#### YEAR BEING REPORTED: 2018

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence No. **3AM-ARV1016** issued to the **Hamlet of Arviat**.

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

Attached are results for Monitoring Stations ARV-1, as well as detailed chemical, physical and biological analysis required at ARV-2a, ARV-4, ARV-5 and ARV-6 (for the months of July to September).

Month Reported	Quantity of Water Obtained from all sources (m³)	Quantity of Sewage Waste Discharged (m³)
January	8,869.901	Same
February	7,917.038	Same
March	8,542.440	Same
April	8,310.513	Same
Мау	8,656.016	Same
June	8,287.099	Same
July	8,910.061	Same
August	9,041.572	Same
September	8,581.820	Same
October	8,880.961	Same
November	8,708.563	Same
December	8,814.934	Same
ANNUAL TOTAL	103,520.918	103,520.918

Note: No meter exists to measure the sewage discharge volume, therefore water consumption volume is considered as equal volume to the Sewage discharge volume.

- iv. a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;
  - Vehicles were shredded for disposal by a metals shredder bought by the Hamlet of Arviat.
  - Segregation continues to improve at the Solid Waste Site and Bulky Metals Site. Batteries are collected and being stored in a sea can. Non-metals have been removed from the Bulky Metals Dump and brought to the Solid Waste Site. A wood recycling area is in use as well as an area for old tires.
  - The Solid Waste Site is improving drastically, and all waste is spread evenly within the fencing.
  - A new water treatment plant and water reservoir is currently being constructed by Tower Construction.



v. a list of unauthorized discharges and summary of follow-up action taken;

The following spills were reported to the NT-NU Spill Report Line and are listed on the Hazardous Materials Spills Database for Arviat in 2018:

Spill No.	Date	Site Description	Commodity	Quantity
2018277	2018-07-17	N/A	Petroleum – fuel oil	15 L
20188243	2018-06-20	N/A	Petroleum – fuel oil	100 L
2018229	2018-06-14	N/A	Petroleum – fuel oil	300 L
2018208	2018-05-31	N/A	Petroleum – fuel oil	75 L
2018195	2018-05-25	N/A	Petroleum – fuel oil	205 L

- vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
  - A new water treatment plant and water reservoir is currently being constructed by Tower Construction.
- vii. a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;
  - none
- viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and
  - Decanting of the old sewage lagoon was approved by INAC on August 3<sup>rd</sup>, 2018. They will decant, desludge, and expand their SWS in future years.
- ix. updates or revisions to the approved Operation and Maintenance Plans.
  - New Water Treatment Plant O&M Manual will be submitted following construction completion.

#### ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- The Hamlet is working with the Water Compliance Working Group to implement the Solid Waste Workplan goals.

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

- The 3AM-ARV1016 INAC Inspection took place on June  $27^{th}$ , 2018. A copy of the inspection report can be found in Appendix K.

Appendix A: ARV-4 Effluent Quality Limits – 1 page

**Appendix B: Weekly Inspections at Monitoring Program Stations – 1 page** 

Appendix C: Certificate of Analysis June 21, 2018–16 pages

Appendix D: Certificate of Analysis July 17, 2018 – 16 pages

Appendix E: Certificate of Analysis August 14, 2018 – 20 pages

Appendix F: Certificate of Analysis September 10, 2018 – 9 pages

Appendix G: Hazardous Materials Spill Database, Arviat 2018 – 1 page

Appendix H: Arviat 2018 Sampling Summary – 4 pages

**Appendix I: INAC Inspection Report – 2 pages** 

Appendix A

# 3AM-ARV1016 Arviat Monitoring Program Results 2018 Part D, Item 2; ARV-4 Effluent Quality limits

Parameter	Maximum Concentration		ARV-4					
Parameter	of any grab sample	21-Jun-18	17-Jul-18	13-Aug-18	10-Sep-18			
BOD <sub>5</sub>	80 mg/L	5.0	30.6	18.9	7.2			
Total Suspended Solids	100 mg/L	52.9	49.6	8.1	349.0			
Fecal Coliforms	1 x 10 <sup>4</sup> CFU/100mL	<10	>24200	11200	220			
Oil & Grease	no visible sheen	<5.0	5.6	<5.0	<5.0			
рН	between 6 and 9	7.29	7.25	7.21	7.00			

Exceeds effluent quality limits

Appendix B

Arviat, NU Nunavut Water Board Licence No. 3AM-ARV1016

Part H, Item 8: Weekly Inspections at Monitoring Program Sations, May to August

18	17	16	15	14	13	12	11	10	9	00	7	6	<sub>5</sub>	4	ω	2	1	Week		
27-Aug-18	20-Aug-18	13-Aug-18	06-Aug-18	30-Jul-18	23-Jul-18	16-Jul-18	09-Jul-18	02-Jul-18	25-Jun-18	18-Jun-18	11-Jun-18	04-Jun-18	28-May-18	21-May-18	14-May-18	07-May-18	30-Apr-18	Starting Date		
5	7	5	5	7	7	1	7	7	5	<								Yes	Water	
\			\				\	1	1	\								No	Water Present (check)	ARV-2a
											(	-	7	<	7	7	1	Frozen	(check)	
7	7	7	7	5	٢	7	( '		7	7							1	Yes	Water	
				1						\								No	Water Present (check)	ARV-4
											7	7	7	(	7	7	7	Frozen	(check)	
7	7	7	7	5	1	(	7	۲	7	7	1	١				\	1	Yes	Water	
					1			\	1									No	Water Present (check)	ARV-5
											7	٢	7	<u></u>	7	7	7	Frozen	(check)	
7	7	7		7	1	7	7	7	7	٢		1	1	`		`		Yes	Water	
			1			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		1	1	1					٠			No	Water Present (check)	ARV-6
											5	٢	7	7	٢	7	7	Frozen	(check)	
Laura	Lours	10 w/2	- 0 e e f	1000x	Lacers	laux.	land	Louis	To cons	laur	Lacer	laux.	Lowers	Tars	) Ours	Lower	Laure	Checked By		

# Monitoring Program Station Locations:

ARV-2a: Effluent discharge from the Discharge Point of the Solid Waste Disposal Facility ARV-4: Effluent from the discharge point of the Sewage Disposal Facility (end of wetland)

ARV-5: Discharge from the Bulky Metal Waste Area ARV-6: Discharge from the Hazardous Waste Storage Area

<sup>\*</sup> Fax Sheets Weekly to Connor Faulkner at CGS- Rankin Inlet. Fax: (867) 645-8143

Appendix C



Hamlet of Arviat

ATTN: STEVE ENGLAND

PO Box 150

Arviat NU XOC 0E0

Date Received: 25-JUN-18

Report Date: 16-JUL-18 11:29 (MT)

Version: FINAL

Client Phone: 867-857-2841

# Certificate of Analysis

Lab Work Order #: L2118040
Project P.O. #: NOT SUBMITTED

Job Reference: HAMLET OF ARVIAT - WASTE WATER

C of C Numbers: Legal Site Desc:

Mohl

Hua Wo

Chemistry Laboratory Manager

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

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

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L2118040 CONTD.... PAGE 2 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2118040-1 ARV - 2							
Sampled By: CLIENT on 21-JUN-18 @ 14:23							
Matrix: WASTE WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		28-JUN-18	R4098476
Toluene	<0.0010		0.0010	mg/L		28-JUN-18	R4098476
Ethyl benzene o-Xylene	<0.00050 <0.00050		0.00050 0.00050	mg/L mg/L		28-JUN-18 28-JUN-18	R4098476 R4098476
m+p-Xylenes	<0.00030		0.00030	mg/L		28-JUN-18	R4098476
F1 (C6-C10)	<0.10		0.10	mg/L		28-JUN-18	R4098476
Surrogate: 4-Bromofluorobenzene (SS)	89.0		70-130	%		28-JUN-18	R4098476
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.15		0.10	mg/L	28-JUN-18	30-JUN-18	R4106588
F3 (C16-C34)	0.31		0.25	mg/L	28-JUN-18	30-JUN-18	R4106588
F4 (C34-C50)	<0.25		0.25	mg/L	28-JUN-18	30-JUN-18	R4106588
Surrogate: 2-Bromobenzotrifluoride	87.9		60-140	%	28-JUN-18	30-JUN-18	R4106588
CCME Total Hydrocarbons F1-BTEX	<0.10		0.10	mg/L		04-JUL-18	
Total Hydrocarbons (C6-C50)	0.46		0.10	mg/L		04-JUL-18	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		03-JUL-18	
Nunavut WW Group 1							
Alkalinity, Bicarbonate	400		4.0	m a/I		27-JUN-18	
Bicarbonate (HCO3)  Alkalinity, Carbonate	460		1.2	mg/L		27-JUN-18	
Carbonate (CO3)	<0.60		0.60	mg/L		27-JUN-18	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		27-JUN-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	377		1.0	mg/L		26-JUN-18	R4097988
Ammonia by colour Ammonia, Total (as N)	9.2		1.0	mg/L		27-JUN-18	R4099627
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	17.5		6.0	mg/L		25-JUN-18	R4111150
Carbonaceous BOD	40.4		0.0	/1		05 1111 40	D444450
BOD Carbonaceous  Chloride in Water by IC	13.4		6.0	mg/L		25-JUN-18	R4111150
Chloride (CI)	372		2.5	mg/L		25-JUN-18	R4099408
Conductivity Conductivity	2360		1.0	umhos/cm		26-JUN-18	R4097988
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	390	PEHR	10	MPN/100mL		25-JUN-18	R4097310
Hardness Calculated Hardness (as CaCO3)	709	HTC	0.20	mg/L		03-JUL-18	
Mercury Total Mercury (Hg)-Total	0.0000554		0.0000050		28-JUN-18	29-JUN-18	R4105452
Nitrate in Water by IC					20 0011-10		
Nitrate (as N) Nitrate+Nitrite	<0.10	DLM	0.10	mg/L		25-JUN-18	R4099408
Nitrate and Nitrite as N	<0.11		0.11	mg/L		28-JUN-18	
Nitrite in Water by IC Nitrite (as N)	<0.050	DLM	0.050	mg/L		25-JUN-18	R4099408
Oil & Grease - Gravimetric Oil and Grease	<5.0		5.0	mg/L		04-JUL-18	R4113449
Phenol (4AAP)	10.0		0.0	9, =		0.002.10	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2118040 CONTD.... PAGE 3 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L 2448040 4 A A R V 2							
L2118040-1 ARV - 2							
Sampled By: CLIENT on 21-JUN-18 @ 14:23							
Matrix: WASTE WATER							
Phenol (4AAP) Phenols (4AAP)	0.0057		0.0010	mg/L		29-JUN-18	R4110409
Phosphorus, Total Phosphorus (P)-Total	0.968		0.0010	mg/L		04-JUL-18	R4112349
Sulfate in Water by IC	0.000		0.00.0				
Sulfate (SO4)	384		1.5	mg/L		25-JUN-18	R4099408
Total Metals in Water by CRC ICPMS				"	00 11 11 40	00 11 11 40	D
Aluminum (Al)-Total	0.0379		0.0030	mg/L	29-JUN-18	29-JUN-18	R4108907
Arsenic (As)-Total	0.00468		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Cadmium (Cd)-Total Calcium (Ca)-Total	0.000606 207		0.0000050 0.050	mg/L	29-JUN-18 29-JUN-18	29-JUN-18 29-JUN-18	R4108907 R4108907
Chromium (Cr)-Total	0.00157		0.00010	mg/L mg/L	29-JUN-18 29-JUN-18	29-JUN-18 29-JUN-18	R4108907
Cobalt (Co)-Total	0.00137		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Copper (Cu)-Total	0.0666		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Iron (Fe)-Total	4.55		0.00030	mg/L	29-JUN-18	29-JUN-18	R4108907
Lead (Pb)-Total	0.00901		0.00050	mg/L	29-JUN-18	29-JUN-18	R4108907
Magnesium (Mg)-Total	46.4		0.0050	mg/L	29-JUN-18	29-JUN-18	R4108907
Manganese (Mn)-Total	0.972		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Nickel (Ni)-Total	0.00877		0.00050	mg/L	29-JUN-18	29-JUN-18	R4108907
Potassium (K)-Total	42.9		0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Sodium (Na)-Total	234		0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Zinc (Zn)-Total	0.311		0.0030	mg/L	29-JUN-18	29-JUN-18	R4108907
Total Organic Carbon by Combustion				-			
Total Organic Carbon	43.8		0.50	mg/L		13-JUL-18	R4126236
Total Suspended Solids							
Total Suspended Solids	21.6		2.0	mg/L		28-JUN-18	R4104155
рН							
рН	7.57		0.10	pH units		26-JUN-18	R4097988
L2118040-2 ARV - 4							
Sampled By: CLIENT on 21-JUN-18 @ 14:00							
Matrix: WASTE WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS				"		00 11 11 40	D
Benzene	<0.00050		0.00050	mg/L		26-JUN-18	R4098476
Toluene	<0.0010		0.0010	mg/L		26-JUN-18	R4098476
Ethyl benzene o-Xylene	<0.00050		0.00050 0.00050	mg/L		26-JUN-18 26-JUN-18	R4098476
m+p-Xylenes	<0.00050 <0.00040		0.00050	mg/L mg/L		26-JUN-18 26-JUN-18	R4098476 R4098476
F1 (C6-C10)	<0.00040 <0.10		0.00040	mg/L		26-JUN-18	R4098476 R4098476
Surrogate: 4-Bromofluorobenzene (SS)	93.0		70-130	mg/∟ %		26-JUN-18	R4098476
CCME PHC F2-F4 in Water	33.0		10-130	70		20 0014-10	117030470
F2 (C10-C16)	<0.10		0.10	mg/L	28-JUN-18	30-JUN-18	R4106588
F3 (C16-C34)	<0.15		0.10	mg/L	28-JUN-18	30-JUN-18	R4106588
F4 (C34-C50)	<0.25		0.25	mg/L	28-JUN-18	30-JUN-18	R4106588
Surrogate: 2-Bromobenzotrifluoride	92.9		60-140	%	28-JUN-18	30-JUN-18	R4106588
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		04-JUL-18	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		04-JUL-18	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		28-JUN-18	
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Amanthity, Dicardonate		1			I.	l	-

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2118040 CONTD.... PAGE 4 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2118040-2 ARV - 4							
Sampled By: CLIENT on 21-JUN-18 @ 14:00							
Matrix: WASTE WATER							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	155		1.2	mg/L		27-JUN-18	
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		27-JUN-18	
Alkalinity, Hydroxide						27-JUN-18	
Hydroxide (OH)  Alkalinity, Total (as CaCO3)	<0.34		0.34	mg/L		27-JUN-10	
Alkalinity, Total (as CaCO3)  Ammonia by colour	127		1.0	mg/L		26-JUN-18	R4097988
Ammonia, Total (as N)	8.56		0.20	mg/L		27-JUN-18	R4099627
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	10.0		2.0	mg/L		25-JUN-18	R4111150
Carbonaceous BOD BOD Carbonaceous	5.0		2.0	mg/L		25-JUN-18	R4111150
Chloride in Water by IC							
Chloride (CI) Conductivity	155		0.50	mg/L		25-JUN-18	R4099408
Conductivity Fecal coliforms, 1:10 dilution by QT97	782		1.0	umhos/cm		26-JUN-18	R4097988
Fecal Coliforms	<10	PEHR	10	MPN/100mL		25-JUN-18	R4097310
Hardness Calculated Hardness (as CaCO3)	85.7	нтс	0.20	mg/L		03-JUL-18	
Mercury Total Mercury (Hg)-Total	0.0000107		0.0000050	mg/L	28-JUN-18	29-JUN-18	R4105452
Nitrate in Water by IC Nitrate (as N)	0.498		0.020	mg/L		25-JUN-18	R4099408
Nitrate+Nitrite	0.496		0.020	IIIg/L		23-30IN-18	K4099406
Nitrate and Nitrite as N	0.620		0.070	mg/L		28-JUN-18	
Nitrite in Water by IC Nitrite (as N)	0.122		0.010	mg/L		25-JUN-18	R4099408
Oil & Grease - Gravimetric Oil and Grease	<5.0		5.0	mg/L		04-JUL-18	R4113449
Phenol (4AAP)	<5.0		3.0	mg/L		04-30L-10	K4113449
Phenols (4AAP)	0.0011		0.0010	mg/L		29-JUN-18	R4110409
Phosphorus, Total Phosphorus (P)-Total	3.15		0.010	mg/L		04-JUL-18	R4112349
Sulfate in Water by IC	3.13		0.010	illy/L		U-1-JUL-10	134112349
Sulfate (SO4)	13.6		0.30	mg/L		25-JUN-18	R4099408
Total Metals in Water by CRC ICPMS							
Aluminum (AI)-Total	0.151		0.0030	mg/L	29-JUN-18	29-JUN-18	R4108907
Arsenic (As)-Total	0.0110		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Cadmium (Cd)-Total	0.0000610		0.0000050	mg/L	29-JUN-18	29-JUN-18	R4108907
Calcium (Ca)-Total	15.4		0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Chromium (Cr)-Total	0.00114		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Cobalt (Co)-Total	0.00487		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Copper (Cu)-Total	0.0188		0.00050	mg/L	29-JUN-18	29-JUN-18	R4108907
Iron (Fe)-Total	4.02		0.010	mg/L	29-JUN-18	29-JUN-18	R4108907
Lead (Pb)-Total	0.00140		0.000050	mg/L	29-JUN-18	29-JUN-18	R4108907
Magnesium (Mg)-Total	11.5		0.0050	mg/L	29-JUN-18	29-JUN-18	R4108907
Manganese (Mn)-Total	0.341		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Nickel (Ni)-Total	0.0107		0.00050	mg/L	29-JUN-18	29-JUN-18	R4108907
Potassium (K)-Total	18.3		0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Sodium (Na)-Total	107		0.050	mg/L	29-JUN-18	29-JUN-18	R4108907

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2118040 CONTD.... PAGE 5 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2118040-2 ARV - 4							
Sampled By: CLIENT on 21-JUN-18 @ 14:00							
Matrix: WASTE WATER							
Total Metals in Water by CRC ICPMS							
Zinc (Zn)-Total	0.0079		0.0030	mg/L	29-JUN-18	29-JUN-18	R4108907
Total Organic Carbon by Combustion	00.0		0.50			40 1111 40	D 4400000
Total Sygnamus Solida	33.2		0.50	mg/L		13-JUL-18	R4126236
<b>Total Suspended Solids</b> Total Suspended Solids	52.9		2.0	mg/L		28-JUN-18	R4104155
pH							
pH	7.29		0.10	pH units		26-JUN-18	R4097988
L2118040-3 ARV - 5							
Sampled By: CLIENT on 21-JUN-18 @ 14:43							
Matrix: WASTE WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS Benzene	<0.00050		0.00050	mg/L		26-JUN-18	R4098476
Toluene	<0.0010		0.00030	mg/L		26-JUN-18	R4098476
Ethyl benzene	<0.00050		0.00050	mg/L		26-JUN-18	R4098476
o-Xylene	<0.00050		0.00050	mg/L		26-JUN-18	R4098476
m+p-Xylenes	<0.00040		0.00040	mg/L		26-JUN-18	R4098476
F1 (C6-C10)	<0.10		0.10	mg/L		26-JUN-18	R4098476
Surrogate: 4-Bromofluorobenzene (SS)	91.0		70-130	%		26-JUN-18	R4098476
<b>CCME PHC F2-F4 in Water</b> F2 (C10-C16)	<0.10		0.10	mg/L	28-JUN-18	30-JUN-18	R4106588
F3 (C16-C34)	<0.10		0.10	mg/L	28-JUN-18	30-JUN-18	R4106588
F4 (C34-C50)	<0.25		0.25	mg/L	28-JUN-18	30-JUN-18	R4106588
Surrogate: 2-Bromobenzotrifluoride	92.6		60-140	%	28-JUN-18	30-JUN-18	R4106588
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		04-JUL-18	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		04-JUL-18	
Sum of Xylene Isomer Concentrations Xylenes (Total)	<0.00064		0.00064	mg/L		28-JUN-18	
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	55.5		1.2	mg/L		27-JUN-18	
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		27-JUN-18	
<b>Alkalinity, Hydroxide</b> Hydroxide (OH)	<0.34		0.34	mg/L		27-JUN-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	45.5		1.0	mg/L		26-JUN-18	R4097988
Ammonia by colour	45.5		1.0	mg/L		20 0011-10	114037300
Ammonia, Total (as N)	0.013		0.010	mg/L		27-JUN-18	R4099627
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	<2.0		2.0	mg/L		25-JUN-18	R4111150
Carbonaceous BOD BOD Carbonaceous	<2.0		2.0	mg/L		25-JUN-18	R4111150
Chloride in Water by IC Chloride (CI)	131		0.50	mg/L		25-JUN-18	R4099408
Conductivity							
Conductivity  Fecal coliforms, 1:10 dilution by QT97	537		1.0	umhos/cm		26-JUN-18	R4097988
Fecal Coliforms  Hardness Calculated	<10	PEHR	10	MPN/100mL		25-JUN-18	R4097310
	1						

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2118040 CONTD.... PAGE 6 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2118040-3 ARV - 5							
Sampled By: CLIENT on 21-JUN-18 @ 14:43							
Matrix: WASTE WATER							
Hardness Calculated Hardness (as CaCO3)	81.6	HTC	0.20	mg/L		03-JUL-18	
Mercury Total Mercury (Hg)-Total	<0.0000050		0.000050	mg/L	28-JUN-18	29-JUN-18	R4105452
Nitrate in Water by IC Nitrate (as N)	<0.020		0.020	mg/L		25-JUN-18	R4099408
Nitrate+Nitrite Nitrate and Nitrite as N	<0.070		0.070	mg/L		28-JUN-18	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		25-JUN-18	R4099408
Oil & Grease - Gravimetric Oil and Grease							
Phenol (4AAP)	<5.0		5.0	mg/L		04-JUL-18	R4113449
Phenols (4AAP)	<0.0010		0.0010	mg/L		29-JUN-18	R4110409
Phosphorus, Total Phosphorus (P)-Total	0.0058		0.0010	mg/L		04-JUL-18	R4112349
Sulfate in Water by IC Sulfate (SO4)	13.2		0.30	mg/L		25-JUN-18	R4099408
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.0158		0.0030	mg/L	29-JUN-18	29-JUN-18	R4108907
Arsenic (As)-Total	0.00040		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Cadmium (Cd)-Total	<0.000050		0.0000050	mg/L	29-JUN-18	29-JUN-18	R4108907
Calcium (Ca)-Total	14.8		0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Chromium (Cr)-Total	0.00014		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Copper (Cu)-Total	0.00059		0.00050	mg/L	29-JUN-18	29-JUN-18	R4108907
Iron (Fe)-Total	0.514		0.010	mg/L	29-JUN-18	29-JUN-18	R4108907
Lead (Pb)-Total	0.000052		0.000050	mg/L	29-JUN-18	29-JUN-18	R4108907
Magnesium (Mg)-Total	10.8		0.0050	mg/L	29-JUN-18	29-JUN-18	R4108907
Manganese (Mn)-Total	0.00856		0.00010	mg/L	29-JUN-18	29-JUN-18	R4108907
Nickel (Ni)-Total	0.00055		0.00050	mg/L	29-JUN-18	29-JUN-18	R4108907
Potassium (K)-Total	4.92		0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Sodium (Na)-Total	72.2		0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Zinc (Zn)-Total	0.0031		0.0030	mg/L	29-JUN-18	29-JUN-18	R4108907
Total Organic Carbon by Combustion Total Organic Carbon	7.76		0.50	mg/L		13-JUL-18	R4126236
Total Suspended Solids Total Suspended Solids	<2.0		2.0	mg/L		28-JUN-18	R4104155
pH pH	7.67		0.10	pH units		26-JUN-18	R4097988
L2118040-4 ARV - 6							
Sampled By: CLIENT on 21-JUN-18 @ 14:57							
Matrix: WASTE WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS Benzene	<0.00050		0.00050	mg/L		26-JUN-18	R4098476
Toluene	0.0012		0.00030	mg/L		26-JUN-18	R4098476
Ethyl benzene	<0.0012		0.0010	mg/L		26-JUN-18	R4098476
o-Xylene	<0.00050		0.00050	mg/L		26-JUN-18	R4098476
m+p-Xylenes	<0.00040		0.00040	mg/L		26-JUN-18	R4098476
F1 (C6-C10)	<0.10		0.10	mg/L		26-JUN-18	R4098476
Surrogate: 4-Bromofluorobenzene (SS)	93.0		70-130	%		26-JUN-18	R4098476
CCME PHC F2-F4 in Water							

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2118040 CONTD.... PAGE 7 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2118040-4 ARV - 6							
Sampled By: CLIENT on 21-JUN-18 @ 14:57							
Matrix: WASTE WATER							
CCME PHC F2-F4 in Water	-0.10		0.10	m a/l	20 II INI 40	20 1111 10	D4406500
F2 (C10-C16) F3 (C16-C34)	<0.10 <0.25		0.10 0.25	mg/L mg/L	28-JUN-18 28-JUN-18	30-JUN-18 30-JUN-18	R4106588 R4106588
F4 (C34-C50)	<0.25		0.25	mg/L	28-JUN-18	30-JUN-18	R4106588
Surrogate: 2-Bromobenzotrifluoride	85.0		60-140	%	28-JUN-18	30-JUN-18	R4106588
CCME Total Hydrocarbons F1-BTEX	<0.10		0.10	mg/L		04-JUL-18	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		04-JUL-18	
Sum of Xylene Isomer Concentrations Xylenes (Total)	<0.00064		0.00064	mg/L		03-JUL-18	
Nunavut WW Group 1							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	98.7		1.2	mg/L		27-JUN-18	
Alkalinity, Carbonate	30.7		1.2	iiig/L		21-00IN-10	
Carbonate (CO3)	<0.60		0.60	mg/L		27-JUN-18	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		27-JUN-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)						26-JUN-18	D4007000
Ammonia by colour	80.9		1.0	mg/L		20-JUN-10	R4097988
Ammonia, Total (as N)	0.122		0.010	mg/L		27-JUN-18	R4099627
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	11.4		2.0	mg/L		25-JUN-18	R4111150
Carbonaceous BOD BOD Carbonaceous	7.3		2.0	mg/L		25-JUN-18	R4111150
Chloride in Water by IC							
Chloride (CI) Conductivity	247		0.50	mg/L		25-JUN-18	R4099408
Conductivity	944		1.0	umhos/cm		26-JUN-18	R4097988
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	<10	PEHR	10	MPN/100mL		25-JUN-18	R4097310
Hardness Calculated Hardness (as CaCO3)	319	нтс	0.20	mg/L		04-JUL-18	
Mercury Total							
Mercury (Hg)-Total  Nitrate in Water by IC	<0.000050		0.0000050	mg/L	28-JUN-18	29-JUN-18	R4105452
Nitrate in Water by iC Nitrate (as N)	<0.020		0.020	mg/L		25-JUN-18	R4099408
Nitrate+Nitrite Nitrate and Nitrite as N	<0.070		0.070	mg/L		28-JUN-18	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		25-JUN-18	R4099408
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		04-JUL-18	R4113449
Phenol (4AAP) Phenols (4AAP)	0.0145		0.0010	mg/L		29-JUN-18	R4110409
Phosphorus, Total Phosphorus (P)-Total	0.0433		0.0010	mg/L		04-JUL-18	R4112349
Sulfate in Water by IC Sulfate (SO4)	0.99		0.30	mg/L		25-JUN-18	R4099408
Total Metals in Water by CRC ICPMS	0.99		0.30	ilig/L		20-00IN-10	114033400
Aluminum (Al)-Total Arsenic (As)-Total	0.0202 0.00068		0.0030 0.00010	mg/L mg/L	29-JUN-18 29-JUN-18	29-JUN-18 29-JUN-18	R4108907 R4108907
,	0.0000		0.00010	9/ =			114100001

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier* D.L.	Units	Extracted	Analyzed	Batch
L2118040-4 ARV - 6						
Sampled By: CLIENT on 21-JUN-18 @ 14:57						
Matrix: WASTE WATER						
Total Metals in Water by CRC ICPMS						
Cadmium (Cd)-Total	0.0000150	0.000005	0 mg/L	29-JUN-18	29-JUN-18	R4108907
Calcium (Ca)-Total	101	0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Chromium (Cr)-Total	0.00024	0.00010		29-JUN-18	29-JUN-18	R4108907
Cobalt (Co)-Total	0.00347	0.00010	_	29-JUN-18	29-JUN-18	R4108907
Copper (Cu)-Total Iron (Fe)-Total	0.00123	0.00050	_	29-JUN-18	29-JUN-18	R4108907
Lead (Pb)-Total	8.93 0.000102	0.010 0.000050	mg/L mg/L	29-JUN-18 29-JUN-18	29-JUN-18 29-JUN-18	R4108907 R4108907
Magnesium (Mg)-Total	16.3	0.0050	mg/L	29-JUN-18	29-JUN-18	R4108907
Manganese (Mn)-Total	3.91	0.000	mg/L	29-JUN-18	03-JUL-18	R4110907
Nickel (Ni)-Total	0.00419	0.00050		29-JUN-18	29-JUN-18	R4108907
Potassium (K)-Total	9.58	0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Sodium (Na)-Total	43.5	0.050	mg/L	29-JUN-18	29-JUN-18	R4108907
Zinc (Zn)-Total	0.0131	0.0030	mg/L	29-JUN-18	29-JUN-18	R4108907
Total Organic Carbon by Combustion						
Total Organic Carbon	16.3	0.50	mg/L		13-JUL-18	R4126236
Total Suspended Solids	247		ma/l		28-JUN-18	D4104455
Total Suspended Solids pH	34.7	2.0	mg/L		∠0-JUIN-18	R4104155
pH pH	6.92	0.10	pH units		26-JUN-18	R4097988

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

#### L2118040 CONTD....

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#### Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

#### **Test Method References:**

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

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

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

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

# Reference Information

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#### Test Method References:

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

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

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

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

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

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

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

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

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

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

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

HG-T-CVAF-WP Water Mercury Total EPA245.7 V2.0

Mercury in filtered and unfiltered waters is oxidized with Bromine monochloride and analyzed by cold-vapour atomic fluorescence spectrometry.

