conductivity	198		1.0	umhos/cm		17-JUL-20	R5158036
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	2910	MBHT	10	MPN/100mL		15-JUL-20	R5154800
Hardness Calculated							
Hardness (as CaCO3)	66.7	HTC	0.20	mg/L		20-JUL-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156978
Nitrate in Water by IC							
Nitrate (as N)	0.286		0.020	mg/L		15-JUL-20	R5160806
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.386		0.070	mg/L		22-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	0.100		0.010	mg/L		15-JUL-20	R5160806
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		20-JUL-20	R5159794
Phenol (4AAP)							
Phenols (4AAP)	0.0053		0.0010	mg/L		17-JUL-20	R5158557
Phosphorus, Total							
Phosphorus (P)-Total	1.15		0.0060	mg/L		22-JUL-20	R5161476
Sulfate in Water by IC							
Sulfate (SO4)	10.3		0.30	mg/L		15-JUL-20	R5160806
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0861		0.0030	mg/L	17-JUL-20	17-JUL-20	R5158577
Arsenic (As)-Total	0.00065		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Cadmium (Cd)-Total	0.0000103		0.0000050	mg/L	17-JUL-20	17-JUL-20	R5158577
Calcium (Ca)-Total	20.4		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Chromium (Cr)-Total	0.00024		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Cobalt (Co)-Total	0.00044		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Copper (Cu)-Total	0.00704		0.00050	mg/L	17-JUL-20	17-JUL-20	R5158577
Iron (Fe)-Total	1.75		0.010	mg/L	17-JUL-20	17-JUL-20	R5158577
Lead (Pb)-Total	0.000365		0.000050	mg/L	17-JUL-20	17-JUL-20	R5158577
Magnesium (Mg)-Total	3.80		0.0050	mg/L	17-JUL-20	17-JUL-20	R5158577
Manganese (Mn)-Total	0.192		0.00010	mg/L	17-JUL-20	17-JUL-20	R5158577
Nickel (Ni)-Total	0.00113		0.00050	mg/L	17-JUL-20	17-JUL-20	R5158577
Potassium (K)-Total	3.31		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Sodium (Na)-Total	11.5		0.050	mg/L	17-JUL-20	17-JUL-20	R5158577
Zinc (Zn)-Total	0.0101		0.0030	mg/L	17-JUL-20	17-JUL-20	R5158577
Total Organic Carbon by Combustion							
Total Organic Carbon	16.5		0.50	mg/L		22-JUL-20	R5166668
Total Suspended Solids							
Total Suspended Solids	12.4		3.0	mg/L		21-JUL-20	R5165797
pH							

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2474594-4 BAK-5							
Sampled By: PN on 14-JUL-20 @ 08:15							
Matrix: WATER							
pH							
pH	7.39		0.10	pH units		17-JUL-20	R5158036

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

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-WP	Water	Alkalinity, Bicarbonate	CALCULATION

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

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

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

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

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

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP	Water	Conductivity	APHA 2510B

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

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

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

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

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

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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

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

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

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

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

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

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PH-WP	Water	pH	APHA 4500H

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

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

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

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.			
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:

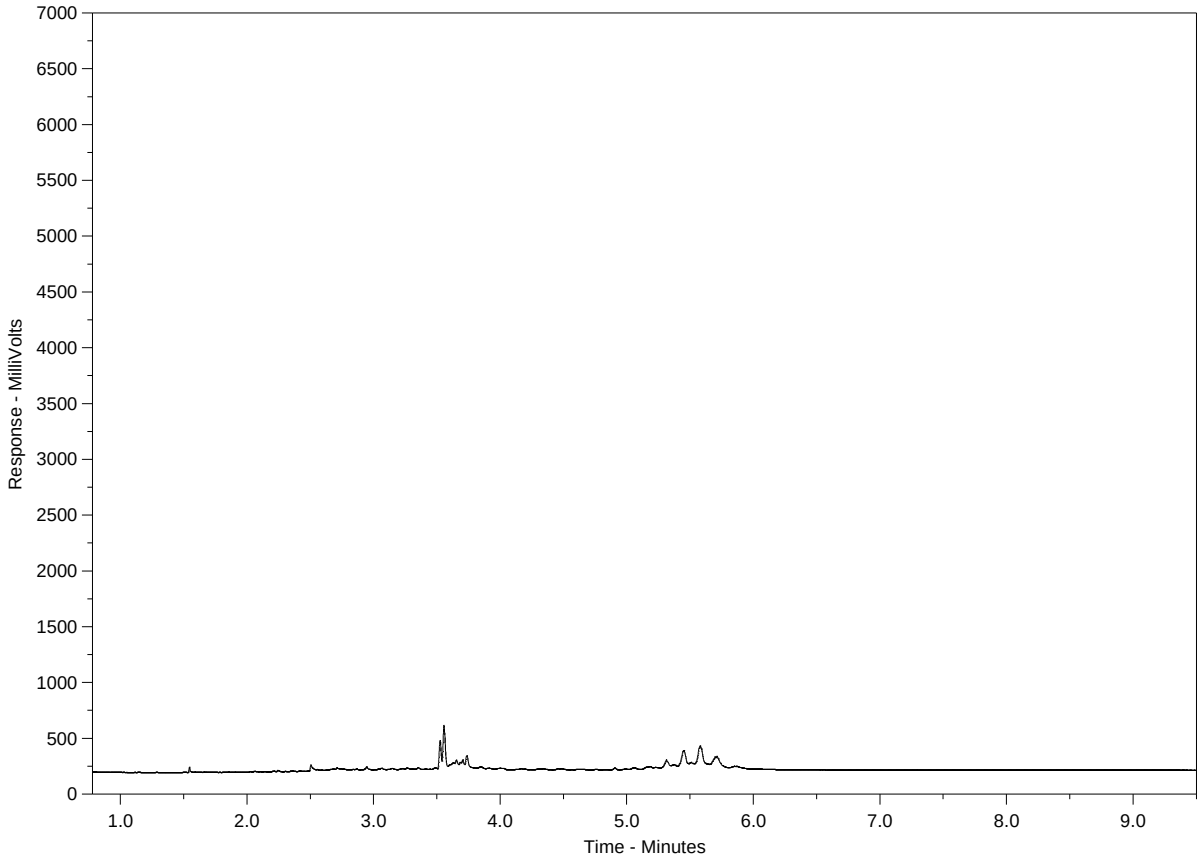
GLOSSARY OF REPORT TERMS

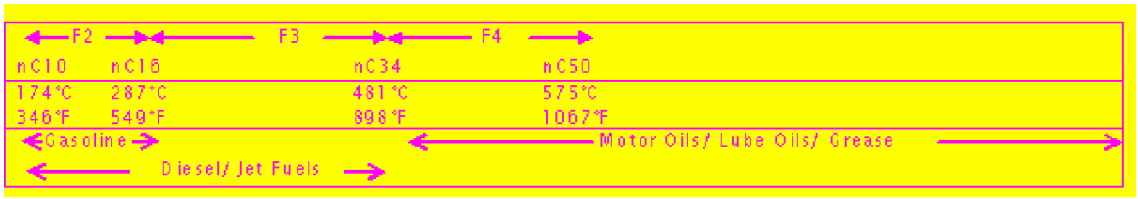
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2474594-3
Client Sample ID: BAK-4





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

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

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

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

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2474594-COFC

COC Number: 17 - 781479

Page of

Report To	Contact and company name below will appear on the final report
Company:	Haulet of Baker Lake
Contact:	Paul Narkyagik
Phone:	867-793-2881
	Company address below will appear on the final report
Street:	3022 4 Avenue
City/Province:	Nunavut
Postal Code:	X0C-0A0
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [X] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: [X] PDF [ ] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report [ ] YES [ ] NO
[ ] Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: [ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax
Email 2
Email 3

Invoice Distribution

Select Invoice Distribution: [ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax
Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [ ] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] | 3 day [P3-25%] [ ] | 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ] | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Routine	BOD	Bacteria *	Phenols (P)	Nutrients (P)	Oil and Grease	Metals (P)	Mercury (P)	PAH/EPH/F2-F4 (P)	BTEX/VOC	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	BAK-2	07-20	7:15			X	X	X	X	X	X	X	X				
		14.															
	BAK-3	07-20	7:30			X	X	X	X	X	X	X	X				
		14.															
	BAK-4	07-20	8:25			X	X	X	X	X	X	X	X	X	X		
		14.															
	BAK-5	07-20	8:15			X	X	X	X	X	X	X	X				
		14.															

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [ ] NO

Are samples for human consumption/ use? [ ] YES [ ] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

#Sub

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]
Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]
Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
			15.8				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Paul Narkyagik	July 2020			JUL 15 2020	13:30			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2015 FRONT

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

Hamlet of Baker Lake
ATTN: PAUL NARKYAGIK
Public Works Foreman - Wastewater
PO Box 149
Baker Lake NU X0C 0A0

Date Received: 31-JUL-20
Report Date: 10-AUG-20 12:59 (MT)
Version: FINAL

Client Phone: 867-793-2881

Certificate of Analysis

Lab Work Order #: L2482392

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF BAKER LAKE - WASTE WATER
C of C Numbers:
Legal Site Desc:

Comments: NOTE: No Sterile Bacti bottle was submitted with other bottles for NUNAVUT-WW-GRP1-WP pkg - Sub-sampled from unpreserved portion and run for TC,EC10-QT97 & FC10-QT97-WP

