Building Nunavut Together
Nunavu liuqatigiingniq
Bâtir le Nunavut ensemble
Nunavut

May 7, 2021

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

Attention: Richard Dwyer, Manager of Licensing

Dear Richard,

The Hamlet of Chesterfield Inlet is pleased to submit the 2020 Annual Report for water use and disposal of waste as required under the 3BM- CHE-1523 water license from January 1-December 31, 2020.

The estimated water use in 2020 was 16,810 m^3 which is below the 23,000m^3 allowable limit and a 6.7% increase from last year (15,760 m^3). Sampling of sewage effluent was tested at the ALS Laboratory in Winnipeg. The effluent sampled at the end of the wetland discharge point CHE-4 was above the allowable limit for TSS for the August 11th sample and below the allowable limit for BOD in all samples.

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

Regards,

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 CHESTERFIELD INLET

YEAR BEING REPORTED: 2020

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. 3BM-CHE1523 issued to the Hamlet of Chesterfield Inlet.

a) **Tabular summaries of all data generated under the "Monitoring Program", highlighting any exceedances at the Final Discharge Point;**
b) **summary of modifications to the "Monitoring Program" in accordance with Part H, Item 11;**
c) **the daily, monthly and annual quantities in cubic metres of freshwater obtained from all sources;**
d) **the daily, monthly and annual quantities in cubic metres of sewage Waste discharged; and the monthly and yearly quantities of every type of Waste—re: landfill, bulky metal, oil and hazardous—accepted at the Solid Waste Facility; the total volume of sludge removed from the Sewage Holding Cells and the disposal method;**

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	1,396.438	Same
February	1,357.240	Same
March	1,460.778	Same
April	1,435.948	Same
May	1,348.289	Same
June	1,366.663	Same
July	1,446.824	Same
August	1,513.790	Same
September	1,406.013	Same
October	1,302.354	Same
November	1,404.709	Same
December	1,370.687	Same
ANNUAL TOTAL	**16,809.734**	**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. The average daily water use and wastewater disposal is 46.1 m^3/day. Solid waste volumes were not provided to CGS for this report. There was no sewage sludge removed from the wastewater treatment facility in 2020.

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

- A new raw water supply line from First Lake to the water reservoir was installed in 2020. The certificate of substantial completion was issued on October 5, 2020.
- Segregation at the Solid Waste Site improved over the course of the summer.

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

- None

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

- None

h) Any updates or revisions for manuals and plans (Including Operations and Maintenance Manuals, QA/QC) as required by changes in operation and/or technology;

- An Operations and Maintenance Manual was prepared by Tetra Tech for the new transmission line and pump was submitted to NWB.
- The licensee notes that all current O&M plans are in need of being updated. CGS intends to update the plans and submit them to NWB in 2021.

i) a summary of any studies, reports and plans requested by the Board that relate to Waste disposal, Water use or reclamation, and a brief description of any future studies planned;

- None

j) Summary of any inspections completed by federal or territorial authorities, geotechnical or municipal engineers, on undertakings related to Waste disposal, Water use or reclamation activities

- The 3BM-CHE1523 CIRNAC Inspection took place on August 17th, 2020.

k) 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 effluent sample taken on August 11, 2020 exceeded the licence parameters. This result is uncharacteristic for this system. This compliance point will continue to be monitored in 2021 and sampling procedures will be reviewed with the responsible municipal staff.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- A copy of the CIRNAC report from the August 17th inspection has not been received at the time of this submission.

List of Appendices

Appendix A: CHE-4 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 8, 2020 – 24 pages**
- **Certificate of Analysis August 11, 2020 – 18 pages**
- **Certificate of Analysis August 18, 2020 – 20 pages**
- **Certificate of Analysis September 11, 2020 – 20 pages**

Appendix D: Hazardous Materials Spill Database, Chesterfield Inlet 2020 – 1 page
Appendix E: Chesterfield Inlet 2020 Sampling Summary – 3 pages
Appendix F: CIRNAC Inspection Report - 1 pages
Appendix G: Licensee Representative Annual Inspection Report - 1 pages

Appendix A : CHE-4 Effluent Quality Limits

3BM-CHE1523 Chesterfield Inlet Monitoring Program Results 2020 for Effluent Quality

Parameter	Limits	CHE-4			
		08-Jul-20	11-Aug-20	18-Aug-20	11-Sep-20
BOD5	80 mg/L	2	31.4	6	<2.0
Total Suspended Solids	100 mg/L	58.8	668	58.1	<3.0
Fecal Coliforms	1 x 10^4 CFU/100mL	10	10	10	10
Oil + Grease	no visible sheen	5	5	28.2	<5.0
pH	between 6 and 9	7.87	7.16	7.96	7.73

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 Chesterfield Inlet
ATTN: DON TANUYAK / ROY MULLINS
(Waste)
PO Box 10
Chesterfield Inlet NU X0C 0B0

Date Received: 09-JUL-20
Report Date: 22-JUL-20 09:16 (MT)
Version: FINAL

Client Phone: 867-898-9926

Certificate of Analysis

Lab Work Order #: L2472017

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

Comments: NOTE: For Frac -1 CHE-4 client did not submit 100 ml Amber PAH bottle or 100 ml Amber F2-F4 bottle - Portion was sub-sampled from 500 ml HDPE Routine bottle.

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2472017-1 CHE-4							
Sampled By: CLIENT on 08-JUL-20 @ 09:25							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050	VOCHS	0.00050	mg/L		13-JUL-20	R5152396
Toluene	0.0036	VOCHS	0.0010	mg/L		13-JUL-20	R5152396
Ethyl benzene	<0.00050	VOCHS	0.00050	mg/L		13-JUL-20	R5152396
o-Xylene	<0.00050	VOCHS	0.00050	mg/L		13-JUL-20	R5152396
m+p-Xylenes	<0.00040	VOCHS	0.00040	mg/L		13-JUL-20	R5152396
F1 (C6-C10)	<0.10	VOCHS	0.10	mg/L		13-JUL-20	R5152396
Surrogate: 4-Bromofluorobenzene (SS)	81.9		70-130	%		13-JUL-20	R5152396
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	10-JUL-20	10-JUL-20	R5151499
F3 (C16-C34)	<0.25		0.25	mg/L	10-JUL-20	10-JUL-20	R5151499
F4 (C34-C50)	<0.25		0.25	mg/L	10-JUL-20	10-JUL-20	R5151499
Surrogate: 2-Bromobenzotrifluoride	97.5		60-140	%	10-JUL-20	10-JUL-20	R5151499
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		16-JUL-20	
F2-Naphth	<0.10		0.10	mg/L		16-JUL-20	
F3-PAH	<0.25		0.25	mg/L		16-JUL-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		16-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		15-JUL-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	190	MBHT	10	MPN/100mL		09-JUL-20	R5147916
Escherichia Coli	10	MBHT	10	MPN/100mL		09-JUL-20	R5147916
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthylene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Anthracene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Acridine	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)anthracene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Chrysene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluoranthene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluorene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Naphthalene	<0.000050		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Phenanthrene	<0.000050		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Pyrene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Quinoline	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	14-JUL-20	15-JUL-20	R5153564
Surrogate: d8-Naphthalene	101.6		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Phenanthrene	101.7		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d12-Chrysene	91.7		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Acenaphthene	102.8		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d9-Acridine (SS)	93.7		50-150	%	14-JUL-20	15-JUL-20	R5153564
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
L2472017-1 CHE-4							
Sampled By: CLIENT on 08-JUL-20 @ 09:25							
Matrix: WATER							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	95.5		1.2	mg/L		13-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		13-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		13-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	78.3		1.0	mg/L		10-JUL-20	R5149607
Ammonia by colour							
Ammonia, Total (as N)	0.012		0.010	mg/L		14-JUL-20	R5153737
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		10-JUL-20	R5154400
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		10-JUL-20	R5154400
Chloride in Water by IC							
Chloride (Cl)	35.0		0.50	mg/L		09-JUL-20	R5154082
Conductivity							
Conductivity	286		1.0	umhos/cm		10-JUL-20	R5149607
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	<10	MBHT	10	MPN/100mL		09-JUL-20	R5147913
Hardness Calculated							
Hardness (as CaCO3)	68.3	HTC	0.20	mg/L		14-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)	0.054		0.020	mg/L		09-JUL-20	R5154082
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		15-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		09-JUL-20	R5154082
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		15-JUL-20	R5154644
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		15-JUL-20	R5154547
Phosphorus, Total							
Phosphorus (P)-Total	0.0222		0.0030	mg/L		13-JUL-20	R5150021
Sulfate in Water by IC							
Sulfate (SO4)	15.9		0.30	mg/L		09-JUL-20	R5154082
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0172		0.0030	mg/L	13-JUL-20	13-JUL-20	R5152460
Arsenic (As)-Total	0.00050		0.00010	mg/L	13-JUL-20	13-JUL-20	R5152460
Cadmium (Cd)-Total	0.0000083		0.0000050	mg/L	13-JUL-20	13-JUL-20	R5152460
Calcium (Ca)-Total	19.3		0.050	mg/L	13-JUL-20	13-JUL-20	R5152460
Chromium (Cr)-Total	0.00027		0.00010	mg/L	13-JUL-20	13-JUL-20	R5152460
Cobalt (Co)-Total	0.00045		0.00010	mg/L	13-JUL-20	13-JUL-20	R5152460
Copper (Cu)-Total	0.00257		0.00050	mg/L	13-JUL-20	13-JUL-20	R5152460
Iron (Fe)-Total	0.102		0.010	mg/L	13-JUL-20	13-JUL-20	R5152460
Lead (Pb)-Total	0.000065		0.000050	mg/L	13-JUL-20	13-JUL-20	R5152460
Magnesium (Mg)-Total	4.91		0.0050	mg/L	13-JUL-20	13-JUL-20	R5152460
Manganese (Mn)-Total	0.00234		0.00010	mg/L	13-JUL-20	13-JUL-20	R5152460
Nickel (Ni)-Total	0.00322		0.00050	mg/L	13-JUL-20	13-JUL-20	R5152460
Potassium (K)-Total	4.02		0.050	mg/L	13-JUL-20	13-JUL-20	R5152460
Sodium (Na)-Total	34.7		0.050	mg/L	13-JUL-20	13-JUL-20	R5152460

* 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
L2472017-1 CHE-4							
Sampled By: CLIENT on 08-JUL-20 @ 09:25							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	13-JUL-20	13-JUL-20	R5152460
Total Organic Carbon by Combustion							
Total Organic Carbon	10.3		0.50	mg/L		14-JUL-20	R5153615
Total Suspended Solids							
Total Suspended Solids	58.8		3.0	mg/L		14-JUL-20	R5153855
pH							
pH	7.87		0.10	pH units		10-JUL-20	R5149607
L2472017-2 CHE-2							
Sampled By: CLIENT on 08-JUL-20 @ 09:15							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050	VOCHS	0.00050	mg/L		13-JUL-20	R5152396
Toluene	0.0037	VOCHS	0.0010	mg/L		13-JUL-20	R5152396
Ethyl benzene	<0.00050	VOCHS	0.00050	mg/L		13-JUL-20	R5152396
o-Xylene	<0.00050	VOCHS	0.00050	mg/L		13-JUL-20	R5152396
m+p-Xylenes	<0.00040	VOCHS	0.00040	mg/L		13-JUL-20	R5152396
F1 (C6-C10)	<0.10	VOCHS	0.10	mg/L		13-JUL-20	R5152396
Surrogate: 4-Bromofluorobenzene (SS)	82.7		70-130	%		13-JUL-20	R5152396
CCME PHC F2-F4 in Water							
F2 (C10-C16)	1.79		0.10	mg/L	10-JUL-20	10-JUL-20	R5151499
F3 (C16-C34)	37.8		0.25	mg/L	10-JUL-20	10-JUL-20	R5151499
F4 (C34-C50)	8.81		0.25	mg/L	10-JUL-20	10-JUL-20	R5151499
Surrogate: 2-Bromobenzotrifluoride	96.3		60-140	%	10-JUL-20	10-JUL-20	R5151499
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		16-JUL-20	
F2-Naphth	1.79		0.10	mg/L		16-JUL-20	
F3-PAH	37.8		0.25	mg/L		16-JUL-20	
Total Hydrocarbons (C6-C50)	48.5		0.38	mg/L		16-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		15-JUL-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	MBHT	10	MPN/100mL		09-JUL-20	R5147916
Escherichia Coli	1660	MBHT	10	MPN/100mL		09-JUL-20	R5147916
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000040	RRR	0.000040	mg/L	14-JUL-20	15-JUL-20	R5153564
2-Methyl Naphthalene	<0.000040	RRR	0.000040	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthene	<0.000022	DLQ	0.000022	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthylene	<0.000040	RRR	0.000040	mg/L	14-JUL-20	15-JUL-20	R5153564
Anthracene	0.000016		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Acridine	0.000021		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)anthracene	0.000040		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)pyrene	0.000348		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(b&j)fluoranthene	0.000018		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(g,h,i)perylene	0.000035		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(k)fluoranthene	0.000012		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Chrysene	0.000027		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Dibenzo(a,h)anthracene	0.0000333		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluoranthene	<0.000110	DLQ	0.00011	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluorene	<0.000048	DLQ	0.000048	mg/L	14-JUL-20	15-JUL-20	R5153564

* 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
L2472017-2 CHE-2							
Sampled By: CLIENT on 08-JUL-20 @ 09:15							
Matrix: WATER							
CCME PAHs in mg/L							
Indeno(1,2,3-cd)pyrene	0.000013		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Naphthalene	<0.00010	RRR	0.00010	mg/L	14-JUL-20	15-JUL-20	R5153564
Phenanthrene	0.000184		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Pyrene	0.000084		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Quinoline	0.000078	R	0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
B(a)P Total Potency Equivalent	0.000455		0.000030	mg/L	14-JUL-20	15-JUL-20	R5153564
Surrogate: d8-Naphthalene	N/A	SMI	50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Phenanthrene	96.4		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d12-Chrysene	96.2		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Acenaphthene	81.7		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d9-Acridine (SS)	97.9		50-150	%	14-JUL-20	15-JUL-20	R5153564
Note: RRR: Surrogate recovery is outside ALS DQO limits. Detection limits for affected compounds have been raised accordingly.							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	249		1.2	mg/L		13-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		13-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		13-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	204		1.0	mg/L		10-JUL-20	R5149607
Ammonia by colour							
Ammonia, Total (as N)	3.63		0.10	mg/L		15-JUL-20	R5153737
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	490		100	mg/L		10-JUL-20	R5154400
Carbonaceous BOD							
BOD Carbonaceous	241	BODP	50	mg/L		10-JUL-20	R5154400
Chloride in Water by IC							
Chloride (Cl)	39.9		0.50	mg/L		09-JUL-20	R5154082
Conductivity							
Conductivity	523		1.0	umhos/cm		10-JUL-20	R5149607
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	2190	MBHT	10	MPN/100mL		09-JUL-20	R5147913
Hardness Calculated							
Hardness (as CaCO3)	628	HTC	1.3	mg/L		14-JUL-20	
Mercury Total							
Mercury (Hg)-Total	0.00043		0.00013	mg/L	16-JUL-20	16-JUL-20	R5156978
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		09-JUL-20	R5154082
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		15-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		09-JUL-20	R5154082
Oil & Grease - Gravimetric							
Oil and Grease	23.9		5.0	mg/L		15-JUL-20	R5154644
Phenol (4AAP)							
Phenols (4AAP)	<0.0050	DLM	0.0050	mg/L		15-JUL-20	R5154547
Phosphorus, Total							
Phosphorus (P)-Total	344		1.2	mg/L		13-JUL-20	R5150021
Sulfate in Water by IC							
Sulfate (SO4)	<0.30		0.30	mg/L		09-JUL-20	R5154082

* 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
L2472017-2 CHE-2							
Sampled By: CLIENT on 08-JUL-20 @ 09:15							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	2.36		0.030	mg/L	13-JUL-20	13-JUL-20	R5152460
Arsenic (As)-Total	0.0567		0.0010	mg/L	13-JUL-20	13-JUL-20	R5152460
Cadmium (Cd)-Total	0.00166		0.000050	mg/L	13-JUL-20	13-JUL-20	R5152460
Calcium (Ca)-Total	220		0.50	mg/L	13-JUL-20	13-JUL-20	R5152460
Chromium (Cr)-Total	0.0161		0.0010	mg/L	13-JUL-20	13-JUL-20	R5152460
Cobalt (Co)-Total	0.0270		0.0010	mg/L	13-JUL-20	13-JUL-20	R5152460
Copper (Cu)-Total	0.152		0.0050	mg/L	13-JUL-20	13-JUL-20	R5152460
Iron (Fe)-Total	679		0.10	mg/L	13-JUL-20	13-JUL-20	R5152460
Lead (Pb)-Total	0.0189		0.00050	mg/L	13-JUL-20	13-JUL-20	R5152460
Magnesium (Mg)-Total	18.9		0.050	mg/L	13-JUL-20	13-JUL-20	R5152460
Manganese (Mn)-Total	5.93		0.0010	mg/L	13-JUL-20	13-JUL-20	R5152460
Nickel (Ni)-Total	0.0342		0.0050	mg/L	13-JUL-20	13-JUL-20	R5152460
Potassium (K)-Total	26.2		0.50	mg/L	13-JUL-20	13-JUL-20	R5152460
Sodium (Na)-Total	45.8		0.50	mg/L	13-JUL-20	13-JUL-20	R5152460
Zinc (Zn)-Total	0.647		0.030	mg/L	13-JUL-20	13-JUL-20	R5152460
Total Organic Carbon by Combustion							
Total Organic Carbon	794		50	mg/L		21-JUL-20	R5160553
Total Suspended Solids							
Total Suspended Solids	5660		150	mg/L		14-JUL-20	R5153855
pH							
pH	7.35		0.10	pH units		10-JUL-20	R5149607
L2472017-3 CHE-3A							
Sampled By: CLIENT on 08-JUL-20 @ 08:57							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050	VOCHS	0.00050	mg/L		13-JUL-20	R5152396
Toluene	0.0038	VOCHS	0.0010	mg/L		13-JUL-20	R5152396
Ethyl benzene	<0.00050	VOCHS	0.00050	mg/L		13-JUL-20	R5152396
o-Xylene	<0.00050	VOCHS	0.00050	mg/L		13-JUL-20	R5152396
m+p-Xylenes	<0.00040	VOCHS	0.00040	mg/L		13-JUL-20	R5152396
F1 (C6-C10)	<0.10	VOCHS	0.10	mg/L		13-JUL-20	R5152396
Surrogate: 4-Bromofluorobenzene (SS)	82.9		70-130	%		13-JUL-20	R5152396
CCME PHC F2-F4 in Water							
F2 (C10-C16)	1.73		0.10	mg/L	10-JUL-20	10-JUL-20	R5151499
F3 (C16-C34)	36.3		0.25	mg/L	10-JUL-20	10-JUL-20	R5151499
F4 (C34-C50)	8.52		0.25	mg/L	10-JUL-20	10-JUL-20	R5151499
Surrogate: 2-Bromobenzotrifluoride	98.1		60-140	%	10-JUL-20	10-JUL-20	R5151499
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		16-JUL-20	
F2-Naphth	1.73		0.10	mg/L		16-JUL-20	
F3-PAH	36.3		0.25	mg/L		16-JUL-20	
Total Hydrocarbons (C6-C50)	46.6		0.38	mg/L		16-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		15-JUL-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	MBHT	10	MPN/100mL		09-JUL-20	R5147916
Escherichia Coli	>24200	MBHT	10	MPN/100mL		09-JUL-20	R5147916
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000040	RRR	0.000040	mg/L	14-JUL-20	15-JUL-20	R5153564