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

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

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

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

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

Throprosside and measured colodimetrically.

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-L-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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-WP Water pH APHA 4500H

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

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

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

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

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

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

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#### **Reference Information**

#### **Test Method References:**

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

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

XYLENES-SUM-CALC-

Water

Sum of Xylene Isomer Concentrations

CALCULATED RESULT

WP

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

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

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

<b>Laboratory Definition Code</b>	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.

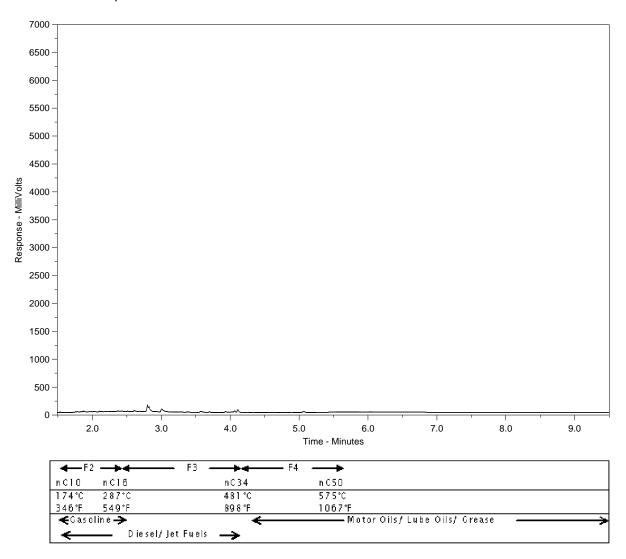
Test results reported relate only to the samples as received by the laboratory.

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.



ALS Sample ID: L2118040-1 Client Sample ID: ARV - 2



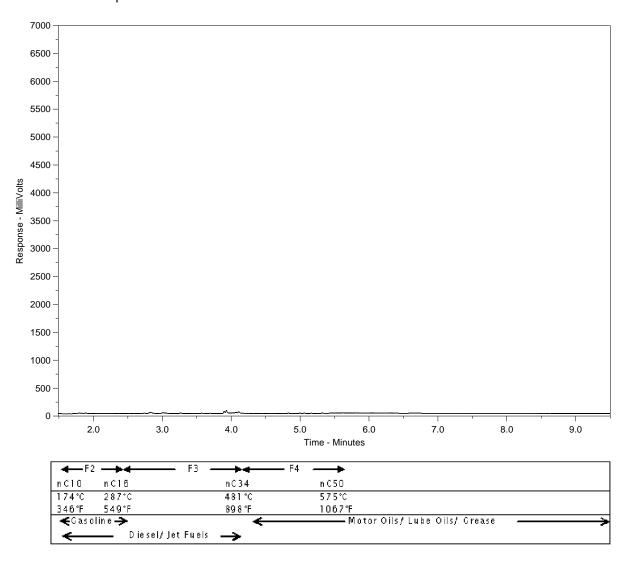
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2118040-2 Client Sample ID: ARV - 4



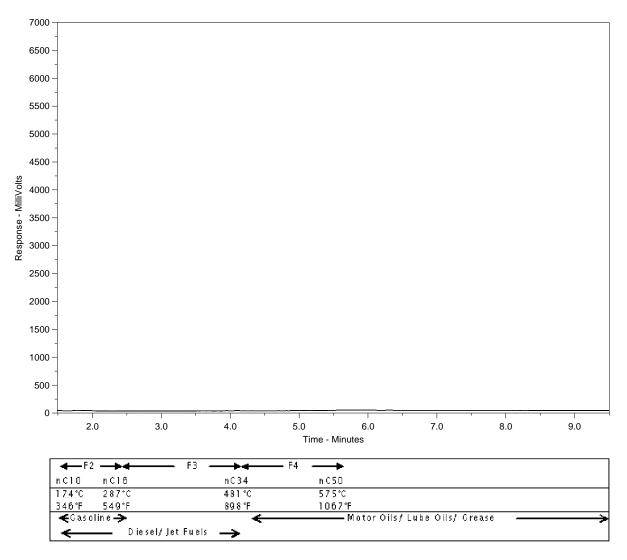
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2118040-3 Client Sample ID: ARV - 5



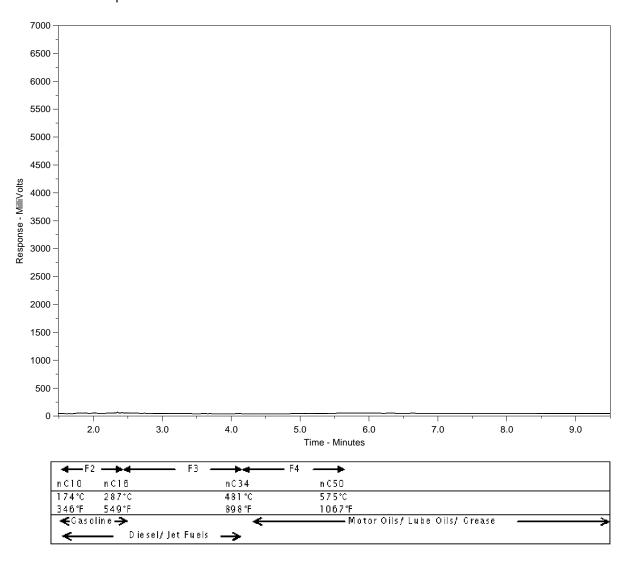
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2118040-4 Client Sample ID: ARV - 6



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

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

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

# Environmental www.atsglobal.com

#### Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Report To		Report Format	/ Distribution		T -		Select 5	Service L	evel Bel	ow (Rush	Turnarou	und Time	(TAT) is	not avail	ilable for	all tests)		
Company: Hampet of Anylot	Select Report Fo	ormat: Pr	F EXCEL	EDD (DIGITAL)	R		Regular	(Standard	TẠT IỆ Ị	eceived by	/ 3pm)	۱)	210 8	noit t	նուս է			
Contact: Steve Emlard	Quality Control (	QC) Report with Rep	ort Yes	≶ ∏No	P		Priority (	2-4 busir	ess days	if receive	d by 3pm				latig .			
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PO / AFE:	Activity Code: ,		<u> </u>			2 1	6.7		"."↓	(1)	= 4	0	7		t se Ci. Norc <sup>a</sup>		Chivi toutti	, j
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ALS Lab Work Order # (lab use only)	ALS Contact:		Sampler:		15	Solve	5 2	8	$\tilde{\mathcal{B}}$	70	1-Aveic	hen	7-11		an a	dr.	,1/2 fr	· Z
ALS Sample # Sample Identification and/or Coordinates (lab use only) (This description will appear on the report)	*· <u>·</u>	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	<del> </del> (247	X	Ñ	(A)	7	đ	VJ (	7						
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<u></u>	Instructions / Spe	: cify Criteria to add on	report (client Use)	<u></u>	W(%)				LE CO	NDITIO		_						
Are samples taken from a Regulated DW System?					Froze			님			Control of the Control	ervatio	A Sec. 2	Yes		No.	· 7	
☐ Yes ☐ No					Ice pa Cooli	acks ng Initia	Yes		No		ustody	seal in	itact	Yes		No	١	]
Are samples for human drinking water use?					2 :: ∤N	IIITIAL C	OOLER 1	EMPER.	ATURES	°C ·	8 % Se	S. FIN	AL COO	LER TE	MPERAT	TURES *	c _	
∏ Yes ∏; No								5.3		74000	4.9	ALCO:		C Min	<b>8</b> , 7%	⊥Æ	つと	١.
SHIPMENT RELEASE (client use)		SHIPMENT RECEPT	ION (lab use only		1796	. O. 25.	\$11.15/F	% FII	NAL SH	IIPMEN			N (lab u				5.5	* y
Released by: Jawa 25-06/18 31,155 Receive	d by:		Date: 2516	Time:	Rece	ived by					Da	ate:		Time:		*		
DESCRIPTION DACK BOD ALS LOCATIONS AND SAMPLING INCOMMETON	-	1471 117	C LACODATORY	CODY VELLO	A	NT CO	DV.											

Appendix D



Hamlet of Arviat

ATTN: STEVE ENGLAND

PO Box 150

Arviat NU XOC 0E0

Date Received: 18-JUL-18

Report Date: 30-JUL-18 13:42 (MT)

Version: FINAL

Client Phone: 867-857-2841

# Certificate of Analysis

Lab Work Order #: L2131552
Project P.O. #: NOT SUBMITTED

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

Mhl

Hua wo

Chemistry Laboratory Manager

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

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



Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2131552-1 ARV - 2							
L2131552-1 ARV - 2 Sampled By: CLIENT on 17-JUL-18 @ 08:43							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		19-JUL-18	R4138287
Toluene	<0.0010		0.0010	mg/L		19-JUL-18	R4138287
Ethyl benzene	<0.00050		0.00050	mg/L		19-JUL-18	R4138287
o-Xylene m+p-Xylenes	<0.00050 <0.00040		0.00050 0.00040	mg/L mg/L		19-JUL-18 19-JUL-18	R4138287 R4138287
F1 (C6-C10)	<0.0040		0.00040	mg/L		19-JUL-18	R4138287
Surrogate: 4-Bromofluorobenzene (SS)	101.1		70-130	%		19-JUL-18	R4138287
CCME PHC F2-F4 in Water							
F2 (C10-C16)	0.17		0.10	mg/L	19-JUL-18	19-JUL-18	R4130550
F3 (C16-C34)	0.30		0.25	mg/L	19-JUL-18	19-JUL-18	R4130550
F4 (C34-C50)	<0.25		0.25	mg/L	19-JUL-18	19-JUL-18	R4130550
Surrogate: 2-Bromobenzotrifluoride  CCME Total Hydrocarbons	95.9		60-140	%	19-JUL-18	19-JUL-18	R4130550
F1-BTEX	<0.10		0.10	mg/L		23-JUL-18	
Total Hydrocarbons (C6-C50)	0.48		0.38	mg/L		23-JUL-18	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		23-JUL-18	
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	478		1.2	mg/L		20-JUL-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		20-JUL-18	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		20-JUL-18	
Alkalinity, Total (as CaCO3)	V0.54		0.54	IIIg/L		20 301 10	
Alkalinity, Total (as CaCO3)	391		1.0	mg/L		19-JUL-18	R4133573
Ammonia by colour							
Ammonia, Total (as N)	5.27		0.20	mg/L		24-JUL-18	R4140131
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	25.5		6.0	mg/L		19-JUL-18	R4141828
Carbonaceous BOD	25.5		0.0	IIIg/L		19-30L-10	K4141020
BOD Carbonaceous	20.5		6.0	mg/L		19-JUL-18	R4141828
Chloride in Water by IC							
Chloride (CI)	691		10	mg/L		19-JUL-18	R4135773
Conductivity Conductivity	3580		1.0	umhos/cm		19-JUL-18	R4133573
Fecal coliforms, 1:10 dilution by QT97	3300		1.0	G111103/0111		10 00L-10	117100010
Fecal Coliforms	30	мвнт	10	MPN/100mL		18-JUL-18	R4133088
Hardness Calculated							
Hardness (as CaCO3)	879	HTC	0.20	mg/L		25-JUL-18	
Mercury Total Mercury (Hg)-Total	<0.000050		0.0000050	mg/L	19-JUL-18	20-JUL-18	R4134551
Nitrate in Water by IC	\J.0000000		0.0000000	illy/L	10 JOL-10	20-JUL-10	1104001
Nitrate (as N)	<0.40	DLM	0.40	mg/L		19-JUL-18	R4135773
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.45		0.45	mg/L		25-JUL-18	
Nitrite in Water by IC Nitrite (as N)	<0.20	DLM	0.20	mg/L		19-JUL-18	R4135773
Oil & Grease - Gravimetric	<b>\U.20</b>	JEIVI	0.20	illy/L		10-30L-10	1100110
Oil and Grease	<5.0		5.0	mg/L		25-JUL-18	R4145146
Phenol (4AAP)							

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2131552-1 ARV - 2							
Sampled By: CLIENT on 17-JUL-18 @ 08:43							
, ,							
Matrix: WATER							
Phenol (4AAP) Phenols (4AAP)	0.0049		0.0010	mg/L		23-JUL-18	R4139243
Phosphorus, Total							
Phosphorus (P)-Total	0.363		0.0010	mg/L		24-JUL-18	R4139681
Sulfate in Water by IC Sulfate (SO4)	456		6.0	mg/L		19-JUL-18	R4135773
Total Metals in Water by CRC ICPMS	450		0.0	IIIg/L		19-301-10	K4133773
Aluminum (Al)-Total	0.0271		0.0030	mg/L	20-JUL-18	20-JUL-18	R4136049
Arsenic (As)-Total	0.00557		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Cadmium (Cd)-Total	0.0000338		0.0000050	mg/L	20-JUL-18	20-JUL-18	R4136049
Calcium (Ca)-Total	201		0.050	mg/L	20-JUL-18	20-JUL-18	R4136049
Chromium (Cr)-Total	0.00215		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Cobalt (Co)-Total	0.00124		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Copper (Cu)-Total	0.00960		0.00050	mg/L	20-JUL-18	20-JUL-18	R4136049
Iron (Fe)-Total	1.10		0.010	mg/L	20-JUL-18	20-JUL-18	R4136049
Lead (Pb)-Total	0.000967		0.000050	mg/L	20-JUL-18	20-JUL-18	R4136049
Magnesium (Mg)-Total	91.8		0.0050	mg/L	20-JUL-18	20-JUL-18	R4136049
Manganese (Mn)-Total	0.213		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Nickel (Ni)-Total	0.00904		0.00050	mg/L	20-JUL-18	20-JUL-18	R4136049
Potassium (K)-Total	82.7		0.050	mg/L	20-JUL-18 20-JUL-18	20-JUL-18 23-JUL-18	R4136049
Sodium (Na)-Total Zinc (Zn)-Total	473 0.0151		5.0 0.0030	mg/L mg/L	20-JUL-18 20-JUL-18	20-JUL-18	R4139615 R4136049
Total Organic Carbon by Combustion	0.0151		0.0030	IIIg/L	20-30L-18	20-30L-18	K4130049
Total Organic Carbon by Combustion  Total Organic Carbon	53.4		0.50	mg/L		27-JUL-18	R4146287
Total Suspended Solids	00.1		0.00	9/ =			10207
Total Suspended Solids	8.1		2.0	mg/L		24-JUL-18	R4140196
pH				, u			
рН	8.10		0.10	pH units		19-JUL-18	R4133573
L2131552-2 ARV - 4							
Sampled By: CLIENT on 17-JUL-18 @ 08:30							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS				,,			
Benzene	<0.00050		0.00050	mg/L		25-JUL-18	R4138287
Toluene	0.0015		0.0010	mg/L		25-JUL-18	R4138287
Ethyl benzene o-Xylene	<0.00050		0.00050	mg/L		25-JUL-18	R4138287
m+p-Xylenes	<0.00050		0.00050 0.00040	mg/L		25-JUL-18 25-JUL-18	R4138287
F1 (C6-C10)	<0.00040 <0.20	DLM	0.00040	mg/L mg/L		25-JUL-18	R4138287 R4138287
Surrogate: 4-Bromofluorobenzene (SS)	83.1		70-130	™g/∟ %		25-JUL-18	R4138287
CCME PHC F2-F4 in Water	55.1		70 100	,0		20 002 10	13700207
F2 (C10-C16)	0.13		0.10	mg/L	19-JUL-18	19-JUL-18	R4130550
F3 (C16-C34)	0.59		0.25	mg/L	19-JUL-18	19-JUL-18	R4130550
F4 (C34-C50)	<0.25		0.25	mg/L	19-JUL-18	19-JUL-18	R4130550
Surrogate: 2-Bromobenzotrifluoride	79.5		60-140	%	19-JUL-18	19-JUL-18	R4130550
CCME Total Hydrocarbons							
F1-BTEX	<0.20		0.20	mg/L		26-JUL-18	
Total Hydrocarbons (C6-C50)	0.72		0.42	mg/L		26-JUL-18	
Sum of Xylene Isomer Concentrations  Xylenes (Total)	<0.00064		0.00064	mg/L		26-JUL-18	
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Antainity, Discussinate					1	1	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2131552-2 ARV - 4							
L2131552-2 ARV - 4 Sampled By: CLIENT on 17-JUL-18 @ 08:30							
Matrix: WATER							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	310		1.2	mg/L		20-JUL-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		20-JUL-18	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		20-JUL-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	254		1.0	mg/L		19-JUL-18	R4133573
Ammonia by colour Ammonia, Total (as N)	43.7		5.0	mg/L		24-JUL-18	R4140131
Biochemical Oxygen Demand (BOD)	43.7		5.0	IIIg/L		24-30L-10	K4140131
Biochemical Oxygen Demand	43		20	mg/L		19-JUL-18	R4141828
Carbonaceous BOD	20.0		0.0	m c://		10 11 11 10	D44 44 000
BOD Carbonaceous  Chloride in Water by IC	30.6		6.0	mg/L		19-JUL-18	R4141828
Chloride (Cl)	194		2.5	mg/L		19-JUL-18	R4135773
Conductivity							
Conductivity	1120		1.0	umhos/cm		19-JUL-18	R4133573
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	>24200	MBHT	10	MPN/100mL		18-JUL-18	R4133088
Hardness Calculated	7 2 1.200						
Hardness (as CaCO3)	123	HTC	0.20	mg/L		23-JUL-18	
Mercury Total Mercury (Hg)-Total	0.000005		0.00000		19-JUL-18	20-JUL-18	D4404554
Nitrate in Water by IC	<0.000025		0.000025	mg/L	19-JUL-16	20-JUL-16	R4134551
Nitrate (as N)	<0.10	DLM	0.10	mg/L		19-JUL-18	R4135773
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.11		0.11	mg/L		25-JUL-18	
Nitrite in Water by IC Nitrite (as N)	<0.050	DLM	0.050	mg/L		19-JUL-18	R4135773
Oil & Grease - Gravimetric							
Oil and Grease	5.6		5.0	mg/L		25-JUL-18	R4145146
Phenol (4AAP) Phenols (4AAP)	0.0049		0.0010	mg/L		23-JUL-18	R4139243
Phosphorus, Total	0.0049		0.0010	1119/2		20 00L-10	117100240
Phosphorus (P)-Total	7.80		0.010	mg/L		24-JUL-18	R4139681
Sulfate in Water by IC	2.2		4.5	ma m/l		10 !!!! 10	D4405770
Sulfate (SO4)  Total Metals in Water by CRC ICPMS	6.9		1.5	mg/L		19-JUL-18	R4135773
Aluminum (Al)-Total	0.156		0.0030	mg/L	20-JUL-18	20-JUL-18	R4136049
Arsenic (As)-Total	0.00758		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Cadmium (Cd)-Total	0.0000524		0.0000050	mg/L	20-JUL-18	20-JUL-18	R4136049
Calcium (Ca)-Total Chromium (Cr)-Total	21.7		0.050	mg/L	20-JUL-18 20-JUL-18	20-JUL-18 20-JUL-18	R4136049
Cobalt (Co)-Total	0.00112 0.00273		0.00010 0.00010	mg/L mg/L	20-JUL-18 20-JUL-18	20-JUL-18 20-JUL-18	R4136049 R4136049
Copper (Cu)-Total	0.00273		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Iron (Fe)-Total	4.58		0.010	mg/L	20-JUL-18	20-JUL-18	R4136049
Lead (Pb)-Total	0.00172		0.000050	mg/L	20-JUL-18	20-JUL-18	R4136049
Magnesium (Mg)-Total	16.7		0.0050	mg/L	20-JUL-18	20-JUL-18	R4136049
Manganese (Mn)-Total Nickel (Ni)-Total	0.418 0.00772		0.00010 0.00050	mg/L	20-JUL-18 20-JUL-18	20-JUL-18 20-JUL-18	R4136049
Potassium (K)-Total	24.0		0.00050	mg/L mg/L	20-JUL-18 20-JUL-18	20-JUL-18 20-JUL-18	R4136049 R4136049
Sodium (Na)-Total	137		0.050	mg/L	20-JUL-18	20-JUL-18	R4136049
, ,				3			

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2131552-2 ARV - 4 Sampled By: CLIENT on 17-JUL-18 @ 08:30 Matrix: WATER Total Metals in Water by CRC ICPMS Zinc (Zn)-Total Total Organic Carbon by Combustion	0.0225						
Sampled By: CLIENT on 17-JUL-18 @ 08:30  Matrix: WATER  Total Metals in Water by CRC ICPMS  Zinc (Zn)-Total  Total Organic Carbon by Combustion	0 0225						
Matrix: WATER  Total Metals in Water by CRC ICPMS Zinc (Zn)-Total  Total Organic Carbon by Combustion	0.0225						
Total Metals in Water by CRC ICPMS Zinc (Zn)-Total Total Organic Carbon by Combustion	0.0225						
Zinc (Zn)-Total  Total Organic Carbon by Combustion	0.0225						
	0.0220		0.0030	mg/L	20-JUL-18	20-JUL-18	R4136049
Total Organic Carbon	39.7		0.50	mg/L		27-JUL-18	R4146287
Total Suspended Solids Total Suspended Solids	49.6		6.0	mg/L		24-JUL-18	R4140196
<b>pH</b> pH	7.25		0.10	pH units		19-JUL-18	R4133573
L2131552-3 ARV - 5							
Sampled By: CLIENT on 17-JUL-18 @ 08:55							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	< 0.00050		0.00050	mg/L		19-JUL-18	R4138287
Toluene	<0.0010		0.0010	mg/L		19-JUL-18	R4138287
Ethyl benzene	<0.00050		0.00050	mg/L		19-JUL-18	R4138287
o-Xylene	<0.00050		0.00050	mg/L		19-JUL-18	R4138287
m+p-Xylenes	<0.00040		0.00040	mg/L		19-JUL-18	R4138287
F1 (C6-C10)	<0.10		0.10	mg/L		19-JUL-18	R4138287
Surrogate: 4-Bromofluorobenzene (SS)	95.4		70-130	%		19-JUL-18	R4138287
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	19-JUL-18	19-JUL-18	R4130550
F3 (C16-C34)	<0.25		0.25	mg/L	19-JUL-18	19-JUL-18	R4130550
F4 (C34-C50)	<0.25		0.25	mg/L	19-JUL-18	19-JUL-18	R4130550
Surrogate: 2-Bromobenzotrifluoride	103.2		60-140	%	19-JUL-18	19-JUL-18	R4130550
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		23-JUL-18	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		23-JUL-18	
Sum of Xylene Isomer Concentrations  Xylenes (Total)	<0.00064		0.00064	mg/L		23-JUL-18	
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	92.0		1.2	mg/L		20-JUL-18	
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		20-JUL-18	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		20-JUL-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	75.4		1.0	mg/L		19-JUL-18	R4133573
Ammonia by colour Ammonia, Total (as N)	0.025		0.010	mg/L		21-JUL-18	R4139040
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	<2.0		2.0	mg/L		19-JUL-18	R4141828
Carbonaceous BOD BOD Carbonaceous	<2.0		2.0	mg/L		19-JUL-18	R4141828
Chloride in Water by IC Chloride (CI)	259		1.0	mg/L		19-JUL-18	R4135773
Conductivity Conductivity	953		1.0	umhos/cm		19-JUL-18	R4133573
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	30	МВНТ		MPN/100mL		18-JUL-18	R4133088
Hardness Calculated			.0			.5 552 .5	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
1.24.24552.2 ADV 5							
L2131552-3 ARV - 5							
Sampled By: CLIENT on 17-JUL-18 @ 08:55							
Matrix: WATER							
Hardness Calculated Hardness (as CaCO3)	138	HTC	0.20	mg/L		23-JUL-18	
Mercury Total Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	19-JUL-18	20-JUL-18	R4134551
Nitrate in Water by IC	<0.000000		0.0000000	1119/12	10 002 10	20 002 10	104051
Nitrate (as N)	<0.040	DLM	0.040	mg/L		19-JUL-18	R4135773
Nitrate+Nitrite	0.070		0.070			25 1111 40	
Nitrate and Nitrite as N	<0.070		0.070	mg/L		25-JUL-18	
Nitrite in Water by IC Nitrite (as N)	<0.020	DLM	0.020	mg/L		19-JUL-18	R4135773
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		26-JUL-18	R4147972
Phenol (4AAP) Phenols (4AAP)	0.0011		0.0010	mg/L		23-JUL-18	R4139243
Phosphorus, Total				3			
Phosphorus (P)-Total	0.0314		0.0010	mg/L		24-JUL-18	R4139681
Sulfate in Water by IC						40 1111 40	
Sulfate (SO4) Total Metals in Water by CRC ICPMS	5.40		0.60	mg/L		19-JUL-18	R4135773
Aluminum (Al)-Total	0.0157		0.0030	mg/L	20-JUL-18	20-JUL-18	R4136049
Arsenic (As)-Total	0.00076		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Cadmium (Cd)-Total	<0.000050		0.0000050	mg/L	20-JUL-18	20-JUL-18	R4136049
Calcium (Ca)-Total	21.7		0.050	mg/L	20-JUL-18	20-JUL-18	R4136049
Chromium (Cr)-Total	0.00018		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Cobalt (Co)-Total	0.00029		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Copper (Cu)-Total	0.00066		0.00050	mg/L	20-JUL-18	20-JUL-18	R4136049
Iron (Fe)-Total	1.79		0.010	mg/L	20-JUL-18	20-JUL-18	R4136049
Lead (Pb)-Total	0.000072		0.000050	mg/L	20-JUL-18	20-JUL-18	R4136049
Magnesium (Mg)-Total	20.2		0.0050	mg/L	20-JUL-18	20-JUL-18	R4136049
Manganese (Mn)-Total	0.150		0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Nickel (Ni)-Total	0.00077		0.00050	mg/L	20-JUL-18	20-JUL-18	R4136049
Potassium (K)-Total	6.81		0.050	mg/L	20-JUL-18	20-JUL-18	R4136049
Sodium (Na)-Total	144		0.050	mg/L	20-JUL-18	20-JUL-18	R4136049
Zinc (Zn)-Total	0.0052		0.0030	mg/L	20-JUL-18	20-JUL-18	R4136049
Total Organic Carbon by Combustion Total Organic Carbon	11.4		0.50	mg/L		27-JUL-18	R4146287
Total Suspended Solids	11.4		0.50	mg/∟		21-00L-10	134140207
Total Suspended Solids	3.1		2.0	mg/L		24-JUL-18	R4140196
pH	7 = 1		0.40	منامین للم		10 11 11 40	D4422570
pH	7.51		0.10	pH units		19-JUL-18	R4133573
L2131552-4 ARV - 6							
Sampled By: CLIENT on 17-JUL-18 @ 09:05							
Matrix: WATER BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		25-JUL-18	R4138287
Toluene	0.0013		0.0010	mg/L		25-JUL-18	R4138287
Ethyl benzene	<0.00050		0.00050	mg/L		25-JUL-18	R4138287
o-Xylene	<0.00050		0.00050	mg/L		25-JUL-18	R4138287
m+p-Xylenes	<0.00040		0.00040	mg/L		25-JUL-18	R4138287
F1 (C6-C10)	<0.10		0.10	mg/L		25-JUL-18	R4138287
Surrogate: 4-Bromofluorobenzene (SS)	96.7		70-130	%		25-JUL-18	R4138287
CCME PHC F2-F4 in Water							

