ᑲᑐᑎᑐᒍ ᓄᓇᕗᑦ ᐱᕐᕋᕐᓕᐊᑦᓕᕗᑦ
Building Nunavut Together
Nunavu liuqatigiingniq
Bâtir le Nunavut ensemble

April 30, 2021

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

Attention: Richard Dwyer, Manager of Licensing

Dear Richard,

The Hamlet of Whale Cove is pleased to submit the 2020 Annual Report for water use and disposal of waste as required under the 3BM- WHA-1520 water license from January 1-December 31, 2020. A new license 3BM WHA 2126 was issued on March 26, 2021.

The estimated water use in 2020 was 16,440 m^3 which is below the 30,000m^3 allowable limit and a 3.4% decrease from last year (17,013 m^3). Sampling of sewage effluent was tested at the ALS Laboratory in Winnipeg. The effluent sampled at the lagoon discharge point WHA-3 was below the allowable limits for BOD and TSS.

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 WHALE COVE

YEAR BEING REPORTED: 2020

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. 3BM-WHA1520 issued to the Hamlet of Whale Cove.

a) **tabular summaries of all data generated under the "Monitoring Program";**
b) **the monthly and annual quantities in cubic meters of freshwater obtained at the Water Supply Facility;**
c) **the monthly and annual quantities in cubic metres of each and all waste discharged;**

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	1,552.272	Same
February	1,202.823	Same
March	1,571.989	Same
April	1,318.667	Same
May	1,467.983	Same
June	1,350.177	Same
July	1,648.151	Same
August	1,575.068	Same
September	1,652.102	Same
October	1,605.763	Same
November	1,528.436	Same
December	1,571.571	Same
ANNUAL TOTAL	**16,439.900**	**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.

d) a summary of modifications and/or major maintenance work carried out on the Water Supply Facility, Sewage Disposal Facility, and Solid Waste Disposal Facility, including all associated structures and facilities;

- The Filterboxx temporary water treatment plant went online on August 18th and was available for distribution to the public while the boil water advisory remained in place until testing confirmed that water was meeting treatment objectives. The system was disconnected and winterized on September 28th.
- The boil water advisory began July 22nd, was lifted on August 26, 2021 once the sampling results demonstrated the water was meeting treatment objectives. The boil water advisory was reinstated on September 28th when Filterboxx was taken offline. This advisory was removed on October 9th once the coliform levels subsided in the source water.

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

- No spills documented

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

- None

g) Any updates or revisions for manuals and plans (including Operations and Maintenance Manual/Plans) as required by changes in operation and/or technology;

- New Operations and Maintenance Manuals will be submitted as part of the Water License renewal.

h) 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;

- Planning for the new water treatment plant was completed in spring 2021 and a contract for the design will be awarded summer 2021. As the design develops the documents will be submitted to NWB.
- The initial planning contract for the solid waste project will be completed in 2021. The cost estimates have indicated that the current funding cannot support moving to a new site so the focus of the project will shift to upgrading the current site. A second contract to assess the cost of improvements needed at the current site and a construction plan will be undertaken in 2021/22.

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

- None

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- The renewal application package was submitted on September 16th, 2020 by CGS to the Nunavut Water Board for municipal water license 3BM-WHA1520 and the new license was issued on March 26, 2021.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- The 3BM-WHA1520 CIRNAC Inspection took place on July 15th, 2020. A copy of the inspection report has not been received at the time of this submission.

List of Appendices

Appendix A: WHA-3 Effluent Quality Limits – 1 page
Appendix B: Weekly Inspections at Monitoring Program Stations - 1 page
Appendix C: Laboratory Certificate of Analysis

- **Certificate of Analysis July 7, 2020 – 19 pages**
- **Certificate of Analysis July 16, 2020 – 24 pages**
- **Certificate of Analysis August 18, 2020 – 20 pages**

Appendix D: Hazardous Materials Spill Database, Whale Cove 2020 – 1 page
Appendix E: Whale Cove 2020 Sampling Summary – 3 pages
Appendix F: CIRNAC Inspection Report - 1 pages

Appendix A : WHA-3 Effluent Quality Limits

3BM-WHA1520 Whale Cove Monitoring Program Results 2020 for Effluent Quality

Parameter	Maximum concentration of any grab sample	WHA-3		
		07-Jul-20	16-Jul-20	18-Aug-20
BOD_5	120 mg/L	8.3	27.9	23.4
Total Suspended Solids	180 mg/L	21.4	33.1	36.6
Fecal Coliforms	$1x10^6$ CFU/100mL	880	14100	15500
Oil + Grease	no visible sheen	5	5	38.2
pH	between 6 and 9	7.65	8.01	8.2

Appendix B: Weekly Inspections at Monitoring Program Stations

Weekly inspection of monitoring sites was not received by CGS.

Appendix C: Laboratory Certificate of Analysis

Hamlet of Whale Cove
ATTN: JEANI MacKENZIE (SAO)
PO Box 120
Whale Cove NU X0C 0J0

Date Received: 10-JUL-20
Report Date: 23-JUL-20 13:08 (MT)
Version: FINAL

Client Phone: 867-896-9961

Certificate of Analysis

Lab Work Order #: L2472521

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

Comments: ADDITIONAL 15-JUL-20 08:04

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2472521-1 SEWAGE LAGOON RUNOFF							
Sampled By: CLIENT on 07-JUL-20 @ 12:00							
Matrix: Waste Water							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	253		1.2	mg/L		16-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		16-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		16-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	208		1.0	mg/L		15-JUL-20	R5154480
Ammonia by colour							
Ammonia, Total (as N)	0.12		0.10	mg/L		15-JUL-20	R5154364
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	8.3		2.0	mg/L		17-JUL-20	R5163581
Carbonaceous BOD							
BOD Carbonaceous	8.8		2.0	mg/L		17-JUL-20	R5163581
Chloride in Water by IC							
Chloride (Cl)	64.6		0.50	mg/L		15-JUL-20	R5161876
Conductivity							
Conductivity	589		1.0	umhos/cm		16-JUL-20	R5156988
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	880	PEHR	10	MPN/100mL		15-JUL-20	R5154800
Hardness Calculated							
Hardness (as CaCO3)	161	HTC	0.20	mg/L		17-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)	0.027		0.020	mg/L		15-JUL-20	R5161876
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	R5161876
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		16-JUL-20	R5154766
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		16-JUL-20	R5156146
Phosphorus, Total							
Phosphorus (P)-Total	3.32		0.030	mg/L		16-JUL-20	R5154645
Sulfate in Water by IC							
Sulfate (SO4)	14.8		0.30	mg/L		15-JUL-20	R5161876
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0343		0.0030	mg/L	16-JUL-20	16-JUL-20	R5156998
Arsenic (As)-Total	0.00382		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Cadmium (Cd)-Total	0.0000077		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156998
Calcium (Ca)-Total	48.0		0.050	mg/L	16-JUL-20	16-JUL-20	R5156998
Chromium (Cr)-Total	0.00024		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Cobalt (Co)-Total	0.00051		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Copper (Cu)-Total	0.00204		0.00050	mg/L	16-JUL-20	16-JUL-20	R5156998
Iron (Fe)-Total	0.877		0.010	mg/L	16-JUL-20	16-JUL-20	R5156998
Lead (Pb)-Total	0.000086		0.000050	mg/L	16-JUL-20	16-JUL-20	R5156998
Magnesium (Mg)-Total	9.91		0.0050	mg/L	16-JUL-20	16-JUL-20	R5156998
Manganese (Mn)-Total	0.187		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Nickel (Ni)-Total	0.00268		0.00050	mg/L	16-JUL-20	16-JUL-20	R5156998

* 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
L2472521-1 SEWAGE LAGOON RUNOFF							
Sampled By: CLIENT on 07-JUL-20 @ 12:00							
Matrix: Waste Water							
Total Metals in Water by CRC ICPMS							
Potassium (K)-Total	13.8		0.050	mg/L	16-JUL-20	16-JUL-20	R5156998
Sodium (Na)-Total	56.8		0.050	mg/L	16-JUL-20	16-JUL-20	R5156998
Zinc (Zn)-Total	0.0171		0.0030	mg/L	16-JUL-20	16-JUL-20	R5156998
Total Organic Carbon by Combustion							
Total Organic Carbon	20.3		0.50	mg/L		15-JUL-20	R5154334
Total Suspended Solids							
Total Suspended Solids	21.4		3.0	mg/L		15-JUL-20	R5157074
pH							
pH	7.65		0.10	pH units		16-JUL-20	R5156988
L2472521-2 WHA-2 - SET WITH PAH							
Sampled By: CLIENT on 07-JUL-20 @ 12:00							
Matrix: Waste Water							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		16-JUL-20	R5154921
Toluene	0.0011		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)	85.7		70-130	%		16-JUL-20	R5154921
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.18		0.10	mg/L	15-JUL-20	15-JUL-20	R5156656
F3 (C16-C34)	2.53		0.25	mg/L	15-JUL-20	15-JUL-20	R5156656
F4 (C34-C50)	0.91		0.25	mg/L	15-JUL-20	15-JUL-20	R5156656
Surrogate: 2-Bromobenzotrifluoride	112.6		60-140	%	15-JUL-20	15-JUL-20	R5156656
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		20-JUL-20	
F2-Naphth	0.18		0.10	mg/L		20-JUL-20	
F3-PAH	2.53		0.25	mg/L		20-JUL-20	
Total Hydrocarbons (C6-C50)	3.62		0.38	mg/L		20-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		16-JUL-20	
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
Acenaphthene	<0.000020		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
Acenaphthylene	<0.000020		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
Anthracene	<0.000010		0.000010	mg/L	16-JUL-20	20-JUL-20	R5158059
Acridine	<0.000020		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
Benzo(a)anthracene	<0.000010		0.000010	mg/L	16-JUL-20	20-JUL-20	R5158059
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	16-JUL-20	20-JUL-20	R5158059
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	16-JUL-20	20-JUL-20	R5158059
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	16-JUL-20	20-JUL-20	R5158059
Chrysene	<0.000020		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	16-JUL-20	20-JUL-20	R5158059
Fluoranthene	<0.000020		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
Fluorene	<0.000020		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	16-JUL-20	20-JUL-20	R5158059

* 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
L2472521-2 WHA-2 - SET WITH PAH							
Sampled By: CLIENT on 07-JUL-20 @ 12:00							
Matrix: Waste Water							
CCME PAHs in mg/L							
Naphthalene	<0.000050		0.000050	mg/L	16-JUL-20	20-JUL-20	R5158059
Phenanthrene	<0.000050		0.000050	mg/L	16-JUL-20	20-JUL-20	R5158059
Pyrene	<0.000010		0.000010	mg/L	16-JUL-20	20-JUL-20	R5158059
Quinoline	0.000042		0.000020	mg/L	16-JUL-20	20-JUL-20	R5158059
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	16-JUL-20	20-JUL-20	R5158059
Surrogate: d8-Naphthalene	133.6		50-150	%	16-JUL-20	20-JUL-20	R5158059
Surrogate: d10-Phenanthrene	94.2		50-150	%	16-JUL-20	20-JUL-20	R5158059
Surrogate: d12-Chrysene	85.3		50-150	%	16-JUL-20	20-JUL-20	R5158059
Surrogate: d10-Acenaphthene	99.7		50-150	%	16-JUL-20	20-JUL-20	R5158059
Surrogate: d9-Acridine (SS)	95.8		50-150	%	16-JUL-20	20-JUL-20	R5158059
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	259		1.2	mg/L		16-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		16-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		16-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	212		1.0	mg/L		15-JUL-20	R5154480
Ammonia by colour							
Ammonia, Total (as N)	24.3		1.0	mg/L		15-JUL-20	R5154364
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	12.8		6.0	mg/L		17-JUL-20	R5163581
Carbonaceous BOD							
BOD Carbonaceous	10.6		6.0	mg/L		17-JUL-20	R5163581
Chloride in Water by IC							
Chloride (Cl)	75.0		0.50	mg/L		15-JUL-20	R5161876
Conductivity							
Conductivity	681		1.0	umhos/cm		16-JUL-20	R5156988
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	6130	PEHR	10	MPN/100mL		15-JUL-20	R5154800
Hardness Calculated							
Hardness (as CaCO3)	95.1	HTC	0.20	mg/L		17-JUL-20	
Mercury Total							
Mercury (Hg)-Total	0.0000090		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	R5161876
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	R5161876
Oil & Grease - Gravimetric							
Oil and Grease	6.4		5.0	mg/L		16-JUL-20	R5154766
Phenol (4AAP)							
Phenols (4AAP)	<0.0050	DLM	0.0050	mg/L		16-JUL-20	R5156146
Phosphorus, Total							
Phosphorus (P)-Total	5.83		0.030	mg/L		16-JUL-20	R5154645
Sulfate in Water by IC							
Sulfate (SO4)	13.9		0.30	mg/L		15-JUL-20	R5161876
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0377		0.0030	mg/L	16-JUL-20	16-JUL-20	R5156998
Arsenic (As)-Total	0.00087		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998

* 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
L2472521-2 WHA-2 - SET WITH PAH							
Sampled By: CLIENT on 07-JUL-20 @ 12:00							
Matrix: Waste Water							
Total Metals in Water by CRC ICPMS							
Cadmium (Cd)-Total	0.0000187		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156998
Calcium (Ca)-Total	27.4		0.050	mg/L	16-JUL-20	16-JUL-20	R5156998
Chromium (Cr)-Total	0.00035		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Cobalt (Co)-Total	0.00061		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Copper (Cu)-Total	0.0360		0.00050	mg/L	16-JUL-20	16-JUL-20	R5156998
Iron (Fe)-Total	0.173		0.010	mg/L	16-JUL-20	16-JUL-20	R5156998
Lead (Pb)-Total	0.000353		0.000050	mg/L	16-JUL-20	16-JUL-20	R5156998
Magnesium (Mg)-Total	6.47		0.0050	mg/L	16-JUL-20	16-JUL-20	R5156998
Manganese (Mn)-Total	0.0887		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Nickel (Ni)-Total	0.00205		0.00050	mg/L	16-JUL-20	16-JUL-20	R5156998
Potassium (K)-Total	16.5		0.050	mg/L	16-JUL-20	16-JUL-20	R5156998
Sodium (Na)-Total	54.0		0.050	mg/L	16-JUL-20	16-JUL-20	R5156998
Zinc (Zn)-Total	0.0226		0.0030	mg/L	16-JUL-20	16-JUL-20	R5156998
Total Organic Carbon by Combustion							
Total Organic Carbon	33.5		0.50	mg/L		15-JUL-20	R5154334
Total Suspended Solids							
Total Suspended Solids	26.4		3.0	mg/L		15-JUL-20	R5157074
pH							
pH	7.35		0.10	pH units		16-JUL-20	R5156988
L2472521-3 SET WITHOUT PAH							
Sampled By: CLIENT on 07-JUL-20 @ 12:00							
Matrix: Waste Water							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	244		1.2	mg/L		16-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		16-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		16-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	200		1.0	mg/L		15-JUL-20	R5154480
Ammonia by colour							
Ammonia, Total (as N)	0.58		0.10	mg/L		15-JUL-20	R5154364
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	7.5		2.0	mg/L		17-JUL-20	R5163581
Carbonaceous BOD							
BOD Carbonaceous	5.3		2.0	mg/L		17-JUL-20	R5163581
Chloride in Water by IC							
Chloride (Cl)	69.6		0.50	mg/L		15-JUL-20	R5161876
Conductivity							
Conductivity	672		1.0	umhos/cm		16-JUL-20	R5156988
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	210	PEHR	10	MPN/100mL		15-JUL-20	R5154800
Hardness Calculated							
Hardness (as CaCO3)	212	HTC	0.20	mg/L		17-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	R5161876
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		22-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
L2472521-3 SET WITHOUT PAH							
Sampled By: CLIENT on 07-JUL-20 @ 12:00							
Matrix: Waste Water							
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		15-JUL-20	R5161876
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		16-JUL-20	R5154766
Phenol (4AAP)							
Phenols (4AAP)	0.0036		0.0010	mg/L		16-JUL-20	R5156146
Phosphorus, Total							
Phosphorus (P)-Total	0.360		0.0030	mg/L		16-JUL-20	R5154645
Sulfate in Water by IC							
Sulfate (SO4)	57.1		0.30	mg/L		15-JUL-20	R5161876
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0446		0.0030	mg/L	16-JUL-20	16-JUL-20	R5156998
Arsenic (As)-Total	0.00271		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Cadmium (Cd)-Total	0.0000823		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156998
Calcium (Ca)-Total	69.6		0.050	mg/L	16-JUL-20	16-JUL-20	R5156998
Chromium (Cr)-Total	0.00137		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Cobalt (Co)-Total	0.00183		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Copper (Cu)-Total	0.00735		0.00050	mg/L	16-JUL-20	16-JUL-20	R5156998
Iron (Fe)-Total	3.63		0.010	mg/L	16-JUL-20	16-JUL-20	R5156998
Lead (Pb)-Total	0.000758		0.000050	mg/L	16-JUL-20	16-JUL-20	R5156998
Magnesium (Mg)-Total	9.36		0.0050	mg/L	16-JUL-20	16-JUL-20	R5156998
Manganese (Mn)-Total	0.455		0.00010	mg/L	16-JUL-20	16-JUL-20	R5156998
Nickel (Ni)-Total	0.00676		0.00050	mg/L	16-JUL-20	16-JUL-20	R5156998
Potassium (K)-Total	10.6		0.050	mg/L	16-JUL-20	16-JUL-20	R5156998
Sodium (Na)-Total	46.6		0.050	mg/L	16-JUL-20	16-JUL-20	R5156998
Zinc (Zn)-Total	0.0402		0.0030	mg/L	16-JUL-20	16-JUL-20	R5156998
Total Organic Carbon by Combustion							
Total Organic Carbon	18.9		0.50	mg/L		15-JUL-20	R5154334
Total Suspended Solids							
Total Suspended Solids	19.8		3.0	mg/L		15-JUL-20	R5157074
pH							
pH	7.35		0.10	pH units		16-JUL-20	R5156988