* 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
L2472017-3 CHE-3A							
Sampled By: CLIENT on 08-JUL-20 @ 08:57							
Matrix: WATER							
CCME PAHs in mg/L							
2-Methyl Naphthalene	<0.000040	RRR	0.000040	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthene	<0.000022	DLQ	0.000022	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthylene	<0.000040	RRR	0.000040	mg/L	14-JUL-20	15-JUL-20	R5153564
Anthracene	0.000019		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Acridine	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)anthracene	0.000043		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)pyrene	0.000453		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(b&j)fluoranthene	0.000021		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(g,h,i)perylene	0.000038		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(k)fluoranthene	0.000013		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Chrysene	0.000032		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Dibenzo(a,h)anthracene	0.0000354		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluoranthene	<0.000120	DLQ	0.00012	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluorene	<0.000054	DLQ	0.000054	mg/L	14-JUL-20	15-JUL-20	R5153564
Indeno(1,2,3-cd)pyrene	0.000021		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Naphthalene	<0.00010	RRR	0.00010	mg/L	14-JUL-20	15-JUL-20	R5153564
Phenanthrene	0.000203		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Pyrene	0.000091		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Quinoline	0.000071	R	0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
B(a)P Total Potency Equivalent	0.000574		0.000030	mg/L	14-JUL-20	15-JUL-20	R5153564
Surrogate: d8-Naphthalene	N/A	SMI	50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Phenanthrene	98.8		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d12-Chrysene	99.0		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Acenaphthene	85.1		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d9-Acridine (SS)	102.4		50-150	%	14-JUL-20	15-JUL-20	R5153564
Note: RRR: Surrogate recovery is outside ALS DQO limits. Detection limits for affected compounds have been raised accordingly.							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	220		1.2	mg/L		13-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		13-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		13-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	180		1.0	mg/L		10-JUL-20	R5149607
Ammonia by colour							
Ammonia, Total (as N)	49.0		1.0	mg/L		15-JUL-20	R5153737
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	250	BODP	50	mg/L		10-JUL-20	R5154400
Carbonaceous BOD							
BOD Carbonaceous	232		50	mg/L		10-JUL-20	R5154400
Chloride in Water by IC							
Chloride (Cl)	47.5		0.50	mg/L		09-JUL-20	R5154082
Conductivity							
Conductivity	574		1.0	umhos/cm		10-JUL-20	R5149607
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200	MBHT	10	MPN/100mL		09-JUL-20	R5147913
Hardness Calculated							
Hardness (as CaCO3)	47.2	HTC	0.20	mg/L		14-JUL-20	
Mercury Total							

* 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
L2472017-3 CHE-3A							
Sampled By: CLIENT on 08-JUL-20 @ 08:57							
Matrix: WATER							
Mercury Total							
Mercury (Hg)-Total	0.0000480		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		09-JUL-20	R5154082
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		15-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		09-JUL-20	R5154082
Oil & Grease - Gravimetric							
Oil and Grease	64.7		5.0	mg/L		15-JUL-20	R5154644
Phenol (4AAP)							
Phenols (4AAP)	0.103	DLHC	0.0050	mg/L		15-JUL-20	R5154547
Phosphorus, Total							
Phosphorus (P)-Total	7.56		0.060	mg/L		13-JUL-20	R5150021
Sulfate in Water by IC							
Sulfate (SO4)	7.47		0.30	mg/L		09-JUL-20	R5154082
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.435		0.0030	mg/L	13-JUL-20	13-JUL-20	R5152460
Arsenic (As)-Total	0.00091		0.00010	mg/L	13-JUL-20	13-JUL-20	R5152460
Cadmium (Cd)-Total	0.000130		0.0000050	mg/L	13-JUL-20	13-JUL-20	R5152460
Calcium (Ca)-Total	11.9		0.050	mg/L	13-JUL-20	13-JUL-20	R5152460
Chromium (Cr)-Total	0.00117		0.00010	mg/L	13-JUL-20	13-JUL-20	R5152460
Cobalt (Co)-Total	0.00055		0.00010	mg/L	13-JUL-20	13-JUL-20	R5152460
Copper (Cu)-Total	0.114		0.00050	mg/L	13-JUL-20	13-JUL-20	R5152460
Iron (Fe)-Total	2.21		0.010	mg/L	13-JUL-20	13-JUL-20	R5152460
Lead (Pb)-Total	0.00200		0.000050	mg/L	13-JUL-20	13-JUL-20	R5152460
Magnesium (Mg)-Total	4.21		0.0050	mg/L	13-JUL-20	13-JUL-20	R5152460
Manganese (Mn)-Total	0.0374		0.00010	mg/L	13-JUL-20	13-JUL-20	R5152460
Nickel (Ni)-Total	0.00302		0.00050	mg/L	13-JUL-20	13-JUL-20	R5152460
Potassium (K)-Total	17.6		0.050	mg/L	13-JUL-20	13-JUL-20	R5152460
Sodium (Na)-Total	47.6		0.050	mg/L	13-JUL-20	13-JUL-20	R5152460
Zinc (Zn)-Total	0.124		0.0030	mg/L	13-JUL-20	13-JUL-20	R5152460
Total Organic Carbon by Combustion							
Total Organic Carbon	109		5.0	mg/L		14-JUL-20	R5153615
Total Suspended Solids							
Total Suspended Solids	92.5		7.5	mg/L		14-JUL-20	R5153855
pH							
pH	7.77		0.10	pH units		10-JUL-20	R5149607

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
BODP	BOD dilution results differed by more than 30% RPD. Precision of reported BOD result may be less than usual.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
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.
R	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
RRR	Refer to Report Remarks for issues regarding this analysis
SMI	Surrogate recovery could not be measured due to sample matrix interference.
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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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

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

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

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

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

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

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

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

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

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Reference Information

Test Method References:

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

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

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

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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

Quality Control Report

Workorder: L2472017 Report Date: 22-JUL-20

Client: Hamlet of Chesterfield Inlet
PO Box 10
Chesterfield Inlet NU X0C 0B0

Contact: DON TANUYAK / ROY MULLINS (Waste)

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5149607								
WG3360021-25 DUP		**L2472017-3**						
Alkalinity, Total (as CaCO3)		180	198		mg/L	9.4	20	10-JUL-20
WG3360021-19 LCS								
Alkalinity, Total (as CaCO3)			104.0		%		85-115	10-JUL-20
WG3360021-24 LCS								
Alkalinity, Total (as CaCO3)			107.1		%		85-115	10-JUL-20
WG3360021-16 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	10-JUL-20
WG3360021-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	10-JUL-20
BOD-CBOD-WP	**Water**							
Batch R5154400								
WG3359813-2 LCS								
BOD Carbonaceous			110.5		%		85-115	10-JUL-20
WG3359813-1 MB								
BOD Carbonaceous			<2.0		mg/L		2	10-JUL-20
BOD-WP	**Water**							
Batch R5154400								
WG3359813-2 LCS								
Biochemical Oxygen Demand			112.2		%		85-115	10-JUL-20
WG3359813-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	10-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5152396								
WG3360924-2 LCS								
Benzene			104.4		%		70-130	13-JUL-20
Toluene			98.2		%		70-130	13-JUL-20
Ethyl benzene			100.8		%		70-130	13-JUL-20
o-Xylene			105.5		%		70-130	13-JUL-20
m+p-Xylenes			103.4		%		70-130	13-JUL-20
WG3360924-3 LCS								
F1 (C6-C10)			109.2		%		70-130	13-JUL-20
WG3360924-1 MB								
Benzene			<0.00050		mg/L		0.0005	13-JUL-20
Toluene			<0.0010		mg/L		0.001	13-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	13-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	13-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	**Water**							
Batch R5152396								
WG3360924-1 MB								
m+p-Xylenes			<0.00040		mg/L		0.0004	13-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	13-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			83.6		%		70-130	13-JUL-20
C-TOC-HTC-WP	**Water**							
Batch R5153615								
WG3362707-6 LCS								
Total Organic Carbon			93.6		%		80-120	14-JUL-20
WG3362707-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	14-JUL-20
Batch R5160553								
WG3367647-2 LCS								
Total Organic Carbon			104.0		%		80-120	21-JUL-20
WG3367647-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-JUL-20
CL-IC-N-WP	**Water**							
Batch R5154082								
WG3359272-6 LCS								
Chloride (Cl)			103.5		%		90-110	09-JUL-20
WG3359272-5 MB								
Chloride (Cl)			<0.50		mg/L		0.5	09-JUL-20
EC-WP	**Water**							
Batch R5149607								
WG3360021-25 DUP		**L2472017-3**						
Conductivity		574	574		umhos/cm	0.0	10	10-JUL-20
WG3360021-23 LCS								
Conductivity			97.5		%		90-110	10-JUL-20
WG3360021-16 MB								
Conductivity			<1.0		umhos/cm		1	10-JUL-20
WG3360021-21 MB								
Conductivity			<1.0		umhos/cm		1	10-JUL-20
FC10-QT97-WP	**Water**							
Batch R5147913								
WG3359384-2 DUP		**L2472017-1**						
Fecal Coliforms		<10	<10	RPD-NA	MPN/100mL	N/A	65	09-JUL-20
WG3359384-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	09-JUL-20

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
WG3364109-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	16-JUL-20
MET-T-CCMS-WP	**Water**							
Batch R5152460								
WG3359901-2 LCS								
Aluminum (Al)-Total			103.2		%		80-120	13-JUL-20
Arsenic (As)-Total			99.0		%		80-120	13-JUL-20
Cadmium (Cd)-Total			97.6		%		80-120	13-JUL-20
Calcium (Ca)-Total			91.3		%		80-120	13-JUL-20
Chromium (Cr)-Total			97.9		%		80-120	13-JUL-20
Cobalt (Co)-Total			97.7		%		80-120	13-JUL-20
Copper (Cu)-Total			94.0		%		80-120	13-JUL-20
Iron (Fe)-Total			96.4		%		80-120	13-JUL-20
Lead (Pb)-Total			91.8		%		80-120	13-JUL-20
Magnesium (Mg)-Total			109.4		%		80-120	13-JUL-20
Manganese (Mn)-Total			99.2		%		80-120	13-JUL-20
Nickel (Ni)-Total			96.5		%		80-120	13-JUL-20
Potassium (K)-Total			106.3		%		80-120	13-JUL-20
Sodium (Na)-Total			104.5		%		80-120	13-JUL-20
Zinc (Zn)-Total			96.0		%		80-120	13-JUL-20
WG3359901-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	13-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	13-JUL-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	13-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	13-JUL-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	13-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	13-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	13-JUL-20
Iron (Fe)-Total			<0.010		mg/L		0.01	13-JUL-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	13-JUL-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	13-JUL-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	13-JUL-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	13-JUL-20
Potassium (K)-Total			<0.050		mg/L		0.05	13-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5152460								
WG3359901-1 MB								
Sodium (Na)-Total			<0.050		mg/L		0.05	13-JUL-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	13-JUL-20
NH3-COL-WP	**Water**							
Batch R5153737								
WG3362284-14 LCS								
Ammonia, Total (as N)			100.8		%		85-115	14-JUL-20
WG3362284-13 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	14-JUL-20
NO2-IC-N-WP	**Water**							
Batch R5154082								
WG3359272-6 LCS								
Nitrite (as N)			100.4		%		90-110	09-JUL-20
WG3359272-5 MB								
Nitrite (as N)			<0.010		mg/L		0.01	09-JUL-20
NO3-IC-N-WP	**Water**							
Batch R5154082								
WG3359272-6 LCS								
Nitrate (as N)			101.7		%		90-110	09-JUL-20
WG3359272-5 MB								
Nitrate (as N)			<0.020		mg/L		0.02	09-JUL-20
OG-GRAV-WP	**Water**							
Batch R5154644								
WG3363101-2 LCS								
Oil and Grease			96.0		%		70-130	15-JUL-20
WG3363101-1 MB								
Oil and Grease			<5.0		mg/L		5	15-JUL-20
P-T-COL-WP	**Water**							
Batch R5150021								
WG3360913-14 LCS								
Phosphorus (P)-Total			102.0		%		80-120	13-JUL-20
WG3360913-13 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	13-JUL-20
PAH-CCME-PPM-WT	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	**Water**							
Batch R5153564								
WG3362137-2 LCS								
1-Methyl Naphthalene			94.4		%		50-150	15-JUL-20
2-Methyl Naphthalene			95.5		%		50-150	15-JUL-20
Acenaphthene			104.9		%		50-150	15-JUL-20
Acenaphthylene			106.1		%		50-150	15-JUL-20
Anthracene			106.3		%		50-150	15-JUL-20
Acridine			98.7		%		50-150	15-JUL-20
Benzo(a)anthracene			108.1		%		50-150	15-JUL-20
Benzo(a)pyrene			100.5		%		50-150	15-JUL-20
Benzo(b&j)fluoranthene			92.6		%		50-150	15-JUL-20
Benzo(g,h,i)perylene			96.6		%		50-150	15-JUL-20
Benzo(k)fluoranthene			93.6		%		50-150	15-JUL-20
Chrysene			107.8		%		50-150	15-JUL-20
Dibenzo(a,h)anthracene			99.6		%		50-150	15-JUL-20
Fluoranthene			109.3		%		50-150	15-JUL-20
Fluorene			109.0		%		50-150	15-JUL-20
Indeno(1,2,3-cd)pyrene			109.3		%		50-150	15-JUL-20
Naphthalene			96.3		%		50-150	15-JUL-20
Phenanthrene			112.1		%		50-150	15-JUL-20
Pyrene			111.8		%		50-150	15-JUL-20
Quinoline			109.6		%		50-150	15-JUL-20
WG3362137-1 MB								
1-Methyl Naphthalene			<0.000020		mg/L		0.00002	15-JUL-20
2-Methyl Naphthalene			<0.000020		mg/L		0.00002	15-JUL-20
Acenaphthene			<0.000020		mg/L		0.00002	15-JUL-20
Acenaphthylene			<0.000020		mg/L		0.00002	15-JUL-20
Anthracene			<0.000010		mg/L		0.00001	15-JUL-20
Acridine			<0.000020		mg/L		0.00002	15-JUL-20
Benzo(a)anthracene			<0.000010		mg/L		0.00001	15-JUL-20
Benzo(a)pyrene			<0.000005(		mg/L		0.000005	15-JUL-20
Benzo(b&j)fluoranthene			<0.000010		mg/L		0.00001	15-JUL-20
Benzo(g,h,i)perylene			<0.000020		mg/L		0.00002	15-JUL-20
Benzo(k)fluoranthene			<0.000010		mg/L		0.00001	15-JUL-20
Chrysene			<0.000020		mg/L		0.00002	15-JUL-20
Dibenzo(a,h)anthracene			<0.000005(		mg/L		0.000005	15-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	**Water**							
Batch R5153564								
WG3362137-1 MB								
Fluoranthene			<0.000020		mg/L		0.00002	15-JUL-20
Fluorene			<0.000020		mg/L		0.00002	15-JUL-20
Indeno(1,2,3-cd)pyrene			<0.000010		mg/L		0.00001	15-JUL-20
Naphthalene			<0.000050		mg/L		0.00005	15-JUL-20
Phenanthrene			<0.000050		mg/L		0.00005	15-JUL-20
Pyrene			<0.000010		mg/L		0.00001	15-JUL-20
Quinoline			<0.000020		mg/L		0.00002	15-JUL-20
Surrogate: d8-Naphthalene			83.7		%		50-150	15-JUL-20
Surrogate: d10-Phenanthrene			100.0		%		50-150	15-JUL-20
Surrogate: d12-Chrysene			91.4		%		50-150	15-JUL-20
Surrogate: d10-Acenaphthene			88.7		%		50-150	15-JUL-20
Surrogate: d9-Acridine (SS)			92.4		%		50-150	15-JUL-20
PH-WP	**Water**							
Batch R5149607								
WG3360021-25 DUP		**L2472017-3**						
pH		7.77	7.75	J	pH units	0.02	0.2	10-JUL-20
WG3360021-17 LCS								
pH			7.33		pH units		7.3-7.5	10-JUL-20
WG3360021-22 LCS								
pH			7.39		pH units		7.3-7.5	10-JUL-20
PHENOLS-4AAP-WT	**Water**							
Batch R5154547								
WG3361819-2 LCS								
Phenols (4AAP)			97.2		%		85-115	15-JUL-20
WG3361819-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	15-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5154082								
WG3359272-6 LCS								
Sulfate (SO4)			103.5		%		90-110	09-JUL-20
WG3359272-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	09-JUL-20
SOLIDS-TOTSUS-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-WP	**Water**							
Batch R5153855								
WG3361467-5 LCS								
Total Suspended Solids			93.0		%		85-115	14-JUL-20
WG3361467-4 MB								
Total Suspended Solids			<3.0		mg/L		3	14-JUL-20
TC,EC10-QT97-WP	**Water**							
Batch R5147916								
WG3359387-2 DUP		**L2472017-1**						
Total Coliforms		190	180		MPN/100mL	6.6	65	09-JUL-20
Escherichia Coli		10	<10	RPD-NA	MPN/100mL	N/A	65	09-JUL-20
WG3359387-1 MB								
Total Coliforms			<1		MPN/100mL		1	09-JUL-20
Escherichia Coli			<1		MPN/100mL		1	09-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.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	08-JUL-20 09:25	10-JUL-20 12:00	0.25	51	hours	EHTR-FM
	2	08-JUL-20 09:15	10-JUL-20 12:00	0.25	51	hours	EHTR-FM
	3	08-JUL-20 08:57	10-JUL-20 12:00	0.25	51	hours	EHTR-FM
Bacteriological Tests							
Fecal coliforms, 1:10 dilution by QT97							
	1	08-JUL-20 09:25	09-JUL-20 18:00	30	33	hours	EHTL
	2	08-JUL-20 09:15	09-JUL-20 18:00	30	33	hours	EHTL
	3	08-JUL-20 08:57	09-JUL-20 18:00	30	33	hours	EHTL
Total and E. coli, 1:10 dilution by QT97							
	1	08-JUL-20 09:25	09-JUL-20 18:00	30	33	hours	EHTL
	2	08-JUL-20 09:15	09-JUL-20 18:00	30	33	hours	EHTL
	3	08-JUL-20 08:57	09-JUL-20 18:00	30	33	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 L2472017 were received on 09-JUL-20 12:40.