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2131552-4 ARV - 6							
Sampled By: CLIENT on 17-JUL-18 @ 09:05							
Matrix: WATER							
CCME PHC F2-F4 in Water							
F2 (C10-C16) F3 (C16-C34)	0.16		0.10	mg/L	19-JUL-18 19-JUL-18	19-JUL-18 19-JUL-18	R4130550
F3 (C16-C34) F4 (C34-C50)	<0.25 <0.25		0.25 0.25	mg/L mg/L	19-JUL-18 19-JUL-18	19-JUL-18 19-JUL-18	R4130550 R4130550
Surrogate: 2-Bromobenzotrifluoride	83.6		60-140	%	19-JUL-18	19-JUL-18	R4130550
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		26-JUL-18	
Total Hydrocarbons (C6-C50)  Sum of Xylene Isomer Concentrations	<0.38		0.38	mg/L		26-JUL-18	
Xylenes (Total)	<0.00064		0.00064	mg/L		26-JUL-18	
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	136		1.2	mg/L		20-JUL-18	
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		20-JUL-18	
Alkalinity, Hydroxide	13.00		3.00				
Hydroxide (OH)	<0.34		0.34	mg/L		20-JUL-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	111		1.0	mg/L		19-JUL-18	R4133573
Ammonia by colour Ammonia, Total (as N)	0.639		0.020	mg/L		24-JUL-18	R4140131
Biochemical Oxygen Demand (BOD)	_						
Biochemical Oxygen Demand  Carbonaceous BOD	<6		6.0	mg/L		19-JUL-18	R4141828
BOD Carbonaceous	<6		6.0	mg/L		19-JUL-18	R4141828
Chloride in Water by IC							
Chloride (CI)	177		0.50	mg/L		19-JUL-18	R4135773
Conductivity Conductivity	767		1.0	umhos/cm		19-JUL-18	R4133573
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	<10	MBHT	10	MPN/100mL		18-JUL-18	R4133088
Hardness Calculated Hardness (as CaCO3)	272	HTC	0.20	mg/L		25-JUL-18	
Mercury Total			0.20	1119/ 🗠		20 00L-10	
Mercury (Hg)-Total	<0.000010		0.000010	mg/L	19-JUL-18	20-JUL-18	R4134551
Nitrate in Water by IC Nitrate (as N)	<0.020		0.020	mg/L		19-JUL-18	R4135773
Nitrate+Nitrite	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		0.020	iiig/L		13-30L-10	114100110
Nitrate and Nitrite as N	<0.070		0.070	mg/L		25-JUL-18	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		19-JUL-18	R4135773
Oil & Grease - Gravimetric Oil and Grease	6.5		5.0	mg/L		26-JUL-18	R4147972
Phenol (4AAP) Phenols (4AAP)	0.0043		0.0010	mg/L		23-JUL-18	R4139243
Phosphorus, Total Phosphorus (P)-Total	0.399		0.0010	mg/L		24-JUL-18	R4139681
Sulfate in Water by IC Sulfate (SO4)	0.59					19-JUL-18	
Total Metals in Water by CRC ICPMS			0.30	mg/L		19-JOE-10	R4135773
Aluminum (AI)-Total Arsenic (As)-Total	0.132 0.00321		0.0030 0.00010	mg/L mg/L	20-JUL-18 20-JUL-18	20-JUL-18 20-JUL-18	R4136049 R4136049
	3.00021		0.00010	9, _			

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

2131552-4 ARV - 6 Sampled By: CLIENT on 17-JUL-18 @ 09:05						
Sampled By: CLIENT on 17-JUL-18 @ 09:05					I .	
Matrix: WATER						
Total Metals in Water by CRC ICPMS						
Cadmium (Cd)-Total	0.0000172	0.0000050	mg/L	20-JUL-18	20-JUL-18	R4136049
Calcium (Ca)-Total	84.7	0.050	mg/L	20-JUL-18	20-JUL-18	R4136049
Chromium (Cr)-Total	0.00097	0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Cobalt (Co)-Total	0.00198	0.00010	mg/L	20-JUL-18	20-JUL-18	R4136049
Copper (Cu)-Total	0.00116	0.00050	mg/L	20-JUL-18	20-JUL-18	R4136049
Iron (Fe)-Total	34.0	0.010	mg/L	20-JUL-18	20-JUL-18	R4136049
Lead (Pb)-Total	0.000272	0.000050	mg/L	20-JUL-18	20-JUL-18	R4136049
Magnesium (Mg)-Total	14.7	0.0050	mg/L	20-JUL-18	20-JUL-18	R4136049
Manganese (Mn)-Total	1.60	0.010	mg/L	20-JUL-18	23-JUL-18	R4139615
Nickel (Ni)-Total	0.00189	0.00050	mg/L	20-JUL-18	20-JUL-18	R4136049
Potassium (K)-Total Sodium (Na)-Total	9.17	0.050	mg/L	20-JUL-18 20-JUL-18	20-JUL-18	R4136049
Zinc (Zn)-Total	35.0 0.0173	0.050	mg/L	20-JUL-18 20-JUL-18	20-JUL-18 20-JUL-18	R4136049 R4136049
Total Organic Carbon by Combustion	0.0173	0.0030	mg/L	20-JUL-10	20-JUL-10	130049
Total Organic Carbon by Combustion  Total Organic Carbon	17.9	0.50	mg/L		27-JUL-18	R4146287
Total Suspended Solids	17.5	0.00	g/ =		2. 332 13	114140201
Total Suspended Solids	132	6.0	mg/L		24-JUL-18	R4140196
pH			•			
pH	6.77	0.10	pH units		19-JUL-18	R4133573

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

**Reference Information** 

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#### Sample Parameter Qualifier Key:

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

#### Test Method References

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

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

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

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

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#### Reference Information

**Test Method References:** 

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

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

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

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

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

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

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

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

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

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

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

HG-T-CVAF-WP Water Mercury Total EPA245.7 V2.0

Mercury in filtered and unfiltered waters is oxidized with Bromine monochloride and analyzed by cold-vapour atomic fluorescence spectrometry.

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

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

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

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

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

NO2+NO3-CALC-WP Water Nitrate+Nitrite **CALCULATION** 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-I -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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PH-WP **APHA 4500H** 

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

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

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

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

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

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

L2131552 CONTD....

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### **Reference Information**

#### **Test Method References:**

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

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

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

XYLENES-SUM-CALC-WP

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

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

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

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

#### **Chain of Custody Numbers:**

#### **GLOSSARY OF REPORT TERMS**

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

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

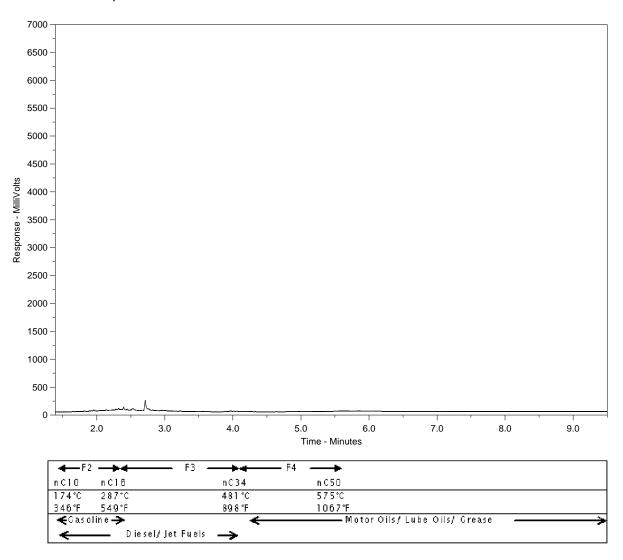
Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



ALS Sample ID: L2131552-1 Client Sample ID: ARV - 2



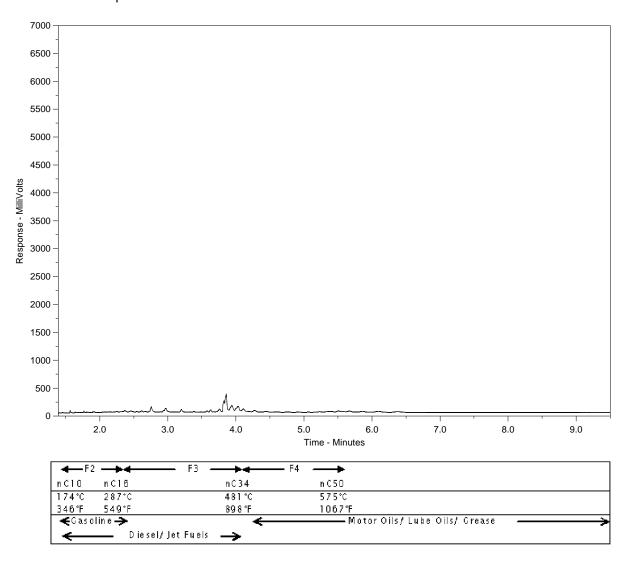
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2131552-2 Client Sample ID: ARV - 4



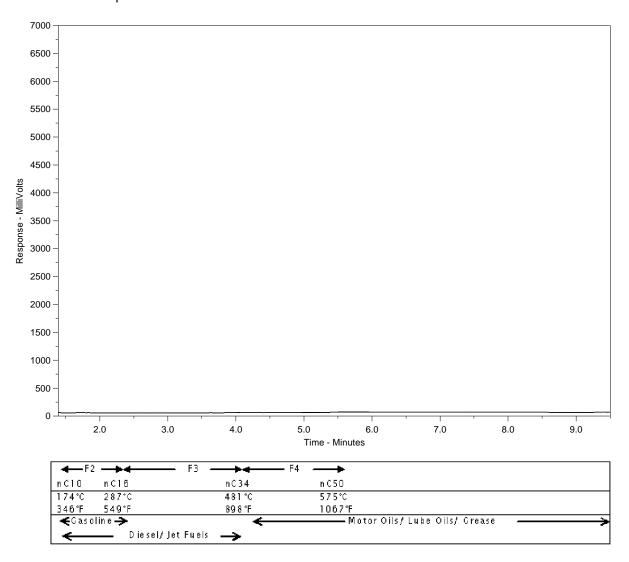
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2131552-3 Client Sample ID: ARV - 5



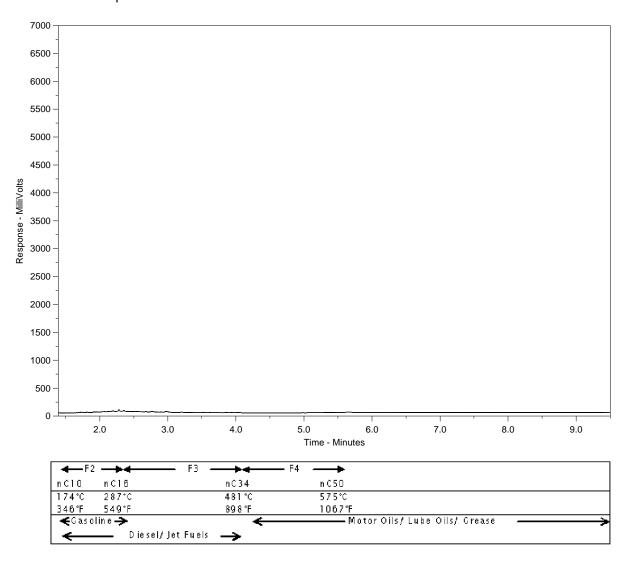
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2131552-4 Client Sample ID: ARV - 6



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

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

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

# Environmental www.atsglobal.com

# Chain of Custody (COC) / Analyti Request Form

re

coc Number: 14 - 450473

Canada Toll Free: 1 800 668 9878

			<u></u>						
Report To	Repo		vice Le	vel Below (Rush Turns	around Time (TAT) is not available	for all tests)			
Company: Hamlet of Arrigh	Select Report Format:	PDF EXCEL EDD (DIGITAL)	Regular (Standard	TAT if received by 3pm	1) ~				
Contact: Steve England	Quality Control (QC) Report with R	eport 🗌 Yes 🔲 No		P 10 Priority (2-4 business days if received by 3pm) = 17 etc					
Address: Box \ 50	Criteria on Report - provide details		E Emergency (1-2 bu	isiness days if received	by 3pm) 13				
Arrigh, NU XOC-DED_	Select Distribution:	EMAIL FAX	E2 Same day or week	end emergency if recei	ived by 10am – contact ALS for su	urcharge.			
Phone:	Email 1 or Fax Correct	Sac@aingicon	Specify Date Required for E	2,E or P:	<u> </u>				
867-857-2841	Email 2 Mustur	aux, nulca b			is Request 1.				
Invoice To Same as Report To Yes I No	Invoice	Distribution	Indicate Filtered (F)	j, Preserved (P) or Filter	red and Preserved (F/P) below				
Copy of Invoice with Report	Select Invoice Distribution:	EMAIL FAX			1 6 5 2 5 4 1				
Company:	Email 1 or Fax		.1 3.00. 44 2.251	ج ل	1. 200 1 122000 1. 101 201 2				
Contact:	Email 2			1 X 2	S rot lidial :	2			
Project Information	Oil and Gas Requi	Oil and Gas Required Fields (client use)			A a lim & A Pro	l lei			
ALS Quote #:	Approver ID: 16	prover ID: Cost Center:			N sis no □	mit			
Job#:	GL Account:	Routing Code:	וע וי ווי ווי ו	. 101		atc			
PO / AFE:	Activity Code:		700'VI67.20	no 107	4#@JUL##	per			
LSD;	Location:		الا-اح [1] [	VU at a	3 10 Se - 6 2 4 4 4 1	Number of Containers			
	ALS Contact:	Complete	7 4 2 2 2	~01 🔟 (C	# # # # # # # # # # # # # # # # # # #				
ALS Lab Work Order # (lab use only)	ALS Contact:	Sampler:	1 2 0 2 2 2	, <del>-</del>					
ALS Sample # Sample Identification and/or Coordinates	Date	Time Sample Type		400	3 (2)   10   12				
(Iab use only) (This description will appear on the report)	(dd-mmm-yy)	(hh:mm)		1 7 0	10°   -				
ARV-Z	17/01/19	843an Lour	·   -   -   -   -   -   -   -   -   -	711	1441				
ARV-4	17 107 110	830an Lan	- 4-4-4		1-1-1				
ARV-5	17/01/19	<u> </u>		7//					
ARV- b		1905 m la		7/7/	<del>                                     </del>	1 1 1			
	1 27014	403 - 50	<del>           </del>	<del>-   -   -</del>	+ - + - + - + - + - + - + - + - + - + -	<del>-       </del>			
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			<del>                                     </del>		<del>    </del>	<del>                                     </del>			
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				i E coupition A	0.05050/ED //				
Drinking Water (DW) Samples¹ (client use)	lal Instructions / Specify Criteria to add	on report (client Use)	Frozen		S RECEIVED (lab use only Observations Yes				
Are samples taken from a Regulated DW System?	<del></del> -		<b>네</b> 이 첫 등에 보고 하면 있다고 그 경찰		ody seal intact Yes				
∏ Yes □ No			Cooling Initiated		,, , , , , , , , , , , , , , , , , , ,				
Are samples for human drinking water use?			INIITIAL COOLER TEMPERA	TURES °C	FINAL COOLER TEMPER	RATURES of .—			
r Yes □ No			P. S.						
	SENSON INITIAL SHIPMENT RECE	PTION (lab use only)	Programme Telephone FIN	JAL SHIPMENT RI	ECEPTION (lab use only)				
Released by: Date: Time: Rece	ived by:	Date: Time:	Received by:			2/			
Released by: Date: July 1718 9122 an Rece			. Kan Perbebasi kan 1		3 1111	8 2018			
	1					· · · · · · · · · · · · · · · · · · ·			

## ANNUAL REPORT FOR THE HAMLET OF ARVIAT

Appendix E



Hamlet of Arviat

ATTN: K/STEVE ENGLAND

PO Box 150

Arviat NU XOC 0E0

Date Received: 14-AUG-18

Report Date: 28-AUG-18 07:31 (MT)

Version: FINAL

Client Phone: 867-857-2841

# Certificate of Analysis

Lab Work Order #: L2146326

Project P.O. #: NOT SUBMITTED

Job Reference: HAMLET OF ARVIAT

C of C Numbers: Legal Site Desc:

Hua Wo

Chemistry Laboratory Manager

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

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

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



L2146326 CONTD.... PAGE 2 of 14 Version: FINAL

Sample Details/Parameters	Result	Qualifier* D.L.	Units	Extracted	Analyzed	Batch
L2146326-1 ARV-2						
Sampled By: CLIENT on 13-AUG-18 @ 08:45						
Matrix: WATER						
BTEX plus F1-F4						
BTX plus F1 by GCMS						
Benzene Benzene	<0.00050	0.00050	mg/L		15-AUG-18	R4175024
Toluene	< 0.0010	0.0010	mg/L		15-AUG-18	R4175024
Ethyl benzene	< 0.00050	0.00050	mg/L		15-AUG-18	R4175024
o-Xylene	<0.00050	0.00050	mg/L		15-AUG-18	R4175024
m+p-Xylenes	< 0.00040	0.00040	mg/L		15-AUG-18	R4175024
F1 (C6-C10)	<0.10	0.10	mg/L		15-AUG-18	R4175024
Surrogate: 4-Bromofluorobenzene (SS)	92.2	70-130	%		15-AUG-18	R4175024
CCME PHC F2-F4 in Water						
F2 (C10-C16)	0.13	0.10	mg/L	17-AUG-18	17-AUG-18	R4176931
F3 (C16-C34)	0.36	0.25	mg/L	17-AUG-18	17-AUG-18	R4176931
F4 (C34-C50)	<0.25	0.25	mg/L	17-AUG-18	17-AUG-18	R4176931
Surrogate: 2-Bromobenzotrifluoride	102.6	60-140	%	17-AUG-18	17-AUG-18	R4176931
CCME Total Hydrocarbons					00 4110 15	
F1-BTEX	<0.10	0.10	mg/L		22-AUG-18	
F2-Naphth	0.13	0.10	mg/L		22-AUG-18	
F3-PAH	0.36	0.25	mg/L		22-AUG-18	
Total Hydrocarbons (C6-C50)	0.50	0.38	mg/L		22-AUG-18	
Sum of Xylene Isomer Concentrations Xylenes (Total)	<0.00064	0.00064	mg/L		17-AUG-18	
Aylenes (Total)	<0.0004	0.0004	ilig/L		17-400-10	
Polyaromatic Hydrocarbons (PAHs)						
1-Methyl Naphthalene	<0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
2-Methyl Naphthalene	<0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
Acenaphthene	<0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
Acenaphthylene	<0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
Anthracene	< 0.000010	0.000010	mg/L	18-AUG-18	20-AUG-18	R4180385
Acridine	< 0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
Benzo(a)anthracene	<0.000010	0.000010	mg/L	18-AUG-18	20-AUG-18	R4180385
Benzo(a)pyrene	<0.000050	0.0000050	mg/L	18-AUG-18	20-AUG-18	R4180385
Benzo(b&j)fluoranthene	<0.000010	0.000010	mg/L	18-AUG-18	20-AUG-18	R4180385
Benzo(g,h,i)perylene	<0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
Benzo(k)fluoranthene	<0.000010	0.000010	mg/L	18-AUG-18	20-AUG-18	R4180385
Chrysene	<0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
Dibenzo(a,h)anthracene	<0.000050	0.0000050	mg/L	18-AUG-18	20-AUG-18	R4180385
Fluoranthene	<0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
Fluorene	<0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
Indeno(1,2,3-cd)pyrene	<0.000010	0.000010	mg/L	18-AUG-18	20-AUG-18	R4180385
Naphthalene	<0.000050	0.000050	mg/L	18-AUG-18	20-AUG-18	R4180385
Phenanthrene	<0.000050	0.000050	mg/L	18-AUG-18	20-AUG-18	R4180385
Pyrene	<0.000010	0.000010	mg/L	18-AUG-18	20-AUG-18	R4180385
Quinoline	<0.000020	0.000020	mg/L	18-AUG-18	20-AUG-18	R4180385
B(a)P Total Potency Equivalent	<0.000030	0.000030	mg/L	18-AUG-18	20-AUG-18	R4180385
Surrogate: Acenaphthene d10 Surrogate: Acridine d9	85.5 85.9	40-130	% %	18-AUG-18 18-AUG-18	20-AUG-18 20-AUG-18	R4180385
Surrogate: Actidine d9 Surrogate: Chrysene d12	85.8 63.4	40-130 40-130	% %	18-AUG-18	20-AUG-18 20-AUG-18	R4180385 R4180385
Surrogate: Naphthalene d8	78.5	40-130	%	18-AUG-18	20-AUG-18 20-AUG-18	R4180385
Surrogate: Phenanthrene d10	80.8	40-130	%	18-AUG-18	20-AUG-18 20-AUG-18	R4180385
Nunavut WW Group 1	00.0	40-130	70	107.00-10	207.00-10	114100000
Alkalinity, Bicarbonate						
Bicarbonate (HCO3)	479	1.2	mg/L		16-AUG-18	
Alkalinity, Carbonate			-			
Airaillity, Carbonate						

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2146326 CONTD.... PAGE 3 of 14 Version: FINAL

Ammonia by colour Ammonia, Total (as N)         5.45         0.20         mg/L         17-AUG-18         R4*           Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand         32         20         mg/L         15-AUG-18         R4*           Carbonaceous BOD BOD Carbonaceous         42.2         BODP         6.0         mg/L         15-AUG-18         R4*           Chloride in Water by IC Chloride (Cl)         732         10         mg/L         14-AUG-18         R4*           Conductivity Conductivity         3820         1.0         umhos/cm         15-AUG-18         R4*           Fecal coliforms, 1:10 dilution by QT97         Fecal Coliforms         200         MBHT         10         MPN/100mL         14-AUG-18         R4*           Hardness Calculated Hardness (as CaCO3)         1180         HTC         0.20         mg/L         14-AUG-18         R4*           Mercury Total Mercury (Hg)-Total         0.0000050         0.0000050         0.0000050         mg/L         14-AUG-18         R4*           Nitrate in Water by IC Nitrate (as N)         < 0.40	Batch
Sampled By: CLIENT on 13-AUG-18 @ 08:45   Matrix: WATER	
Matrix:         WATER         Alkalinity, Carbonate Coarbonate (CO3)         <0.60	
Alkalinity, Carbonate         <0.60         0.60         mg/L         16-AUG-18         16-AUG-18           Alkalinity, Mydroxide         Hydroxide (OH)         <0.34         0.34         mg/L         16-AUG-18         16-AUG-18         16-AUG-18         AUG-18         16-AUG-18         AUG-18	
Carbonate (CO3)	
Hydroxide (OH)	
Alkalinity, Total (as CaCO3) Amononia by colour Ammonia, Total (as N) Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand Biochemical Oxygen Demand 32 20 mg/L 15-AUG-18 R4: Carbonaceous BOD BOD Carbonaceous BOD BOD Carbonaceous BOD Chloride in Water by IC Chloride (CI) Conductivity Conductivity Conductivity Conductivity Fecal Coliforms, 1:10 dilution by QT97 Fecal Coliforms American Scalculated Hardness Calculated Hardness (as CaCO3) Mercury (Hg)-Total Mercury (Hg)-Total Mercury (Hg)-Total Mirtate in Water by IC Nitrate (as N) Nitrate and Nitrite as N Nitrate and Nitrite as N Nitrate and Nitrite as N Nitrate in Water by IC Nitrite (as N) Oil & Grease - Gravimetric Oil and Grease  - 5.0 DLM 0.00010 DLM 0.0010 mg/L 17-AUG-18 R4:  R4:  R4:  R4:  R4:  R4:  R4:  R4:	
Ammonia by colour   Ammonia, Total (as N)   5.45   0.20   mg/L   17-AUG-18   R41   R42   R42   R43   R43   R44	171247
Biochemical Oxygen Demand (BOD)   Biochemical Oxygen Demand (BOD)   Biochemical Oxygen Demand   32   20   mg/L   15-AUG-18   R4:   Carbonaceous BOD   BOD Carbonaceous   42.2   BODP   6.0   mg/L   15-AUG-18   R4:   Chloride in Water by IC   Chloride (Cl)   732   10   mg/L   14-AUG-18   R4:   Conductivity   3820   1.0   umhos/cm   15-AUG-18   R4:   Conductivity   16-AUG-18   Conductivity   16-AUG-18   R4:   Conductivity   16-AUG-18	
Carbonaceous BOD   BOD Carbonaceous   42.2   BODP   6.0   mg/L   15-AUG-18   R45	177036
BOD Carbonaceous	179083
Chloride (Cl)	179083
Conductivity   3820	172673
Fecal coliforms, 1:10 dilution by QT97   Fecal Coliforms	171247
Hardness Calculated   Hardness (as CaCO3)	169687
Mercury Total         0.0000050         0.0000050         mg/L         14-AUG-18         15-AUG-18         R41           Nitrate in Water by IC         Nitrate (as N)         <0.40	10001
Nitrate in Water by IC         Nitrate (as N)         <0.40	
Nitrate (as N)	171819
Nitrate and Nitrite as N   <0.45   0.45   mg/L   17-AUG-18	172673
Nitrite (as N)	
Oil and Grease       <5.0       5.0       mg/L       21-AUG-18       R41         Phenol (4AAP)       0.0034       0.0010       mg/L       17-AUG-18       R41         Phosphorus, Total       0.552       0.0010       mg/L       22-AUG-18       R41         Sulfate in Water by IC       0.0010       mg/L       14-AUG-18       R41         Total Metals in Water by CRC ICPMS       0.0168       0.0030       mg/L       23-AUG-18       R41         Arsenic (As)-Total       0.00618       0.00010       mg/L       23-AUG-18       23-AUG-18       R41	172673
Phenol (4AAP)         0.0034         0.0010         mg/L         17-AUG-18         R41           Phosphorus, Total         0.0010         mg/L         17-AUG-18         R41           Phosphorus (P)-Total         0.552         0.0010         mg/L         22-AUG-18         R41           Sulfate in Water by IC         664         6.0         mg/L         14-AUG-18         R41           Total Metals in Water by CRC ICPMS         0.0168         0.0030         mg/L         23-AUG-18         23-AUG-18         R41           Arsenic (As)-Total         0.00618         0.00010         mg/L         23-AUG-18         23-AUG-18         R41	180460
Phosphorus, Total         0.552         0.0010         mg/L         22-AUG-18         R41           Sulfate in Water by IC         664         6.0         mg/L         14-AUG-18         R41           Total Metals in Water by CRC ICPMS         0.0168         0.0030         mg/L         23-AUG-18         23-AUG-18         R41           Arsenic (As)-Total         0.00618         0.00010         mg/L         23-AUG-18         23-AUG-18         R41	
Sulfate in Water by IC         Sulfate (SO4)         664         6.0         mg/L         14-AUG-18         R41           Total Metals in Water by CRC ICPMS         0.0168         0.0030         mg/L         23-AUG-18         23-AUG-18         R41           Arsenic (As)-Total         0.00618         0.00010         mg/L         23-AUG-18         23-AUG-18         R41	178686
Sulfate (SO4)     664     6.0     mg/L     14-AUG-18     R41       Total Metals in Water by CRC ICPMS Aluminum (Al)-Total Arsenic (As)-Total     0.0168     0.0030     mg/L     23-AUG-18     23-AUG-18     R41       Arsenic (As)-Total     0.00618     0.00010     mg/L     23-AUG-18     23-AUG-18     R41	181330
Total Metals in Water by CRC ICPMS         0.0168         0.0030         mg/L         23-AUG-18         23-AUG-18         R41           Arsenic (As)-Total         0.00618         0.00010         mg/L         23-AUG-18         23-AUG-18         R41	170070
Aluminum (Al)-Total         0.0168         0.0030         mg/L         23-AUG-18         23-AUG-18         R41           Arsenic (As)-Total         0.00618         0.00010         mg/L         23-AUG-18         23-AUG-18         R41	172673
Arsenic (As)-Total 0.00618 0.00010 mg/L 23-AUG-18 23-AUG-18 R41	182884
	182884
Cadmium (Cd)-Total   0.0000134   0.0000050   mg/L   23-AUG-18   23-AUG-18   R41	182884
	182884
	182884
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	182884
	182884
	182884
	182884
	182884
	182884
	182884
Total Organic Carbon by Combustion	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2146326 CONTD.... PAGE 4 of 14 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2146326-1 ARV-2							
Sampled By: CLIENT on 13-AUG-18 @ 08:45							
' '							
Matrix: WATER							
<b>Total Organic Carbon by Combustion</b> Total Organic Carbon	55.5		5.0	mg/L		22-AUG-18	R4181416
Total Suspended Solids							
Total Suspended Solids	71.7		2.0	mg/L		20-AUG-18	R4179298
pH	7.70		0.40			45 4110 40	D 4474047
pH	7.76		0.10	pH units		15-AUG-18	R4171247
L2146326-2 ARV-4							
Sampled By: CLIENT on 13-AUG-18 @ 08:20							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS				,,			
Benzene	<0.00050		0.00050	mg/L		15-AUG-18	R4175024
Toluene	<0.0010		0.0010	mg/L		15-AUG-18	R4175024
Ethyl benzene	<0.00050		0.00050	mg/L		15-AUG-18	R4175024
o-Xylene m+p-Xylenes	<0.00050 <0.00040		0.00050 0.00040	mg/L mg/L		15-AUG-18 15-AUG-18	R4175024 R4175024
F1 (C6-C10)	<0.0040		0.00040	mg/L		15-AUG-18	R4175024
Surrogate: 4-Bromofluorobenzene (SS)	88.5		70-130	%		15-AUG-18	R4175024
CCME PHC F2-F4 in Water	00.5		70-130	70		13 700 10	1173024
F2 (C10-C16)	0.12		0.10	mg/L	20-AUG-18	23-AUG-18	R4181389
F3 (C16-C34)	<0.25		0.25	mg/L	20-AUG-18	23-AUG-18	R4181389
F4 (C34-C50)	<0.25		0.25	mg/L	20-AUG-18	23-AUG-18	R4181389
Surrogate: 2-Bromobenzotrifluoride	86.4		60-140	%	20-AUG-18	23-AUG-18	R4181389
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		23-AUG-18	
F2-Naphth	0.12		0.10	mg/L		23-AUG-18	
F3-PAH	<0.25		0.25	mg/L		23-AUG-18	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		23-AUG-18	
Sum of Xylene Isomer Concentrations  Xylenes (Total)	<0.00064		0.00064	mg/L		17-AUG-18	
ryiones (rotal)	10.00001		0.00001	9/=			
Polyaromatic Hydrocarbons (PAHs) 1-Methyl Naphthalene	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
2-Methyl Naphthalene	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
Acenaphthene	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
Acenaphthylene	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
Anthracene	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
Acridine	0.000042	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(a)anthracene	<0.000020	DLM	0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(a)pyrene	<0.000010	DLM	0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(b&j)fluoranthene	<0.000020	DLM	0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(g,h,i)perylene	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(k)fluoranthene	<0.000020	DLM	0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Chrysene	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
Dibenzo(a,h)anthracene	<0.000010	DLM	0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Fluoranthene	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
Fluorene	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385
Indeno(1,2,3-cd)pyrene	<0.000020	DLM	0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Naphthalene	<0.00010	DLM	0.00010	mg/L	18-AUG-18	21-AUG-18	R4180385
Phenanthrene	<0.00010	DLM	0.00010	mg/L	18-AUG-18	21-AUG-18	R4180385
Pyrene	<0.000020	DLM	0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Quinoline	<0.000040	DLM	0.000040	mg/L	18-AUG-18	21-AUG-18	R4180385