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

Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2472521-1	SEWAGE LAGOON RUNOFF	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
		UIC	Unreliable: Improper Container
L2472521-2	WHA-2 - SET WITH PAH	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
		UIC	Unreliable: Improper Container
L2472521-3	SET WITHOUT PAH	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
		UIC	Unreliable: Improper Container

Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Test Method References:

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

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

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

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

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

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

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

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

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP	Water	Conductivity	APHA 2510B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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

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

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

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105 C.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

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

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

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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

Quality Control Report

Client: Hamlet of Whale Cove
PO Box 120
Whale Cove NU X0C 0J0
Contact: JEANI MacKENZIE (SAO)

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R5154480								
WG3363682-4 LCS								
Alkalinity, Total (as CaCO3)			100.7		%		85-115	15-JUL-20
WG3363682-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	15-JUL-20
BOD-CBOD-WP	Water							
Batch R5163581								
WG3364556-2 LCS								
BOD Carbonaceous			105.4		%		85-115	17-JUL-20
WG3364556-1 MB								
BOD Carbonaceous			<2.0		mg/L		2	17-JUL-20
BOD-WP	Water							
Batch R5163581								
WG3364556-2 LCS								
Biochemical Oxygen Demand			109.0		%		85-115	17-JUL-20
WG3364556-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	17-JUL-20
BTEXS+F1-HSMS-WP	Water							
Batch R5154921								
WG3362937-8 LCS								
Benzene			102.0		%		70-130	15-JUL-20
Toluene			99.5		%		70-130	15-JUL-20
Ethyl benzene			102.9		%		70-130	15-JUL-20
o-Xylene			112.1		%		70-130	15-JUL-20
m+p-Xylenes			103.1		%		70-130	15-JUL-20
WG3362937-9 LCS								
F1 (C6-C10)			102.3		%		70-130	15-JUL-20
WG3362937-7 MB								
Benzene			<0.00050		mg/L		0.0005	15-JUL-20
Toluene			<0.0010		mg/L		0.001	15-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	15-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	15-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	15-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	15-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			88.0		%		70-130	15-JUL-20
C-TOC-HTC-WP	Water							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	Water							
Batch R5154334								
WG3363582-2 LCS								
Total Organic Carbon			101.9		%		80-120	15-JUL-20
WG3363582-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	15-JUL-20
CL-IC-N-WP	Water							
Batch R5161876								
WG3363202-2 LCS								
Chloride (Cl)			104.4		%		90-110	15-JUL-20
WG3363202-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	15-JUL-20
EC-WP	Water							
Batch R5156988								
WG3364733-3 LCS								
Conductivity			98.4		%		90-110	16-JUL-20
WG3364733-1 MB								
Conductivity			<1.0		umhos/cm		1	16-JUL-20
F2-F4-FID-WP	Water							
Batch R5156656								
WG3362782-4 LCS								
F2 (C10-C16)			104.7		%		70-130	15-JUL-20
F3 (C16-C34)			96.1		%		70-130	15-JUL-20
F4 (C34-C50)			98.4		%		70-130	15-JUL-20
WG3362782-3 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	15-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	15-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	15-JUL-20
Surrogate: 2-Bromobenzotrifluoride			104.9		%		60-140	15-JUL-20
FC10-QT97-WP	Water							
Batch R5154800								
WG3363306-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	15-JUL-20
HG-T-CVAA-WP	Water							
Batch R5156978								
WG3364115-3 DUP		**L2472521-3**						
Mercury (Hg)-Total		0.0000050	<0.000005C	RPD-NA	mg/L	N/A	20	16-JUL-20
WG3364109-2 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WP	Water							
Batch R5156978								
WG3364109-2 LCS								
Mercury (Hg)-Total			113.0		%		80-120	16-JUL-20
WG3364115-2 LCS								
Mercury (Hg)-Total			112.0		%		80-120	16-JUL-20
WG3364109-1 MB								
Mercury (Hg)-Total			<0.000005		mg/L		0.000005	16-JUL-20
WG3364115-1 MB								
Mercury (Hg)-Total			<0.000005		mg/L		0.000005	16-JUL-20
MET-T-CCMS-WP	Water							
Batch R5156998								
WG3363386-2 LCS								
Aluminum (Al)-Total			102.5		%		80-120	16-JUL-20
Arsenic (As)-Total			98.1		%		80-120	16-JUL-20
Cadmium (Cd)-Total			98.3		%		80-120	16-JUL-20
Calcium (Ca)-Total			98.6		%		80-120	16-JUL-20
Chromium (Cr)-Total			99.6		%		80-120	16-JUL-20
Cobalt (Co)-Total			96.9		%		80-120	16-JUL-20
Copper (Cu)-Total			97.6		%		80-120	16-JUL-20
Iron (Fe)-Total			97.9		%		80-120	16-JUL-20
Lead (Pb)-Total			99.4		%		80-120	16-JUL-20
Magnesium (Mg)-Total			102.5		%		80-120	16-JUL-20
Manganese (Mn)-Total			97.7		%		80-120	16-JUL-20
Nickel (Ni)-Total			96.1		%		80-120	16-JUL-20
Potassium (K)-Total			98.7		%		80-120	16-JUL-20
Sodium (Na)-Total			99.6		%		80-120	16-JUL-20
Zinc (Zn)-Total			99.1		%		80-120	16-JUL-20
WG3363386-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-JUL-20
Cadmium (Cd)-Total			<0.000005		mg/L		0.000005	16-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-JUL-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-JUL-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-JUL-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-JUL-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R5156998								
WG3363386-1 MB								
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-JUL-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-JUL-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-JUL-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-JUL-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-JUL-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-JUL-20
NH3-COL-WP	Water							
Batch R5154364								
WG3363605-10 LCS								
Ammonia, Total (as N)			100.6		%		85-115	15-JUL-20
WG3363605-9 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	15-JUL-20
NO2-IC-N-WP	Water							
Batch R5161876								
WG3363202-2 LCS								
Nitrite (as N)			104.5		%		90-110	15-JUL-20
WG3363202-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	15-JUL-20
NO3-IC-N-WP	Water							
Batch R5161876								
WG3363202-2 LCS								
Nitrate (as N)			104.6		%		90-110	15-JUL-20
WG3363202-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	15-JUL-20
OG-GRAV-WP	Water							
Batch R5154766								
WG3363944-2 LCS								
Oil and Grease			93.4		%		70-130	16-JUL-20
WG3363944-1 MB								
Oil and Grease			<5.0		mg/L		5	16-JUL-20
P-T-COL-WP	Water							
Batch R5154645								
WG3363427-10 LCS								
Phosphorus (P)-Total			97.3		%		80-120	16-JUL-20
WG3363427-9 MB								
Phosphorus (P)-Total			0.0043	B	mg/L		0.003	16-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R5158059								
WG3364045-2 LCS								
1-Methyl Naphthalene			91.4		%		50-150	20-JUL-20
2-Methyl Naphthalene			91.5		%		50-150	20-JUL-20
Acenaphthene			98.6		%		50-150	20-JUL-20
Acenaphthylene			91.3		%		50-150	20-JUL-20
Anthracene			100.8		%		50-150	20-JUL-20
Acridine			96.7		%		50-150	20-JUL-20
Benzo(a)anthracene			102.2		%		50-150	20-JUL-20
Benzo(a)pyrene			99.5		%		50-150	20-JUL-20
Benzo(b&j)fluoranthene			99.3		%		50-150	20-JUL-20
Benzo(g,h,i)perylene			113.8		%		50-150	20-JUL-20
Benzo(k)fluoranthene			95.8		%		50-150	20-JUL-20
Chrysene			102.6		%		50-150	20-JUL-20
Dibenzo(a,h)anthracene			102.3		%		50-150	20-JUL-20
Fluoranthene			94.9		%		50-150	20-JUL-20
Fluorene			96.4		%		50-150	20-JUL-20
Indeno(1,2,3-cd)pyrene			102.4		%		50-150	20-JUL-20
Naphthalene			93.4		%		50-150	20-JUL-20
Phenanthrene			106.8		%		50-150	20-JUL-20
Pyrene			97.1		%		50-150	20-JUL-20
Quinoline			106.9		%		50-150	20-JUL-20
WG3364045-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	20-JUL-20
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	20-JUL-20
Acenaphthene			<0.000020		mg/L		0.00002	20-JUL-20
Acenaphthylene			<0.000020		mg/L		0.00002	20-JUL-20
Anthracene			<0.000010		mg/L		0.00001	20-JUL-20
Acridine			<0.000020		mg/L		0.00002	20-JUL-20
Benzo(a)anthracene			<0.000010		mg/L		0.00001	20-JUL-20
Benzo(a)pyrene			<0.0000050		mg/L		0.000005	20-JUL-20
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	20-JUL-20
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	20-JUL-20
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	20-JUL-20
Chrysene			<0.000020		mg/L		0.00002	20-JUL-20
Dibenzo(a,h)anthracene			<0.0000050		mg/L		0.000005	20-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R5158059								
WG3364045-1 MB								
Fluoranthene			<0.000020		mg/L		0.00002	20-JUL-20
Fluorene			<0.000020		mg/L		0.00002	20-JUL-20
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	20-JUL-20
Naphthalene			<0.000050		mg/L		0.00005	20-JUL-20
Phenanthrene			<0.000050		mg/L		0.00005	20-JUL-20
Pyrene			<0.000010		mg/L		0.00001	20-JUL-20
Quinoline			<0.000020		mg/L		0.00002	20-JUL-20
Surrogate: d8-Naphthalene			100.5		%		50-150	20-JUL-20
Surrogate: d10-Phenanthrene			99.5		%		50-150	20-JUL-20
Surrogate: d12-Chrysene			88.4		%		50-150	20-JUL-20
Surrogate: d10-Acenaphthene			95.8		%		50-150	20-JUL-20
Surrogate: d9-Acridine (SS)			87.8		%		50-150	20-JUL-20
PH-WP	Water							
Batch R5156988								
WG3364733-2 LCS								
pH			7.36		pH units		7.3-7.5	16-JUL-20
PHENOLS-4AAP-WT	Water							
Batch R5156146								
WG3364233-2 LCS								
Phenols (4AAP)			97.9		%		85-115	16-JUL-20
WG3364233-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	16-JUL-20
SO4-IC-N-WP	Water							
Batch R5161876								
WG3363202-2 LCS								
Sulfate (SO4)			105.8		%		90-110	15-JUL-20
WG3363202-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	15-JUL-20
SOLIDS-TOTSUS-WP	Water							
Batch R5157074								
WG3362900-5 LCS								
Total Suspended Solids			99.3		%		85-115	15-JUL-20
WG3362900-4 MB								
Total Suspended Solids			<3.0		mg/L		3	15-JUL-20

Legend:

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

Sample Parameter Qualifier Definitions:

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

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Total Suspended Solids							
	1	07-JUL-20 12:00	15-JUL-20 13:00	7	8	days	EHT
	2	07-JUL-20 12:00	15-JUL-20 13:00	7	8	days	EHT
	3	07-JUL-20 12:00	15-JUL-20 13:00	7	8	days	EHT
pH							
	1	07-JUL-20 12:00	16-JUL-20 12:00	0.25	216	hours	EHTR-FM
	2	07-JUL-20 12:00	16-JUL-20 12:00	0.25	216	hours	EHTR-FM
	3	07-JUL-20 12:00	16-JUL-20 12:00	0.25	216	hours	EHTR-FM
Anions and Nutrients							
Nitrate in Water by IC							
	1	07-JUL-20 12:00	15-JUL-20 13:30	3	8	days	EHTL
	2	07-JUL-20 12:00	15-JUL-20 13:30	3	8	days	EHTL
	3	07-JUL-20 12:00	15-JUL-20 13:30	3	8	days	EHTL
Nitrite in Water by IC							
	1	07-JUL-20 12:00	15-JUL-20 13:30	3	8	days	EHTL
	2	07-JUL-20 12:00	15-JUL-20 13:30	3	8	days	EHTL
	3	07-JUL-20 12:00	15-JUL-20 13:30	3	8	days	EHTL
Bacteriological Tests							
Fecal coliforms, 1:10 dilution by QT97							
	1	07-JUL-20 12:00	15-JUL-20 18:40	30	199	hours	EHTR
	2	07-JUL-20 12:00	15-JUL-20 18:40	30	199	hours	EHTR
	3	07-JUL-20 12:00	15-JUL-20 18:40	30	199	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Demand (BOD)							
	1	07-JUL-20 12:00	17-JUL-20 07:00	48	235	hours	EHTR
	2	07-JUL-20 12:00	17-JUL-20 07:00	48	235	hours	EHTR
	3	07-JUL-20 12:00	17-JUL-20 07:00	48	235	hours	EHTR
Carbonaceous BOD							
	1	07-JUL-20 12:00	17-JUL-20 07:00	48	235	hours	EHTR
	2	07-JUL-20 12:00	17-JUL-20 07:00	48	235	hours	EHTR
	3	07-JUL-20 12:00	17-JUL-20 07:00	48	235	hours	EHTR

Legend & Qualifier Definitions:

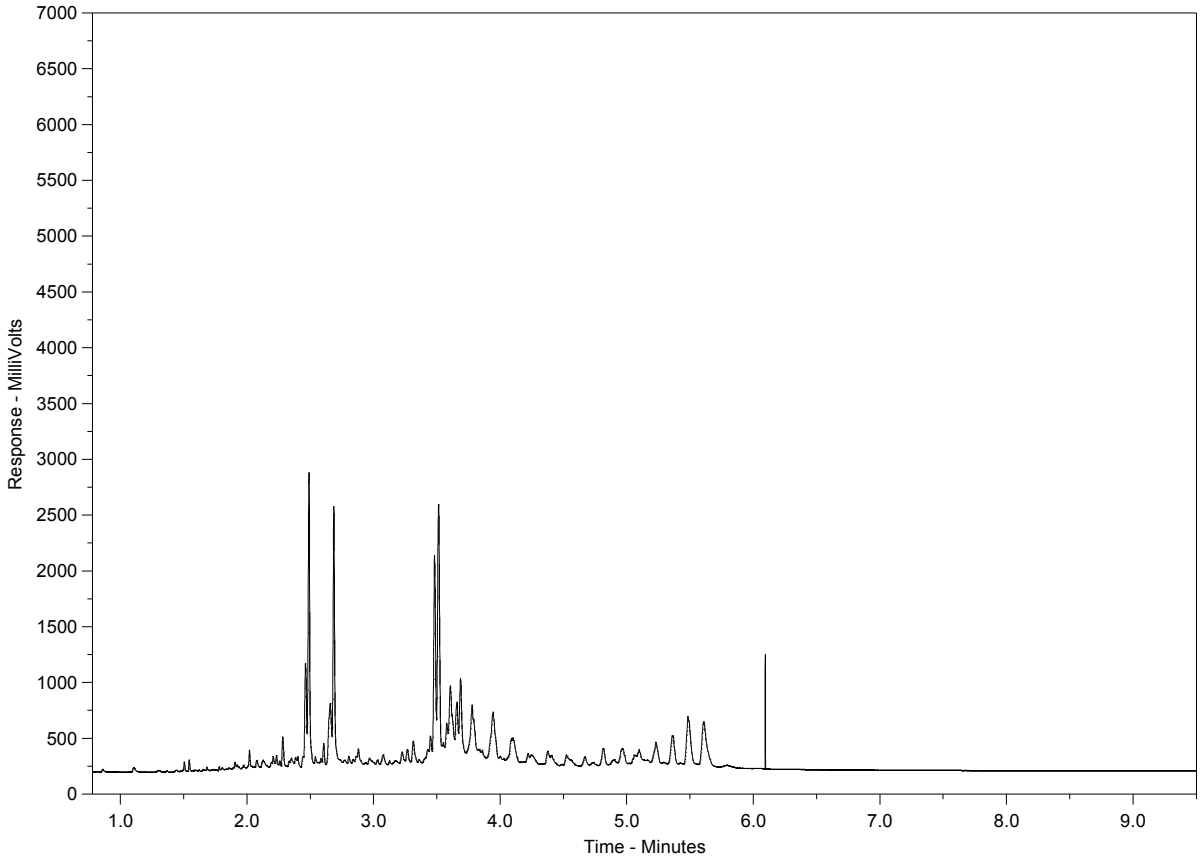
EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended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

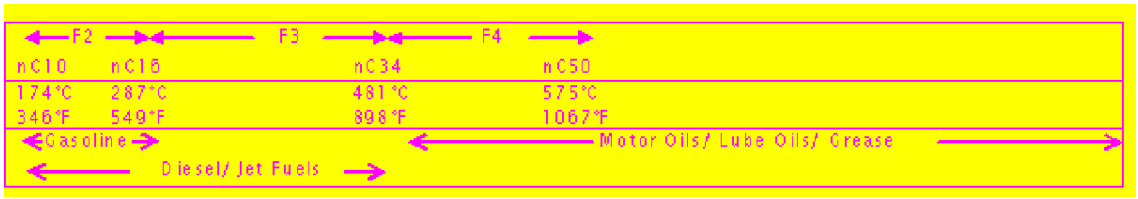
Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2472521 were received on 10-JUL-20 11:00.

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2472521-2
Client Sample ID: SET WITH PAH





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

L2472521-COFC

COC Number: 17 - 781474

Page 1 of 2 SA AM

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:		Select Report Format: ☐ PDF ☐ EXCEL | | EDD (DIGITAL)	Regular [R] ☐ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	White Cove	Quality Control (QC) Report with Report ☐ YES ☐ NO	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)] ☐
Phone:		☐ Compare Results to Criteria on Report - provide details below if box checked	
Company address below will appear on the final report		Select Distribution: ☐ EMAIL | | MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:		Email 1 or Fax	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:		Email 2	
Postal Code:		Email 3	

Invoice To		Invoice Distribution	
	Same as Report To ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
	Copy of Invoice with Report ☐ YES ☐ NO	Email 1 or Fax	
Company:		Email 2	
Contact:			

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	W 10623	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	NUNAVUT-WW GRP1-WP	BTX F1 - F4-WP PAH	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	Sewage Lagoon Runoff				✓				
	Sewage Lagoon				✓				
	Waste Dump Pond				✓				

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)	SAMPLE CONDITION AS RECEIVED (lab use only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	* COC filled out as per bottle order sheet # 1112 Rarely20	Frozen ☐ SIF Observations Yes ☐ No ☐
Are samples for human consumption/ use? | | YES | | NO		Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
		Cooling Initiated ☐
		INITIAL COOLER TEMPERATURES °C: 7.1 / FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by: AR	Date: 10 July	Time: 1100	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**.

Hamlet of Whale Cove
ATTN: PAUL VOISEY
PO Box 120
Whale Cove NU X0C 0J0

Date Received: 17-JUL-20
Report Date: 28-JUL-20 07:37 (MT)
Version: FINAL

Client Phone: 867-896-9961

Certificate of Analysis

Lab Work Order #: L2476022
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476022-1 WHA-2							
Sampled By: CF on 16-JUL-20 @ 09:40							
Matrix: WW							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		21-JUL-20	R5161660
Toluene	<0.0010		0.0010	mg/L		21-JUL-20	R5161660
Ethyl benzene	<0.00050		0.00050	mg/L		21-JUL-20	R5161660
o-Xylene	<0.00050		0.00050	mg/L		21-JUL-20	R5161660
m+p-Xylenes	<0.00040		0.00040	mg/L		21-JUL-20	R5161660
F1 (C6-C10)	<0.10		0.10	mg/L		21-JUL-20	R5161660
Surrogate: 4-Bromofluorobenzene (SS)	84.5		70-130	%		21-JUL-20	R5161660
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	22-JUL-20	22-JUL-20	R5163558
F3 (C16-C34)	<0.25		0.25	mg/L	22-JUL-20	22-JUL-20	R5163558
F4 (C34-C50)	<0.25		0.25	mg/L	22-JUL-20	22-JUL-20	R5163558
Surrogate: 2-Bromobenzotrifluoride	92.9		60-140	%	22-JUL-20	22-JUL-20	R5163558
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		24-JUL-20	
F2-Naphth	<0.10		0.10	mg/L		24-JUL-20	
F3-PAH	<0.25		0.25	mg/L		24-JUL-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		24-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		23-JUL-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	860	MBHT	10	MPN/100mL		17-JUL-20	R5158600
Escherichia Coli	100	MBHT	10	MPN/100mL		17-JUL-20	R5158600
CCME PAHs in mg/L							
1-Methyl Naphthalene	0.000028		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
2-Methyl Naphthalene	0.000023		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
Acenaphthene	<0.000020		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
Acenaphthylene	<0.000020		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
Anthracene	<0.000010		0.000010	mg/L	21-JUL-20	24-JUL-20	R5166437
Acridine	<0.000020		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
Benzo(a)anthracene	<0.000010		0.000010	mg/L	21-JUL-20	24-JUL-20	R5166437
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	21-JUL-20	24-JUL-20	R5166437
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	21-JUL-20	24-JUL-20	R5166437
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	21-JUL-20	24-JUL-20	R5166437
Chrysene	<0.000020		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	21-JUL-20	24-JUL-20	R5166437
Fluoranthene	<0.000020		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
Fluorene	<0.000020		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	21-JUL-20	24-JUL-20	R5166437
Naphthalene	0.000060		0.000050	mg/L	21-JUL-20	24-JUL-20	R5166437
Phenanthrene	<0.000050		0.000050	mg/L	21-JUL-20	24-JUL-20	R5166437
Pyrene	<0.000010		0.000010	mg/L	21-JUL-20	24-JUL-20	R5166437
Quinoline	0.000091		0.000020	mg/L	21-JUL-20	24-JUL-20	R5166437
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	21-JUL-20	24-JUL-20	R5166437
Surrogate: d8-Naphthalene	90.2		50-150	%	21-JUL-20	24-JUL-20	R5166437
Surrogate: d10-Phenanthrene	95.1		50-150	%	21-JUL-20	24-JUL-20	R5166437
Surrogate: d12-Chrysene	92.7		50-150	%	21-JUL-20	24-JUL-20	R5166437
Surrogate: d10-Acenaphthene	92.1		50-150	%	21-JUL-20	24-JUL-20	R5166437
Surrogate: d9-Acridine (SS)	91.6		50-150	%	21-JUL-20	24-JUL-20	R5166437
Nunavut WW Group 1							

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2476022-1 WHA-2							
Sampled By: CF on 16-JUL-20 @ 09:40							
Matrix: WW							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	269		1.2	mg/L		21-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		21-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		21-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	221		1.0	mg/L		20-JUL-20	R5159610
Ammonia by colour							
Ammonia, Total (as N)	1.11		0.10	mg/L		23-JUL-20	R5166435
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	10.9		2.0	mg/L		17-JUL-20	R5163581
Carbonaceous BOD							
BOD Carbonaceous	8.4		2.0	mg/L		17-JUL-20	R5163581
Chloride in Water by IC							
Chloride (Cl)	69.6		0.50	mg/L		17-JUL-20	R5159043
Conductivity							
Conductivity	698		1.0	umhos/cm		20-JUL-20	R5159610
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	190	MBHT	10	MPN/100mL		17-JUL-20	R5158597
Hardness Calculated							
Hardness (as CaCO3)	238	HTC	0.20	mg/L		22-JUL-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	27-JUL-20	27-JUL-20	R5167891
Nitrate in Water by IC							
Nitrate (as N)	0.032		0.020	mg/L		17-JUL-20	R5159043
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-JUL-20	R5159043
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		22-JUL-20	R5166335
Phenol (4AAP)							
Phenols (4AAP)	0.0022		0.0010	mg/L		21-JUL-20	R5161377
Phosphorus, Total							
Phosphorus (P)-Total	0.245		0.0030	mg/L		22-JUL-20	R5161476
Sulfate in Water by IC							
Sulfate (SO4)	58.0		0.30	mg/L		17-JUL-20	R5159043
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0170		0.0030	mg/L	21-JUL-20	21-JUL-20	R5160938
Arsenic (As)-Total	0.00242		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Cadmium (Cd)-Total	0.0000564		0.0000050	mg/L	21-JUL-20	21-JUL-20	R5160938
Calcium (Ca)-Total	77.9		0.050	mg/L	21-JUL-20	21-JUL-20	R5160938
Chromium (Cr)-Total	0.00106		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Cobalt (Co)-Total	0.00181		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Copper (Cu)-Total	0.00627		0.00050	mg/L	21-JUL-20	21-JUL-20	R5160938
Iron (Fe)-Total	2.15		0.010	mg/L	21-JUL-20	21-JUL-20	R5160938
Lead (Pb)-Total	0.000536		0.000050	mg/L	21-JUL-20	21-JUL-20	R5160938
Magnesium (Mg)-Total	10.6		0.0050	mg/L	21-JUL-20	21-JUL-20	R5160938
Manganese (Mn)-Total	0.355		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Nickel (Ni)-Total	0.00651		0.00050	mg/L	21-JUL-20	21-JUL-20	R5160938
Potassium (K)-Total	10.8		0.050	mg/L	21-JUL-20	21-JUL-20	R5160938
Sodium (Na)-Total	48.6		0.050	mg/L	21-JUL-20	21-JUL-20	R5160938

* 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
L2476022-1 WHA-2							
Sampled By: CF on 16-JUL-20 @ 09:40							
Matrix: WW							
Total Metals in Water by CRC ICPMS							
Zinc (Zn)-Total	0.0279		0.0030	mg/L	21-JUL-20	21-JUL-20	R5160938
Total Organic Carbon by Combustion							
Total Organic Carbon	15.5		0.50	mg/L		24-JUL-20	R5167423
Total Suspended Solids							
Total Suspended Solids	10.9		3.0	mg/L		22-JUL-20	R5166810
pH							
pH	8.12		0.10	pH units		20-JUL-20	R5159610
L2476022-2 WHA-3							
Sampled By: CF on 16-JUL-20 @ 09:40							
Matrix: WW							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050	VOCHS	0.00050	mg/L		21-JUL-20	R5161660
Toluene	<0.0010	VOCHS	0.0010	mg/L		21-JUL-20	R5161660
Ethyl benzene	<0.00050	VOCHS	0.00050	mg/L		21-JUL-20	R5161660
o-Xylene	<0.00050	VOCHS	0.00050	mg/L		21-JUL-20	R5161660
m+p-Xylenes	<0.00040	VOCHS	0.00040	mg/L		21-JUL-20	R5161660
F1 (C6-C10)	<0.10	VOCHS	0.10	mg/L		21-JUL-20	R5161660
Surrogate: 4-Bromofluorobenzene (SS)	82.8		70-130	%		21-JUL-20	R5161660
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	22-JUL-20	22-JUL-20	R5163558
F3 (C16-C34)	1.01		0.25	mg/L	22-JUL-20	22-JUL-20	R5163558
F4 (C34-C50)	0.48		0.25	mg/L	22-JUL-20	22-JUL-20	R5163558
Surrogate: 2-Bromobenzotrifluoride	95.7		60-140	%	22-JUL-20	22-JUL-20	R5163558
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		23-JUL-20	
Total Hydrocarbons (C6-C50)	1.50		0.38	mg/L		23-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		23-JUL-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	MBHT	10	MPN/100mL		17-JUL-20	R5158600
Escherichia Coli	9210	MBHT	10	MPN/100mL		17-JUL-20	R5158600
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	248		1.2	mg/L		21-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		21-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		21-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	203		1.0	mg/L		20-JUL-20	R5159610
Ammonia by colour							
Ammonia, Total (as N)	23.4		2.0	mg/L		23-JUL-20	R5166435
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	27.9		6.0	mg/L		17-JUL-20	R5163581
Carbonaceous BOD							
BOD Carbonaceous	20.9		6.0	mg/L		17-JUL-20	R5163581
Chloride in Water by IC							
Chloride (Cl)	77.0		0.50	mg/L		17-JUL-20	R5159043
Conductivity							
Conductivity	685		1.0	umhos/cm		20-JUL-20	R5159610

* 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
L2476022-2 WHA-3							
Sampled By: CF on 16-JUL-20 @ 09:40							
Matrix: WW							
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	14100	MBHT	10	MPN/100mL		17-JUL-20	R5158597
Hardness Calculated							
Hardness (as CaCO3)	103	HTC	0.20	mg/L		22-JUL-20	
Mercury Total							
Mercury (Hg)-Total	0.0000060		0.0000050	mg/L	27-JUL-20	27-JUL-20	R5167891
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		17-JUL-20	R5159043
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-JUL-20	R5159043
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		22-JUL-20	R5166335
Phenol (4AAP)							
Phenols (4AAP)	0.0011		0.0010	mg/L		21-JUL-20	R5161377
Phosphorus, Total							
Phosphorus (P)-Total	5.79		0.030	mg/L		22-JUL-20	R5161476
Sulfate in Water by IC							
Sulfate (SO4)	15.5		0.30	mg/L		17-JUL-20	R5159043
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0296		0.0030	mg/L	21-JUL-20	21-JUL-20	R5160938
Arsenic (As)-Total	0.00083		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Cadmium (Cd)-Total	0.0000185		0.0000050	mg/L	21-JUL-20	21-JUL-20	R5160938
Calcium (Ca)-Total	30.0		0.050	mg/L	21-JUL-20	21-JUL-20	R5160938
Chromium (Cr)-Total	0.00027		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Cobalt (Co)-Total	0.00062		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Copper (Cu)-Total	0.0303		0.00050	mg/L	21-JUL-20	21-JUL-20	R5160938
Iron (Fe)-Total	0.145		0.010	mg/L	21-JUL-20	21-JUL-20	R5160938
Lead (Pb)-Total	0.000272		0.000050	mg/L	21-JUL-20	21-JUL-20	R5160938
Magnesium (Mg)-Total	6.90		0.0050	mg/L	21-JUL-20	21-JUL-20	R5160938
Manganese (Mn)-Total	0.0908		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Nickel (Ni)-Total	0.00216		0.00050	mg/L	21-JUL-20	21-JUL-20	R5160938
Potassium (K)-Total	16.9		0.050	mg/L	21-JUL-20	21-JUL-20	R5160938
Sodium (Na)-Total	55.9		0.050	mg/L	21-JUL-20	21-JUL-20	R5160938
Zinc (Zn)-Total	0.0205		0.0030	mg/L	21-JUL-20	21-JUL-20	R5160938
Total Organic Carbon by Combustion							
Total Organic Carbon	24.2		0.50	mg/L		24-JUL-20	R5167423
Total Suspended Solids							
Total Suspended Solids	33.1		3.0	mg/L		22-JUL-20	R5166810
pH							
pH	8.01		0.10	pH units		20-JUL-20	R5159610
L2476022-3 WHA-4							
Sampled By: CF on 16-JUL-20 @ 09:40							
Matrix: WW							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050	VOCHS	0.00050	mg/L		21-JUL-20	R5161660
Toluene	<0.0010	VOCHS	0.0010	mg/L		21-JUL-20	R5161660
Ethyl benzene	<0.00050	VOCHS	0.00050	mg/L		21-JUL-20	R5161660
o-Xylene	<0.00050	VOCHS	0.00050	mg/L		21-JUL-20	R5161660
m+p-Xylenes	<0.00040	VOCHS	0.00040	mg/L		21-JUL-20	R5161660
F1 (C6-C10)	<0.10	VOCHS	0.10	mg/L		21-JUL-20	R5161660