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2482392-1 BAK-2							
Sampled By: CLIENT on 30-JUL-20 @ 08:30							
Matrix: WATER							
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	130	MBHT	10	MPN/100mL		31-JUL-20	R5173392
Escherichia Coli	10	MBHT	10	MPN/100mL		31-JUL-20	R5173392
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	30.4		1.2	mg/L		04-AUG-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		04-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		04-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	24.9		1.0	mg/L		31-JUL-20	R5173759
Ammonia by colour							
Ammonia, Total (as N)	<0.010		0.010	mg/L		05-AUG-20	R5174886
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	4.0		2.0	mg/L		31-JUL-20	R5175204
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		31-JUL-20	R5175204
Chloride in Water by IC							
Chloride (Cl)	10.9		0.50	mg/L		31-JUL-20	R5174777
Conductivity							
Conductivity	92.5		1.0	umhos/cm		31-JUL-20	R5173759
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	10	MBHT	10	MPN/100mL		31-JUL-20	R5173394
Hardness Calculated							
Hardness (as CaCO3)	28.8	HTC	0.20	mg/L		06-AUG-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	04-AUG-20	04-AUG-20	R5174196
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		31-JUL-20	R5174777
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		06-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		31-JUL-20	R5174777
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		07-AUG-20	R5177198
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		05-AUG-20	R5175495
Phosphorus, Total							
Phosphorus (P)-Total	0.117		0.0030	mg/L		06-AUG-20	R5176078
Sulfate in Water by IC							
Sulfate (SO4)	4.52		0.30	mg/L		31-JUL-20	R5174777
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0280		0.0030	mg/L	05-AUG-20	05-AUG-20	R5175488
Arsenic (As)-Total	0.00069		0.00010	mg/L	05-AUG-20	05-AUG-20	R5175488
Cadmium (Cd)-Total	0.0000058		0.0000050	mg/L	05-AUG-20	05-AUG-20	R5175488
Calcium (Ca)-Total	8.86		0.050	mg/L	05-AUG-20	05-AUG-20	R5175488
Chromium (Cr)-Total	<0.00010		0.00010	mg/L	05-AUG-20	05-AUG-20	R5175488
Cobalt (Co)-Total	0.00017		0.00010	mg/L	05-AUG-20	05-AUG-20	R5175488
Copper (Cu)-Total	0.00165		0.00050	mg/L	05-AUG-20	05-AUG-20	R5175488
Iron (Fe)-Total	0.322		0.010	mg/L	05-AUG-20	05-AUG-20	R5175488
Lead (Pb)-Total	0.000071		0.000050	mg/L	05-AUG-20	05-AUG-20	R5175488

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2482392-1 BAK-2							
Sampled By: CLIENT on 30-JUL-20 @ 08:30							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Magnesium (Mg)-Total	1.61		0.0050	mg/L	05-AUG-20	05-AUG-20	R5175488
Manganese (Mn)-Total	0.0589		0.00010	mg/L	05-AUG-20	05-AUG-20	R5175488
Nickel (Ni)-Total	0.00073		0.00050	mg/L	05-AUG-20	05-AUG-20	R5175488
Potassium (K)-Total	1.36		0.050	mg/L	05-AUG-20	05-AUG-20	R5175488
Sodium (Na)-Total	6.02		0.050	mg/L	05-AUG-20	05-AUG-20	R5175488
Zinc (Zn)-Total	0.0083		0.0030	mg/L	05-AUG-20	05-AUG-20	R5175488
Total Organic Carbon by Combustion							
Total Organic Carbon	6.66		0.50	mg/L		06-AUG-20	R5176327
Total Suspended Solids							
Total Suspended Solids	8.7		3.0	mg/L		05-AUG-20	R5176229
pH							
pH	7.36		0.10	pH units		31-JUL-20	R5173759

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

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-WP	Water	Alkalinity, Bicarbonate	CALCULATION

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

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

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

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

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

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

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

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

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

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.

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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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	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.			

** 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:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2482392-COFC

COC Number: 17 - 781478

Page of

Report To	Contact and company name below will appear on the final report
Company:	Hamlet of Baker Lake
Contact:	Paul Narkyagjik
Phone:	867-793-2881
	Company address below will appear on the final report
Street:	3022 4th Avenue
City/Province:	Nunavut
Postal Code:	X0C-0A0
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [X] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	[X] PDF [ ] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report	[ ] YES [ ] NO
[ ] Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	[ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	
Email 2	
Email 3	
Invoice Distribution	
Select Invoice Distribution:	[ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	
Email 2	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [ ] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] | 3 day [P3-25%] [ ] | 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ] | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Routine	BOD	Bacteria	Phenols (P)	Nutrients (P)	Oil and Grease	Metals (P)	Mercury (P)	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	BAK-2	30-07-20	8:30 AM												

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

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
20.7							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Paul Narkyagjik	July 30, 2020	8:30				GE	July 31, 2020	14:45 AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

Hamlet of Baker Lake
ATTN: PAUL NARKYAGIK
Public Works Foreman - Wastewater
PO Box 149
Baker Lake NU X0C 0A0

Date Received: 26-AUG-20
Report Date: 02-SEP-20 12:38 (MT)
Version: FINAL

Client Phone: 867-793-2881

Certificate of Analysis

Lab Work Order #: L2494499

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF BAKER LAKE - WASTE WATER
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 26-AUG-20 14:21