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2146326 CONTD.... PAGE 5 of 14 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2146326-2 ARV-4							
Sampled By: CLIENT on 13-AUG-18 @ 08:20							
Matrix: WATER							
Polyaromatic Hydrocarbons (PAHs) B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	18-AUG-18	21-AUG-18	R4180385
Surrogate: Acenaphthene d10	84.5		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Acridine d9	92.1		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Chrysene d12	78.3		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Naphthalene d8	80.1		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Phenanthrene d10	83.9		40-130	%	18-AUG-18	21-AUG-18	R4180385
Nunavut WW Group 1 Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	247		1.2	mg/L		16-AUG-18	
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		16-AUG-18	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		16-AUG-18	
Alkalinity, Total (as CaCO3)							D4474647
Alkalinity, Total (as CaCO3)  Ammonia by colour	202		1.0	mg/L		15-AUG-18	R4171247
Ammonia, Total (as N)  Biochemical Oxygen Demand (BOD)	22.8		2.0	mg/L		17-AUG-18	R4177036
Biochemical Oxygen Demand	36.1		6.0	mg/L		15-AUG-18	R4179083
Carbonaceous BOD BOD Carbonaceous	18.9		6.0	mg/L		15-AUG-18	R4179083
Chloride in Water by IC Chloride (CI)	416		2.5	mg/L		14-AUG-18	R4172673
Conductivity Conductivity	1770		1.0	umhos/cm		15-AUG-18	R4171247
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	11200	MBHT	10	MPN/100mL		14-AUG-18	R4169687
Hardness Calculated Hardness (as CaCO3)	243	нтс	0.20	mg/L		25-AUG-18	
Mercury Total		1110					
Mercury (Hg)-Total  Nitrate in Water by IC	<0.0000050		0.0000050	mg/L	14-AUG-18	15-AUG-18	R4171819
Nitrate (as N) Nitrate+Nitrite	<0.10	DLM	0.10	mg/L		14-AUG-18	R4172673
Nitrate and Nitrite as N	<0.11		0.11	mg/L		17-AUG-18	
Nitrite in Water by IC Nitrite (as N)	<0.050	DLM	0.050	mg/L		14-AUG-18	R4172673
Oil & Grease - Gravimetric Oil and Grease	<5.0		5.0	mg/L		21-AUG-18	R4180460
Phenol (4AAP) Phenols (4AAP)	0.0029		0.0010	mg/L		17-AUG-18	R4178686
Phosphorus, Total Phosphorus (P)-Total	22.4		0.10	mg/L		22-AUG-18	R4181330
Sulfate in Water by IC Sulfate (SO4)						14-AUG-18	
Total Metals in Water by CRC ICPMS	23.4		1.5	mg/L		14-400-18	R4172673
Aluminum (Al)-Total	0.0492		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Arsenic (As)-Total	0.00476		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Cadmium (Cd)-Total	0.0000122		0.0000050	mg/L	23-AUG-18	23-AUG-18	R4182884
Calcium (Ca)-Total	38.5		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Chromium (Cr)-Total	0.00059		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Cobalt (Co)-Total	0.00179		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2146326-2 ARV-4							
Sampled By: CLIENT on 13-AUG-18 @ 08:20							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Copper (Cu)-Total	0.00244		0.00050	mg/L	23-AUG-18	23-AUG-18	R4182884
Iron (Fe)-Total	3.57		0.010	mg/L	23-AUG-18	23-AUG-18	R4182884
Lead (Pb)-Total	0.000148		0.000050	mg/L	23-AUG-18	23-AUG-18	R4182884
Magnesium (Mg)-Total	35.6		0.0050	mg/L	23-AUG-18	23-AUG-18	R4182884
Manganese (Mn)-Total	0.790		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Nickel (Ni)-Total	0.00537		0.00050	mg/L	23-AUG-18	23-AUG-18	R4182884
Potassium (K)-Total	22.1		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Sodium (Na)-Total	232		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Zinc (Zn)-Total	< 0.0030		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Total Organic Carbon by Combustion							
Total Organic Carbon	38.0		5.0	mg/L		22-AUG-18	R4181416
Total Suspended Solids							
Total Suspended Solids	8.1		2.0	mg/L		20-AUG-18	R4179298
pH	7.01		0.45			45 4110 45	D44746 :=
pH	7.21		0.10	pH units		15-AUG-18	R4171247
L2146326-3 ARV-5							
Sampled By: CLIENT on 13-AUG-18 @ 09:00							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		15-AUG-18	R4175024
Toluene	<0.0010		0.0010	mg/L		15-AUG-18	R4175024
Ethyl benzene	<0.00050		0.00050	mg/L		15-AUG-18	R4175024
o-Xylene	<0.00050		0.00050	mg/L		15-AUG-18	R4175024
m+p-Xylenes F1 (C6-C10)	<0.00040		0.00040	mg/L		15-AUG-18 15-AUG-18	R4175024
Surrogate: 4-Bromofluorobenzene (SS)	<0.10 91.7		0.10 70-130	mg/L %		15-AUG-18	R4175024 R4175024
CCME PHC F2-F4 in Water	91.7		70-130	/0		13-AUG-18	K4173024
F2 (C10-C16)	<0.10		0.10	mg/L	20-AUG-18	23-AUG-18	R4181389
F3 (C16-C34)	<0.25		0.25	mg/L	20-AUG-18	23-AUG-18	R4181389
F4 (C34-C50)	<0.25		0.25	mg/L	20-AUG-18	23-AUG-18	R4181389
Surrogate: 2-Bromobenzotrifluoride	83.0		60-140	%	20-AUG-18	23-AUG-18	R4181389
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		23-AUG-18	
F2-Naphth	<0.10		0.10	mg/L		23-AUG-18	
F3-PAH	<0.25		0.25	mg/L		23-AUG-18	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		23-AUG-18	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		17-AUG-18	
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Acenaphthene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Acenaphthylene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Anthracene	<0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Acridine	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(a)anthracene	<0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(a)pyrene	<0.000050		0.0000050	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2146326 CONTD.... PAGE 7 of 14 Version: FINAL

	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2146326-3 ARV-5							
Sampled By: CLIENT on 13-AUG-18 @ 09:00							
Matrix: WATER							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Chrysene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	18-AUG-18	21-AUG-18	R4180385
Fluoranthene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Fluorene Indeno(1,2,3-cd)pyrene	<0.000020		0.000020 0.000010	mg/L	18-AUG-18 18-AUG-18	21-AUG-18 21-AUG-18	R4180385
Naphthalene	<0.000010 <0.000050		0.000010	mg/L mg/L	18-AUG-18	21-AUG-18 21-AUG-18	R4180385 R4180385
Phenanthrene	<0.000050		0.000050	mg/L	18-AUG-18	21-AUG-18	R4180385
Pyrene	< 0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Quinoline	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	18-AUG-18	21-AUG-18	R4180385
Surrogate: Acenaphthene d10	54.4		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Acridine d9	64.4		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Chrysene d12	54.2		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Naphthalene d8 Surrogate: Phenanthrene d10	50.5 57.3		40-130	% %	18-AUG-18 18-AUG-18	21-AUG-18 21-AUG-18	R4180385 R4180385
Nunavut WW Group 1	31.3		40-130	/0	10-400-10	21-AUG-10	N4100303
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	94.4		1.2	mg/L		16-AUG-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		16-AUG-18	
Alkalinity, Hydroxide	0.04		0.04			40 4110 40	
Hydroxide (OH)	<0.34		0.34	mg/L		16-AUG-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	77.4		1.0	mg/L		15-AUG-18	R4171247
Ammonia by colour	11.4		1.0	1119/2		107.00 10	1171247
Ammonia, Total (as N)	0.019		0.010	mg/L		16-AUG-18	R4175387
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		15-AUG-18	R4179083
Carbonaceous BOD	0.0					45 4110 40	D 4470000
BOD Carbonaceous	<2.0		2.0	mg/L		15-AUG-18	R4179083
Chloride in Water by IC Chloride (CI)	372		2.5	mg/L		14-AUG-18	R4172673
Conductivity	0.2					,	
Conductivity	1340		1.0	umhos/cm		15-AUG-18	R4171247
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	20	MBHT	10	MPN/100mL		14-AUG-18	R4169687
Hardness Calculated	040	штс	0.00	ma/l		25 ALIC 40	
Hardness (as CaCO3)  Mercury Total	212	HTC	0.20	mg/L		25-AUG-18	
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L	14-AUG-18	15-AUG-18	R4171819
Nitrate in Water by IC							
Nitrate (as N)	<0.10	DLM	0.10	mg/L		14-AUG-18	R4172673
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.11		0.11	mg/L		17-AUG-18	
Nitrite in Water by IC	-0.0E0	DLM	0.050	ma/l		14 ALIC 10	D4470670
Nitrite (as N) Oil & Grease - Gravimetric	<0.050	DLIVI	0.050	mg/L		14-AUG-18	R4172673
Oil & Grease - Gravimetric Oil and Grease	<5.0		5.0	mg/L		21-AUG-18	R4180460
Phenol (4AAP)	-0.0		5.0				
Phenols (4AAP)	0.0015		0.0010	mg/L		17-AUG-18	R4178686
Phosphorus, Total							

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L 24.46220 2 A DV 5							
L2146326-3 ARV-5							
Sampled By: CLIENT on 13-AUG-18 @ 09:00							
Matrix: WATER							
Phosphorus, Total Phosphorus (P)-Total	0.0275		0.0010	mg/L		22-AUG-18	R4181330
Sulfate in Water by IC	0.0275		0.0010	ilig/L		22-700-10	114101330
Sulfate (SO4)	2.8		1.5	mg/L		14-AUG-18	R4172673
Total Metals in Water by CRC ICPMS				Č			
Aluminum (Al)-Total	0.0420		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Arsenic (As)-Total	0.00077		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Cadmium (Cd)-Total	<0.000050		0.0000050	mg/L	23-AUG-18	23-AUG-18	R4182884
Calcium (Ca)-Total	34.5		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Chromium (Cr)-Total	0.00025		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Cobalt (Co)-Total Copper (Cu)-Total	0.00050 <0.00050		0.00010 0.00050	mg/L	23-AUG-18 23-AUG-18	23-AUG-18 23-AUG-18	R4182884 R4182884
Iron (Fe)-Total	<0.00050 3.54		0.00050	mg/L mg/L	23-AUG-18	23-AUG-18 23-AUG-18	R4182884 R4182884
Lead (Pb)-Total	0.000070		0.00050	mg/L	23-AUG-18 23-AUG-18	23-AUG-18 23-AUG-18	R4182884
Magnesium (Mg)-Total	30.7		0.000030	mg/L	23-AUG-18	23-AUG-18	R4182884
Manganese (Mn)-Total	0.536		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Nickel (Ni)-Total	0.00052		0.00050	mg/L	23-AUG-18	23-AUG-18	R4182884
Potassium (K)-Total	7.08		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Sodium (Na)-Total	191		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Zinc (Zn)-Total	0.0058		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Total Organic Carbon by Combustion							
Total Organic Carbon	11.0		0.50	mg/L		22-AUG-18	R4181416
Total Suspended Solids	22.5		2.0	ma/l		20 110 19	D4470200
Total Suspended Solids  pH	22.5		2.0	mg/L		20-AUG-18	R4179298
рп   рН	7.18		0.10	pH units		15-AUG-18	R4171247
L2146326-4 ARV-6				<u>'</u>			
Sampled By: CLIENT on 13-AUG-18 @ 09:20							
Matrix: WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		15-AUG-18	R4175024
Toluene	<0.0010		0.0010	mg/L		15-AUG-18	R4175024
Ethyl benzene	<0.00050		0.00050	mg/L		15-AUG-18	R4175024
o-Xylene	<0.00050		0.00050	mg/L		15-AUG-18	R4175024
m+p-Xylenes F1 (C6-C10)	<0.00040		0.00040	mg/L		15-AUG-18	R4175024
Surrogate: 4-Bromofluorobenzene (SS)	<0.10 89.1		0.10 70-130	mg/L %		15-AUG-18 15-AUG-18	R4175024 R4175024
CCME PHC F2-F4 in Water	03.1		10-130	/0		10-400-10	134173024
F2 (C10-C16)	0.14		0.10	mg/L	20-AUG-18	23-AUG-18	R4181389
F3 (C16-C34)	<0.25		0.25	mg/L	20-AUG-18	23-AUG-18	R4181389
F4 (C34-C50)	<0.25		0.25	mg/L	20-AUG-18	23-AUG-18	R4181389
Surrogate: 2-Bromobenzotrifluoride	84.5		60-140	%	20-AUG-18	23-AUG-18	R4181389
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		23-AUG-18	
F2-Naphth	0.14		0.10	mg/L		23-AUG-18	
F3-PAH	<0.25		0.25	mg/L		23-AUG-18	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		23-AUG-18	
Sum of Xylene Isomer Concentrations Xylenes (Total)	<0.00064		0.00064	mg/L		17-AUG-18	
Polyaromatic Hydrocarbons (PAHs)							

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2146326 CONTD.... PAGE 9 of 14 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2146326-4 ARV-6							
Sampled By: CLIENT on 13-AUG-18 @ 09:20							
Matrix: WATER							
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	0.000025		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Acenaphthene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Acenaphthylene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Anthracene	< 0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Acridine	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(a)anthracene	<0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Chrysene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
Dibenzo(a,h)anthracene Fluoranthene	<0.000050		0.0000050	mg/L	18-AUG-18 18-AUG-18	21-AUG-18 21-AUG-18	R4180385
Fluoranthene	<0.000020 <0.000020		0.000020	mg/L mg/L	18-AUG-18 18-AUG-18	21-AUG-18 21-AUG-18	R4180385 R4180385
Indeno(1,2,3-cd)pyrene	<0.000020		0.000020	mg/L	18-AUG-18	21-AUG-18 21-AUG-18	R4180385
Naphthalene	<0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18 21-AUG-18	R4180385
Phenanthrene	<0.000050		0.000050	mg/L	18-AUG-18	21-AUG-18	R4180385
Pyrene	<0.000010		0.000010	mg/L	18-AUG-18	21-AUG-18	R4180385
Quinoline	<0.000010		0.000020	mg/L	18-AUG-18	21-AUG-18	R4180385
B(a)P Total Potency Equivalent	< 0.000030		0.000030	mg/L	18-AUG-18	21-AUG-18	R4180385
Surrogate: Acenaphthene d10	60.1		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Acridine d9	77.8		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Chrysene d12	60.5		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Naphthalene d8	54.3		40-130	%	18-AUG-18	21-AUG-18	R4180385
Surrogate: Phenanthrene d10	78.5		40-130	%	18-AUG-18	21-AUG-18	R4180385
Nunavut WW Group 1							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	79.3		1.2	mg/L		16-AUG-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		16-AUG-18	
Alkalinity, Hydroxide Hydroxide (OH)	<0.34		0.34	mg/L		16-AUG-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	65.0		1.0	mg/L		15-AUG-18	R4171247
Ammonia by colour Ammonia, Total (as N)	0.038		0.010	mg/L		16-AUG-18	R4175387
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	<2.0		2.0	mg/L		15-AUG-18	R4179083
Carbonaceous BOD BOD Carbonaceous			2.0			15-AUG-18	
Chloride in Water by IC	<2.0			mg/L			R4179083
Chloride (CI) Conductivity	238		1.0	mg/L		14-AUG-18	R4172673
Conductivity	894		1.0	umhos/cm		15-AUG-18	R4171247
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms	20	MBHT	10	MPN/100mL		14-AUG-18	R4169687
Hardness Calculated Hardness (as CaCO3)	223	нтс	0.20	mg/L		28-AUG-18	
Mercury Total Mercury (Hg)-Total	<0.000050		0.0000050	mg/L	14-AUG-18	15-AUG-18	R4171819
Nitrate in Water by IC							

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L 24.46226 A A D.V. 6							
L2146326-4 ARV-6							
Sampled By: CLIENT on 13-AUG-18 @ 09:20							
Matrix: WATER							
Nitrate in Water by IC	0.040	DIM	0.040			44 4110 40	D 4470070
Nitrate (as N)	<0.040	DLM	0.040	mg/L		14-AUG-18	R4172673
Nitrate+Nitrite Nitrate and Nitrite as N	<0.070		0.070	mg/L		17-AUG-18	
Nitrite in Water by IC	<0.070		0.070	IIIg/L		17-400-10	
Nitrite (as N)	<0.020	DLM	0.020	mg/L		14-AUG-18	R4172673
Oil & Grease - Gravimetric				3			
Oil and Grease	<5.0		5.0	mg/L		22-AUG-18	R4181614
Phenol (4AAP)							
Phenols (4AAP)	0.0014		0.0010	mg/L		17-AUG-18	R4178687
Phosphorus, Total							
Phosphorus (P)-Total	0.0280		0.0010	mg/L		22-AUG-18	R4181330
Sulfate in Water by IC	0.00	DIM	0.00			44 4110 40	D4470070
Sulfate (SO4)	<0.60	DLM	0.60	mg/L		14-AUG-18	R4172673
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.0305		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Arsenic (As)-Total	0.00045		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Cadmium (Cd)-Total	<0.00045		0.00010	mg/L	23-AUG-18	23-AUG-18 23-AUG-18	R4182884
Calcium (Ca)-Total	60.1		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Chromium (Cr)-Total	0.00047		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Cobalt (Co)-Total	0.00100		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Copper (Cu)-Total	<0.00050		0.00050	mg/L	23-AUG-18	23-AUG-18	R4182884
Iron (Fe)-Total	11.5		0.010	mg/L	23-AUG-18	23-AUG-18	R4182884
Lead (Pb)-Total	0.000196		0.000050	mg/L	23-AUG-18	23-AUG-18	R4182884
Magnesium (Mg)-Total	17.7		0.0050	mg/L	23-AUG-18	23-AUG-18	R4182884
Manganese (Mn)-Total	1.66		0.010	mg/L	23-AUG-18	27-AUG-18	R4186849
Nickel (Ni)-Total	0.00062		0.00050	mg/L	23-AUG-18	23-AUG-18	R4182884
Potassium (K)-Total	5.09		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Sodium (Na)-Total	84.5		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Zinc (Zn)-Total	0.0135		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Total Organic Carbon by Combustion Total Organic Carbon	7.00		0.50			22 4110 48	D4404446
	7.99		0.50	mg/L		22-AUG-18	R4181416
Total Suspended Solids Total Suspended Solids	30.0		2.0	mg/L		20-AUG-18	R4179298
pH	00.0		2.0	9, ⊏			
pH	6.66		0.10	pH units		15-AUG-18	R4171247
L2146326-5 OLD LAGOON				•			
Sampled By: CLIENT							
Matrix: WATER							
TITLE STATE OF THE							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	83.8		1.2	mg/L		16-AUG-18	
Alkalinity, Carbonate	_		_				
Carbonate (CO3)	<0.60		0.60	mg/L		16-AUG-18	
Alkalinity, Hydroxide	.0.04		0.04	m a/I		16 110 10	
Hydroxide (OH)	<0.34		0.34	mg/L		16-AUG-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	68.7		1.0	mg/L		15-AUG-18	R4171247
Ammonia by colour	00.7		1.0	111g/ L		107.00-10	1717 1247
Ammonia, Total (as N)	3.45		0.10	mg/L		16-AUG-18	R4175387
Biochemical Oxygen Demand (BOD)				3			
Biochemical Oxygen Demand	5.2		2.0	mg/L		15-AUG-18	R4179083

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2146326-5 OLD LAGOON							
Sampled By: CLIENT							
Matrix: WATER							
Carbonaceous BOD							
BOD Carbonaceous	2.9		2.0	mg/L		15-AUG-18	R4179083
Chloride in Water by IC							
Chloride (CI)	66.2		0.50	mg/L		14-AUG-18	R4172673
Conductivity Conductivity	365		1.0	umhos/cm		15-AUG-18	R4171247
Fecal coliforms, 1:10 dilution by QT97	303		1.0	dillios/oili		107100 10	14171247
Fecal Coliforms	80		10	MPN/100mL		14-AUG-18	R4169687
Hardness Calculated				,,,			
Hardness (as CaCO3)	60.1	HTC	0.20	mg/L		25-AUG-18	
Mercury Total Mercury (Hg)-Total	0.0000090		0.0000050	mg/L	14-AUG-18	15-AUG-18	R4171819
Nitrate in Water by IC							
Nitrate (as N)	0.279		0.020	mg/L		14-AUG-18	R4172673
Nitrate+Nitrite Nitrate and Nitrite as N	0.510		0.070	mg/L		17-AUG-18	
Nitrite in Water by IC	0.510		0.070	iiig/L		11-400-10	
Nitrite (as N)	0.231		0.010	mg/L		14-AUG-18	R4172673
Oil & Grease - Gravimetric						00 4110 46	D 44045
Oil and Grease  Phosphorus, Total	<5.0		5.0	mg/L		22-AUG-18	R4181614
Phosphorus (P)-Total	1.93		0.0020	mg/L		22-AUG-18	R4181330
Sulfate in Water by IC							
Sulfate (SO4)	3.84		0.30	mg/L		14-AUG-18	R4172673
Total Metals in Water by CRC ICPMS Aluminum (Al)-Total	0.246		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Arsenic (As)-Total	0.00183		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Cadmium (Cd)-Total	0.0000200		0.0000050	mg/L	23-AUG-18	23-AUG-18	R4182884
Calcium (Ca)-Total	12.6		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Chromium (Cr)-Total	0.00041		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Cobalt (Co)-Total	0.00034		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Copper (Cu)-Total	0.00837		0.00050	mg/L	23-AUG-18	23-AUG-18	R4182884
Iron (Fe)-Total	1.68		0.010	mg/L	23-AUG-18	23-AUG-18	R4182884
Lead (Pb)-Total	0.000939		0.000050	mg/L	23-AUG-18	23-AUG-18	R4182884
Magnesium (Mg)-Total	6.96		0.0050	mg/L	23-AUG-18	23-AUG-18	R4182884
Manganese (Mn)-Total	0.0677		0.00010	mg/L	23-AUG-18	23-AUG-18	R4182884
Nickel (Ni)-Total	0.00181		0.00050	mg/L	23-AUG-18	23-AUG-18	R4182884
Potassium (K)-Total	7.60		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Sodium (Na)-Total	41.8		0.050	mg/L	23-AUG-18	23-AUG-18	R4182884
Zinc (Zn)-Total	0.0117		0.0030	mg/L	23-AUG-18	23-AUG-18	R4182884
Total Organic Carbon by Combustion Total Organic Carbon	17.6		0.50	mg/L		22-AUG-18	R4181416
Total Suspended Solids							
Total Suspended Solids	3.9		2.0	mg/L		20-AUG-18	R4179298
<b>рН</b> рН	7.77		0.10	pH units		15-AUG-18	R4171247
	1.11		0.10	pri driito		107.00 10	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

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### **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.
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).
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may be valid in some cases (refer to Health Canada guidance).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

#### **Test Method References:**

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

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

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

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

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

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

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

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

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Person Final

### **Reference Information**

Test	· M	letk	hor	Ref	er	en	Ces

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

Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

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

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

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

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

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

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

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

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

HARDNESS-CALC-WP Water Hardness Calculated APHA 2340B

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

P-T-L-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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PAH,PANH-WP Water Polyaromatic Hydrocarbons (PAHs) EPA SW 846/8270-GC/MS

Water is spiked with a surrogate spike mix and extracted using solvent extraction techniques. Analysis is performed by GC/MS in the selected ion monitoring (SIM) mode.

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

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### **Reference Information**

**Test Method References:** 

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

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

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

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

SOLIDS-TOTSUS-WP Water **Total Suspended Solids** APHA 2540 D (modified) Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.