* 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
L2476022-3 WHA-4							
Sampled By: CF on 16-JUL-20 @ 09:40							
Matrix: WW							
BTX plus F1 by GCMS							
Surrogate: 4-Bromofluorobenzene (SS)	80.8		70-130	%		21-JUL-20	R5161660
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	22-JUL-20	22-JUL-20	R5163558
F3 (C16-C34)	<0.25		0.25	mg/L	22-JUL-20	22-JUL-20	R5163558
F4 (C34-C50)	<0.25		0.25	mg/L	22-JUL-20	22-JUL-20	R5163558
Surrogate: 2-Bromobenzotrifluoride	90.2		60-140	%	22-JUL-20	22-JUL-20	R5163558
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		23-JUL-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		23-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		23-JUL-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	1660	MBHT	10	MPN/100mL		17-JUL-20	R5158600
Escherichia Coli	<10	MBHT	10	MPN/100mL		17-JUL-20	R5158600
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	307		1.2	mg/L		21-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		21-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		21-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	252		1.0	mg/L		20-JUL-20	R5159610
Ammonia by colour							
Ammonia, Total (as N)	0.110		0.010	mg/L		23-JUL-20	R5166435
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	4.6		2.0	mg/L		17-JUL-20	R5163581
Carbonaceous BOD							
BOD Carbonaceous	4.3		2.0	mg/L		17-JUL-20	R5163581
Chloride in Water by IC							
Chloride (Cl)	67.2		0.50	mg/L		17-JUL-20	R5159043
Conductivity							
Conductivity	632		1.0	umhos/cm		20-JUL-20	R5159610
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	20	MBHT	10	MPN/100mL		17-JUL-20	R5158597
Hardness Calculated							
Hardness (as CaCO3)	192	HTC	0.20	mg/L		22-JUL-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	27-JUL-20	27-JUL-20	R5167891
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		17-JUL-20	R5159043
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		20-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		17-JUL-20	R5159043
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		22-JUL-20	R5166335
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		21-JUL-20	R5161377
Phosphorus, Total							
Phosphorus (P)-Total	4.51		0.030	mg/L		22-JUL-20	R5161476

* 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
L2476022-3 WHA-4							
Sampled By: CF on 16-JUL-20 @ 09:40							
Matrix: WW							
Sulfate in Water by IC							
Sulfate (SO4)	4.96		0.30	mg/L		17-JUL-20	R5159043
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0144		0.0030	mg/L	21-JUL-20	21-JUL-20	R5160938
Arsenic (As)-Total	0.00375		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Cadmium (Cd)-Total	0.0000089		0.0000050	mg/L	21-JUL-20	21-JUL-20	R5160938
Calcium (Ca)-Total	57.9		0.050	mg/L	21-JUL-20	21-JUL-20	R5160938
Chromium (Cr)-Total	0.00019		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Cobalt (Co)-Total	0.00050		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Copper (Cu)-Total	0.00148		0.00050	mg/L	21-JUL-20	21-JUL-20	R5160938
Iron (Fe)-Total	1.30		0.010	mg/L	21-JUL-20	21-JUL-20	R5160938
Lead (Pb)-Total	0.000097		0.000050	mg/L	21-JUL-20	21-JUL-20	R5160938
Magnesium (Mg)-Total	11.5		0.0050	mg/L	21-JUL-20	21-JUL-20	R5160938
Manganese (Mn)-Total	0.271		0.00010	mg/L	21-JUL-20	21-JUL-20	R5160938
Nickel (Ni)-Total	0.00292		0.00050	mg/L	21-JUL-20	21-JUL-20	R5160938
Potassium (K)-Total	13.8		0.050	mg/L	21-JUL-20	21-JUL-20	R5160938
Sodium (Na)-Total	61.2		0.050	mg/L	21-JUL-20	21-JUL-20	R5160938
Zinc (Zn)-Total	0.0072		0.0030	mg/L	21-JUL-20	21-JUL-20	R5160938
Total Organic Carbon by Combustion							
Total Organic Carbon	20.8		0.50	mg/L		24-JUL-20	R5167423
Total Suspended Solids							
Total Suspended Solids	24.1		3.0	mg/L		22-JUL-20	R5166810
pH							
pH	8.18		0.10	pH units		20-JUL-20	R5159610

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

Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2476022-2	WHA-3	UIC	Unreliable: Improper Container
L2476022-3	WHA-4	UIC	Unreliable: Improper Container

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.
VOCHS	VOC analysis was conducted for a water sample that contained > 5% headspace. Results may be biased low.

Test Method References:

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

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

ALK-HCO3HCO3-CALC-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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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

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

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

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

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

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

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

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

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PH-WP	Water	pH	APHA 4500H

Reference Information

Test Method References:

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

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

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

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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

Quality Control Report

Client: Hamlet of Whale Cove
PO Box 120
Whale Cove NU X0C 0J0
Contact: PAUL VOISEY

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R5159610								
WG3366724-15 DUP		**L2476022-3**						
Alkalinity, Total (as CaCO3)		252	234		mg/L	7.5	20	20-JUL-20
WG3366724-14 LCS								
Alkalinity, Total (as CaCO3)			103.5		%		85-115	20-JUL-20
WG3366724-11 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-JUL-20
BOD-CBOD-WP	Water							
Batch R5163581								
WG3364556-12 LCS								
BOD Carbonaceous			96.0		%		85-115	17-JUL-20
WG3364556-11 MB								
BOD Carbonaceous			<2.0		mg/L		2	17-JUL-20
BOD-WP	Water							
Batch R5163581								
WG3364556-12 LCS								
Biochemical Oxygen Demand			98.8		%		85-115	17-JUL-20
WG3364556-11 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	17-JUL-20
BTEXS+F1-HSMS-WP	Water							
Batch R5161660								
WG3366450-4 DUP		**L2476022-1**						
Benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	21-JUL-20
Toluene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	21-JUL-20
Ethyl benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	21-JUL-20
o-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	21-JUL-20
m+p-Xylenes		<0.00040	<0.00040	RPD-NA	mg/L	N/A	30	21-JUL-20
F1 (C6-C10)		<0.10	<0.10	RPD-NA	mg/L	N/A	30	21-JUL-20
WG3366450-2 LCS								
Benzene			119.9		%		70-130	21-JUL-20
Toluene			114.1		%		70-130	21-JUL-20
Ethyl benzene			115.3		%		70-130	21-JUL-20
o-Xylene			124.9		%		70-130	21-JUL-20
m+p-Xylenes			115.9		%		70-130	21-JUL-20
WG3366450-3 LCS								
F1 (C6-C10)			86.6		%		70-130	21-JUL-20
WG3366450-1 MB								
Benzene			<0.00050		mg/L		0.0005	21-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	Water							
Batch R5161660								
WG3366450-1 MB								
Toluene			<0.0010		mg/L		0.001	21-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	21-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	21-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	21-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	21-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			82.6		%		70-130	21-JUL-20
WG3366450-5 MS		**L2476022-2**						
Benzene			95.0		%		50-150	21-JUL-20
Toluene			90.7		%		50-150	21-JUL-20
Ethyl benzene			91.8		%		50-150	21-JUL-20
o-Xylene			102.5		%		50-150	21-JUL-20
m+p-Xylenes			95.0		%		50-150	21-JUL-20
WG3366450-6 MS		**L2476022-3**						
F1 (C6-C10)			80.4		%		50-150	21-JUL-20
C-TOC-HTC-WP	Water							
Batch R5167423								
WG3370903-2 LCS								
Total Organic Carbon			102.2		%		80-120	24-JUL-20
WG3370903-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	24-JUL-20
CL-IC-N-WP	Water							
Batch R5159043								
WG3364995-19 DUP		**L2476022-1**						
Chloride (Cl)		69.6	69.5		mg/L	0.1	20	17-JUL-20
WG3364995-18 LCS								
Chloride (Cl)			96.3		%		90-110	17-JUL-20
WG3364995-17 MB								
Chloride (Cl)			<0.50		mg/L		0.5	17-JUL-20
WG3364995-20 MS		**L2476022-1**						
Chloride (Cl)			107.4		%		75-125	17-JUL-20
EC-WP	Water							
Batch R5159610								
WG3366724-15 DUP		**L2476022-3**						
Conductivity		632	631		umhos/cm	0.2	10	20-JUL-20
WG3366724-13 LCS								
Conductivity			98.2		%		90-110	20-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP	Water							
Batch R5159610								
WG3366724-11 MB								
Conductivity			<1.0		umhos/cm		1	20-JUL-20
F2-F4-FID-WP	Water							
Batch R5163558								
WG3367931-2 LCS								
F2 (C10-C16)			97.6		%		70-130	22-JUL-20
F3 (C16-C34)			95.2		%		70-130	22-JUL-20
F4 (C34-C50)			103.1		%		70-130	22-JUL-20
WG3367931-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	22-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	22-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	22-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	22-JUL-20
FC10-QT97-WP	Water							
Batch R5158597								
WG3365164-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	17-JUL-20
HG-T-CVAA-WP	Water							
Batch R5167891								
WG3371325-2 LCS								
Mercury (Hg)-Total			95.0		%		80-120	27-JUL-20
WG3371325-1 MB								
Mercury (Hg)-Total			<0.000005		mg/L		0.000005	27-JUL-20
MET-T-CCMS-WP	Water							
Batch R5160938								
WG3365261-2 LCS								
Aluminum (Al)-Total			101.5		%		80-120	21-JUL-20
Arsenic (As)-Total			98.8		%		80-120	21-JUL-20
Cadmium (Cd)-Total			97.2		%		80-120	21-JUL-20
Calcium (Ca)-Total			97.9		%		80-120	21-JUL-20
Chromium (Cr)-Total			98.7		%		80-120	21-JUL-20
Cobalt (Co)-Total			97.9		%		80-120	21-JUL-20
Copper (Cu)-Total			102.4		%		80-120	21-JUL-20
Iron (Fe)-Total			94.3		%		80-120	21-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R5160938								
WG3365261-2 LCS								
Lead (Pb)-Total			99.3		%		80-120	21-JUL-20
Magnesium (Mg)-Total			107.6		%		80-120	21-JUL-20
Manganese (Mn)-Total			100.5		%		80-120	21-JUL-20
Nickel (Ni)-Total			98.1		%		80-120	21-JUL-20
Potassium (K)-Total			100.7		%		80-120	21-JUL-20
Sodium (Na)-Total			99.2		%		80-120	21-JUL-20
Zinc (Zn)-Total			99.2		%		80-120	21-JUL-20
WG3365261-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	21-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	21-JUL-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	21-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	21-JUL-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	21-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	21-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	21-JUL-20
Iron (Fe)-Total			<0.010		mg/L		0.01	21-JUL-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	21-JUL-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	21-JUL-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	21-JUL-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	21-JUL-20
Potassium (K)-Total			<0.050		mg/L		0.05	21-JUL-20
Sodium (Na)-Total			<0.050		mg/L		0.05	21-JUL-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	21-JUL-20
NH3-COL-WP	Water							
Batch R5166435								
WG3369699-6 LCS								
Ammonia, Total (as N)			101.4		%		85-115	23-JUL-20
WG3369699-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	23-JUL-20
NO2-IC-N-WP	Water							
Batch R5159043								
WG3364995-19 DUP		**L2476022-1**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	17-JUL-20
WG3364995-18 LCS								
Nitrite (as N)			98.3		%		90-110	17-JUL-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-N-WP	Water							
Batch R5159043								
WG3364995-17 MB								
Nitrite (as N)			<0.010		mg/L		0.01	17-JUL-20
WG3364995-20 MS		**L2476022-1**						
Nitrite (as N)			104.8		%		75-125	17-JUL-20
NO3-IC-N-WP	Water							
Batch R5159043								
WG3364995-19 DUP		**L2476022-1**						
Nitrate (as N)		0.032	0.032		mg/L	1.9	20	17-JUL-20
WG3364995-18 LCS								
Nitrate (as N)			96.8		%		90-110	17-JUL-20
WG3364995-17 MB								
Nitrate (as N)			<0.020		mg/L		0.02	17-JUL-20
WG3364995-20 MS		**L2476022-1**						
Nitrate (as N)			107.5		%		75-125	17-JUL-20
OG-GRAV-WP	Water							
Batch R5166335								
WG3367987-2 LCS								
Oil and Grease			95.8		%		70-130	22-JUL-20
WG3367987-1 MB								
Oil and Grease			<5.0		mg/L		5	22-JUL-20
P-T-COL-WP	Water							
Batch R5161476								
WG3367581-18 LCS								
Phosphorus (P)-Total			99.1		%		80-120	22-JUL-20
WG3367581-22 LCS								
Phosphorus (P)-Total			96.5		%		80-120	22-JUL-20
WG3367581-17 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	22-JUL-20
WG3367581-21 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	22-JUL-20
PAH-CCME-PPM-WT	Water							
Batch R5166437								
WG3367109-2 LCS								
1-Methyl Naphthalene			98.6		%		50-150	24-JUL-20
2-Methyl Naphthalene			98.1		%		50-150	24-JUL-20
Acenaphthene			108.0		%		50-150	24-JUL-20
Acenaphthylene			102.3		%		50-150	24-JUL-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R5166437								
WG3367109-2 LCS								
Anthracene			102.5		%		50-150	24-JUL-20
Acridine			92.1		%		50-150	24-JUL-20
Benzo(a)anthracene			97.7		%		50-150	24-JUL-20
Benzo(a)pyrene			84.4		%		50-150	24-JUL-20
Benzo(b&j)fluoranthene			82.8		%		50-150	24-JUL-20
Benzo(g,h,i)perylene			82.3		%		50-150	24-JUL-20
Benzo(k)fluoranthene			82.2		%		50-150	24-JUL-20
Chrysene			101.0		%		50-150	24-JUL-20
Dibenzo(a,h)anthracene			81.5		%		50-150	24-JUL-20
Fluoranthene			104.9		%		50-150	24-JUL-20
Fluorene			104.3		%		50-150	24-JUL-20
Indeno(1,2,3-cd)pyrene			87.3		%		50-150	24-JUL-20
Naphthalene			99.3		%		50-150	24-JUL-20
Phenanthrene			108.9		%		50-150	24-JUL-20
Pyrene			106.1		%		50-150	24-JUL-20
Quinoline			106.3		%		50-150	24-JUL-20
WG3367109-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	24-JUL-20
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	24-JUL-20
Acenaphthene			<0.000020		mg/L		0.00002	24-JUL-20
Acenaphthylene			<0.000020		mg/L		0.00002	24-JUL-20
Anthracene			<0.000010		mg/L		0.00001	24-JUL-20
Acridine			<0.000020		mg/L		0.00002	24-JUL-20
Benzo(a)anthracene			<0.000010		mg/L		0.00001	24-JUL-20
Benzo(a)pyrene			<0.000005C		mg/L		0.000005	24-JUL-20
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	24-JUL-20
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	24-JUL-20
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	24-JUL-20
Chrysene			<0.000020		mg/L		0.00002	24-JUL-20
Dibenzo(a,h)anthracene			<0.000005C		mg/L		0.000005	24-JUL-20
Fluoranthene			<0.000020		mg/L		0.00002	24-JUL-20
Fluorene			<0.000020		mg/L		0.00002	24-JUL-20
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	24-JUL-20
Naphthalene			<0.000050		mg/L		0.00005	24-JUL-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R5166437								
WG3367109-1 MB								
Phenanthrene			<0.000050		mg/L		0.00005	24-JUL-20
Pyrene			<0.000010		mg/L		0.00001	24-JUL-20
Quinoline			<0.000020		mg/L		0.00002	24-JUL-20
Surrogate: d8-Naphthalene			93.9		%		50-150	24-JUL-20
Surrogate: d10-Phenanthrene			95.6		%		50-150	24-JUL-20
Surrogate: d12-Chrysene			92.4		%		50-150	24-JUL-20
Surrogate: d10-Acenaphthene			95.8		%		50-150	24-JUL-20
Surrogate: d9-Acridine (SS)			86.7		%		50-150	24-JUL-20
PH-WP	Water							
Batch R5159610								
WG3366724-15 DUP		**L2476022-3**						
pH		8.18	8.19	J	pH units	0.01	0.2	20-JUL-20
WG3366724-12 LCS								
pH			7.31		pH units		7.3-7.5	20-JUL-20
PHENOLS-4AAP-WT	Water							
Batch R5161377								
WG3366944-2 LCS								
Phenols (4AAP)			94.0		%		85-115	21-JUL-20
WG3366944-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	21-JUL-20
SO4-IC-N-WP	Water							
Batch R5159043								
WG3364995-19 DUP		**L2476022-1**						
Sulfate (SO4)		58.0	58.0		mg/L	0.1	20	17-JUL-20
WG3364995-18 LCS								
Sulfate (SO4)			96.9		%		90-110	17-JUL-20
WG3364995-17 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	17-JUL-20
WG3364995-20 MS		**L2476022-1**						
Sulfate (SO4)			106.4		%		75-125	17-JUL-20
SOLIDS-TOTSUS-WP	Water							
Batch R5166810								
WG3367855-5 LCS								
Total Suspended Solids			91.8		%		85-115	22-JUL-20
WG3367855-4 MB								
Total Suspended Solids			<3.0		mg/L		3	22-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC10-QT97-WP	Water							
Batch R5158600								
WG3365167-2 DUP		**L2476022-1**						
Total Coliforms		860	570		MPN/100mL	40	65	17-JUL-20
Escherichia Coli		100	90		MPN/100mL	13	65	17-JUL-20
WG3365167-1 MB								
Total Coliforms			<1		MPN/100mL		1	17-JUL-20
Escherichia Coli			<1		MPN/100mL		1	17-JUL-20

Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	16-JUL-20 09:40	20-JUL-20 12:00	0.25	98	hours	EHTR-FM
	2	16-JUL-20 09:40	20-JUL-20 12:00	0.25	98	hours	EHTR-FM
	3	16-JUL-20 09:40	20-JUL-20 12:00	0.25	98	hours	EHTR-FM
Bacteriological Tests							
Fecal coliforms, 1:10 dilution by QT97							
	1	16-JUL-20 09:40	17-JUL-20 17:00	30	31	hours	EHTL
	2	16-JUL-20 09:40	17-JUL-20 17:00	30	31	hours	EHTL
	3	16-JUL-20 09:40	17-JUL-20 17:00	30	31	hours	EHTL
Total and E. coli, 1:10 dilution by QT97							
	1	16-JUL-20 09:40	17-JUL-20 17:00	30	31	hours	EHTL
	2	16-JUL-20 09:40	17-JUL-20 17:00	30	31	hours	EHTL
	3	16-JUL-20 09:40	17-JUL-20 17:00	30	31	hours	EHTL

Legend & Qualifier Definitions:

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2476022 were received on 17-JUL-20 12:00.

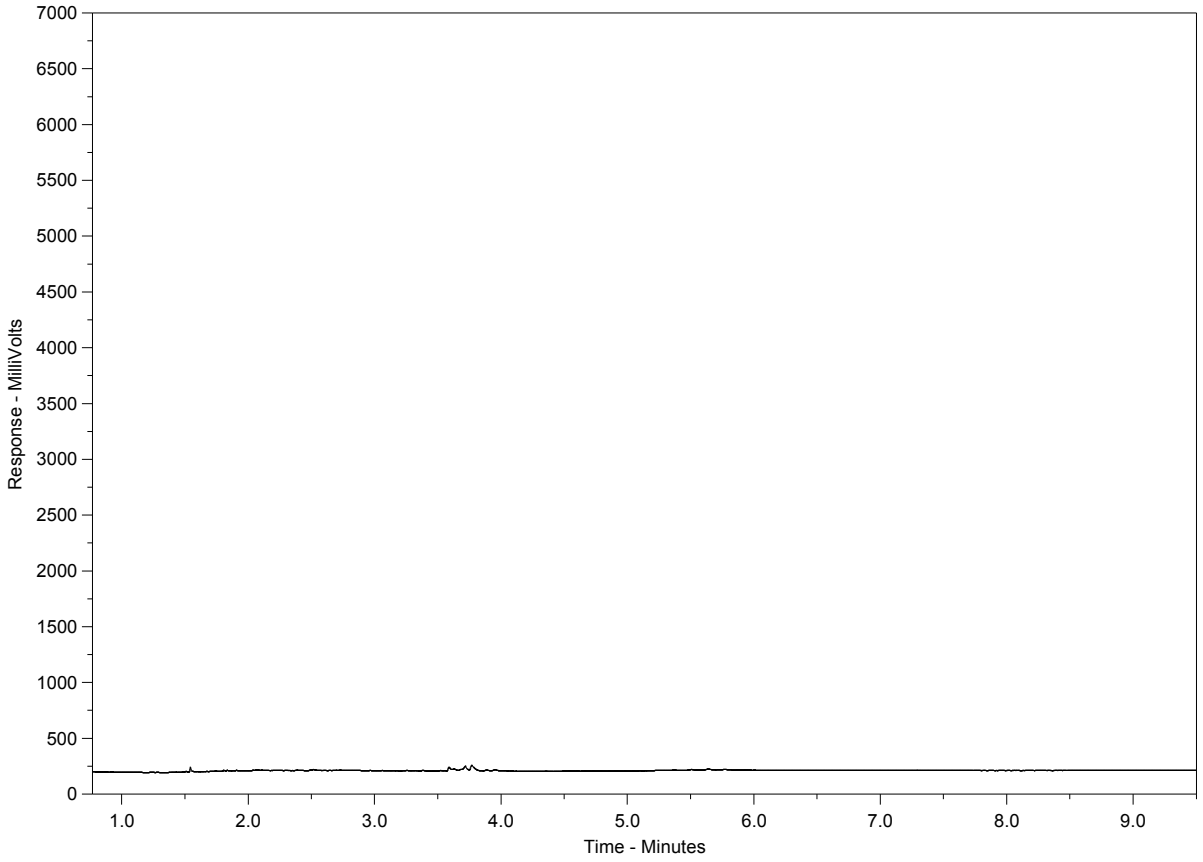
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

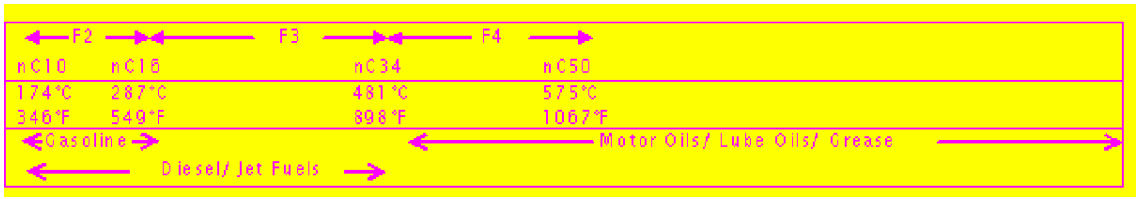
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2476022-1
Client Sample ID: WHA-2





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

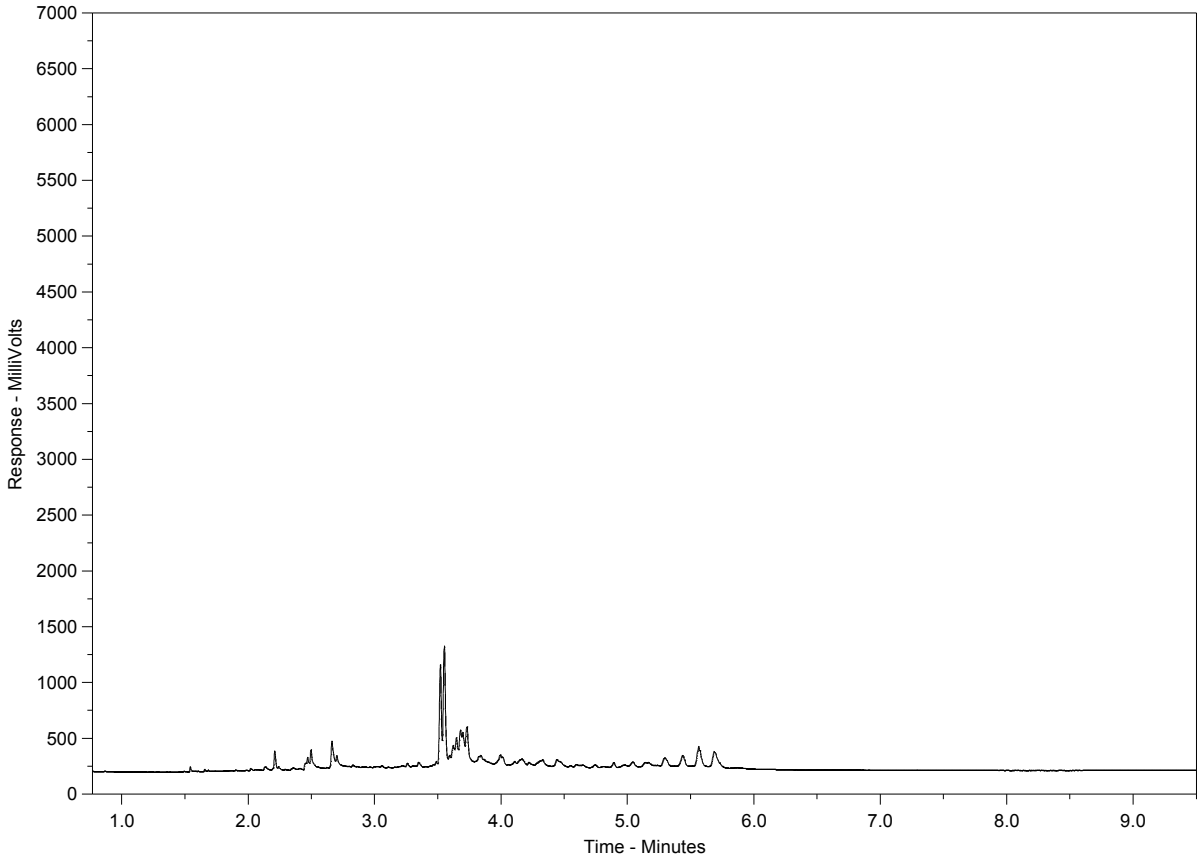
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

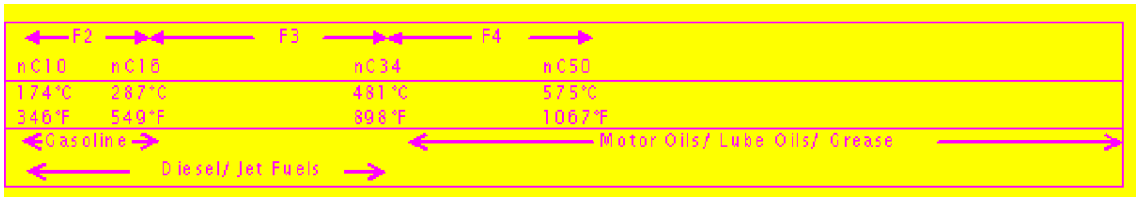
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2476022-2
Client Sample ID: WHA-3





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

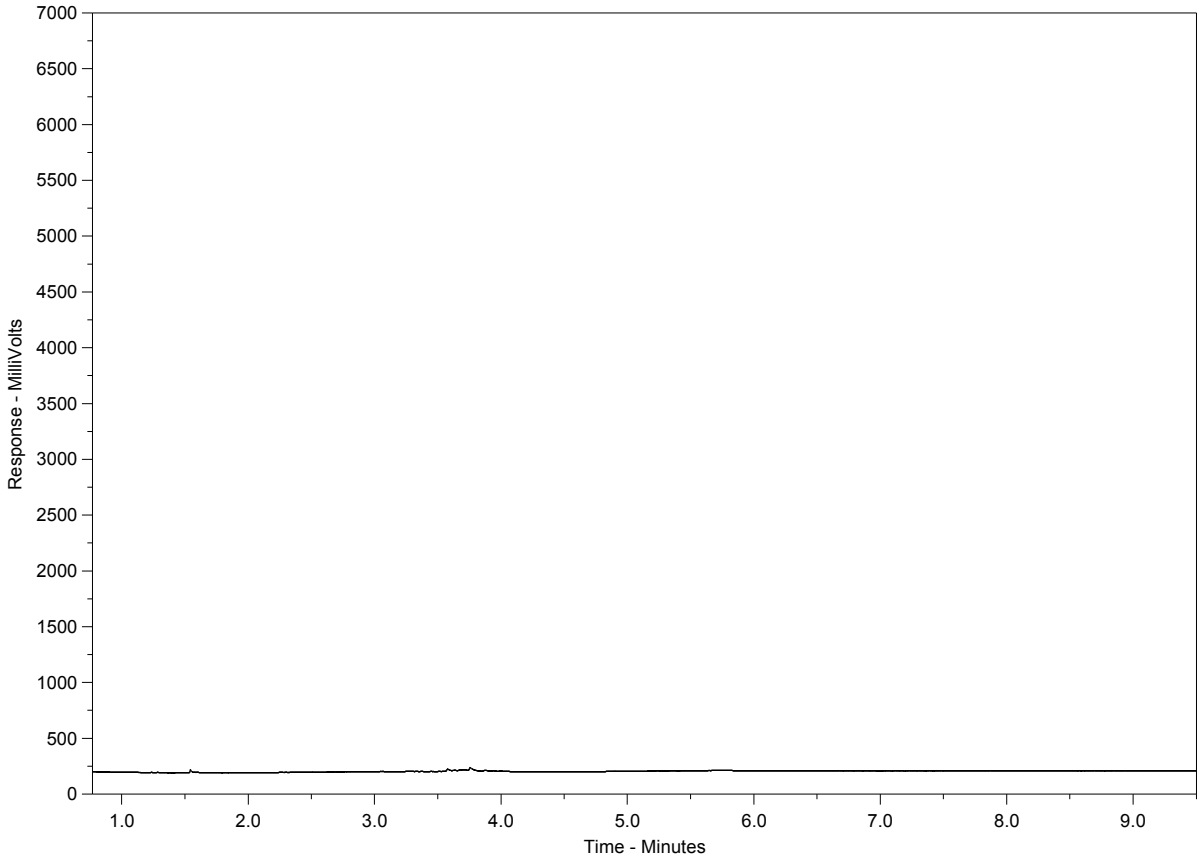
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

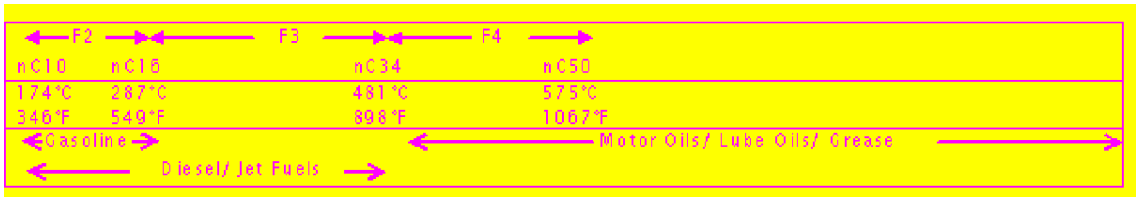
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2476022-3
Client Sample ID: WHA-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

L2476022-COFC

COC Number: 17 - 781473

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Hamlet of Whale Cove	Select Report Format: PDF ☑ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Jeannie Mackenzie	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	867-896-9961	☐ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	P.O. Box 120	Email 1 or Fax: SAO@whalecove.ca	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Whale Cove NU	Email 2: CFaulkner@gov.nu.ca	
Postal Code:	X0C-0S0	Email 3:	

Invoice To		Invoice Distribution	
	Same as Report To ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
	Copy of Invoice with Report ☑ YES ☐ NO	Email 1 or Fax	
Company:		Email 2	
Contact:			

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	W16623	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: Connie Faulkner

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	BOD	CBOD	Routine	Metals	Nutrients	Bacteria	Oil + grease x2	Phenols	BTX-F1 x3	F2-F4 x2	PAH x2	mercury	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	WHA-2	16/07/20	9:40	WW	16	✓	✓	✓	P	P	P	P	P	F	P	P	P		
	WHA-3	16/07/20	9:56	WW	10	✓	✓	✓	P	P	P	P	P	F	F		P		
	WHA-4	16/07/20	10:20	WW	10	✓	✓	✓	P	P	P	P	P	F	F		P		

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 ☑ NO	Nunavut-WW-GRPI
Are samples for human consumption/ use? ☐ YES ☑ NO	BTX-F1-F4, PAH

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			
17.2							

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:
	July 16/2020	11:20	AM	17 JULY	12:00			

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.