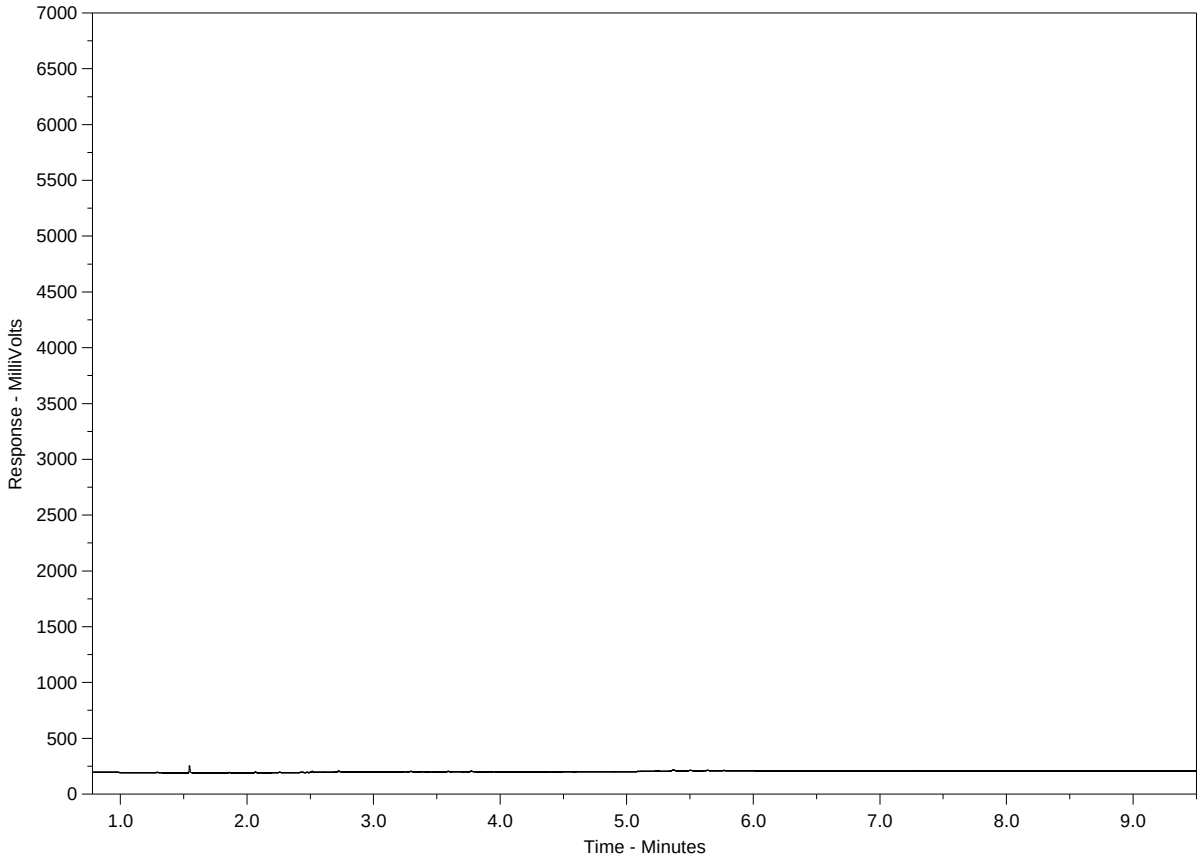
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

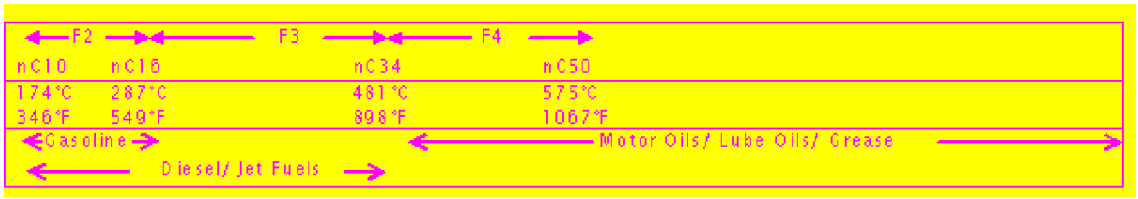
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2472017-1
Client Sample ID: CHE-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.

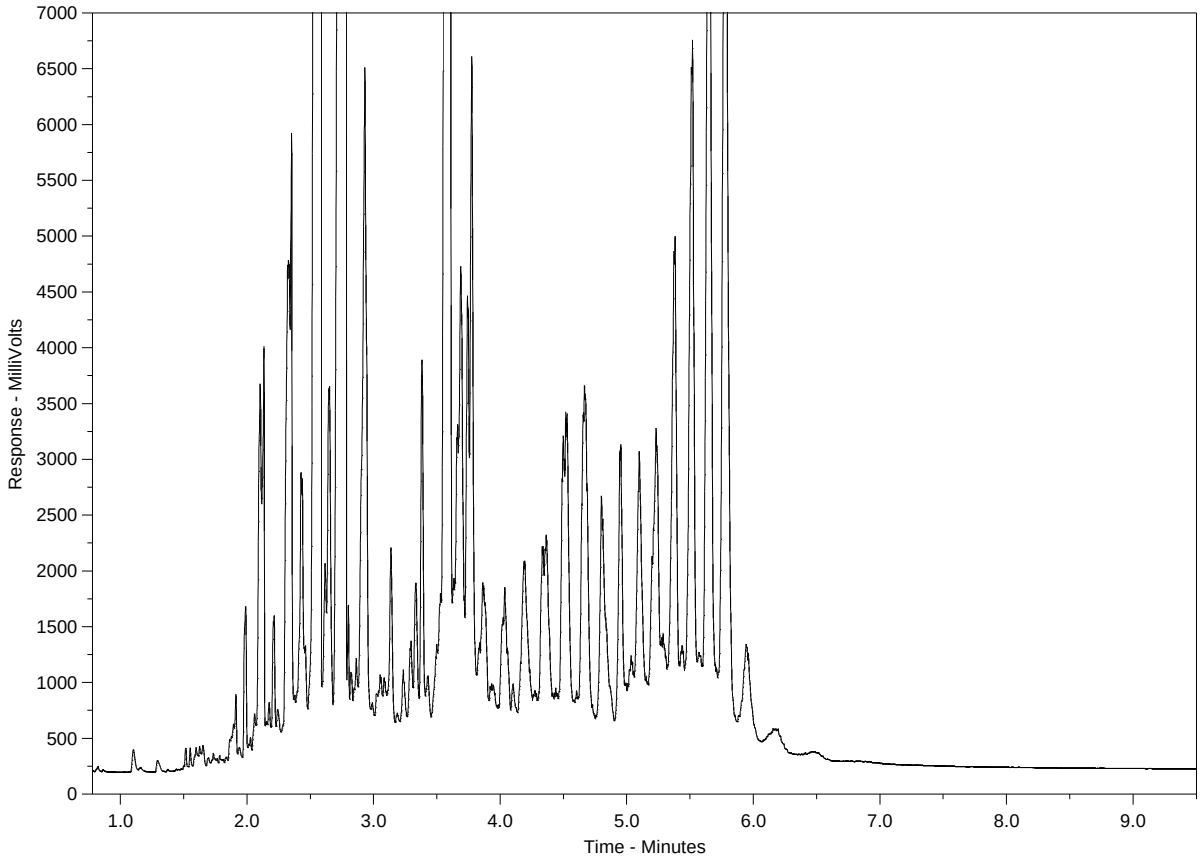
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

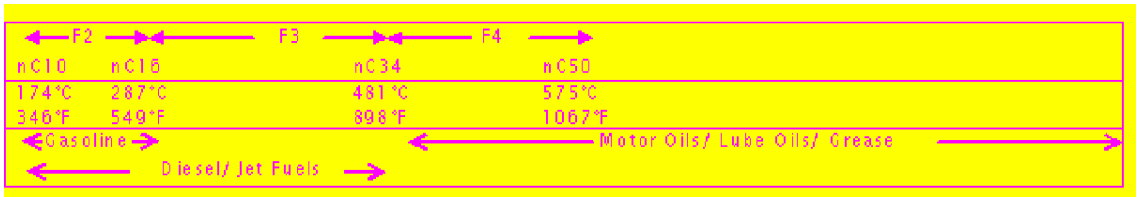
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2472017-2
Client Sample ID: CHE-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.

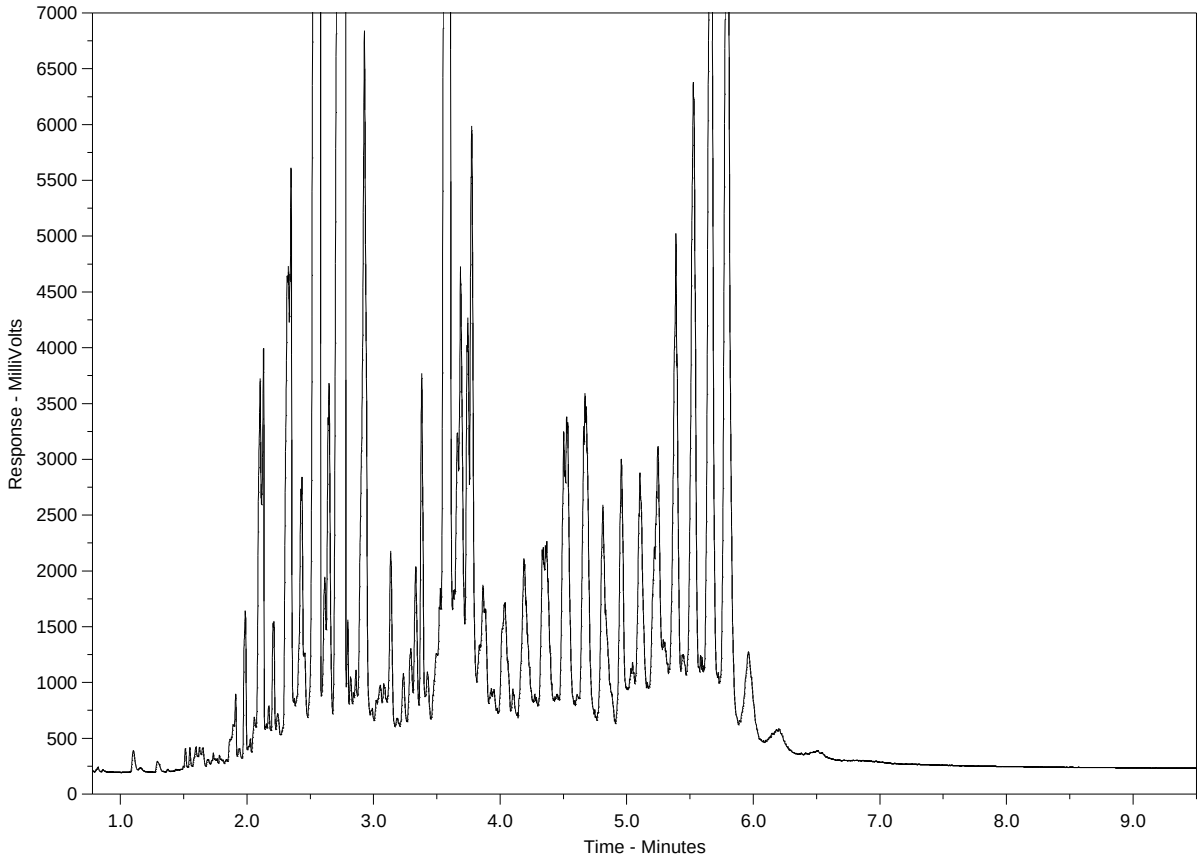
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

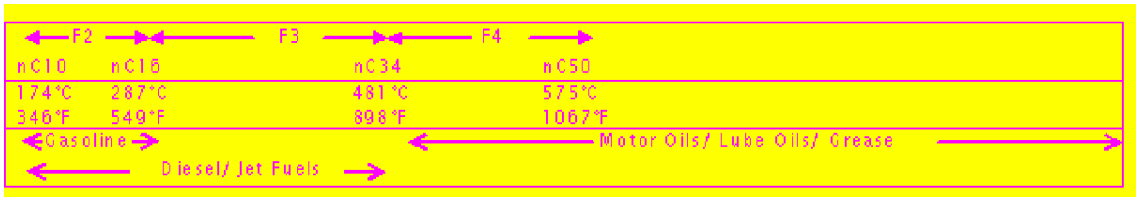
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

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: L2472017-3
Client Sample ID: CHE-3A





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

L2472017-COFC

COC Number: 17 - 747868

Page of

Report To	Contact and company name below will appear on the final report
Company:	Hamlet of Chesterfield Inlet
Contact:	Box 10
Phone:	867-898-9926
	Company address below will appear on the final report
Street:	
City/Province:	Chesterfield Inlet NU
Postal Code:	X0C-0B0

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

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Regular [R]	Standard TAT if received by 3 pm - business days - no surcharges apply
PRIORITY (Business Days): 4 day [P4-20%]	EMERGENCY: 1 Business day [E - 100%]
3 day [P3-25%]	Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]
2 day [P2-50%]	
Date and Time Required for all E&P TATs:	dd-mmm-yy hh:mm
For tests that can not be performed according to the service level selected, you will be contacted.	

Invoice To		
	Same as Report To	YES NO
	Copy of Invoice with Report	YES NO
Company:		
Contact:		

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

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

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

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler: Matthew Arnaquk

Analysis Request

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

NUMBER OF CONTAINERS

SAMPLES ON HOLD

SUSPECTED HAZARD (see Special Instructions)

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
CHE-4			9:25	mA
CHE-2			9:15	mA
CHE-3a		08/07/20	8:57	mA
			9:45	
			9:[illegible]	

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	
Are samples for human consumption/ use? YES NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
			13.6				

SHIPMENT RELEASE (client use)		
Released by:	Date:	Time:

INITIAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date: JUL 09 2020	Time: 1040

FINAL SHIPMENT RECEPTION (lab use only)		
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 Chesterfield Inlet
ATTN: DON TANUYAK / ROY MULLINS
(Waste)
PO Box 10
Chesterfield Inlet NU X0C 0B0

Date Received: 13-AUG-20
Report Date: 26-AUG-20 12:07 (MT)
Version: FINAL

Client Phone: 867-898-9926

Certificate of Analysis

Lab Work Order #: L2488324

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

Comments: NOTE : Limited sample for BTX,F1-F4 for frac -1 CHE-1 and Frac -2 CHE-2 - only 1 x 40 ml BTX,F1 Vial and 1 x 100 ml Amber F2-F4 Bottle submitted. We can proceed with this analysis but we only have 1 attempt (no back up vials or bottles)

**No 100 ml Amber bottles submitted for PAH analysis - unable to analyze for PAH's **.

For Frac -3 CHE-3 only 1 x 40 ml BTX,F1 Vial was submitted instead of 3 and 2 x 250 ml PAH bottles.

Note : Only Frac -1 CHE-2 required BTX,F1-F4 and PAH analysis - removed from frac -2 CHE-3A and Frac -3 CHE-4

Note: Frac -1 CHE-2 F2-F4 bottle was half full of sediment - had to decant sample and increase LOR due to reduced extraction volume.