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2494499-1 BAK-2							
Sampled By: Paul Narkyggik on 25-AUG-20 @ 08:40							
Matrix: Waste Water							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	28.5		1.2	mg/L		28-AUG-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		28-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		28-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	23.4		1.0	mg/L		27-AUG-20	R5203305
Ammonia by colour							
Ammonia, Total (as N)	0.019		0.010	mg/L		01-SEP-20	R5208683
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	7.7		2.0	mg/L		27-AUG-20	R5208069
Carbonaceous BOD							
BOD Carbonaceous	2.8		2.0	mg/L		27-AUG-20	R5208069
Chloride in Water by IC							
Chloride (Cl)	11.5		0.50	mg/L		27-AUG-20	R5205897
Conductivity							
Conductivity	90.7		1.0	umhos/cm		27-AUG-20	R5203305
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	10	MBHT	10	MPN/100mL		26-AUG-20	R5202940
Note: MBHT qualifier added							
Hardness Calculated							
Hardness (as CaCO3)	32.2	HTC	0.20	mg/L		31-AUG-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	27-AUG-20	01-SEP-20	R5208814
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		27-AUG-20	R5205897
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		01-SEP-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		27-AUG-20	R5205897
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		01-SEP-20	R5207379
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		28-AUG-20	R5204943
Phosphorus, Total							
Phosphorus (P)-Total	0.114		0.0030	mg/L		28-AUG-20	R5203546
Sulfate in Water by IC							
Sulfate (SO4)	5.41		0.30	mg/L		27-AUG-20	R5205897
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0334		0.0030	mg/L	28-AUG-20	28-AUG-20	R5205361
Arsenic (As)-Total	0.00067		0.00010	mg/L	28-AUG-20	28-AUG-20	R5205361
Cadmium (Cd)-Total	0.0000104		0.0000050	mg/L	28-AUG-20	28-AUG-20	R5205361
Calcium (Ca)-Total	10.1		0.050	mg/L	28-AUG-20	28-AUG-20	R5205361
Chromium (Cr)-Total	0.00013		0.00010	mg/L	28-AUG-20	28-AUG-20	R5205361
Cobalt (Co)-Total	0.00014		0.00010	mg/L	28-AUG-20	28-AUG-20	R5205361
Copper (Cu)-Total	0.00195		0.00050	mg/L	28-AUG-20	28-AUG-20	R5205361
Iron (Fe)-Total	0.254		0.010	mg/L	28-AUG-20	28-AUG-20	R5205361
Lead (Pb)-Total	0.000096		0.000050	mg/L	28-AUG-20	28-AUG-20	R5205361
Magnesium (Mg)-Total	1.69		0.0050	mg/L	28-AUG-20	28-AUG-20	R5205361
Manganese (Mn)-Total	0.0295		0.00010	mg/L	28-AUG-20	28-AUG-20	R5205361
Nickel (Ni)-Total	0.00083		0.00050	mg/L	28-AUG-20	28-AUG-20	R5205361

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2494499-1 BAK-2							
Sampled By: Paul Narkyggik on 25-AUG-20 @ 08:40							
Matrix: Waste Water							
Total Metals in Water by CRC ICPMS							
Potassium (K)-Total	1.34		0.050	mg/L	28-AUG-20	28-AUG-20	R5205361
Sodium (Na)-Total	6.42		0.050	mg/L	28-AUG-20	28-AUG-20	R5205361
Zinc (Zn)-Total	0.0379		0.0030	mg/L	28-AUG-20	28-AUG-20	R5205361
Total Organic Carbon by Combustion							
Total Organic Carbon	8.92		0.50	mg/L		28-AUG-20	R5205590
Total Suspended Solids							
Total Suspended Solids	8.7		3.0	mg/L		27-AUG-20	R5204760
pH							
pH	7.88		0.10	pH units		27-AUG-20	R5203305

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

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-WP	Water	Alkalinity, Bicarbonate	CALCULATION

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

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

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

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

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

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

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

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

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

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.

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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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	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.			

** 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:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2494499-COFC

COC Number: 17- 752213

Page of

Report To	Contact and company name below will appear on the final report
Company:	Hamlet of Baker Lake
Contact:	Paul Narkyagik
Phone:	867-793-2881
Company address below will appear on the final report	
Street:	3022 4th Avenue
City/Province:	Baker Lake Nunavut
Postal Code:	X0C-0A0
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [X] YES [ ] NO
Company:	
Contact:	

Report Format

Select Report Format: [ ] PDF [ ] EXCEL [ ] EDD (DIGITAL)

Quality Control (QC) Report with Report [ ] YES [ ] NO

[ ] Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: [ ] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax

Email 2

Email 3

Invoice Distribution

Select Invoice Distribution: [ ] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax

Email 2

...elow - Contact your AM to confirm all E&P TATs (surcharges may apply)

...tandard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4-20%] [ ]		1 Business day [E - 100%] [ ]	
3 day [P3-25%] [ ]		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]	
2 day [P2-50%] [ ]			

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:

Job #:

PO / AFE:

LSD:

ALS Lab Work Order # (lab use only):

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler:

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Routine	BOD	Oil and Grease	Bacteria	Phenols (P)	Nutrients (P)	Metals (P)	Mercury (P)	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	BAK-2					X	X	X	X	X	X	X	X		

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [X] NO

Are samples for human consumption/ use? [ ] YES [X] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C: 15.7

FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Paul Narkyagik	Date: Aug 25/20	Time: 8:40	Received by: DJV	Date: Aug 26	Time: 12:30pm	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

White Paper Co. 604 951-3900

Hamlet of Baker Lake
ATTN: PAUL NARKYAGIK
Public Works Foreman - Wastewater
PO Box 149
Baker Lake NU X0C 0A0

