

**ANNUAL REPORT
FOR THE HAMLET OF BAKER LAKE, 2014**

YEAR BEING REPORTED: 2014

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. 3BM-BAK1015 issued to the Hamlet of Baker Lake.

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

Month Reported	Quantity of Water Obtained from all sources (Litres)	Quantity of Sewage Waste Discharged (Estimated, Litres)
January 2014	5,238,089.54	Same
February 2014	4,683,591.30	Same
March 2014	5,754,078.30	Same
April 2014	5,760,759.70	Same
May 2014	5,931,702.70	Same
June 2014	5,688,436.00	Same
July 2014	5,976,526.20	Same
August 2014	5,974,427.60	Same
September 2014	5,884,511.00	Same
October 2014	5,905,471.70	Same
November 2014	5,520,153.00	Same
December 2014	5,767,877.70	Same
ANNUAL TOTAL	68,085,624.74	63,753,644.10

Note: There is no meter existing at the end of the Sewage Truck discharge pipe. Therefore the monthly sewage discharge volume is considered as equal volume to the monthly water consumption.

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- 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;
-
- No modifications and/or major maintenance work was carried out in 2014.
- v. a list of unauthorized discharges and summary of follow-up action taken;
-
- Spills:
- 2014142, 2014-05-06, Craet 3113, Heating Fuel, 113L
 - 2014146, 2014-05-07, Lot 340-341, Fuel Oil, 1000L
 - 2014150, 2014-05-07, 160km of Baker Lake, Gasoline, 151L
 - 2014234, 2014-05-08, Nutaaq Camp, Aniglak Property, NU, P50, 100L
 - 2014264, 2014-07-17, 3.9Km of Areva Kiggavik Camp, Drill Cuttings, 0L
 - 2014289, 2014-08-07, Three Bluffs Drilling Grid (Committee Bay Project), Diesel Fuel, 20L
 - 2014294, 2014-08-11, AEM Diesel Refuelling Station, Diesel Fuel, 200L
 - 2014348, 2014-09-26, 3019 4th Avenue, Jonah Amitnaaq School, Diesel, 200L
 - 2014350, 2014-10-01, 64 11.8N 095 13.6W Course 104, Speed 7.4Knots, Enroute Baker Lake to Helicopter Island, Hydraulic Oil, 40L
 - 2014364, 2014-10-23, Lot 2 Block 13 Plan 1450, Heating Fuel, 0L
 - 2014457, 2015-01-30, Baker Lake CO-OP, Fuel, 114L
- vi. a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;
-
- No abandonment and restoration work was done in 2014 and none is planned for 2015.
- 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;
-
- Hamlet of Baker Lake - Plan for Compliance was submitted with the Amendment/Renewal Application March 6, 2015.
- viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and
-
- Signage for the Monitoring Program Stations will be ordered over the winter for installation summer 2015. Pictures of the signage at Monitoring Program Stations will be included in the 2015 Annual Report.

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ix. updates or revisions to the approved Operation and Maintenance Plans.

- The *Operations and Maintenance Manual for the Water, Sewage and Solid Waste Facilities, Baker Lake, NU* prepared by Nunami Stantec, June, 2011, including:
 - o *Water Distribution System Operations and Maintenance* (Section 3);
 - o *Sewage Disposal Facilities Operations and Maintenance* (Section 4);
 - o *Solid Waste Disposal Facilities Operations and Maintenance* (Section 5); and
 - o *Emergency Response and Spill Contingency Plan* (Section 6);is currently being reviewed and updated. The updated O&M Manual will be submitted by August 31, 2015.
- The *Quality Assurance/Quality Control Plan for the Hamlet of Baker Lake's Licensed Monitoring Program* prepared by Nunami Stantec, April 2011 is currently being reviewed and updated. The updated QA/QC Plan, with cover letter from an accredited lab confirming acceptance, will be submitted by April 30, 2015.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- All sampling required under the Monitoring Program will be completed during the 2015 sampling season.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- No AANDC Inspection took place in 2014.