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2488324-1 CHE-2 (LABELLED CH-1)							
Sampled By: CLIENT on 11-AUG-20 @ 13:40							
Matrix: WASTE WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		24-AUG-20	R5199076
Toluene	0.119		0.0010	mg/L		24-AUG-20	R5199076
Ethyl benzene	<0.00050		0.00050	mg/L		24-AUG-20	R5199076
o-Xylene	<0.00050		0.00050	mg/L		24-AUG-20	R5199076
m+p-Xylenes	<0.00040		0.00040	mg/L		24-AUG-20	R5199076
F1 (C6-C10)	0.17		0.10	mg/L		24-AUG-20	R5199076
Surrogate: 4-Bromofluorobenzene (SS)	85.9		70-130	%		24-AUG-20	R5199076
CCME PHC F2-F4 in Water							
F2 (C10-C16)	1.71	RRR	0.20	mg/L	19-AUG-20	20-AUG-20	R5192163
F3 (C16-C34)	140	RRR	0.50	mg/L	19-AUG-20	20-AUG-20	R5192163
F4 (C34-C50)	15.9	RRR	0.50	mg/L	19-AUG-20	20-AUG-20	R5192163
Surrogate: 2-Bromobenzotrifluoride	95.6		60-140	%	19-AUG-20	20-AUG-20	R5192163
Note: Sample L2488324-1 was decanted into 125 ml bottle and analyzed for f2f4. The results for f2f4 might be biased low.							
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		26-AUG-20	
Total Hydrocarbons (C6-C50)	157		0.74	mg/L		26-AUG-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		24-AUG-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	PEHT	10	MPN/100mL		13-AUG-20	R5188238
Escherichia Coli	>24200	PEHT	10	MPN/100mL		13-AUG-20	R5188238
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	958		1.2	mg/L		17-AUG-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		17-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		17-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	785		1.0	mg/L		14-AUG-20	R5189987
Ammonia by colour							
Ammonia, Total (as N)	48.1		5.0	mg/L		19-AUG-20	R5192476
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	2470		600	mg/L		14-AUG-20	R5192227
Carbonaceous BOD							
BOD Carbonaceous	1570		300	mg/L		14-AUG-20	R5192227
Chloride in Water by IC							
Chloride (Cl)	67.9		1.0	mg/L		14-AUG-20	R5191585
Conductivity							
Conductivity	947		1.0	umhos/cm		14-AUG-20	R5189987
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200	PEHT	10	MPN/100mL		13-AUG-20	R5188259
Hardness Calculated							
Hardness (as CaCO3)	577	HTC	1.3	mg/L		20-AUG-20	
Mercury Total							
Mercury (Hg)-Total	0.00250		0.00050	mg/L	19-AUG-20	19-AUG-20	R5191880
Nitrate in Water by IC							
Nitrate (as N)	<0.040	DLM	0.040	mg/L		14-AUG-20	R5191585
Nitrate+Nitrite							

* 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
L2488324-1 CHE-2 (LABELLED CH-1)							
Sampled By: CLIENT on 11-AUG-20 @ 13:40							
Matrix: WASTE WATER							
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		26-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.020	DLM	0.020	mg/L		14-AUG-20	R5191585
Oil & Grease - Gravimetric							
Oil and Grease	987		5.0	mg/L		20-AUG-20	R5192756
Phenol (4AAP)							
Phenols (4AAP)	0.094	DLHC	0.010	mg/L		17-AUG-20	R5190796
Phosphorus, Total							
Phosphorus (P)-Total	30.5		0.12	mg/L		17-AUG-20	R5190801
Sulfate in Water by IC							
Sulfate (SO4)	<0.60	DLM	0.60	mg/L		14-AUG-20	R5191585
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	41.5		0.030	mg/L	18-AUG-20	19-AUG-20	R5192665
Arsenic (As)-Total	0.0262		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Cadmium (Cd)-Total	0.00642		0.000050	mg/L	18-AUG-20	19-AUG-20	R5192665
Calcium (Ca)-Total	170		0.50	mg/L	18-AUG-20	19-AUG-20	R5192665
Chromium (Cr)-Total	0.168		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Cobalt (Co)-Total	0.0218		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Copper (Cu)-Total	2.17		0.0050	mg/L	18-AUG-20	19-AUG-20	R5192665
Iron (Fe)-Total	122		0.10	mg/L	18-AUG-20	19-AUG-20	R5192665
Lead (Pb)-Total	0.134		0.00050	mg/L	18-AUG-20	19-AUG-20	R5192665
Magnesium (Mg)-Total	37.0		0.050	mg/L	18-AUG-20	19-AUG-20	R5192665
Manganese (Mn)-Total	0.989		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Nickel (Ni)-Total	0.129		0.0050	mg/L	18-AUG-20	19-AUG-20	R5192665
Potassium (K)-Total	44.3		0.50	mg/L	18-AUG-20	19-AUG-20	R5192665
Sodium (Na)-Total	67.2		0.50	mg/L	18-AUG-20	19-AUG-20	R5192665
Zinc (Zn)-Total	6.69		0.030	mg/L	18-AUG-20	19-AUG-20	R5192665
Total Organic Carbon by Combustion							
Total Organic Carbon	2220		50	mg/L		19-AUG-20	R5192218
Total Suspended Solids							
Total Suspended Solids	14600		150	mg/L		14-AUG-20	R5190791
pH							
pH	6.04		0.10	pH units		14-AUG-20	R5189987
L2488324-2 CHE-3A (LABELLED CH-2)							
Sampled By: CLIENT on 11-AUG-20 @ 13:50							
Matrix: WASTE WATER							
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	PEHT	10	MPN/100mL		13-AUG-20	R5188238
Escherichia Coli	1840	PEHT	10	MPN/100mL		13-AUG-20	R5188238
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	195		1.2	mg/L		17-AUG-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		17-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		17-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	160		1.0	mg/L		14-AUG-20	R5189987
Ammonia by colour							
Ammonia, Total (as N)	17.7		2.0	mg/L		19-AUG-20	R5192476
Biochemical Oxygen Demand (BOD)							

* 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
L2488324-2 CHE-3A (LABELLED CH-2)							
Sampled By: CLIENT on 11-AUG-20 @ 13:50							
Matrix: WASTE WATER							
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	79		20	mg/L		14-AUG-20	R5192227
Carbonaceous BOD							
BOD Carbonaceous	32		20	mg/L		14-AUG-20	R5192227
Chloride in Water by IC							
Chloride (Cl)	69.0		0.50	mg/L		14-AUG-20	R5191585
Conductivity							
Conductivity	538		1.0	umhos/cm		14-AUG-20	R5189987
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	2600	PEHT	10	MPN/100mL		13-AUG-20	R5188259
Hardness Calculated							
Hardness (as CaCO3)	70.7	HTC	1.3	mg/L		20-AUG-20	
Mercury Total							
Mercury (Hg)-Total	<0.000050	DLM	0.000050	mg/L	19-AUG-20	19-AUG-20	R5191880
Nitrate in Water by IC							
Nitrate (as N)	0.027		0.020	mg/L		14-AUG-20	R5191585
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		26-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		14-AUG-20	R5191585
Oil & Grease - Gravimetric							
Oil and Grease	5.2		5.0	mg/L		20-AUG-20	R5192756
Phenol (4AAP)							
Phenols (4AAP)	<0.0050	DLM	0.0050	mg/L		17-AUG-20	R5190796
Phosphorus, Total							
Phosphorus (P)-Total	6.30		0.060	mg/L		17-AUG-20	R5190801
Sulfate in Water by IC							
Sulfate (SO4)	4.42		0.30	mg/L		14-AUG-20	R5191585
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.503		0.030	mg/L	18-AUG-20	19-AUG-20	R5192665
Arsenic (As)-Total	0.0021		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Cadmium (Cd)-Total	0.000116		0.000050	mg/L	18-AUG-20	19-AUG-20	R5192665
Calcium (Ca)-Total	19.1		0.50	mg/L	18-AUG-20	19-AUG-20	R5192665
Chromium (Cr)-Total	0.0014		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Cobalt (Co)-Total	<0.0010		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Copper (Cu)-Total	0.0394		0.0050	mg/L	18-AUG-20	19-AUG-20	R5192665
Iron (Fe)-Total	4.39		0.10	mg/L	18-AUG-20	19-AUG-20	R5192665
Lead (Pb)-Total	0.00326		0.00050	mg/L	18-AUG-20	19-AUG-20	R5192665
Magnesium (Mg)-Total	5.57		0.050	mg/L	18-AUG-20	19-AUG-20	R5192665
Manganese (Mn)-Total	0.139		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Nickel (Ni)-Total	0.0051		0.0050	mg/L	18-AUG-20	19-AUG-20	R5192665
Potassium (K)-Total	16.3		0.50	mg/L	18-AUG-20	19-AUG-20	R5192665
Sodium (Na)-Total	53.3		0.50	mg/L	18-AUG-20	19-AUG-20	R5192665
Zinc (Zn)-Total	0.083		0.030	mg/L	18-AUG-20	19-AUG-20	R5192665
Total Organic Carbon by Combustion							
Total Organic Carbon	86.3		5.0	mg/L		19-AUG-20	R5192218
Total Suspended Solids							
Total Suspended Solids	145		5.0	mg/L		14-AUG-20	R5190791
pH							
pH	7.26		0.10	pH units		14-AUG-20	R5189987
L2488324-3 CHE-4 (LABELLED CH-3)							
Sampled By: CLIENT on 11-AUG-20 @ 14:00							
Matrix: WASTE WATER							

* 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
L2488324-3 CHE-4 (LABELLED CH-3)							
Sampled By: CLIENT on 11-AUG-20 @ 14:00							
Matrix: WASTE WATER							
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	1460	PEHT	10	MPN/100mL		13-AUG-20	R5188238
Escherichia Coli	<10	PEHT	10	MPN/100mL		13-AUG-20	R5188238
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	113		1.2	mg/L		17-AUG-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		17-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		17-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	92.8		1.0	mg/L		14-AUG-20	R5189987
Ammonia by colour							
Ammonia, Total (as N)	<0.20		0.20	mg/L		19-AUG-20	R5192476
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	31.4		6.0	mg/L		14-AUG-20	R5192227
Carbonaceous BOD							
BOD Carbonaceous	23.7		6.0	mg/L		14-AUG-20	R5192227
Chloride in Water by IC							
Chloride (Cl)	50.9		0.50	mg/L		14-AUG-20	R5191585
Conductivity							
Conductivity	352		1.0	umhos/cm		14-AUG-20	R5189987
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	<10	PEHT	10	MPN/100mL		13-AUG-20	R5188259
Hardness Calculated							
Hardness (as CaCO3)	<1.3	HTC	1.3	mg/L		20-AUG-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	19-AUG-20	19-AUG-20	R5191880
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		14-AUG-20	R5191585
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		26-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		14-AUG-20	R5191585
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		20-AUG-20	R5192756
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		17-AUG-20	R5190796
Phosphorus, Total							
Phosphorus (P)-Total	0.735		0.060	mg/L		17-AUG-20	R5190801
Sulfate in Water by IC							
Sulfate (SO4)	15.5		0.30	mg/L		14-AUG-20	R5191585
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.030		0.030	mg/L	18-AUG-20	19-AUG-20	R5192665
Arsenic (As)-Total	<0.0010		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Cadmium (Cd)-Total	<0.000050		0.000050	mg/L	18-AUG-20	19-AUG-20	R5192665
Calcium (Ca)-Total	<0.50		0.50	mg/L	18-AUG-20	19-AUG-20	R5192665
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Cobalt (Co)-Total	<0.0010		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Copper (Cu)-Total	<0.0050		0.0050	mg/L	18-AUG-20	19-AUG-20	R5192665
Iron (Fe)-Total	<0.10		0.10	mg/L	18-AUG-20	19-AUG-20	R5192665
Lead (Pb)-Total	<0.00050		0.00050	mg/L	18-AUG-20	19-AUG-20	R5192665

* 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
L2488324-3 CHE-4 (LABELLED CH-3)							
Sampled By: CLIENT on 11-AUG-20 @ 14:00							
Matrix: WASTE WATER							
Total Metals in Water by CRC ICPMS							
Magnesium (Mg)-Total	<0.050		0.050	mg/L	18-AUG-20	19-AUG-20	R5192665
Manganese (Mn)-Total	<0.0010		0.0010	mg/L	18-AUG-20	19-AUG-20	R5192665
Nickel (Ni)-Total	<0.0050		0.0050	mg/L	18-AUG-20	19-AUG-20	R5192665
Potassium (K)-Total	5.03		0.50	mg/L	18-AUG-20	19-AUG-20	R5192665
Sodium (Na)-Total	2.60		0.50	mg/L	18-AUG-20	19-AUG-20	R5192665
Zinc (Zn)-Total	0.039		0.030	mg/L	18-AUG-20	19-AUG-20	R5192665
Total Organic Carbon by Combustion							
Total Organic Carbon	34.9		5.0	mg/L		19-AUG-20	R5192218
Total Suspended Solids							
Total Suspended Solids	668		15	mg/L		14-AUG-20	R5190791
pH							
pH	7.16		0.10	pH units		14-AUG-20	R5189987

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
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.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis
RRR	Refer to Report Remarks for issues regarding this analysis

Test Method References:

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

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

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

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

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

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

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

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

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

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

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

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

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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

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

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

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

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 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.

PH-WP	Water	pH	APHA 4500H

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

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

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

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

Reference Information

Test Method References:

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

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

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

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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

Quality Control Report

Client: Hamlet of Chesterfield Inlet
PO Box 10
Chesterfield Inlet NU X0C 0B0
Contact: DON TANUYAK / ROY MULLINS (Waste)

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5189987								
WG3384716-4 LCS								
Alkalinity, Total (as CaCO3)			90.8		%		85-115	14-AUG-20
WG3384716-1 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-AUG-20
BOD-CBOD-WP	**Water**							
Batch R5192227								
WG3383674-2 LCS								
BOD Carbonaceous			101.2		%		85-115	14-AUG-20
WG3383674-1 MB								
BOD Carbonaceous			<2.0		mg/L		2	14-AUG-20
BOD-WP	**Water**							
Batch R5192227								
WG3383674-2 LCS								
Biochemical Oxygen Demand			106.6		%		85-115	14-AUG-20
WG3383674-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	14-AUG-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5199076								
WG3387686-2 LCS								
Benzene			98.8		%		70-130	20-AUG-20
Toluene			96.6		%		70-130	20-AUG-20
Ethyl benzene			99.3		%		70-130	20-AUG-20
o-Xylene			107.5		%		70-130	20-AUG-20
m+p-Xylenes			102.2		%		70-130	20-AUG-20
WG3387686-3 LCS								
F1 (C6-C10)			102.7		%		70-130	20-AUG-20
WG3387686-1 MB								
Benzene			<0.00050		mg/L		0.0005	21-AUG-20
Toluene			<0.0010		mg/L		0.001	21-AUG-20
Ethyl benzene			<0.00050		mg/L		0.0005	21-AUG-20
o-Xylene			<0.00050		mg/L		0.0005	21-AUG-20
m+p-Xylenes			<0.00040		mg/L		0.0004	21-AUG-20
F1 (C6-C10)			<0.10		mg/L		0.1	21-AUG-20
Surrogate: 4-Bromofluorobenzene (SS)			93.1		%		70-130	21-AUG-20
C-TOC-HTC-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TOC-HTC-WP	**Water**							
Batch R5192218								
WG3387476-2 LCS								
Total Organic Carbon			104.2		%		80-120	19-AUG-20
WG3387476-6 LCS								
Total Organic Carbon			105.2		%		80-120	19-AUG-20
WG3387476-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	19-AUG-20
WG3387476-5 MB								
Total Organic Carbon			<0.50		mg/L		0.5	19-AUG-20
CL-IC-N-WP	**Water**							
Batch R5191585								
WG3383706-2 LCS								
Chloride (Cl)			99.5		%		90-110	14-AUG-20
WG3383706-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	14-AUG-20
EC-WP	**Water**							
Batch R5189987								
WG3384716-3 LCS								
Conductivity			97.4		%		90-110	14-AUG-20
WG3384716-1 MB								
Conductivity			<1.0		umhos/cm		1	14-AUG-20
F2-F4-FID-WP	**Water**							
Batch R5192163								
WG3386820-2 LCS								
F2 (C10-C16)			100.2		%		70-130	19-AUG-20
F3 (C16-C34)			99.0		%		70-130	19-AUG-20
F4 (C34-C50)			105.1		%		70-130	19-AUG-20
WG3386820-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	19-AUG-20
F3 (C16-C34)			<0.25		mg/L		0.25	19-AUG-20
F4 (C34-C50)			<0.25		mg/L		0.25	19-AUG-20
Surrogate: 2-Bromobenzotrifluoride			92.2		%		60-140	19-AUG-20
FC10-QT97-WP	**Water**							
Batch R5188259								
WG3382974-3 DUP		**L2488324-2**						
Fecal Coliforms		2600	1610		MPN/100mL	47	65	13-AUG-20
WG3382974-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	13-AUG-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	**Water**							
Batch R5188259								
WG3382974-2 MB								
Fecal Coliforms			<1		MPN/100mL		1	13-AUG-20
HG-T-CVAA-WP	**Water**							
Batch R5191880								
WG3386900-2 LCS								
Mercury (Hg)-Total			100.0		%		80-120	19-AUG-20
WG3386900-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	19-AUG-20
MET-T-CCMS-WP	**Water**							
Batch R5192665								
WG3385699-2 LCS								
Aluminum (Al)-Total			91.7		%		80-120	19-AUG-20
Arsenic (As)-Total			102.5		%		80-120	19-AUG-20
Cadmium (Cd)-Total			95.2		%		80-120	19-AUG-20
Calcium (Ca)-Total			93.0		%		80-120	19-AUG-20
Chromium (Cr)-Total			93.8		%		80-120	19-AUG-20
Cobalt (Co)-Total			95.1		%		80-120	19-AUG-20
Copper (Cu)-Total			98.4		%		80-120	19-AUG-20
Iron (Fe)-Total			93.5		%		80-120	19-AUG-20
Lead (Pb)-Total			97.1		%		80-120	19-AUG-20
Magnesium (Mg)-Total			103.3		%		80-120	19-AUG-20
Manganese (Mn)-Total			94.0		%		80-120	19-AUG-20
Nickel (Ni)-Total			95.2		%		80-120	19-AUG-20
Potassium (K)-Total			98.2		%		80-120	19-AUG-20
Sodium (Na)-Total			99.7		%		80-120	19-AUG-20
Zinc (Zn)-Total			99.5		%		80-120	19-AUG-20
WG3385699-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	19-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	19-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	19-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-AUG-20
Iron (Fe)-Total			<0.010		mg/L		0.01	19-AUG-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5192665								
WG3385699-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	19-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	19-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	19-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	19-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	19-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-AUG-20
NH3-COL-WP	**Water**							
Batch R5192476								
WG3387464-6 LCS								
Ammonia, Total (as N)			97.9		%		85-115	19-AUG-20
WG3387464-5 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	19-AUG-20
NO2-IC-N-WP	**Water**							
Batch R5191585								
WG3383706-2 LCS								
Nitrite (as N)			103.8		%		90-110	14-AUG-20
WG3383706-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	14-AUG-20
NO3-IC-N-WP	**Water**							
Batch R5191585								
WG3383706-2 LCS								
Nitrate (as N)			99.9		%		90-110	14-AUG-20
WG3383706-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	14-AUG-20
OG-GRAV-WP	**Water**							
Batch R5192756								
WG3386395-2 LCS								
Oil and Grease			96.0		%		70-130	20-AUG-20
WG3386395-1 MB								
Oil and Grease			<5.0		mg/L		5	20-AUG-20
P-T-COL-WP	**Water**							
Batch R5190801								
WG3383995-6 LCS								
Phosphorus (P)-Total			95.7		%		80-120	17-AUG-20
WG3383995-5 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WP	**Water**							
Batch R5190801								
WG3383995-5 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	17-AUG-20
PH-WP	**Water**							
Batch R5189987								
WG3384716-2 LCS								
pH			7.37		pH units		7.3-7.5	14-AUG-20
PHENOLS-4AAP-WT	**Water**							
Batch R5190796								
WG3384310-2 LCS								
Phenols (4AAP)			104.1		%		85-115	17-AUG-20
WG3384310-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	17-AUG-20
SO4-IC-N-WP	**Water**							
Batch R5191585								
WG3383706-2 LCS								
Sulfate (SO4)			100.6		%		90-110	14-AUG-20
WG3383706-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	14-AUG-20
SOLIDS-TOTSUS-WP	**Water**							
Batch R5190791								
WG3383401-5 LCS								
Total Suspended Solids			86.0		%		85-115	14-AUG-20
WG3383401-4 MB								
Total Suspended Solids			<3.0		mg/L		3	14-AUG-20
TC,EC10-QT97-WP	**Water**							
Batch R5188238								
WG3382981-1 MB								
Total Coliforms			<1		MPN/100mL		1	13-AUG-20
Escherichia Coli			<1		MPN/100mL		1	13-AUG-20