Date Received: 24-SEP-20
Report Date: 02-OCT-20 13:19 (MT)
Version: FINAL

Client Phone: 867-793-2881

Certificate of Analysis

Lab Work Order #: L2507661

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF BAKER LAKE - WASTE WATER
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2507661-1 BAK-2							
Sampled By: PN on 23-SEP-20 @ 08:45							
Matrix: WATER							
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	160	PEHT	10	MPN/100mL		25-SEP-20	R5238136
Escherichia Coli	<10	PEHT	10	MPN/100mL		25-SEP-20	R5238136
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	28.9		1.2	mg/L		25-SEP-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		25-SEP-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		25-SEP-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	23.7		1.0	mg/L		24-SEP-20	R5235789
Ammonia by colour							
Ammonia, Total (as N)	<0.010		0.010	mg/L		25-SEP-20	R5241312
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	2.8		2.0	mg/L		24-SEP-20	R5242487
Carbonaceous BOD							
BOD Carbonaceous	2.1		2.0	mg/L		24-SEP-20	R5242487
Chloride in Water by IC							
Chloride (Cl)	12.1		0.50	mg/L		24-SEP-20	R5238110
Conductivity							
Conductivity	101		1.0	umhos/cm		24-SEP-20	R5235789
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	<10		10	MPN/100mL		24-SEP-20	R5235924
Hardness Calculated							
Hardness (as CaCO3)	33.2	HTC	0.20	mg/L		01-OCT-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	29-SEP-20	29-SEP-20	R5242673
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		24-SEP-20	R5238110
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		28-SEP-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		24-SEP-20	R5238110
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		02-OCT-20	R5244088
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		28-SEP-20	R5241770
Phosphorus, Total							
Phosphorus (P)-Total	0.0649		0.0030	mg/L		28-SEP-20	R5241526
Sulfate in Water by IC							
Sulfate (SO4)	7.05		0.30	mg/L		24-SEP-20	R5238110
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0395		0.0030	mg/L	28-SEP-20	28-SEP-20	R5241703
Arsenic (As)-Total	0.00046		0.00010	mg/L	28-SEP-20	28-SEP-20	R5241703
Cadmium (Cd)-Total	0.0000059		0.0000050	mg/L	28-SEP-20	28-SEP-20	R5241703
Calcium (Ca)-Total	10.3		0.050	mg/L	28-SEP-20	28-SEP-20	R5241703
Chromium (Cr)-Total	0.00038		0.00010	mg/L	28-SEP-20	28-SEP-20	R5241703
Cobalt (Co)-Total	0.00011		0.00010	mg/L	28-SEP-20	28-SEP-20	R5241703
Copper (Cu)-Total	0.00212		0.00050	mg/L	28-SEP-20	28-SEP-20	R5241703
Iron (Fe)-Total	0.134		0.010	mg/L	28-SEP-20	28-SEP-20	R5241703
Lead (Pb)-Total	0.000066		0.000050	mg/L	28-SEP-20	28-SEP-20	R5241703

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2507661-1 BAK-2							
Sampled By: PN on 23-SEP-20 @ 08:45							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Magnesium (Mg)-Total	1.84		0.0050	mg/L	28-SEP-20	30-SEP-20	R5243388
Manganese (Mn)-Total	0.0126		0.00010	mg/L	28-SEP-20	30-SEP-20	R5243388
Nickel (Ni)-Total	0.00078		0.00050	mg/L	28-SEP-20	28-SEP-20	R5241703
Potassium (K)-Total	1.45		0.050	mg/L	28-SEP-20	28-SEP-20	R5241703
Sodium (Na)-Total	7.17		0.050	mg/L	28-SEP-20	30-SEP-20	R5243388
Zinc (Zn)-Total	0.0092		0.0030	mg/L	28-SEP-20	28-SEP-20	R5241703
Total Organic Carbon by Combustion							
Total Organic Carbon	6.89		0.50	mg/L		28-SEP-20	R5241846
Total Suspended Solids							
Total Suspended Solids	9.2		3.0	mg/L		28-SEP-20	R5242323
pH							
pH	7.51		0.10	pH units		24-SEP-20	R5235789

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

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.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis

Test Method References:

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

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

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

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

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

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

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

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

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

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

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

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

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.

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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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	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.			

** 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:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2507661-COFC

COC Number: 17 - 747825

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Hamlet of Baker lake
Contact:	Paul Narkyagik
Phone:	867-793-2881
	Company address below will appear on the final report
Street:	
City/Province:	Baker Lake Nunavut
Postal Code:	X0C-0A0
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [X] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	[X] PDF [ ] EXCEL [ ] EDD (DIGITAL)
Quality Control (QC) Report with Report:	[ ] YES [ ] NO
[ ] Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	[X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	
Email 2	
Email 3	

Invoice Distribution	
Select Invoice Distribution:	[ ] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Account # / Quote #:	
Job #:	
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [ ] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] | 3 day [P3-25%] [ ] | 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ] | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Routine	BOD	Bacteria	Phenols	Nutrients	Oil and Grease	Metals	Mercury						SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
						P	P	P	P	P										
	BAK-2					X	X	X	X	X	X	X	X							

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [X] NO

Are samples for human consumption/ use? [ ] YES [X] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
15.9	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Paul Narkyagik	Sept. 23, 2020	8:45		SEP 24 2020	1115		SEP 24 2020	1115