XYLENES-SUM-CALC-

Water

Sum of Xylene Isomer Concentrations

CALCULATED RESULT

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

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

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

<b>Laboratory Definition Code</b>	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.

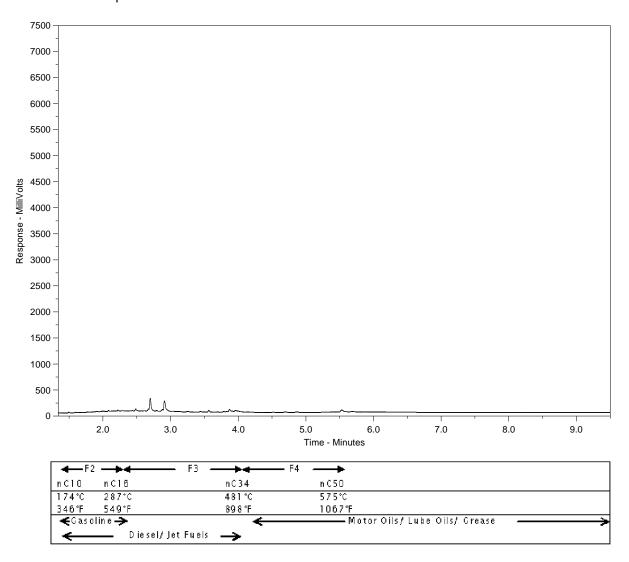
N/A - Result not available. Refer to qualifier code and definition for explanation.

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.



ALS Sample ID: L2146326-1 Client Sample ID: ARV-2



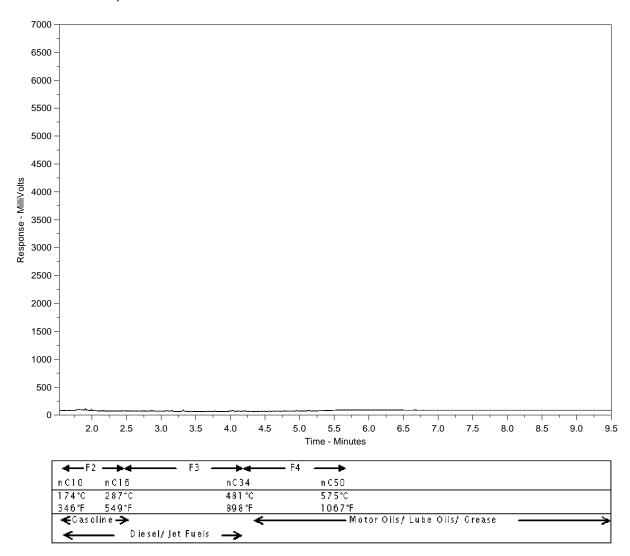
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2146326-2 Client Sample ID: ARV-4



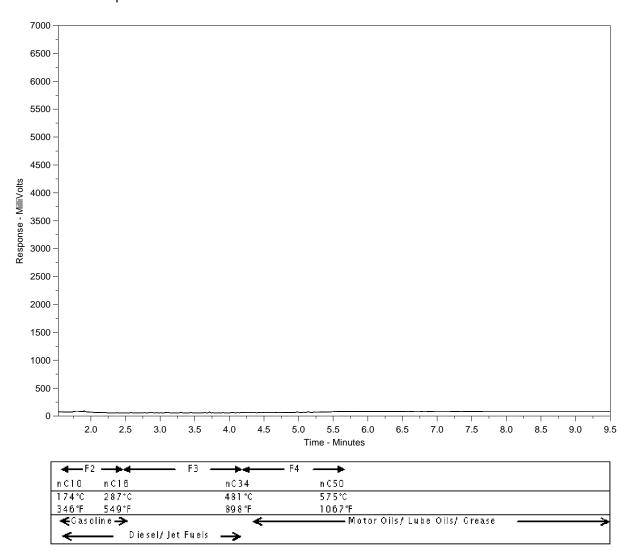
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2146326-3 Client Sample ID: ARV-5



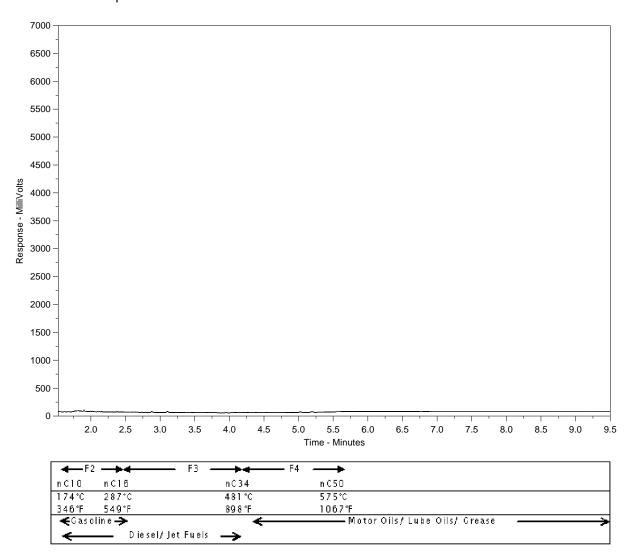
The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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.



ALS Sample ID: L2146326-4 Client Sample ID: ARV-6



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

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

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

# Environt www.alsglobal.com

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Chain of Custody (COC) / Analyti

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Project Information	<u> </u>	Oil and Gas Require	ed Fields (client us	se)	_		*:_	:t- n		$\forall$	7.60	rite o	er:		Number of Containers
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Drinking Water (DW) Samples¹ (client use)	Special Instructions / Sp	ecify Criteria to add or	report (client Use)				S	AMPLE C	ONDITION			•	only)		
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Are samples taken from a Regulated DW System?					ice pa			_ No	□ Cu	stody sea	il intact	Yes		No	
1.22					Cooling Initiated										
Are samples for human drinking water use?					IN	IITIAL CO	OLER TEN	IPERATURE	s °C		FINAL CO	OOLER TE	MPERATI	JRES ℃	7
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SHIPMENT RELEASE (client use)	INITIA	L SHIPMENT RECEP		40 55				FINAL S	HIPMENT						
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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

MA-FM-0328e v06 Frank03 October 2013

# Environmental www.alsglobal.com

# Chain of Custody (COC) / Analytic

Canada Toll Free: 1 800 668 9878

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Report To	Report					round Time (TAT) is not available for all tests)				
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XOC-DEO		MAIL FAX	E2   :	Same day or weekend	emergency if receiv	ved by 10am – contact ALS for surcharge.				
Phone:	Email 1 or Fax	arvietsa-@965	Specify Date	Required for E2,I	E or P:					
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ALS Sample # Sample Identification and/or Coordinates (lab use only) (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm) Sample Type	(+ C	146	401 W	(A) A) A				
1RV-Z	Aca13,18	8145am Wester	1	- 4-6-	1					
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Drinking Water (DW) Samples¹ (client use) Special V	nstructions / Specify Criteria to add on	report (client Use)		SAMPLE		RECEIVED (lab use only)				
Are samples taken from a Regulated DW System?			Frozen	보기		oservations Yes 🔲 No	. 🖳			
☐ Yes ☐ No			Ice packs	Yes 🔲 No	Custod	dy seal intact Yes 🔲 No	· 🗆			
			Cooling Initia							
Are samples for human drinking water use? ☐ Yes ☐ No	•		INIITIAL CO	OCLER TEMPERATUR	RES °C	FINAL COOLER TEMPERATURES °C	110/			
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SHIPMENT RELEASE (client use)  Released by: Date: Time: Receiver	INITIAL SHIPMENT RECEPT	IQN (lab use only)	7 7 7 5 S			CEPTION (lab use only)				
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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INCOMMATION	William	E-LABORATORY CORY VOLUM	N. CLIENT COL							

# ANNUAL REPORT FOR THE HAMLET OF ARVIAT

Appendix F



Hamlet of Arviat

ATTN: STEVE ENGLAND

PO Box 150

Arviat NU XOC 0E0

Date Received: 11-SEP-18

Report Date: 21-SEP-18 09:45 (MT)

Version: FINAL

Client Phone: 867-857-2841

# Certificate of Analysis

Lab Work Order #: L2162085
Project P.O. #: NOT SUBMITTED

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

Mhl

Hua wo

Chemistry Laboratory Manager

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

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

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



Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2162085-1 ARV-2							
Sampled By: CLIENT on 10-SEP-18 @ 08:56							
Matrix: WATER							
WATER							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	548		1.2	mg/L		13-SEP-18	
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		13-SEP-18	
Alkalinity, Hydroxide	40.00		0.00	9/ _		10 021 10	
Hydroxide (OH)	<0.34		0.34	mg/L		13-SEP-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	449		1.0	mg/L		12-SEP-18	R4215222
Ammonia by colour Ammonia, Total (as N)	6.07		0.20	mg/L		12-SEP-18	R4215354
Biochemical Oxygen Demand (BOD)	0.07		0.20	IIIg/L		12-9EF-10	114213334
Biochemical Oxygen Demand	27.6		6.0	mg/L		12-SEP-18	R4217784
Carbonaceous BOD				-			
BOD Carbonaceous	26.1		6.0	mg/L		12-SEP-18	R4217784
Chloride in Water by IC Chloride (CI)	650		10	m c /l		10 CED 10	D4000000
Conductivity	650		10	mg/L		12-SEP-18	R4228350
Conductivity	3670		1.0	umhos/cm		12-SEP-18	R4215222
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	140		10	MPN/100mL		11-SEP-18	R4214107
Hardness Calculated	4440	HTC	0.00			10.0ED 10	
Hardness (as CaCO3)  Mercury Total	1140	піс	0.20	mg/L		19-SEP-18	
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L	12-SEP-18	17-SEP-18	R4217950
Nitrate in Water by IC							
Nitrate (as N)	<0.40	DLM	0.40	mg/L		12-SEP-18	R4228350
Nitrate+Nitrite	0.45		0.45			04.050.40	
Nitrate and Nitrite as N Nitrite in Water by IC	<0.45		0.45	mg/L		21-SEP-18	
Nitrite (as N)	<0.20	DLM	0.20	mg/L		12-SEP-18	R4228350
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		18-SEP-18	R4218890
Phenol (4AAP)	0.0045		0.0040			47 CED 40	D 4040047
Phenols (4AAP)  Phosphorus, Total	0.0015		0.0010	mg/L		17-SEP-18	R4216347
Phosphorus (P)-Total	0.429		0.0010	mg/L		18-SEP-18	R4221654
Sulfate in Water by IC							
Sulfate (SO4)	625		6.0	mg/L		12-SEP-18	R4228350
Total Metals in Water by CRC ICPMS	0.0088		0.0020	ma/l	17-SEP-18	17-SEP-18	D42220E2
Aluminum (AI)-Total Arsenic (As)-Total	0.0088 0.00574		0.0030	mg/L mg/L	17-SEP-18 17-SEP-18	17-SEP-18 17-SEP-18	R4223052 R4223052
Cadmium (Cd)-Total	0.000113		0.00000	mg/L	17-SEP-18	17-SEP-18	R4223052
Calcium (Ca)-Total	310		0.050	mg/L	17-SEP-18	17-SEP-18	R4223052
Chromium (Cr)-Total	0.00076		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Cobalt (Co)-Total	0.00086		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Copper (Cu)-Total	0.00343		0.00050	mg/L	17-SEP-18	17-SEP-18	R4223052
Iron (Fe)-Total Lead (Pb)-Total	0.650 0.000250		0.010 0.000050	mg/L mg/l	17-SEP-18 17-SEP-18	17-SEP-18 17-SEP-18	R4223052 R4223052
Magnesium (Mg)-Total	0.000250 88.9		0.00050	mg/L mg/L	17-SEP-18 17-SEP-18	17-SEP-16 17-SEP-18	R4223052 R4223052
Manganese (Mn)-Total	0.761		0.0030	mg/L	17-SEP-18	17-SEP-18	R4223052
Nickel (Ni)-Total	0.00695		0.00050	mg/L	17-SEP-18	17-SEP-18	R4223052

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2162085-1 ARV-2							
Sampled By: CLIENT on 10-SEP-18 @ 08:56							
Matrix: WATER							
Total Metals in Water by CRC ICPMS Potassium (K)-Total	61.4		0.050	mg/L	17-SEP-18	17-SEP-18	R4223052
Sodium (Na)-Total	419		0.050	mg/L	17-SEP-18	17-SEP-18	R4223052
Zinc (Zn)-Total	0.0067		0.0030	mg/L	17-SEP-18	17-SEP-18	R4223052
<b>Total Organic Carbon by Combustion</b> Total Organic Carbon	47.7		5.0	mg/L		13-SEP-18	R4216018
Total Suspended Solids Total Suspended Solids	24.1		2.0	mg/L		14-SEP-18	R4217517
<b>pH</b> pH	8.00		0.10	pH units		12-SEP-18	R4215222
L2162085-2 ARV-4							
Sampled By: CLIENT on 10-SEP-18 @ 08:42							
Matrix: WATER							
Nunavut WW Group 1							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	192		1.2	mg/L		13-SEP-18	
Alkalinity, Carbonate Carbonate (CO3)	<0.60		0.60	mg/L		13-SEP-18	
<b>Alkalinity, Hydroxide</b> Hydroxide (OH)	<0.34		0.34	mg/L		13-SEP-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	158		1.0	mg/L		12-SEP-18	R4215222
Ammonia by colour Ammonia, Total (as N)	18.5		2.0	mg/L		14-SEP-18	R4216996
Biochemical Oxygen Demand (BOD) Biochemical Oxygen Demand	12.3		6.0	mg/L		12-SEP-18	R4217784
Carbonaceous BOD BOD Carbonaceous	7.2		2.0	mg/L		12-SEP-18	R4217784
Chloride in Water by IC Chloride (CI)	465		5.0	mg/L		12-SEP-18	R4228350
Conductivity Conductivity	1880		1.0	umhos/cm		12-SEP-18	R4215222
Fecal coliforms, 1:10 dilution by QT97 Fecal Coliforms						11-SEP-18	
Hardness Calculated	220	LITO		MPN/100mL			R4214107
Hardness (as CaCO3)  Mercury Total	246	HTC	0.20	mg/L		19-SEP-18	
Mercury (Hg)-Total  Nitrate in Water by IC	<0.0000050		0.0000050	mg/L	12-SEP-18	17-SEP-18	R4217950
Nitrate (as N)	0.25		0.20	mg/L		12-SEP-18	R4228350
Nitrate+Nitrite Nitrate and Nitrite as N	0.25		0.22	mg/L		21-SEP-18	
Nitrite in Water by IC Nitrite (as N)	<0.10	DLM	0.10	mg/L		12-SEP-18	R4228350
Oil & Grease - Gravimetric Oil and Grease	<5.0		5.0	mg/L		18-SEP-18	R4218890
Phenol (4AAP) Phenols (4AAP)	0.0025		0.0010	mg/L		17-SEP-18	R4216347
Phosphorus, Total Phosphorus (P)-Total	13.8		0.020	mg/L		18-SEP-18	R4221654
Sulfate in Water by IC Sulfate (SO4)						12-SEP-18	
Sunate (SO4)	42.7		3.0	mg/L		12-3EP-18	R4228350

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2162085-2 ARV-4							
Sampled By: CLIENT on 10-SEP-18 @ 08:42							
Matrix: WATER							
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0327		0.0030	mg/L	17-SEP-18	17-SEP-18	R4223052
Arsenic (As)-Total	0.00398		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Cadmium (Cd)-Total	0.0000092		0.0000050	mg/L	17-SEP-18	17-SEP-18	R4223052
Calcium (Ca)-Total	37.3		0.050	mg/L	17-SEP-18	17-SEP-18	R4223052
Chromium (Cr)-Total	0.00042		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Cobalt (Co)-Total	0.00119		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Copper (Cu)-Total	0.00221		0.00050	mg/L	17-SEP-18	17-SEP-18	R4223052
Iron (Fe)-Total	3.86		0.010	mg/L	17-SEP-18	17-SEP-18	R4223052
Lead (Pb)-Total	0.000113		0.000050	mg/L	17-SEP-18	17-SEP-18	R4223052
Magnesium (Mg)-Total	37.3		0.0050	mg/L	17-SEP-18	17-SEP-18	R4223052
Manganese (Mn)-Total Nickel (Ni)-Total	0.794 0.00380		0.00010 0.00050	mg/L mg/L	17-SEP-18 17-SEP-18	17-SEP-18 17-SEP-18	R4223052 R4223052
Potassium (K)-Total	20.1		0.0050	mg/L	17-SEP-18 17-SEP-18	17-SEP-18 17-SEP-18	R4223052 R4223052
Sodium (Na)-Total	261		0.050	mg/L	17-SEP-18	17-SEP-18	R4223052 R4223052
Zinc (Zn)-Total	0.0066		0.0030	mg/L	17-SEP-18	17-SEP-18	R4223052
Total Organic Carbon by Combustion	0.000		5.5555				
Total Organic Carbon	34.5		5.0	mg/L		13-SEP-18	R4216018
Total Suspended Solids							
Total Suspended Solids	349		2.7	mg/L		14-SEP-18	R4217517
рН							
pH	7.00		0.10	pH units		12-SEP-18	R4215222
L2162085-3 ARV-5							
Sampled By: CLIENT on 10-SEP-18 @ 09:21							
Matrix: WATER							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	88.2		1.2	mg/L		13-SEP-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		13-SEP-18	
Alkalinity, Hydroxide				,,		40.055.40	
Hydroxide (OH)	<0.34		0.34	mg/L		13-SEP-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	72.3		1.0	mg/L		12-SEP-18	R4215222
Ammonia by colour	72.5		1.0	mg/L		12 021 10	10222
Ammonia, Total (as N)	0.021		0.010	mg/L		12-SEP-18	R4215354
Biochemical Oxygen Demand (BOD)	·						
Biochemical Oxygen Demand	2.3		2.0	mg/L		12-SEP-18	R4217784
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		12-SEP-18	R4217784
Chloride in Water by IC	444		0.5	es = /1		40 CED 40	D 4000050
Chloride (Cl)	441		2.5	mg/L		12-SEP-18	R4228350
Conductivity Conductivity	1570		1.0	umhos/cm		12-SEP-18	R4215222
Fecal coliforms, 1:10 dilution by QT97	1370		1.0	ummos/cm		12-3EF-10	1142 10222
Fecal Coliforms	30		10	MPN/100mL		11-SEP-18	R4214107
Hardness Calculated						0	
Hardness (as CaCO3)	226	HTC	0.20	mg/L		19-SEP-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	12-SEP-18	17-SEP-18	R4217950
Nitrate in Water by IC	2.45	DIM	0.45	D		40.055.40	D 4000055
Nitrate (as N)	<0.10	DLM	0.10	mg/L		12-SEP-18	R4228350

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2162085-3 ARV-5							
Sampled By: CLIENT on 10-SEP-18 @ 09:21							
Matrix: WATER							
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.11		0.11	mg/L		21-SEP-18	
Nitrite in Water by IC							
Nitrite (as N)	<0.050	DLM	0.050	mg/L		12-SEP-18	R4228350
Oil & Grease - Gravimetric Oil and Grease	<5.0		5.0	mg/L		18-SEP-18	R4218890
Phenol (4AAP)	<5.0		3.0	mg/L		10-021-10	142 10090
Phenols (4AAP)	<0.0010		0.0010	mg/L		17-SEP-18	R4216347
Phosphorus, Total							
Phosphorus (P)-Total	0.0236		0.0010	mg/L		18-SEP-18	R4221654
Sulfate in Water by IC Sulfate (SO4)	11.2		1.5	mg/L		12-SEP-18	R4228350
Total Metals in Water by CRC ICPMS	11.4		1.5	111g/ L		12 021 -10	117220000
Aluminum (Al)-Total	0.0094		0.0030	mg/L	17-SEP-18	17-SEP-18	R4223052
Arsenic (As)-Total	0.00055		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Cadmium (Cd)-Total	<0.000050		0.0000050	mg/L	17-SEP-18	17-SEP-18	R4223052
Calcium (Ca)-Total Chromium (Cr)-Total	36.0		0.050	mg/L	17-SEP-18 17-SEP-18	17-SEP-18 17-SEP-18	R4223052
Cobalt (Co)-Total	0.00016 0.00015		0.00010 0.00010	mg/L mg/L	17-SEP-18 17-SEP-18	17-SEP-18 17-SEP-18	R4223052 R4223052
Copper (Cu)-Total	0.00013		0.00010	mg/L	17-SEP-18	17-SET-18	R4223052
Iron (Fe)-Total	0.721		0.010	mg/L	17-SEP-18	17-SEP-18	R4223052
Lead (Pb)-Total	0.000066		0.000050	mg/L	17-SEP-18	17-SEP-18	R4223052
Magnesium (Mg)-Total	33.1		0.0050	mg/L	17-SEP-18	17-SEP-18	R4223052
Manganese (Mn)-Total	0.0619		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Nickel (Ni)-Total Potassium (K)-Total	0.00052 7.64		0.00050 0.050	mg/L	17-SEP-18 17-SEP-18	17-SEP-18 17-SEP-18	R4223052
Sodium (Na)-Total	222		0.050	mg/L mg/L	17-SEP-18	17-SEP-18	R4223052 R4223052
Zinc (Zn)-Total	0.0611		0.0030	mg/L	17-SEP-18	17-SEP-18	R4223052
Total Organic Carbon by Combustion				Č			
Total Organic Carbon	10.6		0.50	mg/L		13-SEP-18	R4216018
Total Suspended Solids	4.40		0.0	po a/I		14 000 40	D4047547
Total Suspended Solids pH	146		2.0	mg/L		14-SEP-18	R4217517
pH pH	7.24		0.10	pH units		12-SEP-18	R4215222
L2162085-4 ARV-6				•			
Sampled By: CLIENT on 10-SEP-18 @ 09:30							
Matrix: WATER							
Nunavut WW Group 1							
Alkalinity, Bicarbonate Bicarbonate (HCO3)	96.0		1.2	mg/L		13-SEP-18	
Alkalinity, Carbonate				··· <i>a</i> / =			
Carbonate (CO3)	<0.60		0.60	mg/L		13-SEP-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		13-SEP-18	
Alkalinity, Total (as CaCO3) Alkalinity, Total (as CaCO3)	78.7		1.0	mg/L		12-SEP-18	R4215222
Ammonia by colour	10.7		1.0	111g/ L		12 321 -10	INTE IOLLE
Ammonia, Total (as N)	0.052		0.010	mg/L		12-SEP-18	R4215354
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	2.1		2.0	mg/L		12-SEP-18	R4217784
Carbonaceous BOD BOD Carbonaceous	<2.0		2.0	mg/L		12-SEP-18	R4217784
DOD Calbullaceous	<2.0		2.0	mg/L		12-3EF-10	N421/104

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2162085-4 ARV-6							
Sampled By: CLIENT on 10-SEP-18 @ 09:30							
Matrix: WATER							
Chloride in Water by IC							
Chloride (Cl)	224		1.0	mg/L		12-SEP-18	R4228350
Conductivity	000		4.0			40 CED 40	D 404 5000
Conductivity Fecal coliforms, 1:10 dilution by QT97	892		1.0	umhos/cm		12-SEP-18	R4215222
Fecal Coliforms	<10		10	MPN/100mL		11-SEP-18	R4214107
Hardness Calculated	207	нтс	0.00	m a/l		19-SEP-18	
Hardness (as CaCO3)  Mercury Total	207	1110	0.20	mg/L		19-3EF-10	
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L	12-SEP-18	17-SEP-18	R4217950
Nitrate in Water by IC Nitrate (as N)	<0.040	DLM	0.040	mg/L		12-SEP-18	R4228350
Nitrate+Nitrite	\0.0 <del>4</del> 0	2 2.111	0.040	1119/ =		12 GEI - 10	117220000
Nitrate and Nitrite as N	<0.070		0.070	mg/L		21-SEP-18	
Nitrite in Water by IC Nitrite (as N)	<0.020	DLM	0.020	mg/L		12-SEP-18	R4228350
Oil & Grease - Gravimetric				J-			
Oil and Grease	<5.0		5.0	mg/L		18-SEP-18	R4218890
Phenol (4AAP) Phenols (4AAP)	<0.0010		0.0010	mg/L		17-SEP-18	R4216347
Phosphorus, Total							
Phosphorus (P)-Total  Sulfate in Water by IC	0.0638		0.0010	mg/L		18-SEP-18	R4221654
Sulfate (SO4)	1.65		0.60	mg/L		12-SEP-18	R4228350
Total Metals in Water by CRC ICPMS				,,	47.0ED 40	17.0ED 10	
Aluminum (Al)-Total	0.152		0.0030	mg/L	17-SEP-18	17-SEP-18	R4223052
Arsenic (As)-Total	0.00054		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Cadmium (Cd)-Total	0.0000332		0.0000050	mg/L	17-SEP-18	17-SEP-18	R4223052
Calcium (Ca)-Total	54.3		0.050	mg/L	17-SEP-18	17-SEP-18	R4223052
Chromium (Cr)-Total	0.00073		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Cobalt (Co)-Total	0.00126		0.00010	mg/L	17-SEP-18	17-SEP-18	R4223052
Copper (Cu)-Total	0.00140		0.00050	mg/L	17-SEP-18	17-SEP-18	R4223052
Iron (Fe)-Total	7.69		0.010	mg/L	17-SEP-18	17-SEP-18	R4223052
Lead (Pb)-Total	0.000370		0.000050	mg/L	17-SEP-18	17-SEP-18	R4223052
Magnesium (Mg)-Total	17.4		0.0050	mg/L	17-SEP-18	17-SEP-18	R4223052
Manganese (Mn)-Total	2.13		0.010	mg/L	17-SEP-18	17-SEP-18	R4223052
Nickel (Ni)-Total	0.00134		0.00050	mg/L	17-SEP-18	17-SEP-18	R4223052
Potassium (K)-Total	5.72		0.050	mg/L	17-SEP-18	17-SEP-18	R4223052
Sodium (Na)-Total	85.7		0.050	mg/L	17-SEP-18	17-SEP-18	R4223052
Zinc (Zn)-Total	0.0234		0.0030	mg/L	17-SEP-18	17-SEP-18	R4223052
Total Organic Carbon by Combustion Total Organic Carbon	7.20		0.50	mg/L		13-SEP-18	R4216018
Total Suspended Solids						44.055 ::	D 40
Total Suspended Solids  pH	24.3		2.0	mg/L		14-SEP-18	R4217517
pH	6.66		0.10	pH units		12-SEP-18	R4215222

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

**Reference Information** 

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#### Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

#### Test Method References:

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

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

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

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

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

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

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

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

BOD-CBOD-WP Water Carbonaceous BOD APHA 5210 B

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

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

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

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

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

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

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

EC-WP Water Conductivity APHA 2510B

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

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

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 – 0.2°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 200.2/6020A (mod.)

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

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

L2162085 CONTD....

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#### Reference Information

**Test Method References:** 

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

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

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

nitroprusside and measured colourmetrically.

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

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

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

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

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

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

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

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

P-T-L-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 Phosphorous is determined colourimetrically

after persulphate digestion of the sample.

PH-WP Water pH APHA 4500H

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

reference electrode.

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

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

red complex which is measured colorimetrically.