Quality Control Report

Legend:

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

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	11-AUG-20 13:40	14-AUG-20 12:00	0.25	70	hours	EHTR-FM
	2	11-AUG-20 13:50	14-AUG-20 12:00	0.25	70	hours	EHTR-FM
	3	11-AUG-20 14:00	14-AUG-20 12:00	0.25	70	hours	EHTR-FM
Bacteriological Tests							
Fecal coliforms, 1:10 dilution by QT97							
	1	11-AUG-20 13:40	13-AUG-20 16:40	30	51	hours	EHTR
	2	11-AUG-20 13:50	13-AUG-20 16:40	30	51	hours	EHTR
	3	11-AUG-20 14:00	13-AUG-20 16:40	30	51	hours	EHTR
Total and E. coli, 1:10 dilution by QT97							
	1	11-AUG-20 13:40	13-AUG-20 16:40	30	51	hours	EHTR
	2	11-AUG-20 13:50	13-AUG-20 16:40	30	51	hours	EHTR
	3	11-AUG-20 14:00	13-AUG-20 16:40	30	51	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Demand (BOD)							
	1	11-AUG-20 13:40	14-AUG-20 07:00	48	65	hours	EHTL
	2	11-AUG-20 13:50	14-AUG-20 07:00	48	65	hours	EHTL
	3	11-AUG-20 14:00	14-AUG-20 07:00	48	65	hours	EHTL
Carbonaceous BOD							
	1	11-AUG-20 13:40	14-AUG-20 07:00	48	65	hours	EHTL
	2	11-AUG-20 13:50	14-AUG-20 07:00	48	65	hours	EHTL
	3	11-AUG-20 14:00	14-AUG-20 07:00	48	65	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 L2488324 were received on 13-AUG-20 12:30.

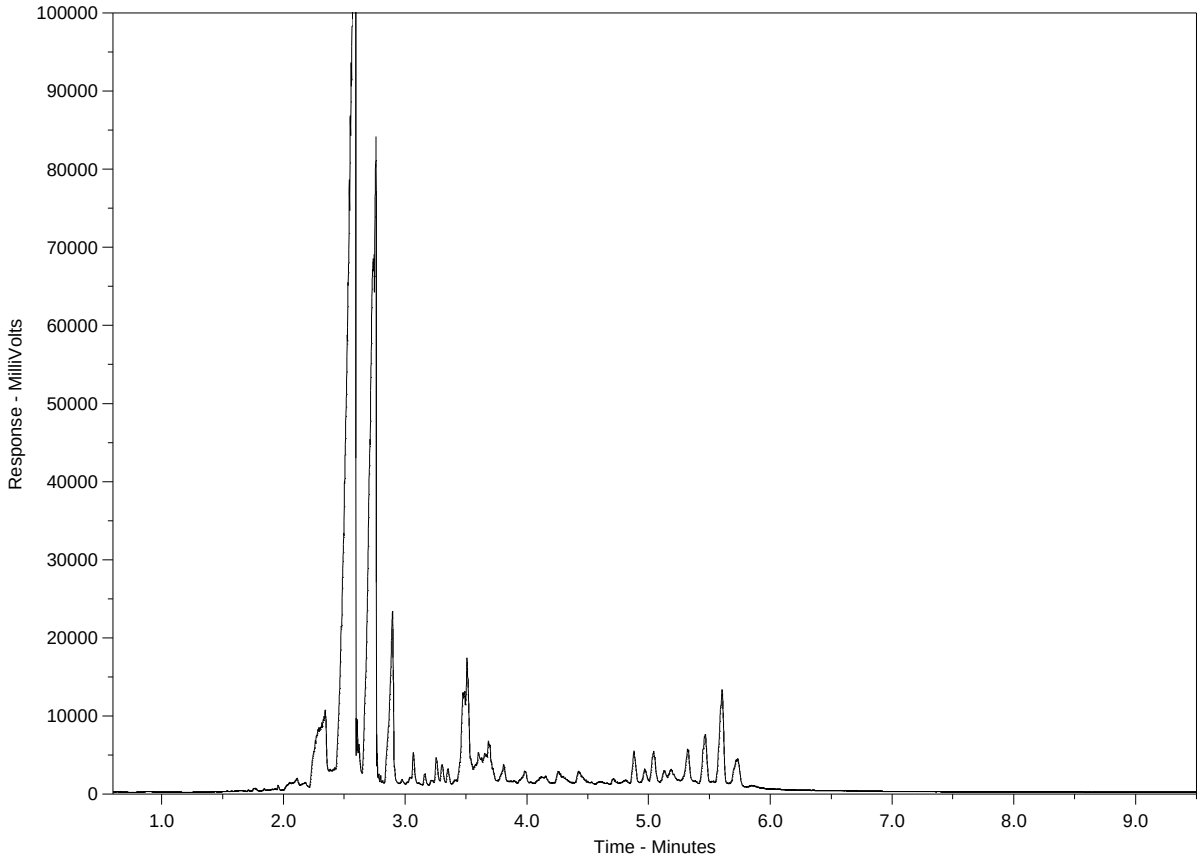
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

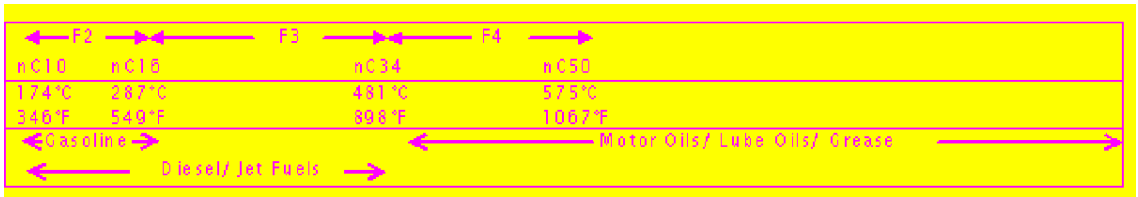
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L2488324-1
Client Sample ID: CHE-2 (LABELLED CH-1)





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

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

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

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

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2488324-COFC

COC Number: 17 - 747869

Page of

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 Chesterfield Inlet	Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☐ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Box 149	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	867-898-9902	☐ 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:		Email 1 or Fax chester_firemen@qiniq.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Chesterfield Inlet	Email 2	
Postal Code:	X0C-0B0 N.U.	Email 3	
Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Distribution	
	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 #:		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: Matt Arnayuk

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	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
CHC-1		08-11-20	1:40				
CHC-2		08-11-20	1:50				
CHC-3		08-11-20	2:00				

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	1 - 1 vial, 1 F2-4 3 - 1 vial 2x PAH
Are samples for human consumption/ use? ☐ YES ☐ NO	2 - 5°C IC

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
15.3							

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: CE	Date: Aug 12, 2020	Time: 12:30 pm

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 Chesterfield Inlet
ATTN: DON TANUYAK / ROY MULLINS
(Waste)
PO Box 10
Chesterfield Inlet NU X0C 0B0

Date Received: 20-AUG-20
Report Date: 31-AUG-20 13:40 (MT)
Version: FINAL

Client Phone: 867-898-9926

Certificate of Analysis

Lab Work Order #: L2491688

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF CHESTERFIELD INLET - 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
L2491688-1 CHE-2							
Sampled By: CLIENT on 18-AUG-20 @ 08:30							
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)	87.2		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)	2.41		0.25	mg/L	25-AUG-20	25-AUG-20	R5200578
F4 (C34-C50)	0.78		0.25	mg/L	25-AUG-20	25-AUG-20	R5200578
Surrogate: 2-Bromobenzotrifluoride	114.0		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	2.41		0.25	mg/L		31-AUG-20	
Total Hydrocarbons (C6-C50)	3.19		0.38	mg/L		31-AUG-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		27-AUG-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	>24200	PEHR	10	MPN/100mL		20-AUG-20	R5195673
Escherichia Coli	24200	PEHR	10	MPN/100mL		20-AUG-20	R5195673
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.00010	DLM	0.00010	mg/L	24-AUG-20	31-AUG-20	R5205237
2-Methyl Naphthalene	<0.00010	DLM	0.00010	mg/L	24-AUG-20	31-AUG-20	R5205237
Acenaphthene	<0.00010	DLM	0.00010	mg/L	24-AUG-20	31-AUG-20	R5205237
Acenaphthylene	<0.00010	DLM	0.00010	mg/L	24-AUG-20	31-AUG-20	R5205237
Anthracene	<0.000050	DLM	0.000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Acridine	<0.00010	DLM	0.00010	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(a)anthracene	<0.000050	DLM	0.000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(a)pyrene	<0.000025	DLM	0.000025	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(b&j)fluoranthene	<0.000050	DLM	0.000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(g,h,i)perylene	<0.00010	DLM	0.00010	mg/L	24-AUG-20	31-AUG-20	R5205237
Benzo(k)fluoranthene	<0.000050	DLM	0.000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Chrysene	<0.00010	DLM	0.00010	mg/L	24-AUG-20	31-AUG-20	R5205237
Dibenzo(a,h)anthracene	<0.000025	DLM	0.000025	mg/L	24-AUG-20	31-AUG-20	R5205237
Fluoranthene	<0.00010	DLM	0.00010	mg/L	24-AUG-20	31-AUG-20	R5205237
Fluorene	<0.00010	DLM	0.00010	mg/L	24-AUG-20	31-AUG-20	R5205237
Indeno(1,2,3-cd)pyrene	<0.000050	DLM	0.000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Naphthalene	<0.00025	DLM	0.00025	mg/L	24-AUG-20	31-AUG-20	R5205237
Phenanthrene	<0.00025	DLM	0.00025	mg/L	24-AUG-20	31-AUG-20	R5205237
Pyrene	<0.000050	DLM	0.000050	mg/L	24-AUG-20	31-AUG-20	R5205237
Quinoline	<0.000450	DLM	0.00045	mg/L	24-AUG-20	31-AUG-20	R5205237
B(a)P Total Potency Equivalent	<0.000036		0.000036	mg/L	24-AUG-20	31-AUG-20	R5205237
Surrogate: d8-Naphthalene	95.8		50-150	%	24-AUG-20	31-AUG-20	R5205237
Surrogate: d10-Phenanthrene	82.0		50-150	%	24-AUG-20	31-AUG-20	R5205237
Surrogate: d12-Chrysene	74.3		50-150	%	24-AUG-20	31-AUG-20	R5205237
Surrogate: d10-Acenaphthene	93.2		50-150	%	24-AUG-20	31-AUG-20	R5205237
Surrogate: d9-Acridine (SS)	68.2		50-150	%	24-AUG-20	31-AUG-20	R5205237
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
L2491688-1 CHE-2							
Sampled By: CLIENT on 18-AUG-20 @ 08:30							
Matrix: WW							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	177		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)	145		1.0	mg/L		21-AUG-20	R5199696
Ammonia by colour							
Ammonia, Total (as N)	17.1		5.0	mg/L		25-AUG-20	R5199983
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	72		20	mg/L		21-AUG-20	R5202551
Carbonaceous BOD							
BOD Carbonaceous	>45		20	mg/L		21-AUG-20	R5202551
Chloride in Water by IC							
Chloride (Cl)	69.9		0.50	mg/L		20-AUG-20	R5198624
Conductivity							
Conductivity	512		1.0	umhos/cm		21-AUG-20	R5199696
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	24200	PEHR	10	MPN/100mL		20-AUG-20	R5195700
Hardness Calculated							
Hardness (as CaCO3)	89.8	HTC	0.20	mg/L		25-AUG-20	
Mercury Total							
Mercury (Hg)-Total	0.0000600		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199326
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		20-AUG-20	R5198624
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		25-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		20-AUG-20	R5198624
Oil & Grease - Gravimetric							
Oil and Grease	92.0		5.0	mg/L		27-AUG-20	R5202765
Phenol (4AAP)							
Phenols (4AAP)	<0.0050	DLM	0.0050	mg/L		24-AUG-20	R5199725
Phosphorus, Total							
Phosphorus (P)-Total	7.61		0.030	mg/L		24-AUG-20	R5198660
Sulfate in Water by IC							
Sulfate (SO4)	5.50		0.30	mg/L		20-AUG-20	R5198624
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.747		0.0030	mg/L	24-AUG-20	24-AUG-20	R5199832
Arsenic (As)-Total	0.00285		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Cadmium (Cd)-Total	0.000221		0.0000050	mg/L	24-AUG-20	24-AUG-20	R5199832
Calcium (Ca)-Total	24.5		0.050	mg/L	24-AUG-20	24-AUG-20	R5199832
Chromium (Cr)-Total	0.00206		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Cobalt (Co)-Total	0.00113		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Copper (Cu)-Total	0.0532		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199832
Iron (Fe)-Total	6.35		0.010	mg/L	24-AUG-20	24-AUG-20	R5199832
Lead (Pb)-Total	0.00457		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199832
Magnesium (Mg)-Total	6.94		0.0050	mg/L	24-AUG-20	24-AUG-20	R5199832
Manganese (Mn)-Total	0.200		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Nickel (Ni)-Total	0.00576		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199832
Potassium (K)-Total	15.1		0.050	mg/L	24-AUG-20	24-AUG-20	R5199832
Sodium (Na)-Total	56.0		0.050	mg/L	24-AUG-20	24-AUG-20	R5199832

* 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
L2491688-1 CHE-2							
Sampled By: CLIENT on 18-AUG-20 @ 08:30							
Matrix: WW							
Total Metals in Water by CRC ICPMS							
Zinc (Zn)-Total	0.111		0.0030	mg/L	24-AUG-20	24-AUG-20	R5199832
Total Organic Carbon by Combustion							
Total Organic Carbon	7.72		0.50	mg/L		21-AUG-20	R5199232
Total Suspended Solids							
Total Suspended Solids	148		3.0	mg/L		21-AUG-20	R5199210
pH							
pH	7.54		0.10	pH units		21-AUG-20	R5199696
L2491688-2 CHE-3A							
Sampled By: CLIENT on 18-AUG-20 @ 08:40							
Matrix: WW							
Miscellaneous Parameters							
Fecal Coliforms	1270000	PEHR	1	MPN/100mL		20-AUG-20	R5195359
Total and E. coli to endpoint by QT97							
Total Coliforms	250000000	PEHR	1	MPN/100mL		20-AUG-20	R5195417
Escherichia Coli	2000000	PEHR	1	MPN/100mL		20-AUG-20	R5195417
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	379		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)	311		1.0	mg/L		21-AUG-20	R5199696
Ammonia by colour							
Ammonia, Total (as N)	64.9		2.0	mg/L		26-AUG-20	R5199983
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	292		50	mg/L		21-AUG-20	R5202551
Carbonaceous BOD							
BOD Carbonaceous	243		50	mg/L		21-AUG-20	R5202551
Chloride in Water by IC							
Chloride (Cl)	67.2		1.0	mg/L		20-AUG-20	R5198624
Conductivity							
Conductivity	857		1.0	umhos/cm		21-AUG-20	R5199696
Hardness Calculated							
Hardness (as CaCO3)	74.7	HTC	0.20	mg/L		25-AUG-20	
Mercury Total							
Mercury (Hg)-Total	0.0000520		0.0000050	mg/L	24-AUG-20	24-AUG-20	R5199326
Nitrate in Water by IC							
Nitrate (as N)	<0.040	DLM	0.040	mg/L		20-AUG-20	R5198624
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		25-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.020	DLM	0.020	mg/L		20-AUG-20	R5198624
Oil & Grease - Gravimetric							
Oil and Grease	7.0		5.0	mg/L		27-AUG-20	R5202765
Phenol (4AAP)							
Phenols (4AAP)	0.119	DLHC	0.0050	mg/L		24-AUG-20	R5199725
Phosphorus, Total							
Phosphorus (P)-Total	8.69		0.030	mg/L		24-AUG-20	R5198660
Sulfate in Water by IC							
Sulfate (SO4)	4.74		0.60	mg/L		20-AUG-20	R5198624