15-4

Hamlet of Whale Cove
ATTN: JEANNIE MACKENZIE
PO Box 120
Whale Cove NU X0C 0J0

Date Received: 19-AUG-20
Report Date: 31-AUG-20 14:30 (MT)
Version: FINAL

Client Phone: 867-896-9961

Certificate of Analysis

Lab Work Order #: L2490924

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF WHALE COVE - 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
L2490924-1 WHA-2							
Sampled By: TF on 18-AUG-20 @ 10:40							
Matrix: WW							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		26-AUG-20	R5201533
Toluene	<0.0010		0.0010	mg/L		26-AUG-20	R5201533
Ethyl benzene	<0.00050		0.00050	mg/L		26-AUG-20	R5201533
o-Xylene	<0.00050		0.00050	mg/L		26-AUG-20	R5201533
m+p-Xylenes	<0.00040		0.00040	mg/L		26-AUG-20	R5201533
F1 (C6-C10)	<0.10		0.10	mg/L		26-AUG-20	R5201533
Surrogate: 4-Bromofluorobenzene (SS)	83.9		70-130	%		26-AUG-20	R5201533
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	25-AUG-20	25-AUG-20	R5200578
F3 (C16-C34)	1.34		0.25	mg/L	25-AUG-20	25-AUG-20	R5200578
F4 (C34-C50)	0.83		0.25	mg/L	25-AUG-20	25-AUG-20	R5200578
Surrogate: 2-Bromobenzotrifluoride	102.6		60-140	%	25-AUG-20	25-AUG-20	R5200578
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		31-AUG-20	
F2-Naphth	<0.10		0.10	mg/L		31-AUG-20	
F3-PAH	1.34		0.25	mg/L		31-AUG-20	
Total Hydrocarbons (C6-C50)	2.16		0.38	mg/L		31-AUG-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		27-AUG-20	
CCME PAHs in mg/L							
1-Methyl Naphthalene	0.000053		0.000020	mg/L	24-AUG-20	31-AUG-20	R5205237
2-Methyl Naphthalene	0.000049		0.000020	mg/L	24-AUG-20	31-AUG-20	R5205237
Acenaphthene	<0.000020		0.000020	mg/L	24-AUG-20	31-AUG-20	R5205237
Acenaphthylene	0.000022	R	0.000020	mg/L	24-AUG-20	31-AUG-20	R5205237
Anthracene	<0.000010		0.000010	mg/L	24-AUG-20	31-AUG-20	R5205237
Acridine	<0.0000230	DLM	0.000023	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(a)anthracene	<0.000010		0.000010	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	24-AUG-20	31-AUG-20	R5205237
Chrysene	<0.000020		0.000020	mg/L	24-AUG-20	31-AUG-20	R5205237
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Fluoranthene	<0.000020		0.000020	mg/L	24-AUG-20	31-AUG-20	R5205237
Fluorene	0.000034		0.000020	mg/L	24-AUG-20	31-AUG-20	R5205237
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	24-AUG-20	31-AUG-20	R5205237
Naphthalene	0.000156		0.000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Phenanthrene	0.000081		0.000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Pyrene	0.000013		0.000010	mg/L	24-AUG-20	31-AUG-20	R5205237
Quinoline	0.000316		0.000020	mg/L	24-AUG-20	31-AUG-20	R5205237
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	24-AUG-20	31-AUG-20	R5205237
Surrogate: d8-Naphthalene	104.7		50-150	%	24-AUG-20	31-AUG-20	R5205237
Surrogate: d10-Phenanthrene	102.7		50-150	%	24-AUG-20	31-AUG-20	R5205237
Surrogate: d12-Chrysene	100.1		50-150	%	24-AUG-20	31-AUG-20	R5205237
Surrogate: d10-Acenaphthene	98.4		50-150	%	24-AUG-20	31-AUG-20	R5205237
Surrogate: d9-Acridine (SS)	102.4		50-150	%	24-AUG-20	31-AUG-20	R5205237
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	323		1.2	mg/L		25-AUG-20	
Alkalinity, Carbonate							

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2490924-1 WHA-2							
Sampled By: TF on 18-AUG-20 @ 10:40							
Matrix: WW							
Alkalinity, Carbonate							
Carbonate (CO3)	7.80		0.60	mg/L		25-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		25-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	277		1.0	mg/L		21-AUG-20	R5199696
Ammonia by colour							
Ammonia, Total (as N)	4.50		0.50	mg/L		21-AUG-20	R5195836
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	3.9		2.0	mg/L		20-AUG-20	R5199912
Carbonaceous BOD							
BOD Carbonaceous	4.8		2.0	mg/L		20-AUG-20	R5199912
Chloride in Water by IC							
Chloride (Cl)	83.4		0.50	mg/L		19-AUG-20	R5195778
Conductivity							
Conductivity	816		1.0	umhos/cm		21-AUG-20	R5199696
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	170		10	MPN/100mL		19-AUG-20	R5192678
Hardness Calculated							
Hardness (as CaCO3)	270	HTC	0.20	mg/L		24-AUG-20	
Mercury Total							
Mercury (Hg)-Total	0.0000080		0.0000050	mg/L	24-AUG-20	24-AUG-20	R5199326
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		19-AUG-20	R5195778
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		21-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		19-AUG-20	R5195778
Oil & Grease - Gravimetric							
Oil and Grease	42.6		5.0	mg/L		24-AUG-20	R5199118
Phenol (4AAP)							
Phenols (4AAP)	0.0091		0.0010	mg/L		21-AUG-20	R5195797
Phosphorus, Total							
Phosphorus (P)-Total	0.242		0.0030	mg/L		21-AUG-20	R5195416
Sulfate in Water by IC							
Sulfate (SO4)	48.3		0.30	mg/L		19-AUG-20	R5195778
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0303		0.0030	mg/L	21-AUG-20	21-AUG-20	R5198196
Arsenic (As)-Total	0.00410		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Cadmium (Cd)-Total	0.00102		0.0000050	mg/L	21-AUG-20	21-AUG-20	R5198196
Calcium (Ca)-Total	87.1		0.050	mg/L	21-AUG-20	21-AUG-20	R5198196
Chromium (Cr)-Total	0.00106		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Cobalt (Co)-Total	0.00195		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Copper (Cu)-Total	0.00932		0.00050	mg/L	21-AUG-20	21-AUG-20	R5198196
Iron (Fe)-Total	3.00		0.010	mg/L	21-AUG-20	21-AUG-20	R5198196
Lead (Pb)-Total	0.00173		0.000050	mg/L	21-AUG-20	21-AUG-20	R5198196
Magnesium (Mg)-Total	12.7		0.0050	mg/L	21-AUG-20	21-AUG-20	R5198196
Manganese (Mn)-Total	0.612		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Nickel (Ni)-Total	0.00467		0.00050	mg/L	21-AUG-20	21-AUG-20	R5198196
Potassium (K)-Total	11.7		0.050	mg/L	21-AUG-20	21-AUG-20	R5198196
Sodium (Na)-Total	56.2		0.050	mg/L	21-AUG-20	21-AUG-20	R5198196
Zinc (Zn)-Total	0.0424		0.0030	mg/L	21-AUG-20	21-AUG-20	R5198196
Total Organic Carbon by Combustion							

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2490924-1 WHA-2							
Sampled By: TF on 18-AUG-20 @ 10:40							
Matrix: WW							
Total Organic Carbon by Combustion							
Total Organic Carbon	17.5		0.50	mg/L		21-AUG-20	R5199232
Total Suspended Solids							
Total Suspended Solids	7.6		3.0	mg/L		20-AUG-20	R5195123
pH							
pH	8.41		0.10	pH units		21-AUG-20	R5199696
L2490924-2 WHA-3							
Sampled By: TF on 18-AUG-20 @ 10:40							
Matrix: WW							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	217		1.2	mg/L		25-AUG-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		25-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		25-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	178		1.0	mg/L		21-AUG-20	R5199696
Ammonia by colour							
Ammonia, Total (as N)	16.0		0.50	mg/L		21-AUG-20	R5195836
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	23.4		6.0	mg/L		20-AUG-20	R5199912
Carbonaceous BOD							
BOD Carbonaceous	9.3		2.0	mg/L		20-AUG-20	R5199912
Chloride in Water by IC							
Chloride (Cl)	82.4		0.50	mg/L		19-AUG-20	R5195778
Conductivity							
Conductivity	650		1.0	umhos/cm		21-AUG-20	R5199696
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	15500		10	MPN/100mL		19-AUG-20	R5192678
Hardness Calculated							
Hardness (as CaCO3)	109	HTC	0.20	mg/L		24-AUG-20	
Mercury Total							
Mercury (Hg)-Total	0.0000060		0.0000050	mg/L	24-AUG-20	24-AUG-20	R5199326
Nitrate in Water by IC							
Nitrate (as N)	0.322		0.020	mg/L		19-AUG-20	R5195778
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.907		0.070	mg/L		21-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	0.585		0.010	mg/L		19-AUG-20	R5195778
Oil & Grease - Gravimetric							
Oil and Grease	38.2		5.0	mg/L		24-AUG-20	R5199118
Phenol (4AAP)							
Phenols (4AAP)	0.0017		0.0010	mg/L		21-AUG-20	R5195797
Phosphorus, Total							
Phosphorus (P)-Total	5.69		0.030	mg/L		21-AUG-20	R5195416
Sulfate in Water by IC							
Sulfate (SO4)	17.9		0.30	mg/L		19-AUG-20	R5195778
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0238		0.0030	mg/L	21-AUG-20	21-AUG-20	R5198196
Arsenic (As)-Total	0.00092		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Cadmium (Cd)-Total	0.0000093		0.0000050	mg/L	21-AUG-20	21-AUG-20	R5198196

* 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
L2490924-2 WHA-3							
Sampled By: TF on 18-AUG-20 @ 10:40							
Matrix: WW							
Total Metals in Water by CRC ICPMS							
Calcium (Ca)-Total	32.5		0.050	mg/L	21-AUG-20	21-AUG-20	R5198196
Chromium (Cr)-Total	0.00021		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Cobalt (Co)-Total	0.00061		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Copper (Cu)-Total	0.0169		0.00050	mg/L	21-AUG-20	21-AUG-20	R5198196
Iron (Fe)-Total	0.103		0.010	mg/L	21-AUG-20	21-AUG-20	R5198196
Lead (Pb)-Total	0.000091		0.000050	mg/L	21-AUG-20	21-AUG-20	R5198196
Magnesium (Mg)-Total	6.81		0.0050	mg/L	21-AUG-20	21-AUG-20	R5198196
Manganese (Mn)-Total	0.0717		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Nickel (Ni)-Total	0.00223		0.00050	mg/L	21-AUG-20	21-AUG-20	R5198196
Potassium (K)-Total	16.8		0.050	mg/L	21-AUG-20	21-AUG-20	R5198196
Sodium (Na)-Total	57.0		0.050	mg/L	21-AUG-20	21-AUG-20	R5198196
Zinc (Zn)-Total	0.0219		0.0030	mg/L	21-AUG-20	21-AUG-20	R5198196
Total Organic Carbon by Combustion							
Total Organic Carbon	27.2		0.50	mg/L		21-AUG-20	R5199232
Total Suspended Solids							
Total Suspended Solids	36.6		3.0	mg/L		20-AUG-20	R5195123
pH							
pH	8.20		0.10	pH units		21-AUG-20	R5199696
L2490924-3 WHA-4							
Sampled By: TF on 18-AUG-20 @ 10:40							
Matrix: WW							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	214		1.2	mg/L		26-AUG-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		26-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		26-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	176		1.0	mg/L		20-AUG-20	R5192738
Ammonia by colour							
Ammonia, Total (as N)	3.62		0.50	mg/L		21-AUG-20	R5195836
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	19.9		6.0	mg/L		20-AUG-20	R5199912
Carbonaceous BOD							
BOD Carbonaceous	3.5		2.0	mg/L		20-AUG-20	R5199912
Chloride in Water by IC							
Chloride (Cl)	80.2		0.50	mg/L		19-AUG-20	R5195778
Conductivity							
Conductivity	615		1.0	umhos/cm		20-AUG-20	R5192738
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	4110		10	MPN/100mL		19-AUG-20	R5192678
Hardness Calculated							
Hardness (as CaCO3)	146	HTC	0.20	mg/L		24-AUG-20	
Mercury Total							
Mercury (Hg)-Total	0.0000050		0.0000050	mg/L	24-AUG-20	24-AUG-20	R5199326
Nitrate in Water by IC							
Nitrate (as N)	3.35		0.020	mg/L		19-AUG-20	R5195778
Nitrate+Nitrite							
Nitrate and Nitrite as N	3.65		0.070	mg/L		21-AUG-20	
Nitrite in Water by IC							

* 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
L2490924-3 WHA-4							
Sampled By: TF on 18-AUG-20 @ 10:40							
Matrix: WW							
Nitrite in Water by IC							
Nitrite (as N)	0.298		0.010	mg/L		19-AUG-20	R5195778
Oil & Grease - Gravimetric							
Oil and Grease	70.6		5.0	mg/L		24-AUG-20	R5199118
Phenol (4AAP)							
Phenols (4AAP)	0.0015		0.0010	mg/L		21-AUG-20	R5195797
Phosphorus, Total							
Phosphorus (P)-Total	3.38		0.030	mg/L		21-AUG-20	R5195416
Sulfate in Water by IC							
Sulfate (SO4)	8.84		0.30	mg/L		19-AUG-20	R5195778
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0302		0.0030	mg/L	21-AUG-20	21-AUG-20	R5198196
Arsenic (As)-Total	0.00355		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Cadmium (Cd)-Total	0.0000091		0.0000050	mg/L	21-AUG-20	21-AUG-20	R5198196
Calcium (Ca)-Total	44.8		0.050	mg/L	21-AUG-20	21-AUG-20	R5198196
Chromium (Cr)-Total	0.00019		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Cobalt (Co)-Total	0.00082		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Copper (Cu)-Total	0.00609		0.00050	mg/L	21-AUG-20	21-AUG-20	R5198196
Iron (Fe)-Total	1.29		0.010	mg/L	21-AUG-20	21-AUG-20	R5198196
Lead (Pb)-Total	0.000071		0.000050	mg/L	21-AUG-20	21-AUG-20	R5198196
Magnesium (Mg)-Total	8.26		0.0050	mg/L	21-AUG-20	21-AUG-20	R5198196
Manganese (Mn)-Total	0.226		0.00010	mg/L	21-AUG-20	21-AUG-20	R5198196
Nickel (Ni)-Total	0.00271		0.00050	mg/L	21-AUG-20	21-AUG-20	R5198196
Potassium (K)-Total	13.5		0.050	mg/L	21-AUG-20	21-AUG-20	R5198196
Sodium (Na)-Total	58.2		0.050	mg/L	21-AUG-20	21-AUG-20	R5198196
Zinc (Zn)-Total	0.0096		0.0030	mg/L	21-AUG-20	21-AUG-20	R5198196
Total Organic Carbon by Combustion							
Total Organic Carbon	21.3		0.50	mg/L		21-AUG-20	R5199232
Total Suspended Solids							
Total Suspended Solids	20.2		3.0	mg/L		20-AUG-20	R5195123
pH							
pH	7.90		0.10	pH units		20-AUG-20	R5192738

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

Reference Information

Sample Parameter Qualifier Key:

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

Test Method References:

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

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

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

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

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

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

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

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

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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

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

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

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

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

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

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PH-WP	Water	pH	APHA 4500H

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

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

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105 C.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

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

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

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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

Quality Control Report

Client: Hamlet of Whale Cove
PO Box 120
Whale Cove NU X0C 0J0
Contact: JEANNIE MACKENZIE

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	Water							
Batch R5192738								
WG3387662-27 LCS								
Alkalinity, Total (as CaCO3)			102.6		%		85-115	20-AUG-20
WG3387662-15 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	20-AUG-20
Batch R5199696								
WG3390538-39 LCS								
Alkalinity, Total (as CaCO3)			104.5		%		85-115	21-AUG-20
WG3390538-36 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-AUG-20
BOD-CBOD-WP	Water							
Batch R5199912								
WG3387339-2 LCS								
BOD Carbonaceous			95.7		%		85-115	20-AUG-20
WG3387339-1 MB								
BOD Carbonaceous			<2.0		mg/L		2	20-AUG-20
BOD-WP	Water							
Batch R5199912								
WG3387339-2 LCS								
Biochemical Oxygen Demand			104.7		%		85-115	20-AUG-20
WG3387339-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	20-AUG-20
BTEXS+F1-HSMS-WP	Water							
Batch R5201533								
WG3390084-2 LCS								
Benzene			81.2		%		70-130	24-AUG-20
Toluene			83.3		%		70-130	24-AUG-20
Ethyl benzene			83.6		%		70-130	24-AUG-20
o-Xylene			87.3		%		70-130	24-AUG-20
m+p-Xylenes			85.7		%		70-130	24-AUG-20
WG3390084-3 LCS								
F1 (C6-C10)			103.3		%		70-130	24-AUG-20
WG3390084-1 MB								
Benzene			<0.00050		mg/L		0.0005	24-AUG-20
Toluene			<0.0010		mg/L		0.001	24-AUG-20
Ethyl benzene			<0.00050		mg/L		0.0005	24-AUG-20
o-Xylene			<0.00050		mg/L		0.0005	24-AUG-20
m+p-Xylenes			<0.00040		mg/L		0.0004	24-AUG-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	Water							
Batch R5201533								
WG3390084-1 MB								
F1 (C6-C10)			<0.10		mg/L		0.1	24-AUG-20
Surrogate: 4-Bromofluorobenzene (SS)			85.0		%		70-130	24-AUG-20
C-TOC-HTC-WP	Water							
Batch R5199232								
WG3389658-2 LCS								
Total Organic Carbon			107.0		%		80-120	21-AUG-20
WG3389658-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-AUG-20
CL-IC-N-WP	Water							
Batch R5195778								
WG3387096-14 LCS								
Chloride (Cl)			102.1		%		90-110	19-AUG-20
WG3387096-13 MB								
Chloride (Cl)			<0.50		mg/L		0.5	19-AUG-20
EC-WP	Water							
Batch R5192738								
WG3387662-26 LCS								
Conductivity			97.7		%		90-110	20-AUG-20
WG3387662-15 MB								
Conductivity			<1.0		umhos/cm		1	20-AUG-20
Batch R5199696								
WG3390538-38 LCS								
Conductivity			99.0		%		90-110	21-AUG-20
WG3390538-36 MB								
Conductivity			<1.0		umhos/cm		1	21-AUG-20
F2-F4-FID-WP	Water							
Batch R5200578								
WG3390535-2 LCS								
F2 (C10-C16)			109.5		%		70-130	25-AUG-20
F3 (C16-C34)			95.6		%		70-130	25-AUG-20
F4 (C34-C50)			104.5		%		70-130	25-AUG-20
WG3390535-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	25-AUG-20
F3 (C16-C34)			<0.25		mg/L		0.25	25-AUG-20
F4 (C34-C50)			<0.25		mg/L		0.25	25-AUG-20
Surrogate: 2-Bromobenzotrifluoride			93.2		%		60-140	25-AUG-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	Water							
Batch R5192678								
WG3387042-2 DUP		**L2490924-1**						
Fecal Coliforms		170	150		MPN/100mL	16	65	19-AUG-20
WG3387042-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	19-AUG-20
HG-T-CVAA-WP	Water							
Batch R5199326								
WG3390012-3 DUP		**L2490924-3**						
Mercury (Hg)-Total		0.0000050	0.0000050		mg/L	0.0	20	24-AUG-20
WG3390012-2 LCS								
Mercury (Hg)-Total			101.0		%		80-120	24-AUG-20
WG3390012-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	24-AUG-20
MET-T-CCMS-WP	Water							
Batch R5198196								
WG3387872-2 LCS								
Aluminum (Al)-Total			97.2		%		80-120	21-AUG-20
Arsenic (As)-Total			95.5		%		80-120	21-AUG-20
Cadmium (Cd)-Total			94.6		%		80-120	21-AUG-20
Calcium (Ca)-Total			99.9		%		80-120	21-AUG-20
Chromium (Cr)-Total			96.4		%		80-120	21-AUG-20
Cobalt (Co)-Total			95.0		%		80-120	21-AUG-20
Copper (Cu)-Total			95.4		%		80-120	21-AUG-20
Iron (Fe)-Total			86.7		%		80-120	21-AUG-20
Lead (Pb)-Total			104.2		%		80-120	21-AUG-20
Magnesium (Mg)-Total			99.0		%		80-120	21-AUG-20
Manganese (Mn)-Total			95.6		%		80-120	21-AUG-20
Nickel (Ni)-Total			94.5		%		80-120	21-AUG-20
Potassium (K)-Total			93.2		%		80-120	21-AUG-20
Sodium (Na)-Total			97.0		%		80-120	21-AUG-20
Zinc (Zn)-Total			94.7		%		80-120	21-AUG-20
WG3387872-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	21-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	21-AUG-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	21-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	21-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	21-AUG-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	Water							
Batch R5198196								
WG3387872-1 MB								
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	21-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	21-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	21-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	21-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	21-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	21-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	21-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	21-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	21-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	21-AUG-20
NH3-COL-WP	Water							
Batch R5195836								
WG3388702-22 LCS								
Ammonia, Total (as N)			101.3		%		85-115	21-AUG-20
WG3388702-21 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	21-AUG-20
NO2-IC-N-WP	Water							
Batch R5195778								
WG3387096-14 LCS								
Nitrite (as N)			99.1		%		90-110	19-AUG-20
WG3387096-13 MB								
Nitrite (as N)			<0.010		mg/L		0.01	19-AUG-20
NO3-IC-N-WP	Water							
Batch R5195778								
WG3387096-14 LCS								
Nitrate (as N)			102.0		%		90-110	19-AUG-20
WG3387096-13 MB								
Nitrate (as N)			<0.020		mg/L		0.02	19-AUG-20
OG-GRAV-WP	Water							
Batch R5199118								
WG3388662-2 LCS								
Oil and Grease			91.9		%		70-130	24-AUG-20
WG3388662-1 MB								
Oil and Grease			<5.0		mg/L		5	24-AUG-20
P-T-COL-WP	Water							

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WP	Water							
Batch R5195416								
WG3387935-10 LCS								
Phosphorus (P)-Total			97.2		%		80-120	21-AUG-20
WG3387935-9 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	21-AUG-20
PAH-CCME-PPM-WT	Water							
Batch R5205237								
WG3389897-2 LCS								
1-Methyl Naphthalene			95.1		%		50-150	31-AUG-20
2-Methyl Naphthalene			94.7		%		50-150	31-AUG-20
Acenaphthene			103.6		%		50-150	31-AUG-20
Acenaphthylene			100.1		%		50-150	31-AUG-20
Anthracene			96.7		%		50-150	31-AUG-20
Acridine			94.1		%		50-150	31-AUG-20
Benzo(a)anthracene			88.6		%		50-150	31-AUG-20
Benzo(a)pyrene			78.7		%		50-150	31-AUG-20
Benzo(b&j)fluoranthene			71.3		%		50-150	31-AUG-20
Benzo(g,h,i)perylene			77.2		%		50-150	31-AUG-20
Benzo(k)fluoranthene			87.8		%		50-150	31-AUG-20
Chrysene			103.2		%		50-150	31-AUG-20
Dibenzo(a,h)anthracene			82.1		%		50-150	31-AUG-20
Fluoranthene			100.6		%		50-150	31-AUG-20
Fluorene			103.3		%		50-150	31-AUG-20
Indeno(1,2,3-cd)pyrene			91.8		%		50-150	31-AUG-20
Naphthalene			99.4		%		50-150	31-AUG-20
Phenanthrene			109.4		%		50-150	31-AUG-20
Pyrene			99.2		%		50-150	31-AUG-20
Quinoline			109.2		%		50-150	31-AUG-20
WG3389897-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	31-AUG-20
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	31-AUG-20
Acenaphthene			<0.000020		mg/L		0.00002	31-AUG-20
Acenaphthylene			<0.000020		mg/L		0.00002	31-AUG-20
Anthracene			<0.000010		mg/L		0.00001	31-AUG-20
Acridine			<0.000020		mg/L		0.00002	31-AUG-20
Benzo(a)anthracene			<0.000010		mg/L		0.00001	31-AUG-20
Benzo(a)pyrene			<0.000005C		mg/L		0.000005	31-AUG-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	Water							
Batch R5205237								
WG3389897-1 MB								
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	31-AUG-20
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	31-AUG-20
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	31-AUG-20
Chrysene			<0.000020		mg/L		0.00002	31-AUG-20
Dibenzo(a,h)anthracene			<0.000005C		mg/L		0.000005	31-AUG-20
Fluoranthene			<0.000020		mg/L		0.00002	31-AUG-20
Fluorene			<0.000020		mg/L		0.00002	31-AUG-20
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	31-AUG-20
Naphthalene			<0.000050		mg/L		0.00005	31-AUG-20
Phenanthrene			<0.000050		mg/L		0.00005	31-AUG-20
Pyrene			<0.000010		mg/L		0.00001	31-AUG-20
Quinoline			<0.000020		mg/L		0.00002	31-AUG-20
Surrogate: d8-Naphthalene			87.9		%		50-150	31-AUG-20
Surrogate: d10-Phenanthrene			93.5		%		50-150	31-AUG-20
Surrogate: d12-Chrysene			83.9		%		50-150	31-AUG-20
Surrogate: d10-Acenaphthene			90.2		%		50-150	31-AUG-20
Surrogate: d9-Acridine (SS)			87.5		%		50-150	31-AUG-20
PH-WP	Water							
Batch R5192738								
WG3387662-16 LCS								
pH			7.33		pH units		7.3-7.5	20-AUG-20
Batch R5199696								
WG3390538-37 LCS								
pH			7.37		pH units		7.3-7.5	21-AUG-20
PHENOLS-4AAP-WT	Water							
Batch R5195797								
WG3387796-2 LCS								
Phenols (4AAP)			108.1		%		85-115	21-AUG-20
WG3387796-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	21-AUG-20
SO4-IC-N-WP	Water							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	Water							
Batch R5195778								
WG3387096-14 LCS								
Sulfate (SO4)			103.3		%		90-110	19-AUG-20
WG3387096-13 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	19-AUG-20
SOLIDS-TOTSUS-WP	Water							
Batch R5195123								
WG3387461-2 LCS								
Total Suspended Solids			85.3		%		85-115	20-AUG-20
WG3387461-1 MB								
Total Suspended Solids			<3.0		mg/L		3	20-AUG-20

Legend:

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

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	18-AUG-20 10:40	21-AUG-20 12:00	0.25	73	hours	EHTR-FM
	2	18-AUG-20 10:40	21-AUG-20 12:00	0.25	73	hours	EHTR-FM
	3	18-AUG-20 10:40	20-AUG-20 12:00	0.25	49	hours	EHTR-FM

Legend & Qualifier Definitions:

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2490924 were received on 19-AUG-20 12:30.

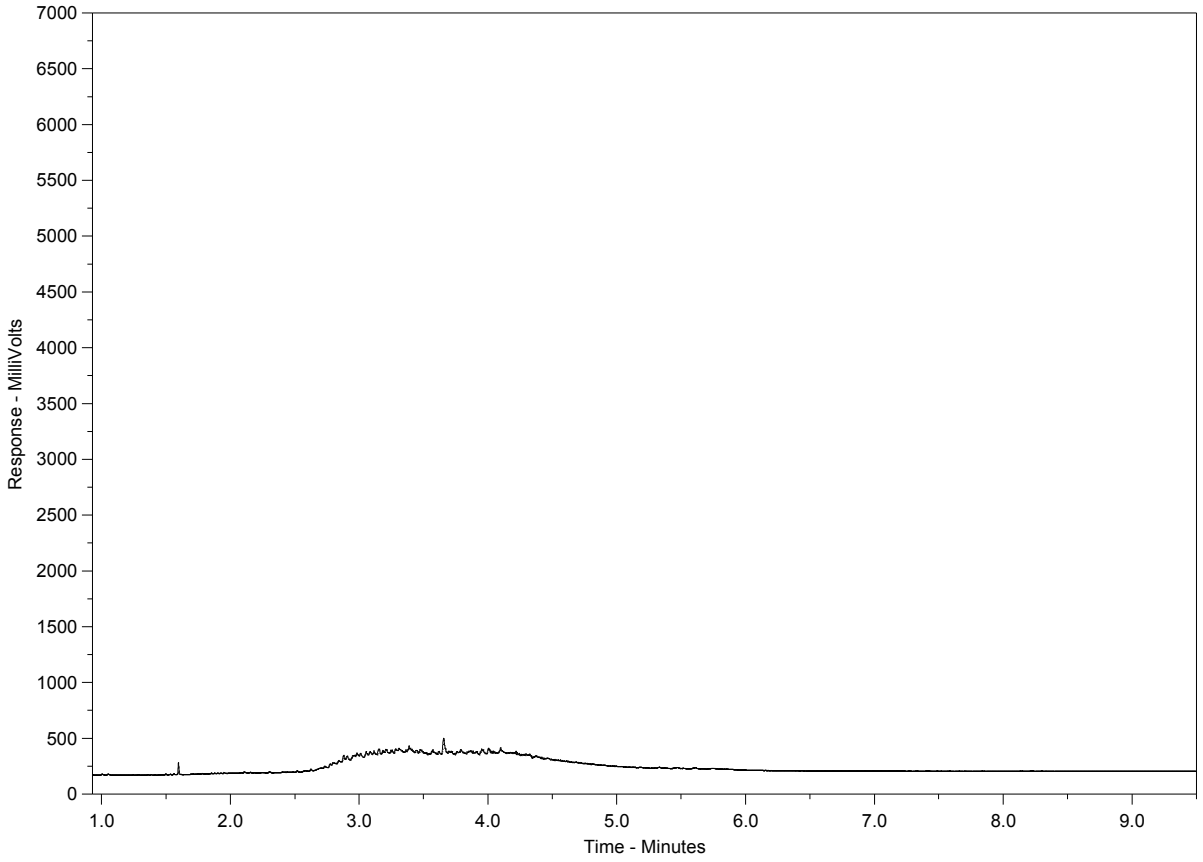
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

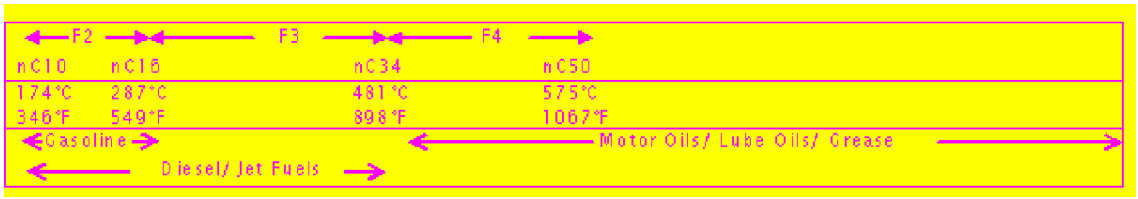
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2490924-1
Client Sample ID: WHA-2





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

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

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

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

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2490924-COFC

COC Number: 17 - 781475

Page 1 of 1

L2490924

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Hamlet of Whale Cove	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Jeannie Mackenzie	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	867-896-9961	☐ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	PO Box 120	Email 1 or Fax: SAO@whalecove.ca	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Whale Cove NU	Email 2: CFawkner@gov.nu.ca	
Postal Code:	X0C 0H0	Email 3:	
Invoice To	Same as Report To ☑ YES ☐ NO	**Invoice Distribution**	**Analysis Request**
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	W10623	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: Tupa Ford