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

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

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

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

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

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

 Laboratory Definition Code
 Laboratory Location

 WP
 ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

 WT
 ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

#### 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.

# Environmental www.alsglobal.com

### Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2162085-COFC

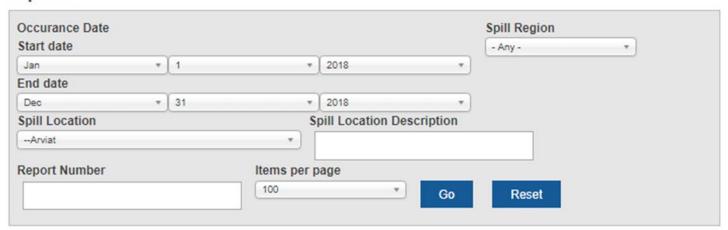
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# ANNUAL REPORT FOR THE HAMLET OF ARVIAT

Appendix G

# Spills





Spill	Occurance Date	Spill Region	Location	Location Description	Product Spilled	Quantity	Spill Cause	Lead Agency
spill- 2018277	July 17, 2018	Keewatin	Arviat, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	15.00	Breakage	GN - Government of Nunavut
spill- 2018243	June 20, 2018	Keewatin	Arviat, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	100.00	Breakage	GN - Government of Nunavut
spill- 2018229	June 14, 2018	Keewatin	Arviat, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	300.00	Fitting Leak	GN - Government of Nunavut
spill- 2018208	May 31, 2018	Keewatin	Arviat, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	75.00	Breakage	GN - Government of Nunavut
spill- 2018195	May 25, 2018	Keewatin	Arviat, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	205.00	Other	GN - Government of Nunavut

# ANNUAL REPORT FOR THE HAMLET OF ARVIAT

Appendix H

Arviat ARV-2a

Parameter	ARV-2a		İ		20	24.0			Castistics	
Alsalinity	Parameter	Unit	DL	21-Jun-18			10-Sep-18	Min	Statistics Max	Average
Carbonate (CO2)					2, 00, 20	20 1108 20			1114111	
Hydroxefe (OH1   mg/L   10   377   391   393   493   493   493   58   133   134   760   480		mg/L	1.2	460	478	479	548	243	934	586.08
Total (sic SacCo3)	Carbonate (CO3)	mg/L	0.60	<0.60	<0.60	<0.60	<0.60	0.6	12	2.35
Marca   Marc	Hydroxide (OH)	mg/L	0.34	<0.34	<0.34	<0.34	< 0.34	0.34	6.8	1.33
Total (as N)   Biochemical Oxygene Demand (PO)   Biochemical Oxygene Dem	Total (as CaCO3)	mg/L	1.0	377	391	393	449	199	766	480.46
	Ammonia by Colour									
Biochemical Oxygen Demand   Carbonaccous   Carbon	Total (as N)	mg/L	0.010	9.20	5.27	5.45	6.07	0.119	15.2	7.27
Carbonaceous BOD   BOD Carbonaceous BOD   BOD Carbonaceous BOD Choirde in Water by IC   Chloride in Water by IC   Mercury Total   Mercury Total   Mercury Total   Mercury Total   Mercury Total   Mercury Total   Mittate in Water by IC   Nitrate in Water by IC   N	Biochemical Oxygen Demand (BOD)									
BOD Carbonaceous	Biochemical Oxygen Demand	mg/L	20	17.5	25.5	32	27.6	2.2	79	33.01
Chloride in Water by IC   Chloride (C)   Chloride										
Chloride (CI)		mg/L	20	13.4	20.5	42.2	26.1	9.9	46	24.07
Conductivity		,								
Fecal Coliforms	' '	mg/L	10	372	691	732	650	291	869	460.00
Fecal Coliforms	•									
	'	umhos/cm	1.0	2360	3580	3820	3670	272	3500	2594.13
Hardness Calculated   Hardness Calculated   Hardness Calculated   Hardness Calculated   Hardness Calculated   Mercury Total										
Hardness (as CaCo2)		MPN/100mL	3	390	30	200	140	3	24000	1639.47
Mercury (Hg)		/	0.30	700	070	4400	4440	F30	1100	022.10
Mercury (Hg)	· , , , , , , , , , , , , , , , , , , ,	mg/L	0.30	709	8/9	1180	1140	520	1160	922.46
Nitrate in Water by IC	•	ma/1	0.000200	0.0000554	<0.0000050	<0.0000000	<0.0000050	0.000005	0.0002	0.00000
Nitrate (as N)	7 ( 0)	mg/L	0.000200	0.0000554	<0.0000050	<0.0000050	<0.0000050	v.vuuu005	U.UUU2	0.00008
Nitrate and Nitrite as N   mg/L   0.070   <0.11   <0.45   <0.45   <0.45   <0.11   0.479   0.35	·	m m /1	0.020	ZO 10	ZO 40	<0.40	ZO 40	0.1	0.4	0.21
Nitrate and Nitrite as N   mg/L   0.070   <0.11   <0.45   <0.45   <0.45   <0.45   <0.11   0.479   0.35	` '	mg/L	0.020	<0.10	<0.40	<0.40	<0.40	0.1	0.4	0.31
Nitrite in Water by IC   Nitrite (as N)   mg/L   0.010   <0.050   <0.20   <0.20   <0.20   <0.20   0.01   0.27   0.16		/I	0.070	10.11	40.45	40.45	40.45	0.11	0.470	0.25
Nitrite (as N)		mg/L	0.070	<0.11	<0.45	<0.45	<0.45	0.11	0.479	0.35
Oil & Grease - Gravimetric   Oil and Grease   mg/L   2.00   <5.0   <5.0   <5.0   <5.0   2   11   4.59	-	mg/l	0.010	<0.050	<0.20	<0.20	<0.20	0.01	0.27	0.16
Dil and Grease   mg/L   2.00   <5.0   <5.0   <5.0   <5.0   2   11   4.59	· · · · · · · · · · · · · · · · · · ·	IIIg/L	0.010	<0.050	<0.20	<0.20	<0.20	0.01	0.27	0.16
Phenois		mg/l	2.00	∠E 0	∠E 0	∠E 0	∠E 0	2	11	4 50
Phenois		IIIg/L	2.00	₹3.0	₹3.0	<5.0	₹3.0	2	11	4.33
Phosphorus, Total   Phosphorus (P)		ma/l	0.0010	0.0057	0.0049	0.0034	0.0015	0.001	0.0205	0.01
Phosphorus (P)		IIIg/L	0.0010	0.0037	0.0049	0.0034	0.0013	0.001	0.0293	0.01
Sulfate in Water by IC   Sulfate (SO4)   mg/L   0.30   384   456   664   625   50.1   565   434.07	• •	mg/l	0.10	0.968	0.363	0.552	0.429	0.1	2.21	0.93
Sulfate (SO4)	• • • • • • • • • • • • • • • • • • • •	6/ =	0.10	0.500	0.505	0.552	01123	0.1	2.21	0.55
No.   Process	•	mg/L	0.30	384	456	664	625	50.1	565	434.07
Aluminium (Al)		8/ =	0.00				020			
Arsenic (As)         mg/L         0.00020         0.00468         0.00557         0.00618         0.00574         0.00038         0.00853         0.01           Cadmium (Cd)         mg/L         0.000010         0.000606         0.0000338         0.000134         0.00011         0.00010         0.00036         0.0001           Calcium (Ca)         mg/L         0.001         207         201         311         310         36.1         356         257.94           Chromium (Cr)         mg/L         0.0010         0.00157         0.00215         0.00083         0.00076         0.00099         0.01         0.0022           Cobalt (Co)         mg/L         0.00020         0.00308         0.00124         0.00098         0.0086         0.00047         0.00396         0.0014           Copper (Cu)         mg/L         0.00020         0.00666         0.00960         0.00282         0.00343         0.0022         0.0034         0.01           Iron (Fe)         mg/L         0.010         4.55         1.10         0.66         0.65         0.34         5.13         1.46           Lead (Pb)         mg/L         0.010         46.4         91.8         98.6         88.9         3.66         100	•	mg/L	0.0050	0.0379	0.0271	0.0168	0.0088	0.0105	0.305	0.05
Cadmium (Cd)         mg/L         0.000010         0.000606         0.000338         0.0000134         0.000011         0.00011         0.000336         0.0001           Calcium (Ca)         mg/L         0.10         207         201         311         310         36.1         356         257.94           Chromium (Cr)         mg/L         0.0010         0.00157         0.00215         0.00083         0.00076         0.00093         0.01         0.0022           Cobalt (Co)         mg/L         0.00020         0.00308         0.00124         0.00098         0.00086         0.00047         0.00336         0.0014           Copper (Cu)         mg/L         0.00020         0.0666         0.00960         0.00428         0.00343         0.00282         0.0434         0.02           Iron (Fe)         mg/L         0.0000         0.009067         0.00224         0.000280         0.00414         0.02           Magnesium (Mg)         mg/L         0.0000         0.009067         0.00224         0.000274         0.0111         0.002           Magnesium (Mg)         mg/L         0.00030         0.972         0.213         0.64         0.761         0.197         1.69         0.73           Nickel (	. `. '									
Calcium (Ca)         mg/L         0.10         207         201         311         310         36.1         356         257.94           Chromium (Cr)         mg/L         0.0010         0.00157         0.00215         0.00083         0.00076         0.00093         0.01         0.0022           Cobalt (Co)         mg/L         0.00020         0.00666         0.00960         0.00428         0.00343         0.00282         0.0434         0.02           Copper (Cu)         mg/L         0.00020         0.0666         0.00960         0.00428         0.00343         0.00282         0.0434         0.02           Iron (Fe)         mg/L         0.010         4.55         1.10         0.66         0.65         0.34         5.13         1.46           Lead (Pb)         mg/L         0.010         4.45         1.10         0.66         0.65         0.34         5.13         1.46           Magnesium (Mg)         mg/L         0.010         4.4         91.8         98.6         88.9         3.66         100         57.81           Manganese (Mn)         mg/L         0.0020         0.00877         0.00904         0.00765         0.00695         0.002         0.02         0.01		-	0.000010		0.0000338		0.0000113	0.00001	0.000336	0.0001
Chromium (Cr)         mg/L         0.0010         0.00157         0.00215         0.00083         0.00076         0.00093         0.01         0.0022           Cobalt (Co)         mg/L         0.00020         0.00308         0.00124         0.00098         0.00086         0.00047         0.00396         0.0014           Copper (Cu)         mg/L         0.00020         0.0666         0.00960         0.00428         0.00343         0.00222         0.0434         0.02           Iron (Fe)         mg/L         0.010         4.55         1.10         0.66         0.65         0.34         5.13         1.46           Lead (Pb)         mg/L         0.00090         0.009010         0.000967         0.000224         0.00025         0.000174         0.0111         0.0027           Magnesium (Mg)         mg/L         0.010         46.4         91.8         98.6         88.9         3.66         100         57.81           Magnesium (Mg)         mg/L         0.0020         0.0927         0.213         0.04         0.076         0.002         0.02         0.01           Magnesium (Mg)         mg/L         0.0020         0.0927         0.213         0.014         0.0076         0.002         0.02<	Calcium (Ca)	-	0.10	207				36.1	356	
Cobalt (Co)         mg/L         0.00020         0.00308         0.00124         0.00098         0.00086         0.00047         0.00396         0.0014           Copper (Cu)         mg/L         0.00020         0.0666         0.00960         0.00428         0.00343         0.00282         0.0434         0.02           Iron (Fe)         mg/L         0.000         4.55         1.10         0.66         0.65         0.34         5.13         1.46           Lead (Pb)         mg/L         0.000090         0.009910         0.000957         0.000224         0.000250         0.000174         0.0111         1.001           Magnesium (Mg)         mg/L         0.010         46.4         91.8         98.6         88.9         3.66         100         57.81           Manganese (Mn)         mg/L         0.00030         0.972         0.213         0.64         0.761         0.197         1.69         0.73           Nickel (Ni)         mg/L         0.0020         0.00877         0.00904         0.00765         0.00695         0.002         0.02         0.01           Potassium (K)         mg/L         0.020         0.311         0.0151         0.0156         6.14         4         78.5	' '	-	0.0010	0.00157	0.00215	0.00083	0.00076	0.00093		0.0022
Copper (Cu)         mg/L         0.00020         0.0666         0.00960         0.00428         0.00343         0.00282         0.0434         0.02           Iron (Fe)         mg/L         0.010         4.55         1.10         0.66         0.65         0.34         5.13         1.46           Lead (Pb)         mg/L         0.00000         0.009010         0.000274         0.000250         0.000174         0.011         0.002           Magnesium (Mg)         mg/L         0.010         46.4         91.8         98.6         88.9         3.66         100         57.81           Manganese (Mn)         mg/L         0.00030         0.972         0.213         0.64         0.761         0.197         1.69         0.73           Nickel (Ni)         mg/L         0.0020         0.00877         0.00904         0.00765         0.00695         0.002         0.02         0.01           Potassium (K)         mg/L         0.020         42.9         82.7         68.6         61.4         4         78.5         56.87           Sodium (Na)         mg/L         0.0020         0.311         0.0151         0.0156         0.0067         0.0087         0.64         0.086 <t< td=""><td>Cobalt (Co)</td><td></td><td>0.00020</td><td>0.00308</td><td>0.00124</td><td>0.00098</td><td>0.00086</td><td>0.00047</td><td>0.00396</td><td>0.0014</td></t<>	Cobalt (Co)		0.00020	0.00308	0.00124	0.00098	0.00086	0.00047	0.00396	0.0014
Iron (Fe)	` '	-								
Lead (Pb)         mg/L         0.000090         0.009010         0.000967         0.000224         0.000250         0.000174         0.0111         0.0027           Magnesium (Mg)         mg/L         0.010         46.4         91.8         98.6         88.9         3.66         100         57.81           Manganese (Mn)         mg/L         0.00030         0.972         0.213         0.64         0.761         0.197         1.69         0.73           Nickel (Ni)         mg/L         0.0020         0.00877         0.00904         0.00765         0.00695         0.002         0.01           Potassium (K)         mg/L         0.020         42.9         82.7         68.6         61.4         4         78.5         56.87           Sodium (Na)         mg/L         0.030         234         473         460         419         7.84         572         296.52           Zinc (Zn)         mg/L         0.0020         0.311         0.0156         0.0067         0.0087         0.64         0.086           Total Organic Carbon         mg/L         0.50         43.8         53.4         55.5         47.7         30.3         67         46.02           Total	'''''	-								
Manganese (Mn)         mg/L         0.00030         0.972         0.213         0.64         0.761         0.197         1.69         0.73           Nickel (Ni)         mg/L         0.0020         0.00877         0.00904         0.00765         0.00695         0.002         0.02         0.01           Potassium (K)         mg/L         0.020         42.9         82.7         68.6         61.4         4         78.5         56.87           Sodium (Na)         mg/L         0.030         234         473         460         419         7.84         572         296.52           Zinc (Zn)         mg/L         0.0020         0.311         0.0151         0.0156         0.0067         0.0087         0.64         0.086           Total Organic Carbon by Combustion           Total Suspended Solids           mg/L         0.50         43.8         53.4         55.5         47.7         30.3         67         46.02           Total Suspended Solids           mg/L         5.0         22         8.1         71.7         24         5         143         52.67           pH         pH Units         0.10         7.57										
Nickel (Ni)         mg/L         0.0020         0.00877         0.00904         0.00765         0.00695         0.002         0.02         0.01           Potassium (K)         mg/L         0.020         42.9         82.7         68.6         61.4         4         78.5         56.87           Sodium (Na)         mg/L         0.030         234         473         460         419         7.84         572         296.52           Zinc (Zn)         mg/L         0.0020         0.311         0.0151         0.0156         0.0067         0.0087         0.64         0.086           Total Organic Carbon by Combustion         mg/L         0.50         43.8         53.4         55.5         47.7         30.3         67         46.02           Total Suspended Solids           mg/L         0.50         22         8.1         71.7         24         5         143         52.67           pH           pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Benzene         mg/L         0.00050         <0.00050	Magnesium (Mg)	_	0.010	46.4	91.8	98.6	88.9	3.66	100	57.81
Nickel (Ni)         mg/L         0.0020         0.00877         0.00904         0.00765         0.00695         0.002         0.02         0.01           Potassium (K)         mg/L         0.020         42.9         82.7         68.6         61.4         4         78.5         56.87           Sodium (Na)         mg/L         0.030         234         473         460         419         7.84         572         296.52           Zinc (Zn)         mg/L         0.0020         0.311         0.0151         0.0156         0.0067         0.0087         0.64         0.086           Total Organic Carbon by Combustion         mg/L         0.50         43.8         53.4         55.5         47.7         30.3         67         46.02           Total Suspended Solids           mg/L         0.50         22         8.1         71.7         24         5         143         52.67           pH           pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Benzene         mg/L         0.00050         <0.00050	Manganese (Mn)	mg/L	0.00030	0.972	0.213	0.64	0.761	0.197	1.69	0.73
Sodium (Na)         mg/L         0.030         234         473         460         419         7.84         572         296.52           Zinc (Zn)         mg/L         0.0020         0.311         0.0151         0.0156         0.0067         0.0087         0.64         0.086           Total Organic Carbon by Combustion           Total Suspended Solids           Total Suspended Solids           Total Suspended Solids           Total Suspended Solids           Mg/L         5.0         22         8.1         71.7         24         5         143         52.67           PH           pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Total Suspended Solids         mg/L         0.00050         <0.00050		mg/L	0.0020	0.00877	0.00904	0.00765	0.00695	0.002	0.02	0.01
Zinc (Zn)         mg/L         0.0020         0.311         0.0151         0.0156         0.0067         0.0087         0.64         0.086           Total Organic Carbon by Combustion         Total Organic Carbon         mg/L         0.50         43.8         53.4         55.5         47.7         30.3         67         46.02           Total Suspended Solids         mg/L         5.0         22         8.1         71.7         24         5         143         52.67           pH           pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Benzene         mg/L         0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050	Potassium (K)	mg/L	0.020	42.9	82.7	68.6	61.4	4	78.5	56.87
Total Organic Carbon by Combustion           Total Organic Carbon         mg/L         0.50         43.8         53.4         55.5         47.7         30.3         67         46.02           Total Suspended Solids         mg/L         5.0         22         8.1         71.7         24         5         143         52.67           pH           pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Benzene         mg/L         0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00010         <0.0010         <0.0010         <0.0001         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050	Sodium (Na)	mg/L	0.030	234	473	460	419	7.84	572	296.52
Total Organic Carbon         mg/L         0.50         43.8         53.4         55.5         47.7         30.3         67         46.02           Total Suspended Solids         mg/L         5.0         22         8.1         71.7         24         5         143         52.67           pH           pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Benzene         mg/L         0.00050         <0.00050	Zinc (Zn)	mg/L	0.0020	0.311	0.0151	0.0156	0.0067	0.0087	0.64	0.086
Total Suspended Solids           Total Suspended Solids         mg/L         5.0         22         8.1         71.7         24         5         143         52.67           pH           pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Benzene         mg/L         0.00050         <0.00050	<b>Total Organic Carbon by Combustion</b>									
Total Suspended Solids         mg/L         5.0         22         8.1         71.7         24         5         143         52.67           pH           pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Benzene         mg/L         0.00050         <0.00050	Total Organic Carbon	mg/L	0.50	43.8	53.4	55.5	47.7	30.3	67	46.02
pH         pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Benzene         mg/L         0.00050         <0.00050	Total Suspended Solids									
pH         pH Units         0.10         7.57         8.10         7.76         8.00         7.4         8.11         7.84           Benzene         mg/L         0.00050         <0.00050	Total Suspended Solids	mg/L	5.0	22	8.1	71.7	24	5	143	52.67
Benzene         mg/L         0.00050         <0.00050         <0.00050         /         0.0005         0.0005         0.0005           Toluene         mg/L         0.0010         <0.0010	рН									
Toluene         mg/L         0.0010         <0.0010         <0.0010         <0.0010         /         0.001         0.001         0.001           Ethyl Benzene         mg/L         0.00050         <0.00050	рН	pH Units		7.57	8.10	7.76	8.00	7.4	8.11	7.84
Ethyl Benzene         mg/L         0.00050         <0.00050         <0.00050         <0.00050         /         0.0005         0.0005         0.0005           o-Xylene         mg/L         0.00050         <0.00050							/			
o-Xylene         mg/L         0.00050         <0.00050         <0.00050         /         0.00050         0.00082         0.0005           F1 (C6-C10)         mg/L         0.10         <0.10		_					/			
F1 (C6-C10)         mg/L         0.10         <0.10         <0.10         <0.10         /         0.1         0.1         0.10           F2 (C10-C16)         mg/L         0.25         0.15         0.17         0.13         /         0.1         0.5         0.22           F3 (C16-C34)         mg/L         0.25         0.31         0.30         0.36         /         0.25         0.69         0.47           F4 (C34-C50)         mg/L         0.25         <0.25		_					/			
F2 (C10-C16)     mg/L     0.25     0.15     0.17     0.13     /     0.1     0.5     0.22       F3 (C16-C34)     mg/L     0.25     0.31     0.30     0.36     /     0.25     0.69     0.47       F4 (C34-C50)     mg/L     0.25     <0.25	o-Xylene	mg/L	0.00050	<0.00050	<0.00050	<0.00050	/	0.0005	0.00082	0.0005
F3 (C16-C34) mg/L 0.25 0.31 0.30 0.36 / 0.25 0.69 0.47 F4 (C34-C50) mg/L 0.25 <0.25 <0.25 / 0.25 0.5 0.28	F1 (C6-C10)	mg/L	0.10	<0.10	<0.10	<0.10	/	0.1	0.1	0.10
F4 (C34-C50) mg/L 0.25 <0.25 <0.25 / 0.25 0.5 0.28	F2 (C10-C16)	mg/L	0.25	0.15	0.17	0.13	/	0.1	0.5	0.22
	F3 (C16-C34)	mg/L	0.25	0.31	0.30	0.36	/	0.25	0.69	0.47
Total Hydrocarbons (C6-C50) mg/L 0.44 0.46 0.48 0.5 / 0.38 1.07 0.66	F4 (C34-C50)	mg/L	0.25	<0.25	<0.25	<0.25	/	0.25	0.5	0.28
	Total Hydrocarbons (C6 CEO)	mg/I	0.44	0.46	0.48	0.5	/	0.38	1.07	0.66