Appendix A: Delivery Summary By Water Rate, Monthly January to December 2014 – 12 pages

Appendix B: Hazardous Materials Spill Database, Baker Lake 2014 – 1 page

Appendix C: BAK-5 Effluent Quality Limits – 1 page

Appendix D: Monitoring Program Sampling Parameters Summary – 1 page

Appendix E: Certificates of Analysis, July 30, 2014 and August 20, 2014 – 18 pages

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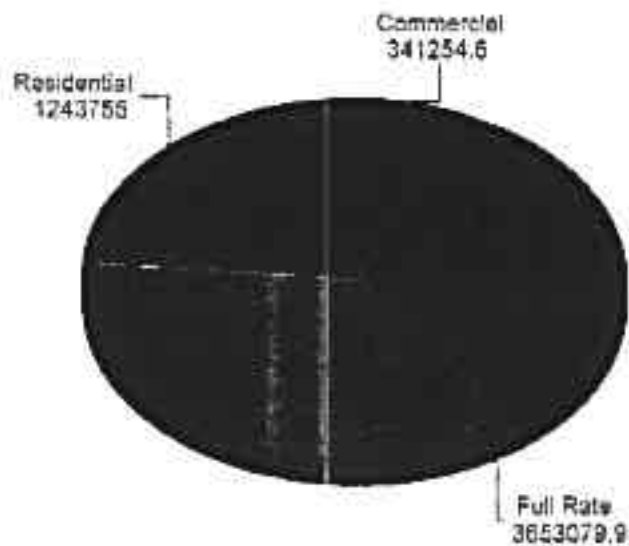
**Appendix A: Delivery Summary By Water Rate, Monthly
January to December 2014**

Delivery Summary By Water Rate

Printed on: Feb 27 2015 @ 2:11:11 PM

Page 1 of 1

Date Range From Jan-01-2014 To Jan-31-2014



Commercial	6.5%
Full Rate	89.7%
Residential	23.7%
Total:	100.0%

Water Rate**Litres Delivered**

Commercial	341,254.60
Full Rate	3,653,079.94
Residential	1,243,755.00

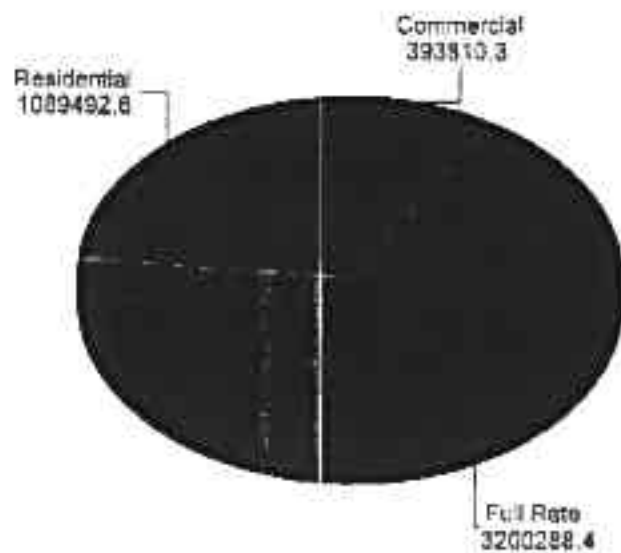
Grand Total:**5,238,089.54**

Delivery Summary By Water Rate

Printed on: Feb 17 2015 @ 2:53 PM

Page: 1 of 1

Date Range From: Feb-01-2014 To: Feb-28-2014



Commercial	8.4%
Full Rate	68.3%
Residential	23.3%
Total:	100.0%

Water Rate

Litres Delivered

Commercial	393,810.30
Full Rate	3,200,288.40
Residential	1,089,492.80

Grand Total:

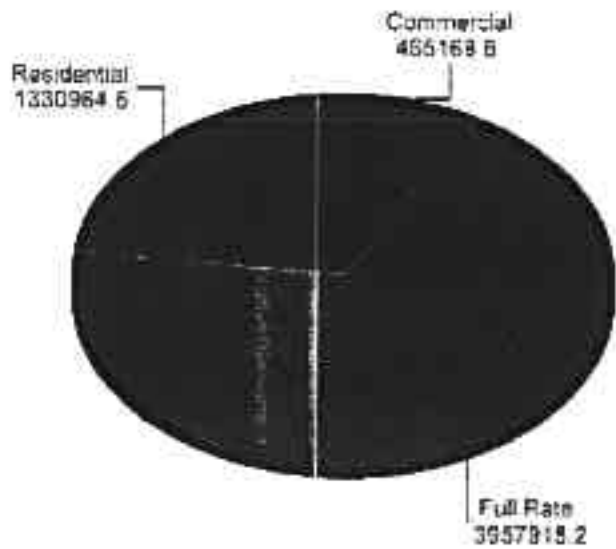
4,683,591.30

Delivery Summary By Water Rate

Printed on: Feb 27 2015 @ 2:15:56PM

Page: 1 of 1

Date Range From Mar-01-2014 To: Mar-31-2014



Commercial	8.1%
Full Rate	68.8%
Residential	23.1%
Total	100.0%

Water Rate

Litres Delivered

Commercial	465,168.60
Full Rate	3,957,915.20
Residential	1,330,964.50

Grand Total:

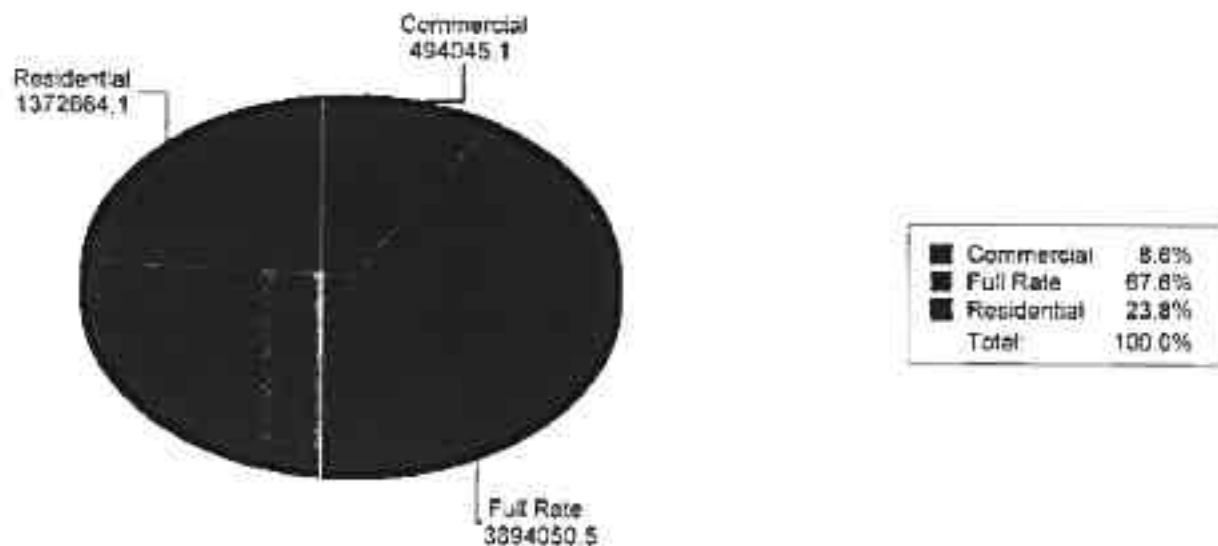
5,754,048.30

Delivery Summary By Water Rate

Printed on: Feb 27 2015 @ 2:35:46PM

Page: 1 of 1

Date Range From: Apr-01-2014 To: Apr-30-2014

**Water Rate****Litres Delivered**

Commercial	494,045.10
Full Rate	3,894,050.50
Residential	1,372,664.10

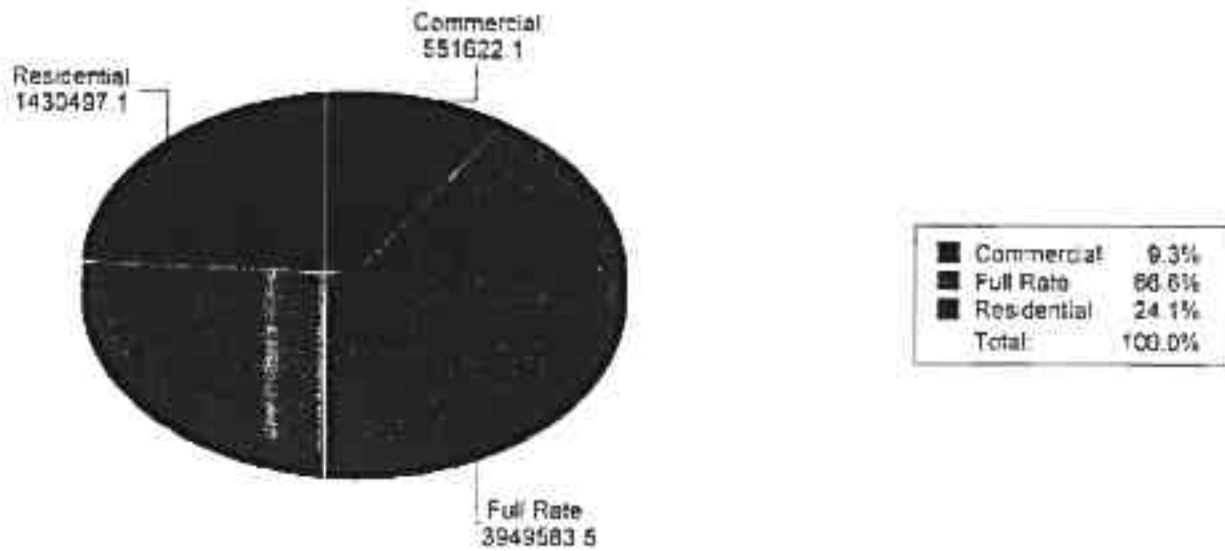
Grand Total:**5,760,759.70**

Delivery Summary By Water Rate

Printed on: Feb 27 2015 @ 2:41:11PM

Page 1 of 1

Date Range From: May-01-2014 To: May-31-2014

**Water Rate****Litres Delivered**

Commercial	551,622.10
Full Rate	3,949,583.50
Residential	1,430,497.10

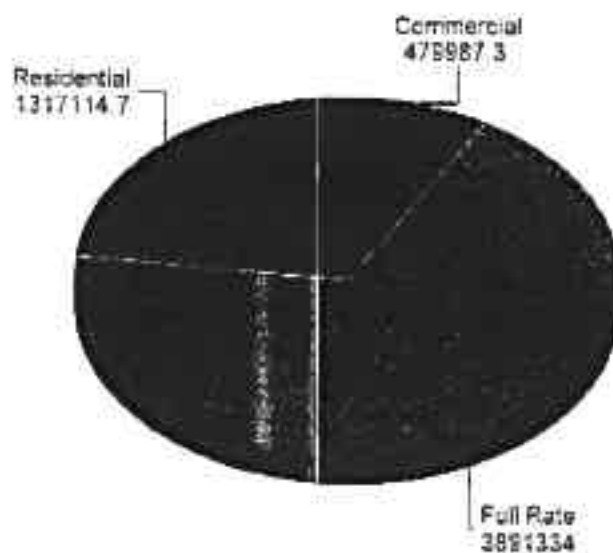
Grand Total:**5,931,702.70**

Delivery Summary By Water Rate

Printed on: Feb 27 2015 @ 1:41:29PM

Page: 1 of 1

Date Range From: Jun-01-2014 To: Jun-30-2014



Commercial	8.4%
Full Rate	68.4%
Residential	23.2%
Total:	100.0%

Water Rate

Litres Delivered

Commercial	479,987.30
Full Rate	3,891,334.00
Residential	1,317,114.70

Grand Total:

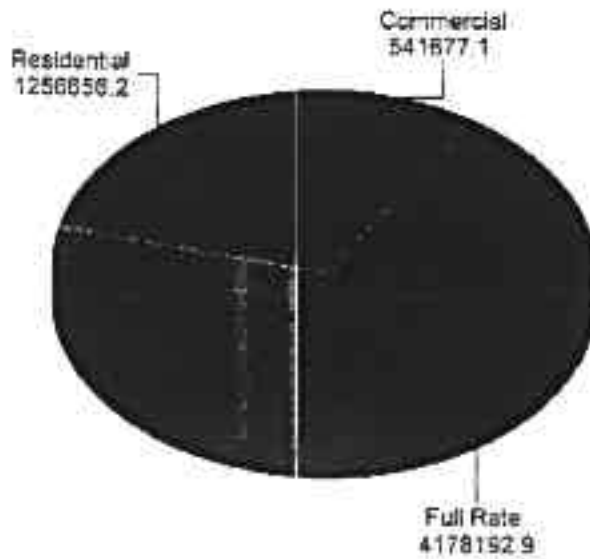
5,688,436.00

Delivery Summary By Water Rate

Printed on: Feb-27-2015 @ 2:55:43PM

Page: 1 of 1

Date Range From: Jul-01-2014 To: Jul-31-2014



Commercial	9.1%
Full Rate	69.9%
Residential	21.0%
Total:	100.0%

Water Rate**Litres Delivered**

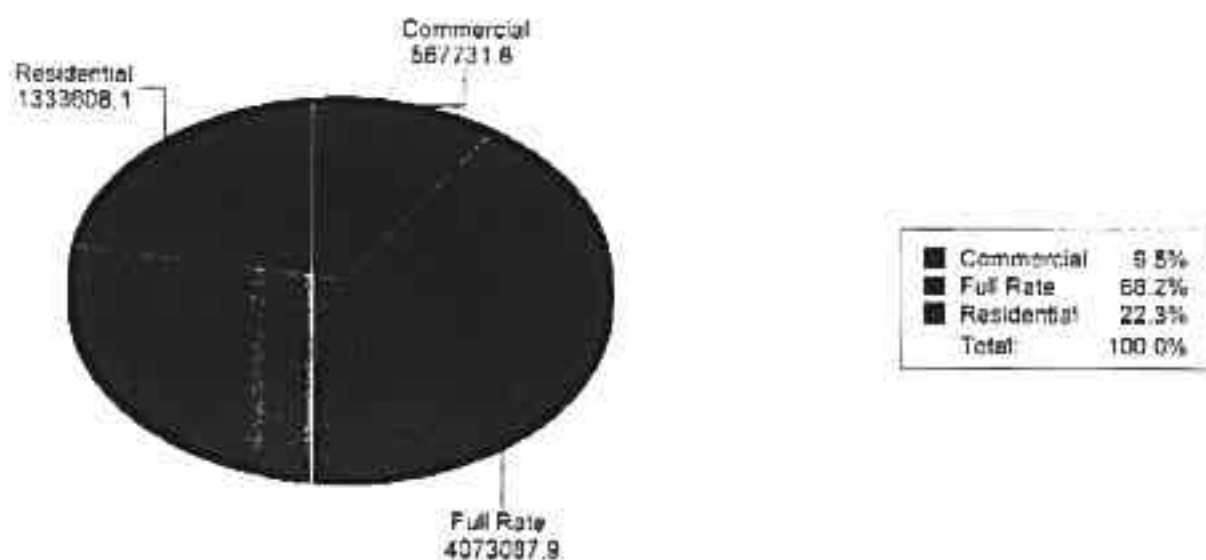
Commercial	541,677.10
Full Rate	4,178,192.90
Residential	1,256,656.20
Grand Total:	5,976,526.20