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	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
						BOD	cBOD	Routine	Metal	Nutrients	Bacteria	oil & Grease	Diesel	BTX-F1 x3	F2-F4 x2	PAH x2	Mercury		
	WHA-2	Aug 18/20	10:40	WW	16	✓	✓	✓	P	P	B	P	P	P	P	P	P		
	WHA-3	Aug 18/20	10:58	WW	10	✓	✓	✓	P	P	P	P	P				P		
	WHA-4	Aug 18/20	11:10	WW	10	✓	✓	✓	P	P	P	P	P				P		

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 ☑ NO	Nunavut - WW - GRP 1
Are samples for human consumption/ use? ☐ YES ☐ NO	BTX-F1-F4, PAH

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			
17.2			16.8				

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:
	Aug 18/20	11:30		Aug 19	12:30			

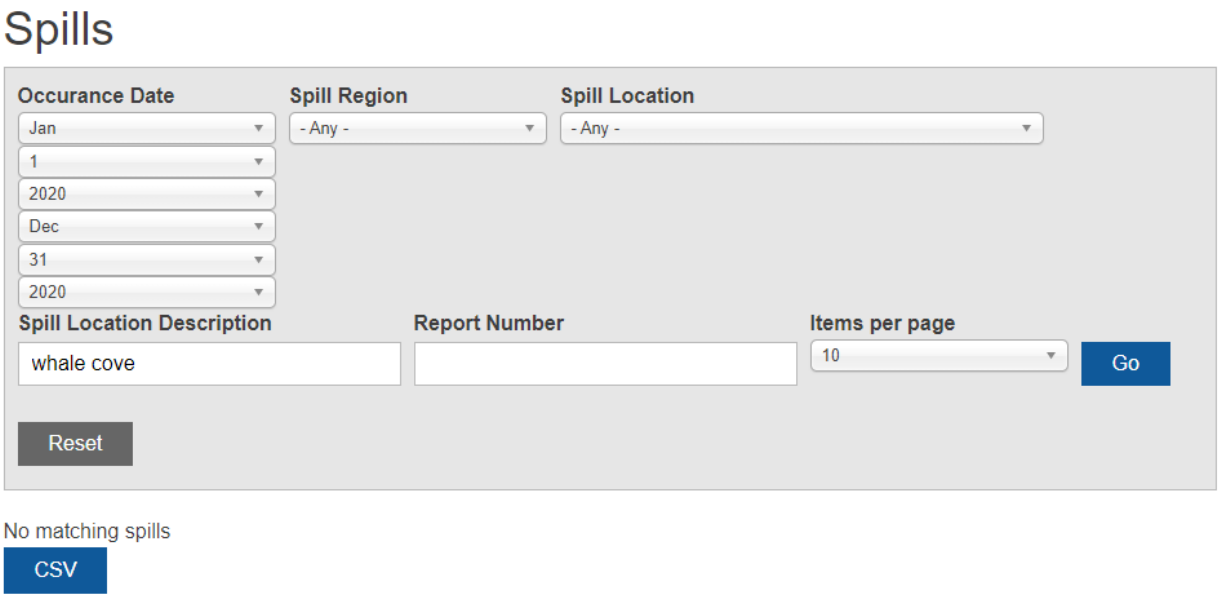
REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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**.

Appendix D: Hazardous Materials Spill Database, Whale Cove 2020



Appendix F: Whale Cove 2020 Sampling Summary

Whale Cove
WHA-2

			2020		
Parameter	**Unit**	**DL**	**07-Jul-20**	**16-Jul-20**	**18-Aug-20**
Alkalinity					
Bicarbonate (HCO3)	mg/L	1.2	259	269	323
Carbonate (CO3)	mg/L	0.60	0.60	0.60	7.80
Hydroxide (OH)	mg/L	0.34	0.34	0.34	0.34
Total (as CaCO3)	mg/L	1.0	212	221	277
Ammonia by Colour					
Total (as N)	mg/L	0.20	24.3	1.11	4.5
Biochemical Oxygen Demand (BOD)					
Biochemical Oxygen Demand	mg/L	6.0	12.8	10.9	3.9
Carbonaceous BOD					
BOD Carbonaceous	mg/L	6.0	10.6	8.4	4.8
Chloride in Water by IC					
Chloride (Cl)	mg/L	10	75	69.6	83.4
Conductivity					
Conductivity	umhos/cm	1.0	681	698	816
Fecal Coliforms					
Fecal Coliforms	MPN/100mL	3	6130	190	170
Hardness Calculated					
Hardness (as CaCO3)	mg/L	0.30	95.1	238	270
Mercury Total					
Mercury (Hg)	mg/L	0.00020	0.0000090	0.0000050	0.0000080
Nitrate in Water by IC					
Nitrate (as N)	mg/L	0.40	0.020	0.032	0.020
Nitrate + Nitrite					
Nitrate and Nitrite as N	mg/L	0.45	0.070	0.070	0.070
Nitrite in Water by IC					
Nitrite (as N)	mg/L	0.20	0.010	0.010	0.010
Oil & Grease - Gravimetric					
Oil and Grease	mg/L	5.0	6.4	5.0	42.6
Phenol					
Phenols	mg/L	0.0010	0.0050	0.0022	0.0091
Phosphorus, Total					
Phosphorus (P)	mg/L	0.010	5.83	0.245	0.242
Sulfate in Water by IC					
Sulfate (SO4)	mg/L	6.0	13.9	58	48.3
Total Metals by ICP-MS					
Aluminium (Al)	mg/L	0.0050	0.0377	0.0170	0.0303
Arsenic (As)	mg/L	0.00020	0.00087	0.00242	0.0041
Cadmium (Cd)	mg/L	0.000010	0.0000187	0.0000564	0.00102
Calcium (Ca)	mg/L	0.10	27.4	77.9	87.1
Chromium (Cr)	mg/L	0.0010	0.00035	0.00106	0.00106
Cobalt (Co)	mg/L	0.00020	0.00061	0.00181	0.00195
Copper (Cu)	mg/L	0.00020	0.0360	0.00627	0.00932
Iron (Fe)	mg/L	0.010	0.173	2.15	3
Lead (Pb)	mg/L	0.000090	0.000353	0.000536	0.00173
Magnesium (Mg)	mg/L	0.010	6.47	10.6	12.7
Manganese (Mn)	mg/L	0.00030	0.0887	0.355	0.612
Nickel (Ni)	mg/L	0.0020	0.00205	0.00651	0.00467
Potassium (K)	mg/L	0.020	16.5	10.8	11.7
Sodium (Na)	mg/L	0.030	54.0	48.6	56.2
Zinc (Zn)	mg/L	0.0020	0.0226	0.0279	0.0424
Total Organic Carbon by Combustion					
Total Organic Carbon	mg/L	0.50	33.5	15.5	17.5
Total Suspended Solids					
Total Suspended Solids	mg/L	13	26.4	10.9	7.6
pH					
pH	pH Units	0.10	7.35	8.12	8.41
Benzene	mg/L	0.00050	0.00050	0.00050	0.00050
Toluene	mg/L	0.0010	0.0011	0.0010	0.0010
Ethyl Benzene	mg/L	0.00050	0.00050	0.00050	0.00050
o-Xylene	mg/L	0.00050	0.00050	0.00050	0.00050
F1 (C6-C10)	mg/L	0.10	0.10	0.10	0.10
F2 (C10-C16)	mg/L	0.25	0.18	0.10	0.10
F3 (C16-C34)	mg/L	0.25	2.53	0.25	1.34
F4 (C34-C50)	mg/L	0.25	0.91	0.25	0.83
Total Hydrocarbons (C6-C50)	mg/L	0.44	3.62	0.38	2.16

Whale Cove
WHA-3

			2020		
Parameter	**Unit**	**DL**	**07-Jul-20**	**16-Jul-20**	**18-Aug-20**
Alkalinity					
Bicarbonate (HCO3)	mg/L	1.2	253	248	217
Carbonate (CO3)	mg/L	0.60	0.60	0.60	0.60
Hydroxide (OH)	mg/L	0.34	0.34	0.34	0.34
Total (as CaCO3)	mg/L	1.0	208	203	178
Ammonia by Colour					
Total (as N)	mg/L	0.20	0.12	23.4	16
Biochemical Oxygen Demand (BOD)					
Biochemical Oxygen Demand	mg/L	6.0	8.3	27.9	23.4
Carbonaceous BOD					
BOD Carbonaceous	mg/L	6.0	8.8	20.9	9.3
Chloride in Water by IC					
Chloride (Cl)	mg/L	10	64.6	77	82.4
Conductivity					
Conductivity	umhos/cm	1.0	589	685	650
Fecal Coliforms					
Fecal Coliforms	MPN/100mL	3	880	14100	15500
Hardness Calculated					
Hardness (as CaCO3)	mg/L	0.30	161	103	109
Mercury Total					
Mercury (Hg)	mg/L	0.00020	0.0000050	0.0000060	0.0000060
Nitrate in Water by IC					
Nitrate (as N)	mg/L	0.40	0.027	0.020	0.322
Nitrate + Nitrite					
Nitrate and Nitrite as N	mg/L	0.45	0.070	0.070	0.907
Nitrite in Water by IC					
Nitrite (as N)	mg/L	0.20	0.010	0.010	0.585
Oil & Grease - Gravimetric					
Oil and Grease	mg/L	5.0	5.0	5.0	38.2
Phenol					
Phenols	mg/L	0.0010	0.0010	0.0011	0.0017
Phosphorus, Total					
Phosphorus (P)	mg/L	0.010	3.32	5.79	5.69
Sulfate in Water by IC					
Sulfate (SO4)	mg/L	6.0	14.8	15.5	17.9
Total Metals by ICP-MS					
Aluminium (Al)	mg/L	0.0050	0.0343	0.0296	0.0238
Arsenic (As)	mg/L	0.00020	0.00382	0.00083	0.00092
Cadmium (Cd)	mg/L	0.000010	0.0000077	0.000185	0.0000093
Calcium (Ca)	mg/L	0.10	48	30	32.5
Chromium (Cr)	mg/L	0.0010	0.00024	0.00027	0.00021
Cobalt (Co)	mg/L	0.00020	0.00051	0.00062	0.00061
Copper (Cu)	mg/L	0.00020	0.00204	0.0303	0.0169
Iron (Fe)	mg/L	0.010	0.877	0.145	0.103
Lead (Pb)	mg/L	0.000090	0.000086	0.000272	0.000091
Magnesium (Mg)	mg/L	0.010	9.91	6.90	6.81
Manganese (Mn)	mg/L	0.00030	0.187	0.0908	0.0717
Nickel (Ni)	mg/L	0.0020	0.00268	0.00216	0.00223
Potassium (K)	mg/L	0.020	13.8	16.9	16.8
Sodium (Na)	mg/L	0.030	56.8	55.9	57.0
Zinc (Zn)	mg/L	0.0020	0.0171	0.0205	0.0219
Total Organic Carbon by Combustion					
Total Organic Carbon	mg/L	0.50	20.3	24.2	27.2
Total Suspended Solids					
Total Suspended Solids	mg/L	13	21.4	33.1	36.6
pH					
pH	pH Units	0.10	7.65	8.01	8.20
Benzene	mg/L	0.00050	N/A	0.00050	N/A
Toluene	mg/L	0.0010	N/A	0.0010	N/A
Ethyl Benzene	mg/L	0.00050	N/A	0.00050	N/A
o-Xylene	mg/L	0.00050	N/A	0.00050	N/A
F1 (C6-C10)	mg/L	0.10	N/A	0.10	N/A
F2 (C10-C16)	mg/L	0.25	N/A	0.10	N/A
F3 (C16-C34)	mg/L	0.25	N/A	1.01	N/A
F4 (C34-C50)	mg/L	0.25	N/A	0.48	N/A
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	2	N/A

Whale Cove
WHA-4

			2020		
Parameter	**Unit**	**DL**	**07-Jul-20**	**16-Jul-20**	**18-Aug-20**
Alkalinity					
Bicarbonate (HCO3)	mg/L	1.2	244	307	214
Carbonate (CO3)	mg/L	0.60	0.60	0.60	0.60
Hydroxide (OH)	mg/L	0.34	0.34	0.34	0.34
Total (as CaCO3)	mg/L	1.0	200	252	176
Ammonia by Colour					
Total (as N)	mg/L	0.20	0.58	0.110	3.62
Biochemical Oxygen Demand (BOD)					
Biochemical Oxygen Demand	mg/L	6.0	7.5	4.6	19.9
Carbonaceous BOD					
BOD Carbonaceous	mg/L	6.0	5.3	4.3	3.5
Chloride in Water by IC					
Chloride (Cl)	mg/L	10	69.6	67.2	80.2
Conductivity					
Conductivity	umhos/cm	1.0	672	632	615
Fecal Coliforms					
Fecal Coliforms	MPN/100mL	3	210	20	4110
Hardness Calculated					
Hardness (as CaCO3)	mg/L	0.30	212	192	146
Mercury Total					
Mercury (Hg)	mg/L	0.00020	0.0000050	0.0000050	0.0000050
Nitrate in Water by IC					
Nitrate (as N)	mg/L	0.40	0.020	0.020	3.35
Nitrate + Nitrite					
Nitrate and Nitrite as N	mg/L	0.45	0.070	0.070	3.65
Nitrite in Water by IC					
Nitrite (as N)	mg/L	0.20	0.010	0.010	0.298
Oil & Grease - Gravimetric					
Oil and Grease	mg/L	5.0	5.0	5.0	70.6
Phenol					
Phenols	mg/L	0.0010	0.0036	0.0010	0.0015
Phosphorus, Total					
Phosphorus (P)	mg/L	0.010	0.360	4.51	3.38
Sulfate in Water by IC					
Sulfate (SO4)	mg/L	6.0	57.1	4.96	8.84
Total Metals by ICP-MS					
Aluminium (Al)	mg/L	0.0050	0.0446	0.0144	0.0302
Arsenic (As)	mg/L	0.00020	0.00271	0.00375	0.00355
Cadmium (Cd)	mg/L	0.000010	0.0000823	0.0000089	0.0000091
Calcium (Ca)	mg/L	0.10	69..6	57.9	44.8
Chromium (Cr)	mg/L	0.0010	0.00137	0.00019	0.00019
Cobalt (Co)	mg/L	0.00020	0.00183	0.00050	0.00082
Copper (Cu)	mg/L	0.00020	0.00735	0.00148	0.00609
Iron (Fe)	mg/L	0.010	3.63	1.30	1.29
Lead (Pb)	mg/L	0.000090	0.000758	0.000097	0.000071
Magnesium (Mg)	mg/L	0.010	9.36	11.5	8.26
Manganese (Mn)	mg/L	0.00030	0.455	0.271	0.226
Nickel (Ni)	mg/L	0.0020	0.00676	0.00292	0.00271
Potassium (K)	mg/L	0.020	10.6	13.8	13.5
Sodium (Na)	mg/L	0.030	46.6	61.2	58.2
Zinc (Zn)	mg/L	0.0020	0.0402	0.0072	0.0096
Total Organic Carbon by Combustion					
Total Organic Carbon	mg/L	0.50	18.9	20.8	21.3
Total Suspended Solids					
Total Suspended Solids	mg/L	13	19.8	24.1	20.2
pH					
pH	pH Units	0.10	7.35	8.18	7.90
Benzene	mg/L	0.00050	N/A	0.00050	N/A
Toluene	mg/L	0.0010	N/A	0.0010	N/A
Ethyl Benzene	mg/L	0.00050	N/A	0.00050	N/A
o-Xylene	mg/L	0.00050	N/A	0.00050	N/A
F1 (C6-C10)	mg/L	0.10	N/A	0.10	N/A
F2 (C10-C16)	mg/L	0.25	N/A	0.10	N/A
F3 (C16-C34)	mg/L	0.25	N/A	0.25	N/A
F4 (C34-C50)	mg/L	0.25	N/A	0.25	N/A
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	0.38	N/A

Appendix F: CIRNAC Inspection Report

The CIRNAC inspection report was not received by CGS.