Arviat ARV-4

Parameter	ARV-4				20	)18			Statistics	
Bicarbonate (PCC03)	Parameter	Unit	DL	21-Jun-18			10-Sep-18	Min		Average
Carbonate (CO2)	Alkalinity					Ü	·			Ü
Hydrosele (DH)	Bicarbonate (HCO3)	mg/L	1.2	155	310	247	192	82.00	354.00	220.77
Total (as CaCO3)	Carbonate (CO3)	mg/L	0.60	<0.6	<0.60	<0.60	<0.60	0.60	13.20	3.32
Marcare   Marc	Hydroxide (OH)	mg/L	0.34	<0.34	<0.34	<0.60	<0.34	0.34	6.80	1.33
Total (as N)	Total (as CaCO3)	mg/L	1.0	127	254	202	158	67.00	290.00	182.54
Biochemical Oxygen Demand (ISOD)	Ammonia by Colour									
Biothenical Oxygen Demand (BOD)   mg/L   20   10   83   36.1   12.3   5.60   215.00   48.31	•	mg/L	0.20	8.56	43.7	22.8	18.50	8.68	39.90	19.64
Biochemical Oxygen Demand   mg/L   20   10   43   36.1   12.3   5.60   215.00   48.31	• • •	O,								
Carbonaceous BOD   BOD Carbonaceous   mg/L   20   5   30.6   18.9   7.2   2.00   154.00   31.84	,,,	mg/L	20	10	43	36.1	12.3	5.60	215.00	48.31
BOD Carbonaceous	/ <del>*</del>	Si.		-	-		-			
Chloride in Water by IC   Chloride (CT)   Ch		mg/l	20	5	30.6	18.9	7.2	2.00	154.00	31.84
Chloride (CT)		6/ =	20	3	30.0	10.5	7.2	2.00	15 1100	51.01
Conductivity		mg/l	10	155	19/	<i>1</i> 16	465	83 50	517.00	239 58
Fecal Coliforms	' '	IIIg/L	10	155	134	410	403	03.30	317.00	233.30
Fecal Coliforms	<u>'</u>	umbos/sm	1.0	702	1120	1770	1000	E70.00	1020.00	1070.07
Fecal Coliforms	'	uninos/cm	1.0	762	1120	1770	1660	370.00	1630.00	1079.07
Hardness Calculated   Hardness (as CaCO3)   mg/L   0.30   85.7   123   243   246   81.20   254.00   140.36		NADNI /100mal	2	-10	> 24200	11200	220	4.00	24000.00	2642.67
Hardness (as CaCO3)		MPN/100mL	3	<10	>24200	11200	220	4.00	24000.00	2642.67
Mercury Total   mg/L			0.20	05.7	432	242	246	04.22	254.00	140.00
Mercury (Hg)	` '	mg/L	0.30	85./	123	243	246	81.20	254.00	140.36
Nitrate in Water by IC   Nitrate + Nitrite   mg/L   0.020   0.50   <0.10   <0.10   0.25   0.02   1.94   0.41	·	,	0.00000	0.0000	.0.00000	-0.00000==	.0.0000	0.00000	0.000:5	0.000:1
Nitrate (as N)	, , , ,	mg/L	0.00020	0.0000107	<0.000025	<0.0000050	<0.0000050	0.000005	0.00040	0.00012
Nitrate + Nitrite   Nitrate and Nitrite as N   Nitrite in Water by IC	•									
Nitrate and Nitrite as N   mg/L   0.070   0.62   < 0.11   < 0.11   0.25   0.07   2.15   0.56	Nitrate (as N)	mg/L	0.020	0.50	<0.10	<0.10	0.25	0.02	1.94	0.41
Nitrite in Water by IC   Nitrite (as N)   mg/L   0.010   0.12   <0.050   <0.05   <0.10   0.02   0.37   0.102	Nitrate + Nitrite									
Nitrite (as N)         mg/L         0.010         0.12         <0.050         <0.10         0.02         0.37         0.102           Oil and Grease         mg/L         2.0         <5.0         5.6         <5.0         <5.0         0.04         18.50         4.60           Phenol           Phenols           Phenols mg/L         0.0010         0.0011         0.0049         0.0029         0.0025         0.00         0.04         1.00         0.007           Phenols mg/L         0.010         3.15         7.80         22.40         13.8         0.92         9.55         5.17           Sulfate in Water by IC           Sulfate (SO4)         mg/L         6.0         13.6         6.9         23.4         42.7         2.18         66.0         15.46           Total Matals by ICP-MS         mg/L         0.00050         0.151         0.156         0.0492         0.0329         0.03         1.26         0.29           Arsenic (AS)         mg/L         0.00020         0.011         0.00788         0.0472         0.0339         0.00         0.01         0.0062           Calcium (Ca)         mg/L         0.00020         0	Nitrate and Nitrite as N	mg/L	0.070	0.62	<0.11	<0.11	0.25	0.07	2.15	0.56
Oil & Grease - Gravimetric         mg/L         2.0         <5.0         <5.0         <5.0         0.04         18.50         4.60           Phenols         mg/L         0.0010         0.0011         0.0049         0.0029         0.0025         0.00         0.04         0.007           Phosphorus, Total Department of Phosphorus (P)         mg/L         0.10         3.15         7.80         22.40         13.8         0.92         9.55         5.17           Sulfate in Water by IC         Sulfate (SO4)         mg/L         6.0         13.6         6.9         23.4         42.7         2.18         66.00         15.46           Total Metals by ICP-MS           Aluminium (Al)         mg/L         0.0050         0.151         0.156         0.0492         0.0327         0.03         1.26         0.29           Arsenic (As)         mg/L         0.00020         0.011         0.00788         0.00476         0.00398         0.00         0.01         1.0066           Cadmium (Cd)         mg/L         0.00020         0.0011         0.00059         0.00402         0.00099         0.00         0.00         0.00         0.001         0.001         0.001         0.001         0.001         0.001	Nitrite in Water by IC									
Dil and Grease	Nitrite (as N)	mg/L	0.010	0.12	<0.050	<0.05	<0.10	0.02	0.37	0.102
Phenol	Oil & Grease - Gravimetric									
Phenol   Phenol   Phenols   Phenols   Phenols   Phenols   Phosphorus, Total   Phosphorus, Total   Phosphorus, Plant   Phosph	Oil and Grease	mg/L	2.0	<5.0	5.6	<5.0	<5.0	0.04	18.50	4.60
Phosphorus, Total   Phosphorus, (P)   mg/L   0.10   3.15   7.80   22.40   13.8   0.92   9.55   5.17	Phenol	Ų.								
Phosphorus, Total   Phosphorus, (P)   mg/L   0.10   3.15   7.80   22.40   13.8   0.92   9.55   5.17	Phenols	mg/L	0.0010	0.0011	0.0049	0.0029	0.0025	0.00	0.04	0.007
Phosphorus (P)		8/ =	0.0020	0.0022	0.00 10	0.0020	0.0020	-		
Sulfate in Water by IC   Sulfate (SO4)   mg/L   0.00   13.6   6.9   23.4   42.7   2.18   66.00   15.46	· · · · ·	mg/l	0.10	3.15	7.80	22.40	13.8	0.92	9.55	5.17
Sulfate (SO4)         mg/L         6.0         13.6         6.9         23.4         42.7         2.18         66.00         15.46           Total Metals by ICP-MS         Total Metals by ICP-MS         VICAMINIUM (AI)         mg/L         0.0050         0.151         0.156         0.0492         0.0327         0.03         1.26         0.29           Alsminium (AI)         mg/L         0.00020         0.011         0.00758         0.00476         0.00398         0.00         0.01         0.0066           Cadmium (Ca)         mg/L         0.000010         0.00061         0.000052         0.0000092         0.00         0.00         0.00         0.00           Calcium (Ca)         mg/L         0.00         1.54         2.17         38.5         37.3         15.80         44.10         24.88           Chromium (Cr)         mg/L         0.0010         0.0014         0.0012         0.00059         0.00420         0.00         0.00         0.0015           Cobatt (Co)         mg/L         0.00020         0.00487         0.00273         0.0019         0.00         0.00         0.002           Lead (Pb)         mg/L         0.0010         4.02         4.58         3.57         3.86         1	, , ,	6/ =	0.110	3113	7100	22110	10.0	0.52	3133	3.17
Name	•	ma/l	6.0	12.6	6.0	23.4	12.7	2 1 2	66.00	15 /6
Aluminium (Al)		IIIg/L	0.0	15.0	0.5	23.4	72.7	2.10	00.00	13.40
Arsenic (As)         mg/L         0.00020         0.011         0.00758         0.00476         0.00398         0.00         0.01         0.00666           Cadmium (Cd)         mg/L         0.000010         0.00061         0.0000524         0.000122         0.0000092         0.00         0.00         0.0000           Calcium (Ca)         mg/L         0.10         15.4         21.7         38.5         37.3         15.80         44.10         24.86           Chromium (Cr)         mg/L         0.0010         0.00114         0.0012         0.00059         0.00420         0.00         0.00         0.00           Cobait (Co)         mg/L         0.00020         0.00487         0.00273         0.00179         0.00119         0.00         0.00         0.00         0.002           Copper (Cu)         mg/L         0.00020         0.0188         0.0374         0.00244         0.00221         0.00         0.01         0.03           Iron (Fe)         mg/L         0.0100         4.02         4.58         3.57         3.86         1.59         19.60         5.72           Lead (Pb)         mg/L         0.0100         11.5         16.7         35.6         37.3         8.85         34.80<	•	ma/l	0.0050	0.151	0.156	0.0402	0.0227	0.02	1 26	0.20
Cadmium (Cd)         mg/L         0.000010         0.00061         0.0000524         0.0000122         0.000092         0.00         0.000         0.0000           Calcium (Ca)         mg/L         0.010         15.4         21.7         38.5         37.3         15.80         44.10         24.86           Chromium (Cr)         mg/L         0.0010         0.00114         0.00127         0.00059         0.00420         0.00         0.00         0.0015           Cobalt (Co)         mg/L         0.00020         0.00487         0.00273         0.00179         0.00119         0.00         0.00         0.002           Copper (Cu)         mg/L         0.00020         0.0188         0.0374         0.00244         0.0021         0.00         0.01         0.032           iron (Fe)         mg/L         0.010         4.02         4.58         3.57         3.86         1.59         19.60         5.72           Lead (Pb)         mg/L         0.010         11.5         16.7         35.6         37.3         8.83         34.80         17.23           Magnesium (Mg)         mg/L         0.010         11.5         16.7         35.6         37.3         8.83         34.80         17.23										
Calcium (Ca)         mg/L         0.10         15.4         21.7         38.5         37.3         15.80         44.10         24.86           Chromium (Cr)         mg/L         0.0010         0.00114         0.00012         0.00059         0.00420         0.00         0.00         0.001           Cobalt (Co)         mg/L         0.00020         0.00487         0.00273         0.00179         0.00119         0.00         0.00         0.002           Copper (Cu)         mg/L         0.00020         0.018         0.0374         0.00244         0.00221         0.00         0.01         0.032           Iron (Fe)         mg/L         0.010         4.02         4.58         3.57         3.86         1.59         19.60         5.72           Lead (Pb)         mg/L         0.00099         0.01400         0.00172         0.00015         0.000113         0.00         0.01         0.0017           Magnasium (Mg)         mg/L         0.0000         0.01400         0.00172         0.00015         0.00113         0.00         0.01         0.0017           Malagasium (Mg)         mg/L         0.0000         0.00877         0.0072         0.00537         0.038         0.00         0.01	· · · · · · · · · · · · · · · · · · ·									
Chromium(Cr)         mg/L         0.0010         0.00114         0.00112         0.00059         0.00420         0.00         0.001         0.0015           Cobalt (Co)         mg/L         0.00020         0.00487         0.00273         0.00179         0.00119         0.00         0.00         0.002           Copper (Cu)         mg/L         0.00020         0.0188         0.0374         0.00244         0.00221         0.00         0.01         0.032           Iron (Fe)         mg/L         0.010         4.02         4.58         3.57         3.86         1.59         19.60         5.72           Lead (Pb)         mg/L         0.00090         0.001400         0.00172         0.00013         0.000113         0.00         0.01         0.0017           Magnesium (Mg)         mg/L         0.010         11.5         16.7         35.6         37.3         8.85         34.80         17.23           Magnesium (Mg)         mg/L         0.0020         0.0037         0.0037         0.0033         0.00         0.01         0.007         0.0033         0.00         0.01         0.007         0.0033         0.00         0.01         0.007         0.0035         0.0033         0.00         0.01 <td>· '</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	· '									
Cobalt (CO)         mg/L         0.00020         0.00487         0.00273         0.00179         0.00119         0.00         0.00         0.0026           Copper (Cu)         mg/L         0.00020         0.0188         0.0374         0.00244         0.00221         0.00         0.10         0.032           Iron (Fe)         mg/L         0.010         4.02         4.58         3.57         3.86         1.59         19.60         5.72           Lead (Pb)         mg/L         0.00090         0.00140         0.00172         0.00015         0.000113         0.00         0.01         0.0017           Magnesium (Mg)         mg/L         0.0010         11.5         16.7         35.6         37.3         8.85         34.80         17.23           Manganese (Mn)         mg/L         0.00030         0.0107         0.418         0.79         0.794         0.25         0.89         0.54           Nickel (Ni)         mg/L         0.0020         0.00877         0.00772         0.0033         0.00         0.01         1.007           Potassium (K)         mg/L         0.030         107         137         232         261         66.50         315.00         134.88 <t< td=""><td>' '</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	' '									
Copper (Cu)										
Iron (Fe)	' '									
Lead (Pb)         mg/L         0.000090         0.001400         0.00172         0.00015         0.000113         0.00         0.01         0.0017           Magnesium (Mg)         mg/L         0.010         11.5         16.7         35.6         37.3         8.85         34.80         17.23           Manganese (Mn)         mg/L         0.00030         0.0107         0.418         0.79         0.794         0.25         0.89         0.54           Nickel (Ni)         mg/L         0.0020         0.00877         0.00772         0.00537         0.0038         0.00         0.01         0.007           Potassium (K)         mg/L         0.020         18.3         24.0         22.1         20.1         18.60         37.40         23.55           Sodium (Na)         mg/L         0.030         107         137         232         261         66.50         315.00         134.88           Zinc (Zn)         mg/L         0.0020         0.0079         0.0225         <0.0030	'''''									
Magnesium (Mg)         mg/L         0.010         11.5         16.7         35.6         37.3         8.85         34.80         17.23           Manganese (Mn)         mg/L         0.00030         0.0107         0.418         0.79         0.794         0.25         0.89         0.54           Nickel (Ni)         mg/L         0.0020         0.00877         0.00772         0.00537         0.0038         0.00         0.01         0.007           Potassium (K)         mg/L         0.020         18.3         24.0         22.1         20.1         18.60         37.40         23.55           Sodium (Na)         mg/L         0.030         107         137         232         261         66.50         315.00         134.84           Zinc (Zn)         mg/L         0.0020         0.0079         0.0225         <0.0030										
Manganese (Mn)         mg/L         0.00030         0.0107         0.418         0.79         0.794         0.25         0.89         0.54           Nickel (Ni)         mg/L         0.0020         0.00877         0.00772         0.00537         0.0038         0.00         0.01         0.007           Potassium (K)         mg/L         0.020         18.3         24.0         22.1         20.1         18.60         37.40         23.55           Sodium (Na)         mg/L         0.030         107         137         232         261         66.50         315.00         134.84           Zinc (Zn)         mg/L         0.0020         0.0079         0.0225         <0.0030	• /	_								0.0017
Nickel (Ni)         mg/L         0.0020         0.00877         0.00772         0.00537         0.0038         0.00         0.01         0.007           Potassium (K)         mg/L         0.020         18.3         24.0         22.1         20.1         18.60         37.40         23.55           Sodium (Na)         mg/L         0.030         107         137         232         261         66.50         315.00         134.84           Zinc (Zn)         mg/L         0.0020         0.0079         0.0225         <0.0030	Magnesium (Mg)	mg/L	0.010	11.5	16.7	35.6	37.3	8.85	34.80	
Potassium (K)         mg/L         0.020         18.3         24.0         22.1         20.1         18.60         37.40         23.55           Sodium (Na)         mg/L         0.030         107         137         232         261         66.50         315.00         134.84           Zinc (Zn)         mg/L         0.0020         0.0079         0.0225         <0.0030	Manganese (Mn)	mg/L	0.00030	0.0107	0.418	0.79	0.794	0.25	0.89	0.54
Sodium (Na)         mg/L         0.030         107         137         232         261         66.50         315.00         134.84           Zinc (Zn)         mg/L         0.0020         0.0079         0.0225         <0.0030         0.0066         0.00         0.06         0.024           Total Organic Carbon by Combustion         Total Organic Carbon mg/L         0.50         33.2         39.7         38         34.5         17.60         175.00         47.19           Total Suspended Solids           mg/L         0.50         33.2         39.7         38         34.5         17.60         175.00         47.19           Total Suspended Solids         mg/L         0.50         33.2         39.7         38         34.5         17.60         175.00         47.19           Total Suspended Solids         mg/L         13         53         50         8         349         10.00         1670.00         177.67           pH         pH Units         0.10         7.29         7.25         7.21         7.00         6.76         8.96         7.52           Benzene         mg/L         0.0010	Nickel (Ni)	mg/L	0.0020	0.00877	0.00772	0.00537	0.0038	0.00	0.01	0.007
Zinc (Zn)         mg/L         0.0020         0.0079         0.0225         <0.0030         0.0066         0.00         0.06         0.024           Total Organic Carbon by Combustion         Total Organic Carbon         mg/L         0.50         33.2         39.7         38         34.5         17.60         175.00         47.19           Total Suspended Solids         mg/L         13         53         50         8         349         10.00         1670.00         177.67           pH           pH         pH Units         0.10         7.29         7.25         7.21         7.00         6.76         8.96         7.52           Benzene         mg/L         0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050         <0.00050 <td>Potassium (K)</td> <td>mg/L</td> <td>0.020</td> <td>18.3</td> <td>24.0</td> <td>22.1</td> <td>20.1</td> <td>18.60</td> <td>37.40</td> <td>23.55</td>	Potassium (K)	mg/L	0.020	18.3	24.0	22.1	20.1	18.60	37.40	23.55
Zinc (Zn)         mg/L         0.0020         0.0079         0.0225         <0.0030         0.0066         0.00         0.06         0.024           Total Organic Carbon by Combustion         mg/L         0.50         33.2         39.7         38         34.5         17.60         175.00         47.19           Total Suspended Solids           Total Suspended Solids         mg/L         13         53         50         8         349         10.00         1670.00         177.67           pH         pH Units         0.10         7.29         7.25         7.21         7.00         6.76         8.96         7.52           Benzene         mg/L         0.00050         <0.00050	Sodium (Na)	mg/L	0.030	107	137	232	261	66.50	315.00	134.84
Total Organic Carbon by Combustion           Total Organic Carbon         mg/L         0.50         33.2         39.7         38         34.5         17.60         175.00         47.19           Total Suspended Solids           mg/L         13         53         50         8         349         10.00         1670.00         177.67           pH           pH         pH Units         0.10         7.29         7.25         7.21         7.00         6.76         8.96         7.52           Benzene         mg/L         0.00050         <0.00050	Zinc (Zn)		0.0020	0.0079	0.0225	<0.0030	0.0066	0.00	0.06	0.024
Total Organic Carbon mg/L 0.50 33.2 39.7 38 34.5 17.60 175.00 47.19  Total Suspended Solids  Total Suspended Solids mg/L 13 53 50 8 349 10.00 1670.00 177.67  pH  pH Units 0.10 7.29 7.25 7.21 7.00 6.76 8.96 7.52  Benzene mg/L 0.00050 <0.00050 <0.00050 0.00050 0.0005  Toluene mg/L 0.0010 <0.0010 0.0015 0.0015 0.001 0.001 0.019 0.0035  Ethyl Benzene mg/L 0.00050 <0.00050 <0.00050 <0.00050 0.00050 0.0005 0.0005  O-Xylene mg/L 0.00050 <0.00050 <0.00050 <0.00050 0.00050 0.0005  F1 (C6-C10) mg/L 0.10 <0.10 <0.20 <0.20 0.10 0.10 0.10 0.10  F2 (C10-C16) mg/L 0.25 <0.10 0.13 0.12 0.10 0.50 0.20  F3 (C16-C34) mg/L 0.25 <0.25 0.59 <0.25 0.25 1.44 0.55	Total Organic Carbon by Combustion									
Total Suspended Solids           Total Suspended Solids         mg/L         13         53         50         8         349         10.00         1670.00         177.67           pH           pH         pH Units         0.10         7.29         7.25         7.21         7.00         6.76         8.96         7.52           Benzene         mg/L         0.00050         <0.00050		mg/L	0.50	33.2	39.7	38	34.5	17.60	175.00	47.19
Total Suspended Solids         mg/L         13         53         50         8         349         10.00         1670.00         177.67           pH         pH         pH Units         0.10         7.29         7.25         7.21         7.00         6.76         8.96         7.52           Benzene         mg/L         0.00050         <0.00050	Š									
pH         pH Units         0.10         7.29         7.25         7.21         7.00         6.76         8.96         7.52           Benzene         mg/L         0.00050         <0.00050	•	mg/L	13	53	50	8	349	10.00	1670.00	177.67
pH         pH Units         0.10         7.29         7.25         7.21         7.00         6.76         8.96         7.52           Benzene         mg/L         0.00050         <0.00050	<u> </u>	6/ =								/.0/
Benzene         mg/L         0.00050         <0.00050         <0.00050         <0.00050         0.0005         0		nH   Inits	0.10	7 20	7 25	7 21	7.00	6.76	8 96	7 52
Toluene         mg/L         0.0010         <0.0010         0.0015         0.0015         0.001         0.019         0.0035           Ethyl Benzene         mg/L         0.00050         <0.00050	•						7.00			
Ethyl Benzene         mg/L         0.00050         <0.00050         <0.00050         <0.00050         0.0005										
o-Xylene         mg/L         0.00050         <0.00050         <0.00050         0.0005         0.		_								
F1 (C6-C10)         mg/L         0.10         <0.10         <0.20         <0.20         0.20         0.10         0.10         0.10           F2 (C10-C16)         mg/L         0.25         <0.10	,	_								
F2 (C10-C16)         mg/L         0.25         <0.10         0.13         0.12         0.10         0.50         0.20           F3 (C16-C34)         mg/L         0.25         <0.25	•	_								
F3 (C16-C34)     mg/L     0.25     <0.25     0.59     <0.25     0.25     4.09     1.36       F4 (C34-C50)     mg/L     0.25     <0.25										
F4 (C34-C50) mg/L 0.25 <0.25 <0.25 0.25 0.25 1.44 0.55	, ,									
Total Hydrocarbons (C6-C50) mg/L 0.44 <0.38 0.72 <0.38 0.38 5.53 1.89	EV (C3V-C2U)	mg/L	0.25	< 0.25	< 0.25	< 0.25		0.25	1.44	0.55

Arviat ARV-5

ARV-5				20	10			Statistics	
Parameter	Unit	DL	21-Jun-18	17-Jul-18	13-Aug-18	10-Sep-18	Min	Max	Average
Alkalinity									
Bicarbonate (HCO3)	mg/L	1.2	55.5	92.0	94.4	88.2	38.40	135.00	88.07
Carbonate (CO3)	mg/L	0.60	<0.60	<0.60	<0.60	<0.60	0.60	12.00	2.35
Hydroxide (OH)	mg/L	0.34	<0.34	<0.34	<0.34	<0.34	0.34	6.80	1.33
Total (as CaCO3)	mg/L	1.0	45.5	75.4	77.4	72.3	31.50	110.00	72.07
Ammonia by Colour									
Total (as N)	mg/L	0.20	0.01	0.025	0.019	0.02	0.01	0.09	0.03
Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	mg/L	6.0	<2.0	<2.0	<2.0	2.3	2.00	6.00	2.98
Carbonaceous BOD									
BOD Carbonaceous	mg/L	6.0	<2.0	<2.0	<2.0	<2.0	2.00	6.00	2.69
Chloride in Water by IC									
Chloride (CI)	mg/L	10	131	259	372	441	94.50	1300.00	554.58
Conductivity									
Conductivity	umhos/cm	1.0	537	953	1340	1570	305.00	3890.00	1789.07
Fecal Coliforms									
Fecal Coliforms	MPN/100mL	3	<10	30	20	30	3.00	7500.00	514.73
Hardness Calculated									
Hardness (as CaCO3)	mg/L	0.30	81.6	138	212	226	64.30	744.00	308.18
Mercury Total									
Mercury (Hg)	mg/L	0.00020	0.0000050	<0.0000050	<0.0000050	<0.000050	0.000005	0.00020	0.00005
Nitrate in Water by IC	3/ -								
Nitrate (as N)	mg/L	0.020	<0.020	<0.040	<0.10	<0.10	0.02	0.40	0.15
Nitrate + Nitrite	6/ -	0.020	0.020	.0.0 10	.0.10	.0.10	5.52	5.40	0.13
Nitrate and Nitrite as N	mg/L	0.070	<0.070	<0.070	<0.11	<0.11	0.07	0.45	0.21
Nitrite in Water by IC	IIIg/L	0.070	<0.070	<0.070	₹0.11	₹0.11	0.07	0.43	0.21
•	ma/l	0.010	<0.010	<0.020	<0.050	<0.050	0.01	0.25	0.09
Nitrite (as N)	mg/L	0.010	<0.010	<0.020	<0.050	<0.050	0.01	0.25	0.09
Oil & Grease - Gravimetric	/	F.0	5.0	5.0	5.0	5.0	2.00	F 00	0.74
Oil and Grease	mg/L	5.0	<5.0	<5.0	<5.0	<5.0	2.00	5.00	3.71
Phenol									
Phenols	mg/L	0.0010	<0.0010	0.0011	0.0015	<0.0010	0.0010	0.014	0.0025
Phosphorus, Total									
Phosphorus (P)									
r nosphorus (r)	mg/L	0.010	0.0058	0.0314	0.0275	0.0236	0.0038	0.17	0.065
Sulfate in Water by IC	mg/L	0.010	0.0058	0.0314	0.0275	0.0236	0.0038	0.17	0.065
	mg/L mg/L	6.0	13.2	5.40	2.80	11.2	4.90	119.00	29.34
Sulfate in Water by IC									
Sulfate in Water by IC Sulfate (SO4)									
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS	mg/L	6.0	13.2	5.40	2.80	11.2	4.90	119.00	29.34
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al)	mg/L	6.0 0.0050	13.2 0.0158	5.40 0.0157	2.80	0.0094	4.90 0.01	119.00 0.46	29.34 0.13 0.0006
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As)	mg/L mg/L mg/L	6.0 0.0050 0.00020	0.0158 0.0004	5.40 0.0157 0.00076	2.80 0.042 0.00077	0.0094 0.00055	4.90 0.01 0.0002	119.00 0.46 0.0009	29.34 0.13 0.0006
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd)	mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010	13.2 0.0158 0.0004 <0.0000050	5.40 0.0157 0.00076 <0.0000050	2.80 0.042 0.00077 <0.0000050	0.0094 0.00055 <0.0000050	4.90 0.01 0.0002 0.000005	0.46 0.0009 0.000074	29.34 0.13 0.0006 0.000014
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10	13.2 0.0158 0.0004 <0.0000050 14.8	5.40 0.0157 0.00076 <0.0000050 21.7	2.80 0.042 0.00077 <0.0000050 34.5	11.2 0.0094 0.00055 <0.0000050 36	4.90 0.01 0.0002 0.000005 8.98	0.46 0.0009 0.000074 79.90	29.34 0.13 0.0006 0.000014 41.74
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020	13.2 0.0158 0.0004 <0.000050 14.8 0.00014	5.40  0.0157  0.00076 <0.0000050  21.7  0.00018  0.00029	2.80 0.042 0.00077 <0.000050 34.5 0.00025	11.2 0.0094 0.00055 <0.0000050 36 0.00016 0.00015	4.90 0.01 0.0002 0.000005 8.98 0.0001	0.46 0.0009 0.000074 79.90 0.0016	29.34 0.13 0.0006 0.000014 41.74 0.0009
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020	13.2  0.0158  0.0004 <0.0000050  14.8  0.00014  0.0001  0.00059	5.40  0.0157  0.00076 <0.0000050  21.7  0.00018  0.00029  0.00066	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050	0.0094 0.00055 <0.000050 36 0.00016 0.00015 0.00061	4.90 0.01 0.0002 0.000005 8.98 0.0001 0.0001 0.0003	119.00 0.46 0.0009 0.000074 79.90 0.0016 0.0006	29.34 0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010	13.2 0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514	5.40  0.0157  0.00076 <0.0000050  21.7  0.00018  0.00029  0.00066  1.79	2.80 0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54	0.0094 0.00055 <0.000050 36 0.00016 0.00015 0.00061 0.721	4.90 0.01 0.0002 0.000005 8.98 0.0001 0.0001 0.0003 0.21	0.46 0.0009 0.00074 79.90 0.0016 0.0006 0.0015 7.56	29.34 0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090	13.2  0.0158  0.0004 <0.0000050  14.8  0.00014  0.0001  0.00059  0.514  0.000052	5.40  0.0157  0.00076 <0.0000050  21.7  0.00018  0.00029  0.00066  1.79  0.000072	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070	0.0094 0.00055 <0.000050 36 0.00016 0.00015 0.00061 0.721 0.000066	4.90 0.01 0.0002 0.000005 8.98 0.0001 0.0001 0.0003 0.21 0.0001	0.46 0.0009 0.00074 79.90 0.0016 0.0006 0.0015 7.56 0.0006	29.34 0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010	13.2  0.0158  0.0004 <0.000050  14.8  0.00014  0.0001  0.00059  0.514  0.000052  10.8	5.40  0.0157  0.00076 <0.0000050  21.7  0.00018  0.00029  0.00066  1.79  0.000072  20.2	2.80  0.042  0.00077 <0.0000050  34.5  0.00025  0.0005 <0.00050  3.54  0.000070  30.7	0.0094 0.00055 <0.000050 36 0.00016 0.00015 0.00061 0.721 0.000066 33.1	4.90 0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27	119.00 0.46 0.0009 0.00074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00	29.34 0.13 0.0006 0.000012 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030	13.2  0.0158  0.0004 <0.000050  14.8  0.00014  0.0001  0.00059  0.514  0.000052  10.8  0.00856	5.40  0.0157  0.00076 <0.0000050  21.7  0.00018  0.00029  0.00066  1.79  0.000072  20.2  0.150	2.80  0.042  0.00077 <0.0000050  34.5  0.00025  0.0005 <0.00050  3.54  0.000070  30.7  0.536	0.0094 0.00055 <0.000050 36 0.00016 0.00015 0.00061 0.721 0.000066 33.1 0.0619	4.90 0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01	119.00 0.46 0.0009 0.00074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26	29.34 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.00020	13.2  0.0158  0.0004 <0.0000050  14.8  0.00014  0.0001  0.00059  0.514  0.000052  10.8  0.00856  0.00055	5.40  0.0157  0.00076  <0.0000050  21.7  0.00018  0.00029  0.00066  1.79  0.000072  20.2  0.150  0.00077	2.80  0.042  0.00077 <0.0000050  34.5  0.00025  0.0005 <0.00050  3.54  0.000070  30.7  0.536  0.00052	0.0094 0.00055 <0.000050 36 0.00016 0.00015 0.00061 0.721 0.000066 33.1 0.0619 0.00052	4.90 0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005	119.00 0.46 0.0009 0.00074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020	29.34 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (K)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.0020	13.2  0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00856 0.00055 4.92	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.000066 33.1 0.0619 0.00052 7.64	4.90  0.01  0.0002  0.000005  8.98  0.0001  0.0003  0.21  0.0001  6.27  0.01  0.0005  2.90	119.00 0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60	29.34 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (Al) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.0020 0.030	13.2  0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00856 0.00055 4.92 72.2	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.000066 33.1 0.0619 0.00052 7.64	4.90  0.01  0.0002  0.000005  8.98  0.0001  0.0003  0.21  0.0001  6.27  0.01  0.0005  2.90  41.60	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0005 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00	29.34 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.0020	13.2  0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00856 0.00055 4.92	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.000066 33.1 0.0619 0.00052 7.64	4.90  0.01  0.0002  0.000005  8.98  0.0001  0.0003  0.21  0.0001  6.27  0.01  0.0005  2.90	119.00 0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60	29.34 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn) Total Organic Carbon by Combustion	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.020 0.030 0.0020	13.2  0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00055 4.92 72.2 0.0031	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.000066 33.1 0.0619 0.00052 7.64 222 0.0611	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42	29.34 0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01 0.033
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn) Total Organic Carbon by Combustion	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.0020 0.030	13.2  0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00856 0.00055 4.92 72.2	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.000066 33.1 0.0619 0.00052 7.64	4.90  0.01  0.0002  0.000005  8.98  0.0001  0.0003  0.21  0.0001  6.27  0.01  0.0005  2.90  41.60	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0005 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00	29.34 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00090 0.00030 0.0020 0.030 0.0020	13.2  0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.000856 0.00055 4.92 72.2 0.0031 7.76	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058	0.0094 0.00055 <0.0000050 36 0.00016 0.00061 0.721 0.000066 33.1 0.0619 0.00052 7.64 222 0.0611	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42	29.34 0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01 0.033
Sulfate in Water by IC Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd) Calcium (Ca) Chromium (Cr) Cobalt (Co) Copper (Cu) Iron (Fe) Lead (Pb) Magnesium (Mg) Manganese (Mn) Nickel (Ni) Potassium (Na) Zinc (Zn) Total Organic Carbon Total Suspended Solids Total Suspended Solids	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.020 0.030 0.0020	13.2  0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00055 4.92 72.2 0.0031	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.000066 33.1 0.0619 0.00052 7.64 222 0.0611	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42	29.34 0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01 0.033
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  PH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00020 0.020 0.030 0.0020 0.50	13.2  0.0158 0.0004 <0.000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00055 4.92 72.2 0.0031 7.76 <2.0	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052 11.4 3.1	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.00066 33.1 0.0619 0.00052 7.64 222 0.0611 10.6	4.90  0.01  0.0002  0.000005  8.98  0.0001  0.0003  0.21  0.0001  6.27  0.01  0.0005  2.90  41.60  0.0020  7.23	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42  13.20	29.34 0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01 0.033 9.39
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.030 0.0020 0.50	13.2  0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00856 0.00055 4.92 72.2 0.0031 7.76 <2.0 7.67	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052 11.4 3.1 7.51	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0 22.5 7.18	0.0094 0.00055 <0.0000050 36 0.00016 0.00061 0.721 0.000066 33.1 0.0619 0.00052 7.64 222 0.0611	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020  7.23 5.00	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42  13.20 124.00	29.34  0.13  0.0006  0.000014  41.74  0.0009  0.0003  0.0007  2.53  0.0002  46.55  0.12  0.0017  11.01  288.01  0.033  9.39  7.51
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.0020 0.0020 0.0020 0.0020 13	13.2  0.0158 0.0004 <0.000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00856 0.00055 4.92 72.2 0.0031 7.76 <2.0 7.67 <0.00050	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052 11.4 3.1 7.51 <0.00050	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0  22.5  7.18 <0.00050	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.00066 33.1 0.0619 0.00052 7.64 222 0.0611 10.6	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020  7.23 5.00 6.96 0.0005	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42  13.20  124.00  8.05 0.0005	29.34 0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01 0.033 9.39 26.99
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.030 0.0020 0.50	13.2  0.0158 0.0004 <0.0000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00856 0.00055 4.92 72.2 0.0031 7.76 <2.0 7.67	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052 11.4 3.1 7.51	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0 22.5 7.18	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.00066 33.1 0.0619 0.00052 7.64 222 0.0611 10.6	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020  7.23 5.00	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42  13.20 124.00	29.34  0.13  0.0006  0.000014  41.74  0.0009  0.0003  0.0007  2.53  0.0002  46.55  0.12  0.0017  11.01  288.01  0.033  9.39  7.51
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0 0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00090 0.010 0.0020 0.0020 0.0020 0.0020 13	13.2  0.0158 0.0004 <0.000050 14.8 0.00014 0.0001 0.00059 0.514 0.000052 10.8 0.00856 0.00055 4.92 72.2 0.0031 7.76 <2.0 7.67 <0.00050	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052 11.4 3.1 7.51 <0.00050	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0  22.5  7.18 <0.00050	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.00066 33.1 0.0619 0.00052 7.64 222 0.0611 10.6	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020  7.23 5.00 6.96 0.0005	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42  13.20  124.00  8.05 0.0005	29.34 0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01 0.033 9.39 26.99
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene  Toluene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0  0.0050 0.00020 0.000010 0.10 0.00020 0.00020 0.010 0.00020 0.010 0.00020 0.0020 0.0020 13  0.10 0.00050 0.0010	13.2  0.0158 0.0004 <0.000050 14.8 0.00014 0.0001 0.00059 0.514 0.00052 10.8 0.00856 0.00055 4.92 72.2 0.0031 7.76 <2.0 7.67 <0.00050 <0.0010	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052 11.4 3.1 7.51 <0.00050 <0.0010	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0  22.5  7.18 <0.00050 <0.0010	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.00066 33.1 0.0619 0.00052 7.64 222 0.0611 10.6	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020  7.23 5.00 6.96 0.0005 0.001	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42  13.20 124.00  8.05 0.0005 0.001	29.34  0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01 0.033  9.39 26.99  7.51 0.0005 0.001
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene  Toluene Ethyl Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0  0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00030 0.0020 0.0020 0.030 0.0020 13  0.10 0.00050 0.0010 0.00050	13.2  0.0158 0.0004 <0.000050 14.8 0.00014 0.0001 0.00059 0.514 0.00052 10.8 0.00856 0.00055 4.92 72.2 0.0031 7.76 <2.0 7.67 <0.00050 <0.0010 <0.00050	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052 11.4 3.1 7.51 <0.00050 <0.0010 <0.00050	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0  22.5  7.18 <0.00050 <0.0010 <0.00050	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.00066 33.1 0.0619 0.00052 7.64 222 0.0611 10.6	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020  7.23 5.00 6.96 0.0005 0.001 0.0005	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0005 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42  13.20  124.00  8.05 0.0005 0.001 0.0005	29.34  0.13 0.0006 0.000012 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01 0.033  9.39 26.99  7.51 0.0005 0.001 0.0005
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon by Combustion  Total Suspended Solids  Total Suspended Solids  PH  pH  Benzene  Toluene  Ethyl Benzene  O-Xylene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0  0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00030 0.0020 0.0020 0.50  13  0.10 0.00050 0.0010 0.00050 0.00050	13.2  0.0158 0.0004 <0.000050 14.8 0.00014 0.0001 0.00059 0.514 0.00052 10.8 0.00856 0.00055 4.92 72.2 0.0031 7.76 <2.0 7.67 <0.00050 <0.0010 <0.00050	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052  11.4  3.1  7.51 <0.00050 <0.0010 <0.00050	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0  22.5  7.18 <0.00050 <0.0010 <0.00050	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.00066 33.1 0.0619 0.00052 7.64 222 0.0611 10.6	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020  7.23 5.00 6.96 0.0005 0.001 0.0005	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42  13.20  124.00  8.05 0.0005 0.0005	29.34  0.13  0.0006  0.000014  41.74  0.0009  0.0003  0.0007  2.53  0.0002  46.55  0.12  0.0017  11.01  288.01  0.033  9.39  26.99  7.51  0.0005  0.0005
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon by Combustion  Total Suspended Solids  Total Suspended Solids  PH  pH  Benzene  Toluene  Ethyl Benzene  O-Xylene  F1 (C6-C10)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0  0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00030 0.0020 0.0020 0.50  13  0.10 0.00050 0.0010 0.00050 0.00050 0.10	13.2  0.0158 0.0004 <0.000050 14.8 0.00014 0.0001 0.00059 0.514 0.00052 10.8 0.00856 0.00055 4.92 72.2 0.0031 7.76 <2.0 7.67 <0.00050 <0.0010 <0.00050 <0.10	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052  11.4  3.1  7.51 <0.00050 <0.0010 <0.00050 <0.100	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0  22.5  7.18 <0.00050 <0.0010 <0.00050 <0.100	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.00066 33.1 0.0619 0.00052 7.64 222 0.0611 10.6	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020  7.23 5.00 6.96 0.0005 0.001 0.0005 0.0005 0.0005	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0005 0.0005 0.0005 0.0005 0.0005 0.0005	29.34  0.13 0.0006 0.000014 41.74 0.0009 0.0003 0.0007 2.53 0.0002 46.55 0.12 0.0017 11.01 288.01 0.033  9.39 26.99 7.51 0.0005 0.0005 0.0005 0.10
Sulfate in Water by IC  Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon by Combustion  Total Suspended Solids  Total Suspended Solids  PH  pH  Benzene  Toluene  Ethyl Benzene  o-Xylene  F1 (C6-C10)  F2 (C10-C16)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	6.0  0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.010 0.00030 0.0020 0.0020 0.030 0.0020 0.50  13  0.10 0.00050 0.0010 0.00050 0.0010 0.00550 0.10 0.25	13.2  0.0158 0.0004 <0.000050 14.8 0.00014 0.0001 0.00059 0.514 0.00052 10.8 0.00856 0.00055 4.92 72.2 0.0031 7.76 <2.0 7.67 <0.00050 <0.0010 <0.00050 <0.100	5.40  0.0157 0.00076 <0.0000050 21.7 0.00018 0.00029 0.00066 1.79 0.000072 20.2 0.150 0.00077 6.81 144 0.0052  11.4  3.1  7.51 <0.00050 <0.0010 <0.00050 <0.100	2.80  0.042 0.00077 <0.0000050 34.5 0.00025 0.0005 <0.00050 3.54 0.000070 30.7 0.536 0.00052 7.08 191 0.0058  11.0  22.5  7.18 <0.00050 <0.0010 <0.00050 <0.100 <0.10	0.0094 0.00055 <0.0000050 36 0.00016 0.00015 0.00061 0.721 0.00066 33.1 0.0619 0.00052 7.64 222 0.0611 10.6	4.90  0.01 0.0002 0.000005 8.98 0.0001 0.0003 0.21 0.0001 6.27 0.01 0.0005 2.90 41.60 0.0020  7.23 5.00 6.96 0.0005 0.001 0.0005 0.0005 0.10 0.10	119.00  0.46 0.0009 0.000074 79.90 0.0016 0.0006 0.0015 7.56 0.0006 132.00 0.26 0.0020 23.60 765.00 0.42  13.20  124.00  8.05 0.0005 0.001 0.0005 0.0005 0.10 0.50	29.34  0.13  0.0006  0.000014  41.74  0.0009  0.0003  0.0007  2.53  0.0012  0.0017  11.01  288.01  0.033  9.39  26.99  7.51  0.0005  0.0005  0.0005  0.100  0.18