* 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
L2491688-2 CHE-3A							
Sampled By: CLIENT on 18-AUG-20 @ 08:40							
Matrix: WW							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	1.13		0.0030	mg/L	24-AUG-20	24-AUG-20	R5199832
Arsenic (As)-Total	0.00205		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Cadmium (Cd)-Total	0.000283		0.0000050	mg/L	24-AUG-20	24-AUG-20	R5199832
Calcium (Ca)-Total	19.9		0.050	mg/L	24-AUG-20	24-AUG-20	R5199832
Chromium (Cr)-Total	0.00477		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Cobalt (Co)-Total	0.00101		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Copper (Cu)-Total	0.191		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199832
Iron (Fe)-Total	6.39		0.010	mg/L	24-AUG-20	24-AUG-20	R5199832
Lead (Pb)-Total	0.00515		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199832
Magnesium (Mg)-Total	6.10		0.0050	mg/L	24-AUG-20	24-AUG-20	R5199832
Manganese (Mn)-Total	0.0697		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Nickel (Ni)-Total	0.00531		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199832
Potassium (K)-Total	23.1		0.050	mg/L	24-AUG-20	24-AUG-20	R5199832
Sodium (Na)-Total	54.1		0.050	mg/L	24-AUG-20	24-AUG-20	R5199832
Zinc (Zn)-Total	0.368		0.0030	mg/L	24-AUG-20	24-AUG-20	R5199832
Total Organic Carbon by Combustion							
Total Organic Carbon	14.7		0.50	mg/L		21-AUG-20	R5199232
Total Suspended Solids							
Total Suspended Solids	83.8		5.0	mg/L		21-AUG-20	R5199210
pH							
pH	7.93		0.10	pH units		21-AUG-20	R5199696
L2491688-3 CHE-4							
Sampled By: CLIENT on 18-AUG-20 @ 08:50							
Matrix: WW							
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	2360	PEHR	10	MPN/100mL		20-AUG-20	R5195673
Escherichia Coli	<10	PEHR	10	MPN/100mL		20-AUG-20	R5195673
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	119		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)	97.7		1.0	mg/L		21-AUG-20	R5199696
Ammonia by colour							
Ammonia, Total (as N)	0.078		0.010	mg/L		26-AUG-20	R5199983
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<6		6.0	mg/L		21-AUG-20	R5202551
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		21-AUG-20	R5202551
Chloride in Water by IC							
Chloride (Cl)	76.8		0.50	mg/L		20-AUG-20	R5198624
Conductivity							
Conductivity	468		1.0	umhos/cm		21-AUG-20	R5199696
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	10	PEHR	10	MPN/100mL		20-AUG-20	R5195700
Hardness Calculated							
Hardness (as CaCO3)	129	HTC	0.20	mg/L		25-AUG-20	
Mercury Total							

* 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
L2491688-3 CHE-4							
Sampled By: CLIENT on 18-AUG-20 @ 08:50							
Matrix: WW							
Mercury Total							
Mercury (Hg)-Total	0.0000070		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		20-AUG-20	R5198624
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		25-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		20-AUG-20	R5198624
Oil & Grease - Gravimetric							
Oil and Grease	28.2		5.0	mg/L		28-AUG-20	R5203246
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		24-AUG-20	R5199725
Phosphorus, Total							
Phosphorus (P)-Total	0.0359		0.0030	mg/L		24-AUG-20	R5198660
Sulfate in Water by IC							
Sulfate (SO4)	26.0		0.30	mg/L		20-AUG-20	R5198624
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.104		0.0030	mg/L	24-AUG-20	24-AUG-20	R5199832
Arsenic (As)-Total	0.00170		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Cadmium (Cd)-Total	0.0000349		0.0000050	mg/L	24-AUG-20	24-AUG-20	R5199832
Calcium (Ca)-Total	36.4		0.050	mg/L	24-AUG-20	24-AUG-20	R5199832
Chromium (Cr)-Total	0.00067		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Cobalt (Co)-Total	0.00047		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Copper (Cu)-Total	0.00428		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199832
Iron (Fe)-Total	1.61		0.010	mg/L	24-AUG-20	24-AUG-20	R5199832
Lead (Pb)-Total	0.000870		0.000050	mg/L	24-AUG-20	24-AUG-20	R5199832
Magnesium (Mg)-Total	9.32		0.0050	mg/L	24-AUG-20	24-AUG-20	R5199832
Manganese (Mn)-Total	0.00817		0.00010	mg/L	24-AUG-20	24-AUG-20	R5199832
Nickel (Ni)-Total	0.00265		0.00050	mg/L	24-AUG-20	24-AUG-20	R5199832
Potassium (K)-Total	4.58		0.050	mg/L	24-AUG-20	24-AUG-20	R5199832
Sodium (Na)-Total	50.9		0.050	mg/L	24-AUG-20	24-AUG-20	R5199832
Zinc (Zn)-Total	0.0217		0.0030	mg/L	24-AUG-20	24-AUG-20	R5199832
Total Organic Carbon by Combustion							
Total Organic Carbon	1.26		0.50	mg/L		21-AUG-20	R5199232
Total Suspended Solids							
Total Suspended Solids	58.1		3.0	mg/L		21-AUG-20	R5199210
pH							
pH	7.96		0.10	pH units		21-AUG-20	R5199696

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

Reference Information

Sample Parameter Qualifier Key:

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

Test Method References:

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

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

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

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

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

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

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

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

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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

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

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

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

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

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

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

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

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

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Reference Information

Test Method References:

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

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

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

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

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

Quality Control Report

Workorder: L2491688 Report Date: 31-AUG-20

Client: Hamlet of Chesterfield Inlet
PO Box 10
Chesterfield Inlet NU X0C 0B0
Contact: DON TANUYAK / ROY MULLINS (Waste)

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5199696								
WG3390538-49 LCS								
Alkalinity, Total (as CaCO3)			107.2		%		85-115	21-AUG-20
WG3390538-46 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	21-AUG-20
BOD-CBOD-WP	**Water**							
Batch R5202551								
WG3388229-2 LCS								
BOD Carbonaceous			105.0		%		85-115	21-AUG-20
WG3388229-1 MB								
BOD Carbonaceous			<2.0		mg/L		2	21-AUG-20
BOD-WP	**Water**							
Batch R5202551								
WG3388229-2 LCS								
Biochemical Oxygen Demand			109.1		%		85-115	21-AUG-20
WG3388229-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	21-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
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**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
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 R5198624								
WG3387980-2 LCS								
Chloride (Cl)			100.1		%		90-110	20-AUG-20
WG3387980-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	20-AUG-20
EC-WP	**Water**							
Batch R5199696								
WG3390538-48 LCS								
Conductivity			100.1		%		90-110	21-AUG-20
WG3390538-46 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
FC-QT97-ENDPT-WP	**Water**							
Batch R5195359								
WG3387956-2 DUP		**L2491688-2**						
Fecal Coliforms		1270000	860000		MPN/100mL	39	65	20-AUG-20
WG3387956-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	20-AUG-20
FC10-QT97-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	**Water**							
Batch R5195700								
WG3387950-3 DUP		**L2491688-1**						
Fecal Coliforms		24200	24200		MPN/100mL	0.0	65	20-AUG-20
WG3387950-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	20-AUG-20
HG-T-CVAA-WP	**Water**							
Batch R5199326								
WG3390012-2 LCS								
Mercury (Hg)-Total			101.0		%		80-120	24-AUG-20
WG3390012-1 MB								
Mercury (Hg)-Total			<0.000005		mg/L		0.000005	24-AUG-20
MET-T-CCMS-WP	**Water**							
Batch R5199832								
WG3389097-2 LCS								
Aluminum (Al)-Total			96.9		%		80-120	24-AUG-20
Arsenic (As)-Total			100.3		%		80-120	24-AUG-20
Cadmium (Cd)-Total			98.7		%		80-120	24-AUG-20
Calcium (Ca)-Total			98.3		%		80-120	24-AUG-20
Chromium (Cr)-Total			98.3		%		80-120	24-AUG-20
Cobalt (Co)-Total			98.2		%		80-120	24-AUG-20
Copper (Cu)-Total			99.1		%		80-120	24-AUG-20
Iron (Fe)-Total			98.3		%		80-120	24-AUG-20
Lead (Pb)-Total			95.6		%		80-120	24-AUG-20
Magnesium (Mg)-Total			98.2		%		80-120	24-AUG-20
Manganese (Mn)-Total			99.4		%		80-120	24-AUG-20
Nickel (Ni)-Total			97.0		%		80-120	24-AUG-20
Potassium (K)-Total			97.1		%		80-120	24-AUG-20
Sodium (Na)-Total			100.2		%		80-120	24-AUG-20
Zinc (Zn)-Total			100.7		%		80-120	24-AUG-20
WG3389097-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	24-AUG-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Cadmium (Cd)-Total			<0.000005		mg/L		0.000005	24-AUG-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-AUG-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-AUG-20

Quality Control Report

Workorder: L2491688 Report Date: 31-AUG-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5199832								
WG3389097-1 MB								
Iron (Fe)-Total			<0.010		mg/L		0.01	24-AUG-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-AUG-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-AUG-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	24-AUG-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-AUG-20
Potassium (K)-Total			<0.050		mg/L		0.05	24-AUG-20
Sodium (Na)-Total			<0.050		mg/L		0.05	24-AUG-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-AUG-20
NH3-COL-WP	**Water**							
Batch R5199983								
WG3390912-10 LCS								
Ammonia, Total (as N)			100.9		%		85-115	25-AUG-20
WG3390912-14 LCS								
Ammonia, Total (as N)			100.6		%		85-115	25-AUG-20
WG3390912-13 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	25-AUG-20
WG3390912-9 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	25-AUG-20
NO2-IC-N-WP	**Water**							
Batch R5198624								
WG3387980-2 LCS								
Nitrite (as N)			99.0		%		90-110	20-AUG-20
WG3387980-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	20-AUG-20
NO3-IC-N-WP	**Water**							
Batch R5198624								
WG3387980-2 LCS								
Nitrate (as N)			100.8		%		90-110	20-AUG-20
WG3387980-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	20-AUG-20
OG-GRAV-WP	**Water**							
Batch R5202765								
WG3391558-2 LCS								
Oil and Grease			100.7		%		70-130	27-AUG-20
WG3391558-1 MB								
Oil and Grease			<5.0		mg/L		5	27-AUG-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OG-GRAV-WP	**Water**							
Batch R5203246								
WG3391569-2 LCS								
Oil and Grease			90.8		%		70-130	28-AUG-20
WG3391569-1 MB								
Oil and Grease			<5.0		mg/L		5	28-AUG-20
P-T-COL-WP	**Water**							
Batch R5198660								
WG3388561-10 LCS								
Phosphorus (P)-Total			95.1		%		80-120	24-AUG-20
WG3388561-9 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	24-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

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-CCME-PPM-WT	**Water**							
Batch R5205237								
WG3389897-1 MB								
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			<0.000005		mg/L		0.000005	31-AUG-20
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			<0.000005		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 R5199696								
WG3390538-47 LCS								
pH			7.37		pH units		7.3-7.5	21-AUG-20
PHENOLS-4AAP-WT	**Water**							
Batch R5199725								
WG3389611-2 LCS								
Phenols (4AAP)			98.3		%		85-115	24-AUG-20
WG3389611-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	24-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 R5198624								
WG3387980-2 LCS								
Sulfate (SO4)			101.1		%		90-110	20-AUG-20
WG3387980-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	20-AUG-20
SOLIDS-TOTSUS-WP	**Water**							
Batch R5199210								
WG3387921-5 LCS								
Total Suspended Solids			90.4		%		85-115	21-AUG-20
WG3387921-4 MB								
Total Suspended Solids			<3.0		mg/L		3	21-AUG-20
TC,EC-QT97-ENDPT-WP	**Water**							
Batch R5195417								
WG3387958-2 DUP		**L2491688-2**						
Total Coliforms		250000000	179000000		MPN/100mL	33	65	20-AUG-20
Escherichia Coli		2000000	1000000	DUPM	MPN/100mL	67	65	20-AUG-20
WG3387958-1 MB								
Total Coliforms			<1		MPN/100mL		1	20-AUG-20
Escherichia Coli			<1		MPN/100mL		1	20-AUG-20
TC,EC10-QT97-WP	**Water**							
Batch R5195673								
WG3387952-2 DUP		**L2491688-1**						
Total Coliforms		>24200	>24200		MPN/100mL	0.0	65	20-AUG-20
Escherichia Coli		24200	24200		MPN/100mL	0.0	65	20-AUG-20
WG3387952-1 MB								
Total Coliforms			<1		MPN/100mL		1	20-AUG-20
Escherichia Coli			<1		MPN/100mL		1	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

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUPM	MPN duplicate results were outside default ALS Data Quality Objective, but within 95% confidence interval for MPN reference method. Sample results are reliable.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	18-AUG-20 08:30	21-AUG-20 12:00	0.25	76	hours	EHTR-FM
	2	18-AUG-20 08:40	21-AUG-20 12:00	0.25	75	hours	EHTR-FM
	3	18-AUG-20 08:50	21-AUG-20 12:00	0.25	75	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform to endpoint by MPN QT97							
	2	18-AUG-20 08:40	20-AUG-20 18:10	30	58	hours	EHTR
Fecal coliforms, 1:10 dilution by QT97							
	1	18-AUG-20 08:30	20-AUG-20 18:10	30	58	hours	EHTR
	3	18-AUG-20 08:50	20-AUG-20 18:10	30	57	hours	EHTR
Total and E. coli to endpoint by QT97							
	2	18-AUG-20 08:40	20-AUG-20 18:10	30	58	hours	EHTR
Total and E. coli, 1:10 dilution by QT97							
	1	18-AUG-20 08:30	20-AUG-20 18:10	30	58	hours	EHTR
	3	18-AUG-20 08:50	20-AUG-20 18:10	30	57	hours	EHTR
Aggregate Organics							
Biochemical Oxygen Demand (BOD)							
	1	18-AUG-20 08:30	21-AUG-20 07:00	48	71	hours	EHTR
	2	18-AUG-20 08:40	21-AUG-20 07:00	48	70	hours	EHTR
	3	18-AUG-20 08:50	21-AUG-20 07:00	48	70	hours	EHTR
Carbonaceous BOD							
	1	18-AUG-20 08:30	21-AUG-20 07:00	48	71	hours	EHTR
	2	18-AUG-20 08:40	21-AUG-20 07:00	48	70	hours	EHTR
	3	18-AUG-20 08:50	21-AUG-20 07:00	48	70	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 L2491688 were received on 20-AUG-20 12:00.