Delivery Summary By Water Rate

Printed on: Feb 27 2015 @ 2:19:00PM

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Date Range From Aug-01-2014 To: Aug-31-2014



Water Rate

Commercial

Full Rate

Residential

Litres Delivered

567,731.60

4,073,067.90

1,333,608.10

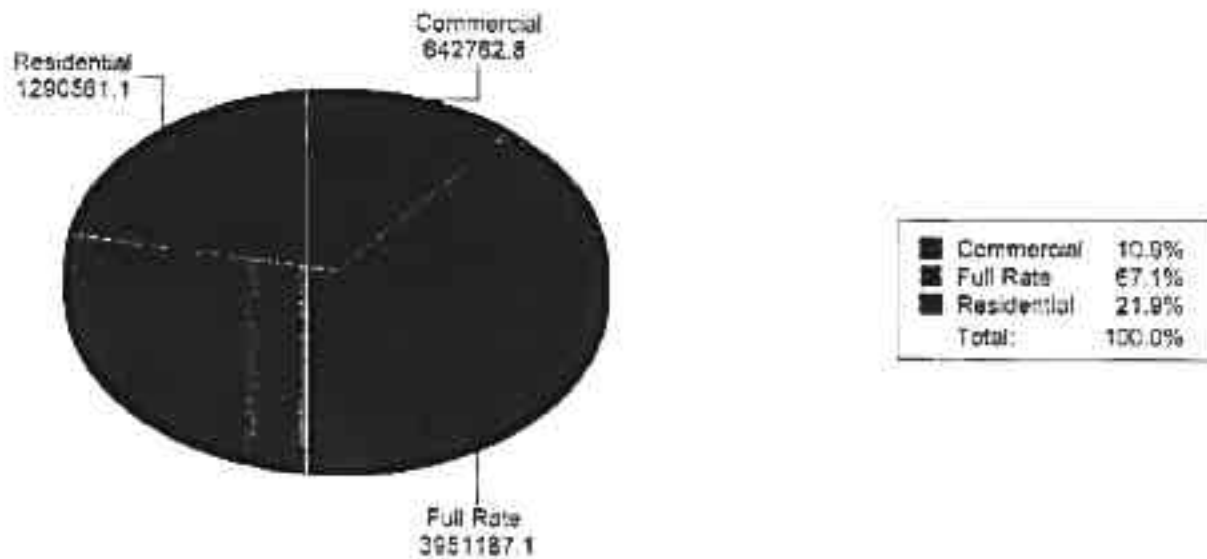
Grand Total:**5,974,427.60**

Delivery Summary By Water Rate

Printed on: Feb-27-2015 @ 2:39:17PM

Page 1 of 1

Date Range From Sep-01-2014 To: Sep-30-2014

**Water Rate****Litres Delivered**

Commercial	642,762.80
Full Rate	3,951,187.10
Residential	1,290,581.10

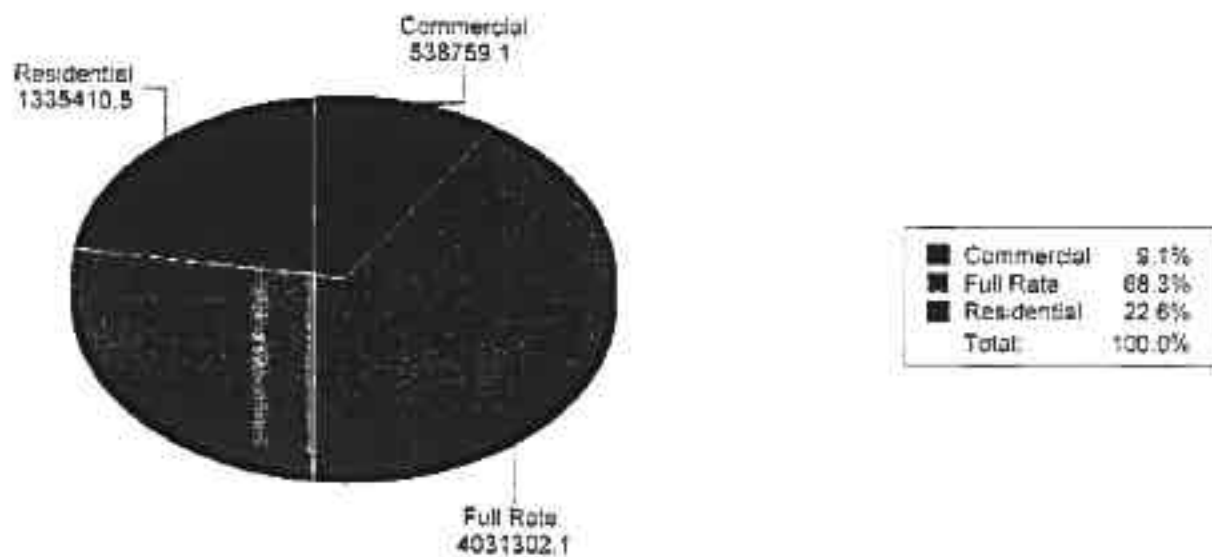
Grand Total:**5,884,511.00**

Delivery Summary By Water Rate

Printed on: Feb 27 2015 @ 2:39:37PM

Page: 1 of 1

Date Range From: Oct-01-2014 To: Oct-31-2014

**Water Rate****Litres Delivered**

Commercial	538,759.10
Full Rate	4,031,302.10
Residential	1,335,410.50

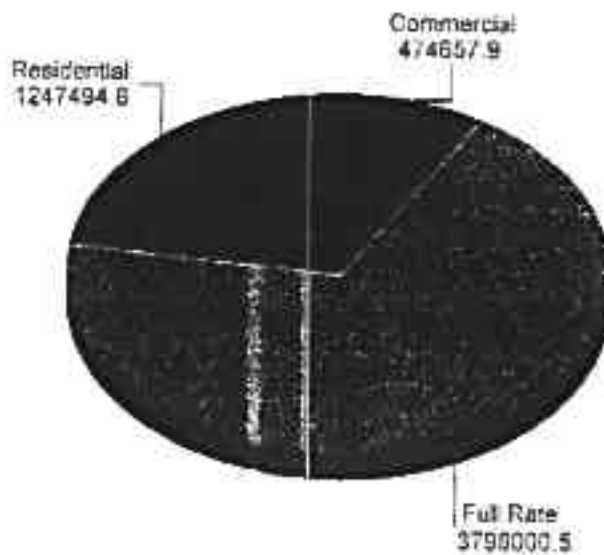
Grand Total:**5,905,471.70**

Delivery Summary By Water Rate