Arviat ARV-6

ARV-6			2018			Statistics			
Parameter	Unit	DL	21-Jun-18	17-Jul-18	13-Aug-18	10-Sep-18	Min	Max	Average
Alkalinity	- Cime					20 000 20		111,011	
Bicarbonate (HCO3)	mg/L	1.2	98.7	136	79.3	96	31.00	138.00	102.75
Carbonate (CO3)	mg/L	0.60	<0.60	<0.60	<0.60	<0.60	0.60	12.00	2.67
Hydroxide (OH)	mg/L	0.34	<0.34	<0.34	<0.34	<0.34	0.34	6.80	1.51
Total (as CaCO3)	mg/L	1.0	80.9	111	65	78.7	25.40	113.00	84.21
Ammonia by Colour	e,								
Total (as N)	mg/L	0.20	0.12	0.639	0.038	0.052	0.01	0.83	0.26
Biochemical Oxygen Demand (BOD)	6/ =	0.20	0.12	0.000	0.050	0.032	0.01	0.05	0.20
Biochemical Oxygen Demand	mg/L	6.0	11.4	<6	<2.0	2.1	2.10	70.10	12.51
Carbonaceous BOD	1116/ 2	0.0	11.7	10	12.0	2.1	2.10	70.10	12.51
BOD Carbonaceous	mg/L	6.0	7.3	<6	<2.0	<2.0	2.00	6.60	3.89
Chloride in Water by IC	IIIg/L	0.0	7.5	<0	₹2.0	<2.0	2.00	0.00	3.09
· · · · · · · · · · · · · · · · · · ·	/I	10	247	177	220	224	45.10	267.00	140.16
Chloride (Cl)	mg/L	10	247	177	238	224	45.10	267.00	149.16
Conductivity	and the second	1.0	044	767	004	003	100.00	4070.00	CEO 22
Conductivity	umhos/cm	1.0	944	767	894	892	198.00	1070.00	650.23
Fecal Coliforms									
Fecal Coliforms	MPN/100mL	3	<10	<10	20	<10	3.00	430.00	38.54
Hardness Calculated									
Hardness (as CaCO3)	mg/L	0.30	319	272	223	207	99.60	253.00	179.24
Mercury Total									
Mercury (Hg)	mg/L	0.00020	<0.0000050	<0.000010	<0.0000050	<0.0000050	0.000005	0.00040	0.00012
Nitrate in Water by IC									
Nitrate (as N)	mg/L	0.40	<0.020	<0.020	<0.040	<0.040	0.02	0.16	0.04
Nitrate + Nitrite									
Nitrate and Nitrite as N	mg/L	0.45	< 0.070	<0.070	< 0.070	< 0.070	0.07	0.16	0.08
Nitrite in Water by IC	Ū.								
Nitrite (as N)	mg/L	0.20	< 0.010	< 0.010	<0.020	<0.020	0.01	0.05	0.02
Oil & Grease - Gravimetric	8/								
Oil and Grease	mg/L	5.0	<5.0	6.5	<5.0	<5.0	2.00	33.00	6.03
Phenol	IIIB/ L	5.0	13.0	0.5	٧٥.٥	13.0	2.00	33.00	0.05
Phenols	mg/l	0.0010	0.0145	0.0043	0.0014	<0.0010	0.0010	0.019	0.006
Phosphorus, Total	mg/L	0.0010	0.0143	0.0043	0.0014	<0.0010	0.0010	0.019	0.000
Phosphorus (P)	ma/l	0.010	0.0422	0.200	0.020	0.0638	0.04	0.42	0.16
. , ,	mg/L	0.010	0.0433	0.399	0.028	0.0638	0.04	0.43	0.16
Sulfate in Water by IC	/	6.0	2.22	0.50	2.52	4.65	0.00	0.00	4.64
Sulfate (SO4)	mg/L	6.0	0.99	0.59	<0.60	1.65	0.30	8.83	1.64
Sulfate (SO4) Total Metals by ICP-MS									
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)	mg/L	0.0050	0.0202	0.132	0.0305	0.152	0.025	1.690	0.511
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)	mg/L mg/L	0.0050 0.00020	0.0202 0.0068	0.132 0.00321	0.0305 0.00045	0.152 0.00054	0.025 0.00036	1.690 0.00584	0.511 0.00146
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)	mg/L	0.0050 0.00020 0.000010	0.0202	0.132 0.00321 0.0000172	0.0305	0.152 0.00054 0.0000332	0.025	1.690	0.511
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)	mg/L mg/L	0.0050 0.00020	0.0202 0.0068	0.132 0.00321	0.0305 0.00045	0.152 0.00054	0.025 0.00036	1.690 0.00584	0.511 0.00146
Sulfate (SO4) Total Metals by ICP-MS Aluminium (AI) Arsenic (As) Cadmium (Cd)	mg/L mg/L mg/L	0.0050 0.00020 0.000010	0.0202 0.0068 0.000015	0.132 0.00321 0.0000172	0.0305 0.00045 <0.0000050	0.152 0.00054 0.0000332	0.025 0.00036 0.000005	1.690 0.00584 0.000091	0.511 0.00146 0.000030
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)	mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10	0.0202 0.0068 0.000015 101	0.132 0.00321 0.0000172 84.7	0.0305 0.00045 <0.0000050 60.1	0.152 0.00054 0.0000332 54.3	0.025 0.00036 0.000005 17.40	1.690 0.00584 0.000091 74.20	0.511 0.00146 0.000030 47.02
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)	mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010	0.0202 0.0068 0.000015 101 0.00024	0.132 0.00321 0.0000172 84.7 0.00097	0.0305 0.00045 <0.0000050 60.1 0.00047	0.152 0.00054 0.0000332 54.3 0.00073	0.025 0.00036 0.000005 17.40 0.0010	1.690 0.00584 0.000091 74.20 0.32	0.511 0.00146 0.000030 47.02 0.027
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020	0.0202 0.0068 0.000015 101 0.00024 0.00347	0.132 0.00321 0.0000172 84.7 0.00097 0.00198	0.0305 0.00045 <0.0000050 60.1 0.00047 0.001	0.152 0.00054 0.0000332 54.3 0.00073 0.00126	0.025 0.00036 0.000005 17.40 0.0010 0.0009	1.690 0.00584 0.000091 74.20 0.32 0.0048	0.511 0.00146 0.000030 47.02 0.027 0.0024
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014	0.025 0.00036 0.000005 17.40 0.0010 0.0009	1.690 0.00584 0.000091 74.20 0.32 0.0048 0.0060	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0	0.0305 0.00045 <0.0000050 60.1 0.00047 0.001 <0.00050 11.5	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81	1.690 0.00584 0.000091 74.20 0.32 0.0048 0.0060 147.00	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7	0.0305 0.00045 <0.0000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13	1.690 0.00584 0.000091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60	0.0305 0.00045 <0.0000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189	0.0305 0.00045 <0.0000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430	0.511 0.00146 0.00003C 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.020	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17	0.0305 0.00045 <0.0000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.020	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.020	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17	0.0305 0.00045 <0.0000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon by Combustion	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.020 0.030 0.0020	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30 82.70	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.000090 0.010 0.00030 0.0020 0.020	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.020 0.030 0.0020	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173	0.0305 0.00045 <0.0000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020	1.690 0.00584 0.000091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30 82.70 0.30	0.511 0.00146 0.000030 47.02 0.0027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.020 0.030 0.0020	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30 82.70	0.511 0.00146 0.000030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00090 0.010 0.00030 0.0020 0.030 0.0020 0.50	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.666 0.00062 5.09 84.5 0.0135 7.99	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00	1.690 0.00584 0.000091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30 82.70 0.30	0.511 0.00146 0.000030 47.02 0.0027 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  pH  pH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.0020 0.030 0.0020 0.50	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.666	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00	1.690 0.00584 0.000091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 82.70 0.30	0.511 0.00146 0.000030 47.02 0.027 0.0023 41.46 0.00076 12.76 2.31 0.0025 5.74 56.92 0.048 13.92
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 13	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132 6.77 <0.00050	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.66 <0.00050	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00 18.00	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 82.70 0.30 28.20 1500.00	0.511 0.00146 0.000030 47.02 0.0027 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048 13.92 201.38 6.92 0.0005
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (AI)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  pH  pH	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.0020 0.030 0.0020 0.50	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.666	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00	1.690 0.00584 0.000091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 82.70 0.30	0.511 0.00146 0.000030 47.02 0.0027 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 13	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132 6.77 <0.00050	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.66 <0.00050	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00 18.00	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 82.70 0.30 28.20 1500.00	0.511 0.00146 0.000030 47.02 0.0027 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048 13.92 201.38 6.92 0.0005
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene  Toluene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35 6.92 <0.00050 0.0012	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132 6.77 <0.00050 0.0013	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.66 <0.00050 0.0013	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00 18.00 6.45 0.0005 0.0010	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 82.70 0.30 28.20 1500.00 7.67 0.0005 0.00424	0.511 0.00146 0.000030 47.02 0.0027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048 13.92 201.38 6.92 0.0005 0.0005
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (Na)  Zinc (Zn)  Total Organic Carbon by Combustion  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene  Toluene  Ethyl Benzene	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.00010 0.10 0.0010 0.00020 0.010 0.00020 0.010 0.00030 0.0020 0.030 0.0020 13	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35 6.92 <0.00050 0.0012 <0.00050	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132 6.77 <0.00050 0.0013 <0.00050	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.66 <0.00050 0.0013 <0.00050	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00 18.00 6.45 0.0005 0.0010 0.0005	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30 82.70 0.30 28.20 1500.00 7.67 0.0005 0.0042 0.0024	0.511 0.00146 0.000030 47.02 0.0027 0.0024 0.0023 41.46 0.00076 2.31 0.00250 5.74 56.92 0.048 13.92 201.38 6.92 0.0005 0.0001
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon by Combustion  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene  Toluene  Ethyl Benzene  O-Xylene  F1 (C6-C10)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.00010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.0020 0.030 0.0020 13 0.10 0.00050 0.0010 0.00050 0.00050 0.10	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35 6.92 <0.00050 0.0012 <0.00050 <0.10	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132 6.77 <0.00050 0.0013 <0.00050 <0.00050 <0.10	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.66 <0.00050 0.0013 <0.00050 <0.00050	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00 18.00 6.45 0.0005 0.0010 0.0005	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30 82.70 0.30 28.20 1500.00 7.67 0.0005 0.0042 0.006	0.511 0.00146 0.000030 47.02 0.0027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048 13.92 201.38 6.92 0.0005 0.0021 0.0007 0.0001
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon by Combustion  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene  Toluene  Ethyl Benzene  o-Xylene  F1 (C6-C10)  F2 (C10-C16)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13 0.10 0.00050 0.0010 0.00050 0.0010 0.0055	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35 6.92 <0.00050 0.0012 <0.00050 <0.100 <0.10	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132 6.77 <0.00050 0.0013 <0.00050 <0.10 0.16	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.66 <0.00050 0.0013 <0.00050 <0.101	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00 18.00 6.45 0.0005 0.0010 0.0005 0.0010 0.10	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30 82.70 0.30 28.20 1500.00 7.67 0.0005 0.0042 0.0024 0.006 0.10 2.47	0.511 0.00146 0.00030 47.02 0.0027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048 13.92 201.38 6.92 0.0005 0.0021 0.0007 0.0014 0.10 0.47
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon by Combustion  Total Organic Carbon  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene  Toluene  Ethyl Benzene  o-Xylene  F1 (C6-C10)  F2 (C10-C16)  F3 (C16-C34)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.00010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13 0.10 0.00050 0.0010 0.00050 0.0010 0.25 0.25	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35 6.92 <0.00050 0.0012 <0.00050 <0.100 <0.10 <0.25	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132 6.77 <0.00050 0.0013 <0.00050 <0.10 0.16 <0.25	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.66 <0.00050 0.0013 <0.00050 <0.10 0.14 <0.25	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00 18.00 6.45 0.0005 0.0010 0.0005 0.001 0.10 0.10 0	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30 82.70 0.30 28.20 1500.00 7.67 0.0005 0.0042 0.0024 0.006 0.10 2.47 13.90	0.511 0.00146 0.00030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048 13.92 201.38 6.92 0.0005 0.0021 0.0007 0.0014 0.10 0.47 2.19
Sulfate (SO4)  Total Metals by ICP-MS  Aluminium (Al)  Arsenic (As)  Cadmium (Cd)  Calcium (Ca)  Chromium (Cr)  Cobalt (Co)  Copper (Cu)  Iron (Fe)  Lead (Pb)  Magnesium (Mg)  Manganese (Mn)  Nickel (Ni)  Potassium (K)  Sodium (Na)  Zinc (Zn)  Total Organic Carbon by Combustion  Total Suspended Solids  Total Suspended Solids  pH  pH  Benzene  Toluene  Ethyl Benzene  o-Xylene  F1 (C6-C10)  F2 (C10-C16)	mg/L mg/L mg/L mg/L mg/L mg/L mg/L mg/L	0.0050 0.00020 0.000010 0.10 0.0010 0.00020 0.00020 0.010 0.00030 0.0020 0.030 0.0020 0.50 13 0.10 0.00050 0.0010 0.00050 0.0010 0.0055	0.0202 0.0068 0.000015 101 0.00024 0.00347 0.00123 8.93 0.000102 16.3 3.91 0.00419 9.58 43.5 0.0131 16.3 35 6.92 <0.00050 0.0012 <0.00050 <0.100 <0.10	0.132 0.00321 0.0000172 84.7 0.00097 0.00198 0.00116 34.0 0.000272 14.7 1.60 0.00189 9.17 35.0 0.0173 17.9 132 6.77 <0.00050 0.0013 <0.00050 <0.10 0.16	0.0305 0.00045 <0.000050 60.1 0.00047 0.001 <0.00050 11.5 0.000196 17.7 1.66 0.00062 5.09 84.5 0.0135 7.99 30 6.66 <0.00050 0.0013 <0.00050 <0.101	0.152 0.00054 0.0000332 54.3 0.00073 0.00126 0.0014 7.69 0.000370 17.4 2.13 0.00134 5.72 85.7 0.0234	0.025 0.00036 0.000005 17.40 0.0010 0.0009 0.0003 2.81 0.00009 4.13 1.07 0.00126 3.23 10.00 0.0020 1.00 18.00 6.45 0.0005 0.0010 0.0005 0.0010 0.10	1.690 0.00584 0.00091 74.20 0.32 0.0048 0.0060 147.00 0.00198 17.80 3.89 0.00430 8.30 82.70 0.30 28.20 1500.00 7.67 0.0005 0.0042 0.0024 0.006 0.10 2.47	0.511 0.00146 0.00030 47.02 0.027 0.0024 0.0023 41.46 0.00076 12.76 2.31 0.00250 5.74 56.92 0.048 13.92 201.38 6.92 0.0005 0.0021 0.0007 0.0014 0.10 0.47

# ANNUAL REPORT FOR THE HAMLET OF ARVIAT

Appendix I



Licensee

Hamlet of Arviat

### WATER LICENCE INSPECTION FORM

Licensee Representative Steve England

$\times$	Original	
	Follow-Up F	Report

3AM-ARV1016/ February 27 <sup>th</sup> 2016 Senior Admin			Representative's little				
			Senior Administ	nistrative Officer Ithorizations			
			Land / Other Author				
Date of Inspection Inspector			•				
June 27 <sup>th</sup> 2018 Atuat Shouldid				9			
Activities Inspected	_		_			_	
			Construction	on	clamation	☐ Fuel Storage	
☐ Roads/Hauling	☑ Other: waste bispo	Sai Facility	☑ Other: wat	er freatment racinty	у		
0 1111	0. 0	11.11	0.0	BII BI - 4 I	ata di BIA	NI-1 !!  -	
Conditions: A- Acceptable U-Unacceptable C-Conc				NI-Not Inspe		Not applicable	
PART:				Item No.*	Condition	Observation No.*	
A: Scope, Definitio	NS AND ENFORCEME	ENT					
B: GENERAL CONDIT	IONS			3,6	U,A	1,2	
C: CONDITIONS APPL		1,2,3	A,C,A	3,4,5			
D: CONDITIONS APPI	LYING TO WASTE DIS	Posal and Managei	MENT	1,3,15,18	A,A,A,A	6,7,8,9	
E: CONDITIONS APPL	TION	2	U	10			
F: CONDITIONS APPL							
G: CONDITIONS APPLYING TO ABANDONMENT, RESTORATION AND CLOSURE							
H: CONDITIONS APPLYING TO MONITORING PROGRAM							
*The item numbe	r corresponds with sp	pecific conditions with	in the licence and	d the observation	number corresp	onds with specific	
		comments	s provided below		,	•	
Samples taken by Ins	spector:	Location(s): ARV-2					
	•						
☐ Yes ☐ No							

### Background

The Hamlet of Arviat is a community located on the Western shore of Hudson Bay at N61° 05.517" W94° 06.249", within the Kivalliq Region of Nunavut. The community is located approximately 221 km South of Rankin Inlet.

In 2015, the Hamlet was granted a short term renewal of water licence no. 3AM-ARV1015 to allow for more time to prepare a water licence renewal application. The short term renewal expired on February 27<sup>th</sup>, 2016. The Hamlet has not been issued a new license due to insufficient information contained in the original renewal application package.

### **Inspector's Statement**

On June 27<sup>th</sup>, 2018, a water licence inspection was conducted of expired water licence no. 3AM-ARV1016 with the assistances from Steve England, Senior Administer Officer, Hamlet of Arviat and Connor Faulkner, Community and Government Services.

#### Observation

- 1. The 2016 and 2018 annual reports are not available for review on the Nunavut Water Board's FTP website.
- **2.** Fresh water is metered at the source (Wolf River).
- **3.** Freshwater is withdrawn from Wolf River at monitoring station no. ARV-1 to resupply the three potable water reservoirs. The Hamlet constructed a third water reservoir to increase the capacity and prevent an anticipated water shortage.
- **4.** The Hamlet is allotted 86 000m<sup>3</sup> of fresh water annually. The 2017 annual report indicates that a total of 98,750,554.50m<sup>3</sup> was used, which the inspector expects to be unrealistic and incorrect.
- **5.** The fresh water intake is equip with a screen.
- **6.** All sewage is directed to the Sewage Disposal Facility ('SDF').
- 7. The SDF berm has one (1) meter freeboard as required PART D item 3.
- **8.** The Hamlet has been depolluting vehicles located in the Solid Waste Disposal Facility ('SWDF'). The hazardous waste that has been removed from the vehicles is collected in appropriate containers and is store in seacans.
- **9.** The depolluted vehicles are then shredded and used as a fire barrier in the SWDF to prevent uncontrolled burning.



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*	

Date

<b>10.</b> The Han Board.	nlet has constructed a	n additional potab	le water pond without appro	oval from the Nunavut Water		
SECTION 2	Comments	Non-Complia	ance with Act or Licence	Action Required		
Concerns related to V	/ater Licence no. 3BM-/	ARV1016;				
	to file 2016 and 2018 A shall submit the outstan	•	as required, before the term of	<sup>f</sup> the next inspection.		
— The Licensee	ns regarding Annual wa shall review the 2017 ar		vide a response to the inspector	's concerns during the next		
inspection.						
PART E item 2: Failure	to receive approval price	or to construction of t	facilities			
— The Licensee	shall complete an applic	cation for renewal pr	ior to the next inspection.			
Failures related to the	Failures related to the Nunavut Waters and Nunavut Surface Rights Tribunal Act;					
Section 11(2): No person shall use or permit the use of water in Nunavut except in accordance with the conditions of a licence.  — The Licensee shall submit the necessary information, as required by the Nunavut Water Board, for the renewal application as discussed in section 1 of this report, prior to the term of the next inspection or further enforcement action will be taken.						
SECTION 3	Comments		ance with Act or Licence	Action Required		
The Hamlet of Arviat is currently using water and depositing waste without a valid water licence for the third year. The Nunavut Water Board has issued a letter to Community and Government Services in December 2018 requesting information on the stalled Type 'A' application. To date no response has been received by the Board.  The inspector is particularly pleased with the efforts made by the Hamlet over the last three years at SWDF but is concerned with the lack of progress obtain a current authorization.						
Licensee or Representative			Inspector's Name			
Steve England Atuat Shouldice Signature						

Sent Electronically

January 23<sup>rd</sup> , 2018

CC: Licensing Department, NWB Justin Hack, Manager, Field Operations, CIRNAC



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