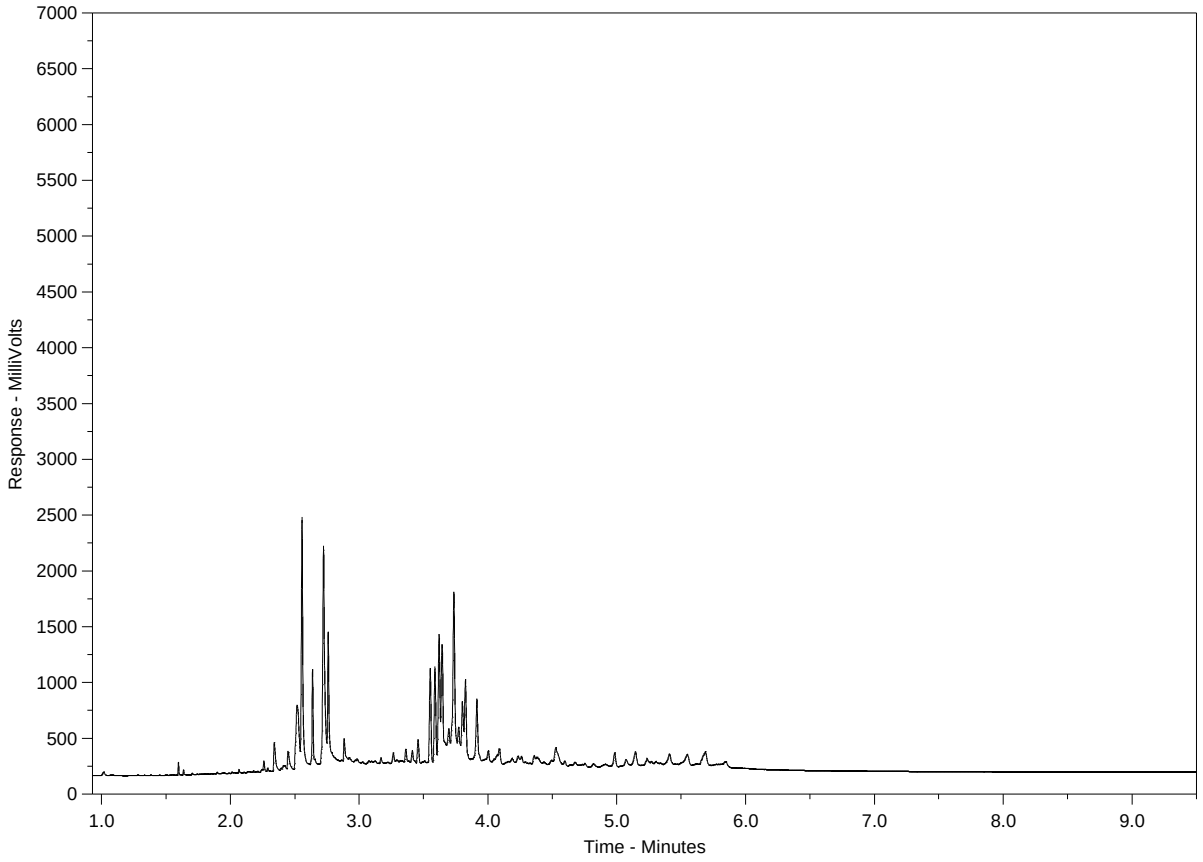
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

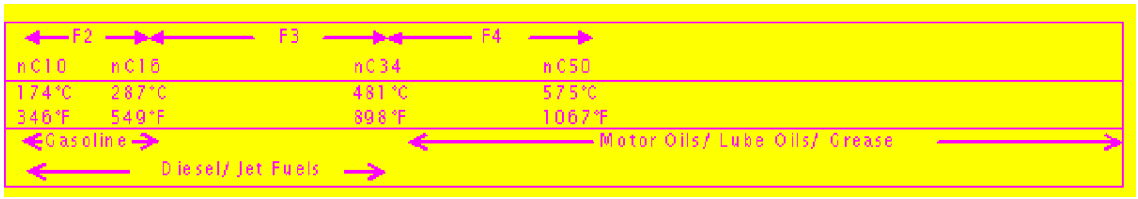
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L2491688-1
Client Sample ID: CHE-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.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2491688-COFC

COC Number: 15 - 571785

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Hamlet of Chesterfield Inlet
Contact:	Don Tanuyak
Phone:	867-898-9939
Company address below will appear on the final report	
Street:	PO Box 10
City/Province:	Chesterfield Inlet, NU
Postal Code:	X0C 0B0
Invoice To	Same as Report To: YES / NO
	Copy of Invoice with Report: YES / NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: PDF, EXCEL, EDD (DIGITAL)
Quality Control (QC) Report with Report: YES / NO
Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: EMAIL, MAIL, FAX
Email 1 or Fax: Chester_foreman@qm.qy.com
Email 2: cfaulkner@gov.nu.ca
Email 3: JCollins@gov.nu.ca

Invoice Distribution

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

Project Information

ALS Account # / Quote #: IN 10671
Job #:
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (lab use only):
ALS Contact:
Sampler: Connor F. / Don T.

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

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

PRIORITY (Business Days): 4 day [P4]; 3 day [P3]; 2 day [P2]

EMERGENCY: 1 Business day [E1]; Same Day, Weekend or Statutory holiday [E0]

Date and Time Required for all E&P TATs:

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	Routine	CBOD	Metals	Mercury	Nutrients	Phenols	Bacteria	Oil + Grease (x2)	BTX-F1 (x3)	F2-F4 (x2)	PAH (x2)	Number of Containers
	CHE-2	18-Aug-20	8:30	WW	✓	✓	✓	P	F	P	P	P	P	P	P	P	
	CHE-3A	18-Aug-20	8:40	WW	✓	✓	✓	P	P	P	P	P	P				
	CHE-4	19-Aug-20	8:50	WW	✓	✓	✓	P	P	P	P	P	P				

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

Are samples taken from a Regulated DW System? YES / NO
Are samples for human drinking water use? YES / NO

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

Nunavut - WW - GRP1
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
15-6	

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: GE	Date: Aug-20/2020	Time: 12 PM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

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

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

Hamlet of Chesterfield Inlet
ATTN: DON TANUYAK / ROY MULLINS
(Waste)
PO Box 10
Chesterfield Inlet NU X0C 0B0

Date Received: 12-SEP-20
Report Date: 22-SEP-20 13:22 (MT)
Version: FINAL

Client Phone: 867-898-9926

Certificate of Analysis

Lab Work Order #: L2502295

Project P.O. #: NOT SUBMITTED
Job Reference: CHESTERFIELD INLET - WASTEWATER
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
L2502295-1 CHE-2							
Sampled By: MA on 11-SEP-20 @ 08:40							
Matrix: WASTEWATER							
Miscellaneous Parameters							
Xylenes (Total)	<0.00064		0.00064	mg/L		18-SEP-20	
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		16-SEP-20	R5229417
Toluene	0.0088		0.0010	mg/L		16-SEP-20	R5229417
Ethyl benzene	<0.00050		0.00050	mg/L		16-SEP-20	R5229417
o-Xylene	<0.00050		0.00050	mg/L		16-SEP-20	R5229417
m+p-Xylenes	<0.00040		0.00040	mg/L		16-SEP-20	R5229417
F1 (C6-C10)	<0.10		0.10	mg/L		16-SEP-20	R5229417
Surrogate: 4-Bromofluorobenzene (SS)	96.8		70-130	%		16-SEP-20	R5229417
Surrogate: 3,4-Dichlorotoluene (SS)	121.4		70-130	%		16-SEP-20	R5229417
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	17-SEP-20	17-SEP-20	R5228457
F3 (C16-C34)	1.55		0.25	mg/L	17-SEP-20	17-SEP-20	R5228457
F4 (C34-C50)	0.43		0.25	mg/L	17-SEP-20	17-SEP-20	R5228457
Surrogate: 2-Bromobenzotrifluoride	100.6		60-140	%	17-SEP-20	17-SEP-20	R5228457
Polyaromatic Hydrocarbons (PAHs)							
Acenaphthene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Acenaphthylene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Anthracene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Benzo(a)anthracene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Benzo(a)pyrene	<0.0050		0.0050	ug/L	16-SEP-20	18-SEP-20	R5228836
Benzo(b)fluoranthene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Benzo(g,h,i)perylene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Benzo(k)fluoranthene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Chrysene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Dibenzo(ah)anthracene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Fluoranthene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Fluorene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Naphthalene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Phenanthrene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Pyrene	<0.020		0.020	ug/L	16-SEP-20	18-SEP-20	R5228836
Surrogate: d8-Naphthalene	90.4		60-140	%	16-SEP-20	18-SEP-20	R5228836
Surrogate: d10-Phenanthrene	102.4		60-140	%	16-SEP-20	18-SEP-20	R5228836
Surrogate: d12-Chrysene	87.7		60-140	%	16-SEP-20	18-SEP-20	R5228836
Surrogate: d10-Acenaphthene	92.1		60-140	%	16-SEP-20	18-SEP-20	R5228836
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	77.7		1.2	mg/L		15-SEP-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		15-SEP-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		15-SEP-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	63.7		1.0	mg/L		14-SEP-20	R5223701
Ammonia by colour							
Ammonia, Total (as N)	5.2		1.0	mg/L		15-SEP-20	R5224725
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	69	BODP	20	mg/L		12-SEP-20	R5228842
Carbonaceous BOD							
BOD Carbonaceous	34.4		6.0	mg/L		12-SEP-20	R5228842
Chloride 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
L2502295-1 CHE-2							
Sampled By: MA on 11-SEP-20 @ 08:40							
Matrix: WASTEWATER							
Chloride in Water by IC							
Chloride (Cl)	28.0		0.50	mg/L		12-SEP-20	R5229920
Conductivity							
Conductivity	231		1.0	umhos/cm		14-SEP-20	R5223701
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	320		10	MPN/100mL		12-SEP-20	R5222754
Hardness Calculated							
Hardness (as CaCO3)	48.2	HTC	0.20	mg/L		17-SEP-20	
Mercury Total							
Mercury (Hg)-Total	0.0000410		0.0000050	mg/L	21-SEP-20	21-SEP-20	R5231723
Nitrate in Water by IC							
Nitrate (as N)	0.052		0.020	mg/L		12-SEP-20	R5229920
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		18-SEP-20	
Nitrite in Water by IC							
Nitrite (as N)	0.014		0.010	mg/L		12-SEP-20	R5229920
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		22-SEP-20	R5232248
Phenol (4AAP)							
Phenols (4AAP)	0.0037		0.0010	mg/L		17-SEP-20	R5229080
Phosphorus, Total							
Phosphorus (P)-Total	3.88		0.030	mg/L		16-SEP-20	R5224585
Sulfate in Water by IC							
Sulfate (SO4)	9.19		0.30	mg/L		12-SEP-20	R5229920
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.958		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225881
Arsenic (As)-Total	0.00268		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Cadmium (Cd)-Total	0.000172		0.0000050	mg/L	16-SEP-20	16-SEP-20	R5225881
Calcium (Ca)-Total	12.8		0.050	mg/L	16-SEP-20	16-SEP-20	R5225881
Chromium (Cr)-Total	0.00260		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Cobalt (Co)-Total	0.00095		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Copper (Cu)-Total	0.0426		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225881
Iron (Fe)-Total	5.68		0.010	mg/L	16-SEP-20	16-SEP-20	R5225881
Lead (Pb)-Total	0.00451		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225881
Magnesium (Mg)-Total	3.96		0.0050	mg/L	16-SEP-20	16-SEP-20	R5225881
Manganese (Mn)-Total	0.201		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Nickel (Ni)-Total	0.00355		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225881
Potassium (K)-Total	5.79		0.050	mg/L	16-SEP-20	16-SEP-20	R5225881
Sodium (Na)-Total	24.1		0.050	mg/L	16-SEP-20	16-SEP-20	R5225881
Zinc (Zn)-Total	0.0979		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225881
Total Organic Carbon by Combustion							
Total Organic Carbon	2.95		0.50	mg/L		17-SEP-20	R5229525
Total Suspended Solids							
Total Suspended Solids	35.3		3.0	mg/L		15-SEP-20	R5224594
pH							
pH	7.34		0.10	pH units		14-SEP-20	R5223701
L2502295-2 CHE-3A							
Sampled By: MA on 11-SEP-20 @ 08:45							
Matrix: WASTEWATER							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	355		1.2	mg/L		15-SEP-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
L2502295-2 CHE-3A							
Sampled By: MA on 11-SEP-20 @ 08:45							
Matrix: WASTEWATER							
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		15-SEP-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		15-SEP-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	291		1.0	mg/L		14-SEP-20	R5223701
Ammonia by colour							
Ammonia, Total (as N)	58.3		2.0	mg/L		15-SEP-20	R5224725
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	316		50	mg/L		12-SEP-20	R5228842
Carbonaceous BOD							
BOD Carbonaceous	300		50	mg/L		12-SEP-20	R5228842
Chloride in Water by IC							
Chloride (Cl)	64.5		1.0	mg/L		12-SEP-20	R5229920
Conductivity							
Conductivity	807		1.0	umhos/cm		14-SEP-20	R5223701
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200		10	MPN/100mL		12-SEP-20	R5222754
Hardness Calculated							
Hardness (as CaCO3)	65.2	HTC	0.20	mg/L		17-SEP-20	
Mercury Total							
Mercury (Hg)-Total	0.0000360		0.0000050	mg/L	21-SEP-20	21-SEP-20	R5231723
Nitrate in Water by IC							
Nitrate (as N)	<0.040	DLM	0.040	mg/L		12-SEP-20	R5229920
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		18-SEP-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.020	DLM	0.020	mg/L		12-SEP-20	R5229920
Oil & Grease - Gravimetric							
Oil and Grease	56.1		5.0	mg/L		22-SEP-20	R5232248
Phenol (4AAP)							
Phenols (4AAP)	0.106	DLHC	0.0050	mg/L		17-SEP-20	R5229080
Phosphorus, Total							
Phosphorus (P)-Total	8.75		0.030	mg/L		16-SEP-20	R5224585
Sulfate in Water by IC							
Sulfate (SO4)	11.0		0.60	mg/L		12-SEP-20	R5229920
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.462		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225881
Arsenic (As)-Total	0.00089		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Cadmium (Cd)-Total	0.000172		0.0000050	mg/L	16-SEP-20	16-SEP-20	R5225881
Calcium (Ca)-Total	17.0		0.050	mg/L	16-SEP-20	16-SEP-20	R5225881
Chromium (Cr)-Total	0.00213		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Cobalt (Co)-Total	0.00074		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Copper (Cu)-Total	0.115		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225881
Iron (Fe)-Total	4.12		0.010	mg/L	16-SEP-20	16-SEP-20	R5225881
Lead (Pb)-Total	0.00249		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225881
Magnesium (Mg)-Total	5.52		0.0050	mg/L	16-SEP-20	16-SEP-20	R5225881
Manganese (Mn)-Total	0.0512		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Nickel (Ni)-Total	0.00372		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225881
Potassium (K)-Total	22.7		0.050	mg/L	16-SEP-20	16-SEP-20	R5225881
Sodium (Na)-Total	47.5		0.050	mg/L	16-SEP-20	16-SEP-20	R5225881
Zinc (Zn)-Total	0.233		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225881
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
L2502295-2 CHE-3A							
Sampled By: MA on 11-SEP-20 @ 08:45							
Matrix: WASTEWATER							
Total Organic Carbon by Combustion							
Total Organic Carbon	16.2		0.50	mg/L		15-SEP-20	R5224799
Total Suspended Solids							
Total Suspended Solids	105		5.0	mg/L		15-SEP-20	R5224594
pH							
pH	7.76		0.10	pH units		14-SEP-20	R5223701
L2502295-3 CHE-4							
Sampled By: MA on 11-SEP-20 @ 08:50							
Matrix: WASTEWATER							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	90.2		1.2	mg/L		15-SEP-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		15-SEP-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		15-SEP-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	73.9		1.0	mg/L		14-SEP-20	R5223701
Ammonia by colour							
Ammonia, Total (as N)	0.015		0.010	mg/L		15-SEP-20	R5224725
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		12-SEP-20	R5228842
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		12-SEP-20	R5228842
Chloride in Water by IC							
Chloride (Cl)	67.5		0.50	mg/L		12-SEP-20	R5229920
Conductivity							
Conductivity	483		1.0	umhos/cm		14-SEP-20	R5223701
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	10		10	MPN/100mL		12-SEP-20	R5222754
Hardness Calculated							
Hardness (as CaCO3)	123	HTC	0.20	mg/L		17-SEP-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	21-SEP-20	21-SEP-20	R5231723
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		12-SEP-20	R5229920
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		18-SEP-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		12-SEP-20	R5229920
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		22-SEP-20	R5232248
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		17-SEP-20	R5229080
Phosphorus, Total							
Phosphorus (P)-Total	0.0116		0.0030	mg/L		16-SEP-20	R5224585
Sulfate in Water by IC							
Sulfate (SO4)	69.3		0.30	mg/L		12-SEP-20	R5229920
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0098		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225881
Arsenic (As)-Total	0.00033		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Cadmium (Cd)-Total	0.0000152		0.0000050	mg/L	16-SEP-20	16-SEP-20	R5225881

* 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
L2502295-3 CHE-4							
Sampled By: MA on 11-SEP-20 @ 08:50							
Matrix: WASTEWATER							
Total Metals in Water by CRC ICPMS							
Calcium (Ca)-Total	34.7		0.050	mg/L	16-SEP-20	16-SEP-20	R5225881
Chromium (Cr)-Total	0.00032		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Cobalt (Co)-Total	0.00032		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Copper (Cu)-Total	0.00286		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225881
Iron (Fe)-Total	0.033		0.010	mg/L	16-SEP-20	16-SEP-20	R5225881
Lead (Pb)-Total	0.000070		0.000050	mg/L	16-SEP-20	16-SEP-20	R5225881
Magnesium (Mg)-Total	8.96		0.0050	mg/L	16-SEP-20	16-SEP-20	R5225881
Manganese (Mn)-Total	0.00054		0.00010	mg/L	16-SEP-20	16-SEP-20	R5225881
Nickel (Ni)-Total	0.00270		0.00050	mg/L	16-SEP-20	16-SEP-20	R5225881
Potassium (K)-Total	6.83		0.050	mg/L	16-SEP-20	16-SEP-20	R5225881
Sodium (Na)-Total	48.7		0.050	mg/L	16-SEP-20	16-SEP-20	R5225881
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	16-SEP-20	16-SEP-20	R5225881
Total Organic Carbon by Combustion							
Total Organic Carbon	10.1		0.50	mg/L		15-SEP-20	R5224799
Total Suspended Solids							
Total Suspended Solids	<3.0		3.0	mg/L		15-SEP-20	R5224594
pH							
pH	7.73		0.10	pH units		14-SEP-20	R5223701

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
BODP	BOD dilution results differed by more than 30% RPD. Precision of reported BOD result may be less than usual.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

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

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

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

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

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

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

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

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

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-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.