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2015 FRONT

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

Appendix C: Hazardous Materials Spill Database

Spill	Occurance Date	Spill Region	Location	Location Description	Product Spilled	Quantity	Measurement	Spill Cause	Lead Agency
spill-2020400	October 15, 2020	Keewatin	Baker Lake, Community, Nunavut	Unit #202, Baker Lake, NU.	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity		Tank Leak	GN - Government of Nunavut
spill-2020326	September 10, 2020	Keewatin	Baker Lake, Community, Nunavut	North shore of Baker Lake, Baker Lake, NU	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity		Other	GN - Government of Nunavut
spill-2020043	January 28, 2020	Keewatin	Baker Lake, Community, Nunavut	VOR	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	3.00	Litres	Breakage	GN - Government of Nunavut
spill-2020361	January 1, 2020	Keewatin	Baker Lake, Community, Nunavut	800m from Kiyuk Lake	Petroleum - crude oil	10.00	Litres	Other	CIRNAC - Crown-Indigenous Relations and Northern Affairs Canada

Appendix D: Baker Lake 2020 Sampling Summary

Baker Lake
BAK-2

			2020			
Parameter	**Unit**	**DL**	**14-Jul-20**	**30-Jul-20**	**25-Aug-20**	**23-Sep-20**
Alkalinity						
Bicarbonate (HCO3)	mg/L	1.2	28.3	30.4	28.5	28.9
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
Total (as CaCO3)	mg/L	1.0	23.2	24.9	23.4	23.7
Ammonia by Colour						
Total (as N)	mg/L	0.20	0.010	<0.010	0.019	<0.010
Biochemical Oxygen Demand (BOD)						
Biochemical Oxygen Demand	mg/L	6.0	3.1	4.0	7.7	2.8
Carbonaceous BOD						
BOD Carbonaceous	mg/L	6.0	2.0	<2.0	2.8	2.1
Chloride in Water by IC						
Chloride (Cl)	mg/L	10	10.1	10.9	11.5	12.1
Conductivity						
Conductivity	umhos/cm	1.0	80.4	92.5	90.7	101
Fecal Coliforms						
Fecal Coliforms	MPN/100mL	3	10	10	10	<10
Hardness Calculated						
Hardness (as CaCO3)	mg/L	0.30	26.7	28.8	32.2	33.2
Mercury Total						
Mercury (Hg)	mg/L	0.00020	0.0000050	<0.0000050	0.0000050	<0.0000050
Nitrate in Water by IC						
Nitrate (as N)	mg/L	0.40	0.020	<0.020	0.020	<0.020
Nitrate + Nitrite						
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	<5.0	5.0	<5.0
Phenol						
Phenols	mg/L	0.0010	0.0010	<0.0010	0.0010	<0.0010
Phosphorus, Total						
Phosphorus (P)	mg/L	0.010	0.0852	0.117	0.114	0.0649
Sulfate in Water by IC						
Sulfate (SO4)	mg/L	6.0	3.38	4.52	5.41	7.05
Total Metals by ICP-MS						
Aluminium (Al)	mg/L	0.0050	0.0264	0.028	0.0334	0.0395
Arsenic (As)	mg/L	0.00020	0.0005	0.00069	0.00067	0.00046
Cadmium (Cd)	mg/L	0.000010	0.0000062	0.0000058	0.0000104	0.0000059
Calcium (Ca)	mg/L	0.10	8.01	8.86	10.1	10.3
Chromium (Cr)	mg/L	0.0010	0.00012	<0.00010	0.00013	0.00038
Cobalt (Co)	mg/L	0.00020	0.00015	0.00017	0.00014	0.00011
Copper (Cu)	mg/L	0.00020	0.00135	0.00165	0.00195	0.00212
Iron (Fe)	mg/L	0.010	0.0650	0.3220	0.2540	0.134
Lead (Pb)	mg/L	0.000090	0.000077	0.000071	0.000096	0.000066
Magnesium (Mg)	mg/L	0.010	1.63	1.61	1.69	1.84
Manganese (Mn)	mg/L	0.00030	0.0460	0.0589	0.0295	0.0126
Nickel (Ni)	mg/L	0.0020	0.00058	0.00073	0.00083	0.00078
Potassium (K)	mg/L	0.020	1.14	1.36	1.34	1.45
Sodium (Na)	mg/L	0.030	6.07	6.02	6.42	7.17
Zinc (Zn)	mg/L	0.0020	0.0061	0.0083	0.0379	0.0092
Total Organic Carbon by Combustion						
Total Organic Carbon	mg/L	0.50	6.16	6.66	8.92	6.89
Total Suspended Solids						
Total Suspended Solids	mg/L	13	6.6	8.7	8.7	9.2
pH						
pH	pH Units	0.10	7.25	7.36	7.88	7.51
Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A
Toluene	mg/L	0.0010	N/A	N/A	N/A	N/A
Ethyl Benzene	mg/L	0.00050	N/A	N/A	N/A	N/A
o-Xylene	mg/L	0.00050	N/A	N/A	N/A	N/A
F1 (C6-C10)	mg/L	0.10	N/A	N/A	N/A	N/A
F2 (C10-C16)	mg/L	0.25	N/A	N/A	N/A	N/A
F3 (C16-C34)	mg/L	0.25	N/A	N/A	N/A	N/A
F4 (C34-C50)	mg/L	0.25	N/A	N/A	N/A	N/A
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	N/A	N/A	N/A