Printed on: Feb 27 2015 @ 2:39:54PM

Page: 1 of 1

Date Range From Nov-01-2014 To Nov-30-2014



Commercial	8.6%
Full Rate	69.8%
Residential	22.6%
Total:	100.0%

Water Rate**Litres Delivered**

Commercial	474,657.90
Full Rate	3,793,000.50
Residential	1,247,494.60

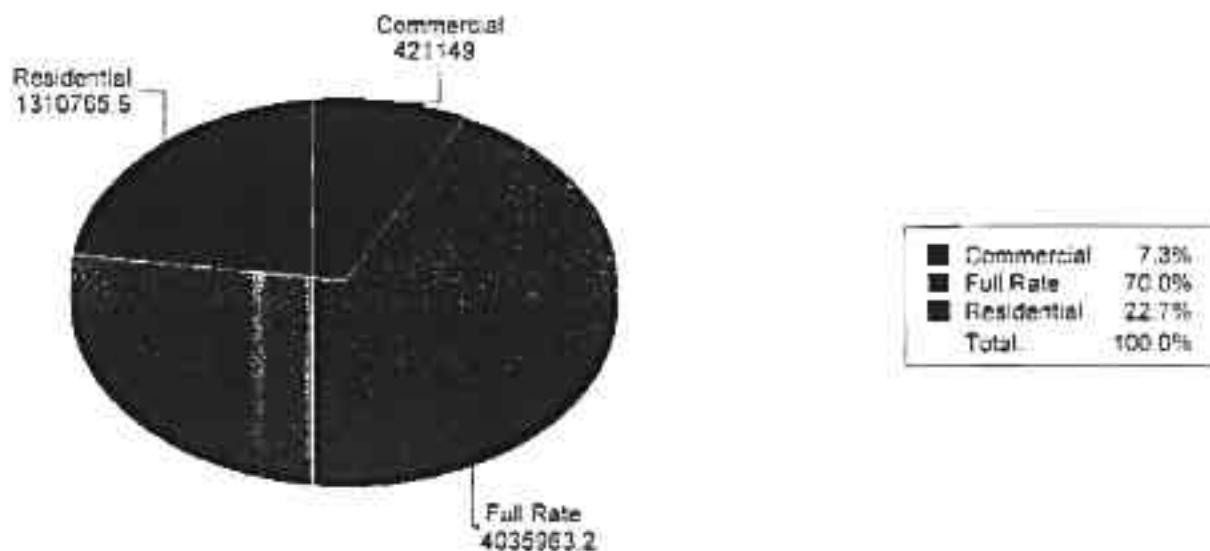
Grand Total:**5,520,153.00**

Delivery Summary By Water Rate

Printed on: Feb 27 2015 @ 2:40:06PM

Page: 1 of 1

Date Range From: Dec-01-2014 To: Dec-31-2014



Water Rate

Litres Delivered

Commercial	421,149.00
Full Rate	4,035,963.20
Residential	1,310,765.50

Grand Total:

5,767,877.70

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**Appendix B: Hazardous Materials Spill Database, Baker Lake
2014**



Hazardous Materials Spill Database

Environment Division of ENR
Scotia 6, 5102-50th Avenue; Yellowknife, NT X1A 3S8
Phone: (867) 873-7654 Fax: (867) 873-0221

Sorted By: SpillNo for the year(s): 2014

Spill No.	Date	Ter	Region	Location	Site Description	Commodity	Quantity	Source	Agency