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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-WT	Water	Polyaromatic Hydrocarbons (PAHs)	SW846 8270
Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. The sample extracts are concentrated and then analyzed using GC/MS. Results for benzo(b) fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample.			
PH-WP	Water	pH	APHA 4500H
The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.			
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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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 Chesterfield Inlet
PO Box 10
Chesterfield Inlet NU X0C 0B0
Contact: DON TANUYAK / ROY MULLINS (Waste)

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5223701								
WG3404121-19 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	14-SEP-20
WG3404121-16 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	14-SEP-20
BOD-CBOD-WP	**Water**							
Batch R5228842								
WG3403316-4 DUP		**L2502295-2**						
BOD Carbonaceous		300	297		mg/L	1.2	30	12-SEP-20
WG3403316-2 LCS								
BOD Carbonaceous			104.1		%		85-115	12-SEP-20
WG3403316-1 MB								
BOD Carbonaceous			<2.0		mg/L		2	12-SEP-20
BOD-WP	**Water**							
Batch R5228842								
WG3403316-3 DUP		**L2502295-1**						
Biochemical Oxygen Demand		69	70		mg/L	1.7	30	12-SEP-20
WG3403316-2 LCS								
Biochemical Oxygen Demand			100.7		%		85-115	12-SEP-20
WG3403316-1 MB								
Biochemical Oxygen Demand			<2.0		mg/L		2	12-SEP-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5229417								
WG3405514-2 LCS								
Benzene			99.6		%		70-130	16-SEP-20
Toluene			101.9		%		70-130	16-SEP-20
Ethyl benzene			100.9		%		70-130	16-SEP-20
o-Xylene			103.9		%		70-130	16-SEP-20
m+p-Xylenes			107.2		%		70-130	16-SEP-20
WG3405514-3 LCS								
F1 (C6-C10)			122.2		%		70-130	16-SEP-20
WG3405514-1 MB								
Benzene			<0.00050		mg/L		0.0005	16-SEP-20
Toluene			<0.0010		mg/L		0.001	16-SEP-20
Ethyl benzene			<0.00050		mg/L		0.0005	16-SEP-20
o-Xylene			<0.00050		mg/L		0.0005	16-SEP-20
m+p-Xylenes			<0.00040		mg/L		0.0004	16-SEP-20
F1 (C6-C10)			<0.10		mg/L		0.1	16-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	**Water**							
Batch R5229417								
WG3405514-1 MB								
Surrogate: 4-Bromofluorobenzene (SS)			93.3		%		70-130	16-SEP-20
Surrogate: 3,4-Dichlorotoluene (SS)			108.1		%		70-130	16-SEP-20
C-TOC-HTC-WP	**Water**							
Batch R5224799								
WG3405564-2 LCS								
Total Organic Carbon			103.5		%		80-120	15-SEP-20
WG3405564-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	15-SEP-20
Batch R5229525								
WG3407302-2 LCS								
Total Organic Carbon			106.4		%		80-120	17-SEP-20
WG3407302-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	17-SEP-20
CL-IC-N-WP	**Water**							
Batch R5229920								
WG3403320-2 LCS								
Chloride (Cl)			100.4		%		90-110	12-SEP-20
WG3403320-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	12-SEP-20
EC-WP	**Water**							
Batch R5223701								
WG3404121-18 LCS								
Conductivity			97.1		%		90-110	14-SEP-20
WG3404121-16 MB								
Conductivity			<1.0		umhos/cm		1	14-SEP-20
F2-F4-FID-WP	**Water**							
Batch R5228457								
WG3406464-2 LCS								
F2 (C10-C16)			98.7		%		70-130	17-SEP-20
F3 (C16-C34)			91.8		%		70-130	17-SEP-20
F4 (C34-C50)			91.8		%		70-130	17-SEP-20
WG3406464-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	17-SEP-20
F3 (C16-C34)			<0.25		mg/L		0.25	17-SEP-20
F4 (C34-C50)			<0.25		mg/L		0.25	17-SEP-20
Surrogate: 2-Bromobenzotrifluoride			102.3		%		60-140	17-SEP-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
FC10-QT97-WP	**Water**							
Batch R5222754								
WG3403337-1 MB								
Fecal Coliforms			<1		MPN/100mL		1	12-SEP-20
HG-T-CVAA-WP	**Water**							
Batch R5231723								
WG3409048-2 LCS								
Mercury (Hg)-Total			98.0		%		80-120	21-SEP-20
WG3409048-1 MB								
Mercury (Hg)-Total			<0.000005C		mg/L		0.000005	21-SEP-20
MET-T-CCMS-WP	**Water**							
Batch R5225881								
WG3405707-2 LCS								
Aluminum (Al)-Total			100.3		%		80-120	16-SEP-20
Arsenic (As)-Total			100.5		%		80-120	16-SEP-20
Cadmium (Cd)-Total			100.5		%		80-120	16-SEP-20
Calcium (Ca)-Total			101.1		%		80-120	16-SEP-20
Chromium (Cr)-Total			99.99		%		80-120	16-SEP-20
Cobalt (Co)-Total			101.1		%		80-120	16-SEP-20
Copper (Cu)-Total			100.5		%		80-120	16-SEP-20
Iron (Fe)-Total			98.7		%		80-120	16-SEP-20
Lead (Pb)-Total			96.8		%		80-120	16-SEP-20
Magnesium (Mg)-Total			107.3		%		80-120	16-SEP-20
Manganese (Mn)-Total			100.2		%		80-120	16-SEP-20
Nickel (Ni)-Total			99.8		%		80-120	16-SEP-20
Potassium (K)-Total			102.0		%		80-120	16-SEP-20
Sodium (Na)-Total			101.2		%		80-120	16-SEP-20
Zinc (Zn)-Total			100.4		%		80-120	16-SEP-20
WG3405707-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	16-SEP-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	16-SEP-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	16-SEP-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	16-SEP-20
Iron (Fe)-Total			<0.010		mg/L		0.01	16-SEP-20

Quality Control Report

Workorder: L2502295 Report Date: 22-SEP-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WP	**Water**							
Batch R5225881								
WG3405707-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	16-SEP-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	16-SEP-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	16-SEP-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	16-SEP-20
Potassium (K)-Total			<0.050		mg/L		0.05	16-SEP-20
Sodium (Na)-Total			<0.050		mg/L		0.05	16-SEP-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	16-SEP-20
NH3-COL-WP	**Water**							
Batch R5224725								
WG3404936-10 LCS								
Ammonia, Total (as N)			103.3		%		85-115	15-SEP-20
WG3404936-9 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	15-SEP-20
NO2-IC-N-WP	**Water**							
Batch R5229920								
WG3403320-2 LCS								
Nitrite (as N)			99.0		%		90-110	12-SEP-20
WG3403320-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	12-SEP-20
NO3-IC-N-WP	**Water**							
Batch R5229920								
WG3403320-2 LCS								
Nitrate (as N)			99.8		%		90-110	12-SEP-20
WG3403320-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	12-SEP-20
OG-GRAV-WP	**Water**							
Batch R5232248								
WG3408746-2 LCS								
Oil and Grease			86.1		%		70-130	22-SEP-20
WG3408746-1 MB								
Oil and Grease			<5.0		mg/L		5	22-SEP-20
P-T-COL-WP	**Water**							
Batch R5224585								
WG3405363-19 DUP		**L2502295-2**						
Phosphorus (P)-Total		8.75	8.43		mg/L	3.7	20	16-SEP-20
WG3405363-14 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-WP	**Water**							
Batch R5224585								
WG3405363-14 LCS								
Phosphorus (P)-Total			94.4		%		80-120	16-SEP-20
WG3405363-18 LCS								
Phosphorus (P)-Total			94.0		%		80-120	16-SEP-20
WG3405363-13 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	16-SEP-20
WG3405363-17 MB								
Phosphorus (P)-Total			<0.0030		mg/L		0.003	16-SEP-20
WG3405363-20 MS		**L2502295-3**						
Phosphorus (P)-Total			98.2		%		70-130	16-SEP-20
PAH-WT	**Water**							
Batch R5228836								
WG3405832-2 LCS								
Acenaphthene			104.7		%		50-140	18-SEP-20
Acenaphthylene			100.0		%		50-140	18-SEP-20
Anthracene			88.4		%		50-140	18-SEP-20
Benzo(a)anthracene			97.4		%		50-140	18-SEP-20
Benzo(a)pyrene			95.6		%		60-130	18-SEP-20
Benzo(b)fluoranthene			95.1		%		50-140	18-SEP-20
Benzo(g,h,i)perylene			106.0		%		50-140	18-SEP-20
Benzo(k)fluoranthene			100.1		%		50-140	18-SEP-20
Chrysene			119.7		%		50-140	18-SEP-20
Dibenzo(ah)anthracene			93.4		%		50-140	18-SEP-20
Fluoranthene			103.7		%		50-140	18-SEP-20
Fluorene			98.2		%		50-140	18-SEP-20
Indeno(1,2,3-cd)pyrene			99.6		%		50-140	18-SEP-20
Naphthalene			95.0		%		50-130	18-SEP-20
Phenanthrene			101.9		%		50-140	18-SEP-20
Pyrene			105.8		%		50-140	18-SEP-20
WG3405832-1 MB								
Acenaphthene			<0.020		ug/L		0.02	18-SEP-20
Acenaphthylene			<0.020		ug/L		0.02	18-SEP-20
Anthracene			<0.020		ug/L		0.02	18-SEP-20
Benzo(a)anthracene			<0.020		ug/L		0.02	18-SEP-20
Benzo(a)pyrene			<0.0050		ug/L		0.005	18-SEP-20
Benzo(b)fluoranthene			<0.020		ug/L		0.02	18-SEP-20

Quality Control Report

Workorder: L2502295 Report Date: 22-SEP-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-WT	**Water**							
Batch R5228836								
WG3405832-1 MB								
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	18-SEP-20
Benzo(k)fluoranthene			<0.020		ug/L		0.02	18-SEP-20
Chrysene			<0.020		ug/L		0.02	18-SEP-20
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	18-SEP-20
Fluoranthene			<0.020		ug/L		0.02	18-SEP-20
Fluorene			<0.020		ug/L		0.02	18-SEP-20
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	18-SEP-20
Naphthalene			<0.020		ug/L		0.02	18-SEP-20
Phenanthrene			<0.020		ug/L		0.02	18-SEP-20
Pyrene			<0.020		ug/L		0.02	18-SEP-20
Surrogate: d8-Naphthalene			94.7		%		60-140	18-SEP-20
Surrogate: d10-Phenanthrene			99.7		%		60-140	18-SEP-20
Surrogate: d12-Chrysene			89.9		%		60-140	18-SEP-20
Surrogate: d10-Acenaphthene			96.2		%		60-140	18-SEP-20
PH-WP	**Water**							
Batch R5223701								
WG3404121-17 LCS								
pH			7.37		pH units		7.3-7.5	14-SEP-20
PHENOLS-4AAP-WT	**Water**							
Batch R5229080								
WG3406086-2 LCS								
Phenols (4AAP)			100.4		%		85-115	17-SEP-20
WG3406086-1 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	17-SEP-20
SO4-IC-N-WP	**Water**							
Batch R5229920								
WG3403320-2 LCS								
Sulfate (SO4)			101.1		%		90-110	12-SEP-20
WG3403320-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	12-SEP-20
SOLIDS-TOTSUS-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TOTSUS-WP	**Water**							
Batch R5224594								
WG3404544-5 LCS								
Total Suspended Solids			90.2		%		85-115	15-SEP-20
WG3404544-4 MB								
Total Suspended Solids			<3.0		mg/L		3	15-SEP-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	11-SEP-20 08:40	14-SEP-20 12:00	0.25	75	hours	EHTR-FM
	2	11-SEP-20 08:45	14-SEP-20 12:00	0.25	75	hours	EHTR-FM
	3	11-SEP-20 08:50	14-SEP-20 12:00	0.25	75	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 L2502295 were received on 12-SEP-20 11:15.

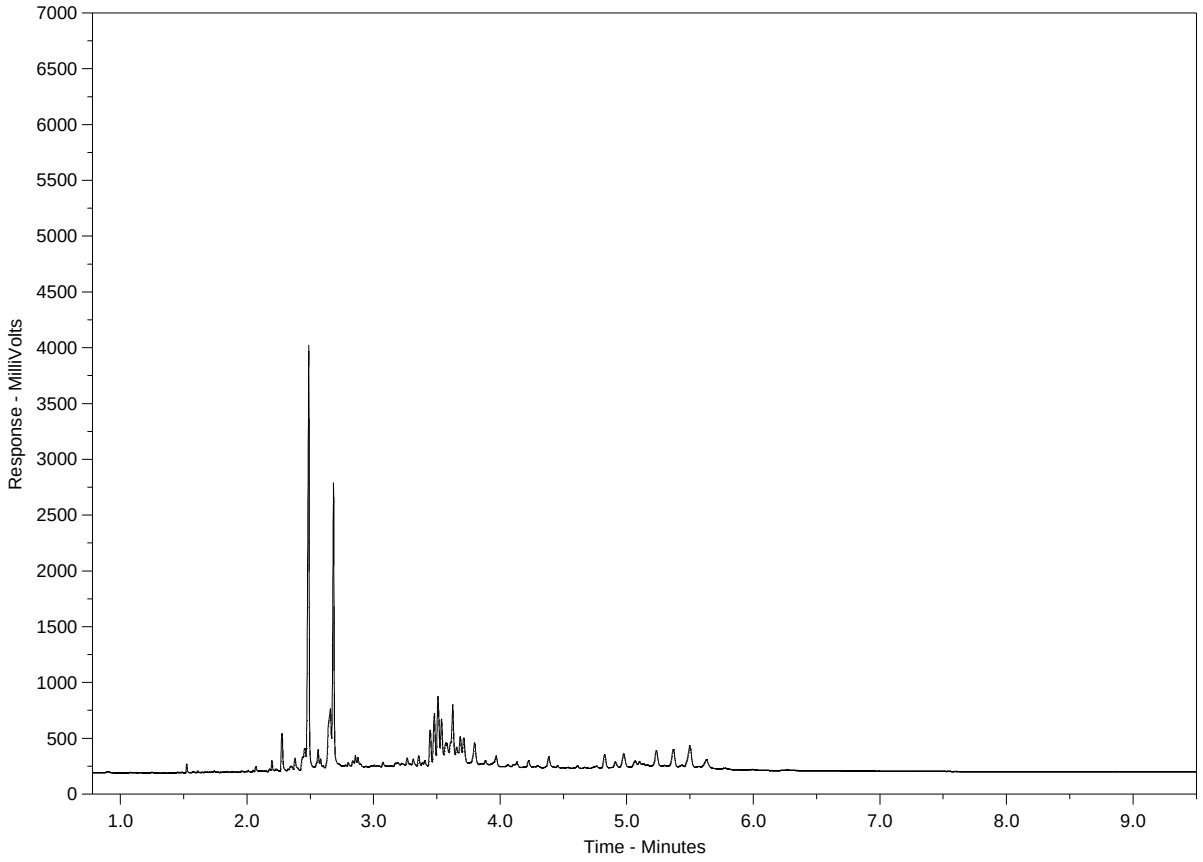
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

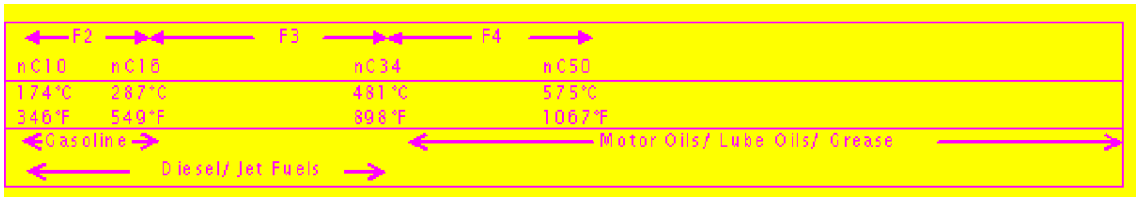
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide 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: L2502295-1
Client Sample ID: CHE-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.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2502295-COFC

COC Number: 17 - 751114

Page of

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 Chesterfield Inlet	Select Report Format:	[ ] PDF [ ] EXCEL [ ] EDD (DIGITAL)	Regular [R] [ ] Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Don Tanuyak	Quality Control (QC) Report with Report	[ ] YES [ ] NO	PRIORITY (Business Days): 4 day [P4-20%] [ ]; 3 day [P3-25%] [ ]; 2 day [P2-50%] [ ]
Phone:	867 898 9939	[ ] 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 10	Email 1 or Fax	chesterfieldinlet	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Chesterfield Inlet	Email 2	[illegible]@gov.nu.ca	
Postal Code:	X0C 0B0	Email 3	[illegible]@gov.nu.ca	Analysis Request

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 #:		AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	CHESTERFIELD Inlet
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: [signature]

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	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	CHE - 2	11-09-20	8.40	W/W			
	CHE - 3A	11-09-20	8.45	W/W			
	CHE - 4	11-09-20	8:50	W/W			

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

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

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

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

Nunavut - WW - GN[illegible]

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
8.8	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Chesterfield Inlet	Date: Sept 11, 2020	Time:	Received by: MPM	Date: 12 Sep 20	Time: 11:15	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.

Appendix D: Hazardous Materials Spill Database, Chesterfield Inlet 2020

No spills were reported in 2020.

Appendix F: Chesterfield Inlet 2020 Sampling Summary

Appendix F: CIRNAC Inspection Report

The CIRNAC inspection report was not received by CGS.

Appendix F: Licensee Representative Annual Inspection Report

August 28, 2020

2020 Municipal Water Licence Inspection – Chesterfield Inlet

The inspection took place on Monday August 17th with John Ivey (Hamlet SAO), Don Tanuyak (Hamlet Foreman), Atuat Shouldice (CIRNAC Inspector), Jakob Voisey (CIRNAC Inspector), and Connor Faulkner (CGS representative) present. Wastewater samples were to be taken at compliance points CHE-2, CHE-3a, and CHE 4 on Wednesday August 19th by the Hamlet Causal employee. Some points brought forth by the inspector were:

- No points were brought forth by the inspector for maintenance or compliance issues.
- The Hamlet Foreman is looking into sending waste oil, batteries, and propane tanks south on empty AEM ships.
- The Hamlet SAO inquired about new fencing for the solid waste site, mentioning this is something they are going to be searching for funding to complete hopefully within the next year.