Baker Lake
BAK-3

			2020
Parameter	**Unit**	**DL**	**14-Jul-20**
Alkalinity			
Bicarbonate (HCO3)	mg/L	1.2	40.0
Carbonate (CO3)	mg/L	0.60	0.6
Hydroxide (OH)	mg/L	0.34	0.3
Total (as CaCO3)	mg/L	1.0	32.8
Ammonia by Colour			
Total (as N)	mg/L	0.20	0.124
Biochemical Oxygen Demand (BOD)			
Biochemical Oxygen Demand	mg/L	6.0	4.4
Carbonaceous BOD			
BOD Carbonaceous	mg/L	6.0	2.0
Chloride in Water by IC			
Chloride (Cl)	mg/L	10	13.40
Conductivity			
Conductivity	umhos/cm	1.0	133.0
Fecal Coliforms			
Fecal Coliforms	MPN/100mL	3	10
Hardness Calculated			
Hardness (as CaCO3)	mg/L	0.30	39.2
Mercury Total			
Mercury (Hg)	mg/L	0.00020	0.0000050
Nitrate in Water by IC			
Nitrate (as N)	mg/L	0.40	0.962
Nitrate + Nitrite			
Nitrate and Nitrite as N	mg/L	0.45	1.02
Nitrite in Water by IC			
Nitrite (as N)	mg/L	0.20	0.057
Oil & Grease - Gravimetric			
Oil and Grease	mg/L	5.0	5.0
Phenol			
Phenols	mg/L	0.0010	0.0010
Phosphorus, Total			
Phosphorus (P)	mg/L	0.010	0.920
Sulfate in Water by IC			
Sulfate (SO4)	mg/L	6.0	9.79
Total Metals by ICP-MS			
Aluminium (Al)	mg/L	0.0050	0.0454
Arsenic (As)	mg/L	0.00020	0.00075
Cadmium (Cd)	mg/L	0.000010	0.0000050
Calcium (Ca)	mg/L	0.10	11.7
Chromium (Cr)	mg/L	0.0010	0.00015
Cobalt (Co)	mg/L	0.00020	0.00035
Copper (Cu)	mg/L	0.00020	0.00371
Iron (Fe)	mg/L	0.010	0.938
Lead (Pb)	mg/L	0.000090	0.000140
Magnesium (Mg)	mg/L	0.010	2.46
Manganese (Mn)	mg/L	0.00030	0.1150
Nickel (Ni)	mg/L	0.0020	0.00094
Potassium (K)	mg/L	0.020	3.20
Sodium (Na)	mg/L	0.030	10.5
Zinc (Zn)	mg/L	0.0020	0.0046
Total Organic Carbon by Combustion			
Total Organic Carbon	mg/L	0.50	10.20
Total Suspended Solids			
Total Suspended Solids	mg/L	13	7.4
pH			
pH	pH Units	0.10	7.4
Benzene	mg/L	0.00050	N/A
Toluene	mg/L	0.0010	N/A
Ethyl Benzene	mg/L	0.00050	N/A
o-Xylene	mg/L	0.00050	N/A
F1 (C6-C10)	mg/L	0.10	N/A
F2 (C10-C16)	mg/L	0.25	N/A
F3 (C16-C34)	mg/L	0.25	N/A
F4 (C34-C50)	mg/L	0.25	N/A
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A

Baker Lake
BAK-4

			2020
Parameter	**Unit**	**DL**	**14-Jul-20**
Alkalinity			
Bicarbonate (HCO3)	mg/L	1.2	53.9
Carbonate (CO3)	mg/L	0.60	0.60
Hydroxide (OH)	mg/L	0.34	0.34
Total (as CaCO3)	mg/L	1.0	44.2
Ammonia by Colour			
Total (as N)	mg/L	0.20	3.26
Biochemical Oxygen Demand (BOD)			
Biochemical Oxygen Demand	mg/L	6.0	14.5
Carbonaceous BOD			
BOD Carbonaceous	mg/L	6.0	7.5
Chloride in Water by IC			
Chloride (Cl)	mg/L	10	15.1
Conductivity			
Conductivity	umhos/cm	1.0	148
Fecal Coliforms			
Fecal Coliforms	MPN/100mL	3	5170
Hardness Calculated			
Hardness (as CaCO3)	mg/L	0.30	32.7
Mercury Total			
Mercury (Hg)	mg/L	0.00020	0.0000050
Nitrate in Water by IC			
Nitrate (as N)	mg/L	0.40	0.462
Nitrate + Nitrite			
Nitrate and Nitrite as N	mg/L	0.45	0.612
Nitrite in Water by IC			
Nitrite (as N)	mg/L	0.20	0.151
Oil & Grease - Gravimetric			
Oil and Grease	mg/L	5.0	5.0
Phenol			
Phenols	mg/L	0.0010	0.0014
Phosphorus, Total			
Phosphorus (P)	mg/L	0.010	1.13
Sulfate in Water by IC			
Sulfate (SO4)	mg/L	6.0	4.49
Total Metals by ICP-MS			
Aluminium (Al)	mg/L	0.0050	0.198
Arsenic (As)	mg/L	0.00020	0.00070
Cadmium (Cd)	mg/L	0.000010	0.0000119
Calcium (Ca)	mg/L	0.10	9.60
Chromium (Cr)	mg/L	0.0010	0.00040
Cobalt (Co)	mg/L	0.00020	0.00039
Copper (Cu)	mg/L	0.00020	0.00823
Iron (Fe)	mg/L	0.010	0.98
Lead (Pb)	mg/L	0.000090	0.000456
Magnesium (Mg)	mg/L	0.010	2.12
Manganese (Mn)	mg/L	0.00030	0.0818
Nickel (Ni)	mg/L	0.0020	0.00121
Potassium (K)	mg/L	0.020	3.63
Sodium (Na)	mg/L	0.030	11.5
Zinc (Zn)	mg/L	0.0020	0.0162
Total Organic Carbon by Combustion			
Total Organic Carbon	mg/L	0.50	12.6
Total Suspended Solids			
Total Suspended Solids	mg/L	13	26.4
pH			
pH	pH Units	0.10	7.5
Benzene	mg/L	0.00050	0.00050
Toluene	mg/L	0.0010	0.0010
Ethyl Benzene	mg/L	0.00050	0.00050
o-Xylene	mg/L	0.00050	0.00050
F1 (C6-C10)	mg/L	0.10	0.10
F2 (C10-C16)	mg/L	0.25	0.10
F3 (C16-C34)	mg/L	0.25	0.36
F4 (C34-C50)	mg/L	0.25	0.25
Total Hydrocarbons (C6-C50)	mg/L	0.44	0.38

Baker Lake
BAK-5

			2020
Parameter	**Unit**	**DL**	**14-Jul-20**
Alkalinity			
Bicarbonate (HCO3)	mg/L	1.2	89.7
Carbonate (CO3)	mg/L	0.60	0.60
Hydroxide (OH)	mg/L	0.34	0.34
Total (as CaCO3)	mg/L	1.0	73.5
Ammonia by Colour			
Total (as N)	mg/L	0.20	3.55
Biochemical Oxygen Demand (BOD)			
Biochemical Oxygen Demand	mg/L	6.0	12.6
Carbonaceous BOD			
BOD Carbonaceous	mg/L	6.0	8.6
Chloride in Water by IC			
Chloride (Cl)	mg/L	10	12.3
Conductivity			
Conductivity	umhos/cm	1.0	198
Fecal Coliforms			
Fecal Coliforms	MPN/100mL	3	2910
Hardness Calculated			
Hardness (as CaCO3)	mg/L	0.30	66.7
Mercury Total			
Mercury (Hg)	mg/L	0.00020	0.0000050
Nitrate in Water by IC			
Nitrate (as N)	mg/L	0.40	0.286
Nitrate + Nitrite			
Nitrate and Nitrite as N	mg/L	0.45	0.386
Nitrite in Water by IC			
Nitrite (as N)	mg/L	0.20	0.100
Oil & Grease - Gravimetric			
Oil and Grease	mg/L	5.0	5.0
Phenol			
Phenols	mg/L	0.0010	0.0053
Phosphorus, Total			
Phosphorus (P)	mg/L	0.010	1.15
Sulfate in Water by IC			
Sulfate (SO4)	mg/L	6.0	10.3
Total Metals by ICP-MS			
Aluminium (Al)	mg/L	0.0050	0.0861
Arsenic (As)	mg/L	0.00020	0.00065
Cadmium (Cd)	mg/L	0.000010	0.0000103
Calcium (Ca)	mg/L	0.10	20.4
Chromium (Cr)	mg/L	0.0010	0.00024
Cobalt (Co)	mg/L	0.00020	0.00044
Copper (Cu)	mg/L	0.00020	0.00704
Iron (Fe)	mg/L	0.010	1.75
Lead (Pb)	mg/L	0.000090	0.000365
Magnesium (Mg)	mg/L	0.010	3.80
Manganese (Mn)	mg/L	0.00030	0.192
Nickel (Ni)	mg/L	0.0020	0.00113
Potassium (K)	mg/L	0.020	3.31
Sodium (Na)	mg/L	0.030	11.5
Zinc (Zn)	mg/L	0.0020	0.0101
Total Organic Carbon by Combustion			
Total Organic Carbon	mg/L	0.50	16.5
Total Suspended Solids			
Total Suspended Solids	mg/L	13	12.4
pH			
pH	pH Units	0.10	7.4
Benzene	mg/L	0.00050	N/A
Toluene	mg/L	0.0010	N/A
Ethyl Benzene	mg/L	0.00050	N/A
o-Xylene	mg/L	0.00050	N/A
F1 (C6-C10)	mg/L	0.10	N/A
F2 (C10-C16)	mg/L	0.25	N/A
F3 (C16-C34)	mg/L	0.25	N/A
F4 (C34-C50)	mg/L	0.25	N/A
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A

Appendix E: CIRNAC Inspection Report

The CIRNAC inspection report was not received by CGS.

Appendix E: Licensee Representative Annual Inspection Report

September 8, 2020

2020 Municipal Water Licence Inspection – Baker Lake

The inspection took place on Thursday September 3rd with Paul Narkyagik (Hamlet Foreman), Atuat Shouldice (CIRNAC Inspector), and Connor Faulkner (CGS representative) present. Wastewater samples were completed by the Hamlet prior to the inspection. Some points brought forth by the inspector were:

- No compliance concerns were brought forth by the inspector.
- Due to ongoing COVID-19 restrictions, the Hamlet of Baker lake was not able to get waste drums, bulky metal objects, propane tanks, and other wastes sent south on the AEM ships. This has been rescheduled for work to be completed during the summer of 2021.