2014142	2014-05-06	NU	KEE	Baker Lake	Craet 3113	Heating Fuel	113 L	PL	GN
2014146	2014-05-07	NU	KEE	Baker Lake	lot 340-341	Fuel Oil	1000 L	ST<	GN
2014150	2014-05-08	NU	KEE	Baker Lake	160Km of Baker Lake	Gasoline	151 L	ST<	INAC
2014234	2014-06-23	NU	KEE	Baker Lake	Nutaaq Camp, Aniglak Property, NU	P50	100 L	DRUM	INAC
2014264	2014-07-17	NU	KEE	Baker Lake	3.9km of AREVA Kiggavik camp	Drill Cuttings	0 L	UK	INAC
2014289	2014-08-07	NU	KEE	Baker Lake	Three Bluffs Drilling Grid (Committee Bay Project)	Diesel Fuel	20 L	DRUM	INAC
2014294	2014-08-11	NU	KEE	Baker Lake	AEM Diesel Refuelling Station	Diesel Fuel	200 L	TRU	GN
2014348	2014-09-26	NU	KEE	Baker Lake	3019 4th Avenue, Jonah Amitnaaq School	Diesel	200 L	UK	GN
2014350	2014-10-01	NU	KEE	Baker Lake	64 11.8N 095 13.6W Course 104, Speed 7.4 Knots, Enroute Baker Lake to Helicopter Island	Hydraulic Oil	40 L	MV	UK
2014364	2014-10-23	NU	KEE	Baker Lake	Baker Lake Lot 2 Block 13 Plan 1450	Heating Fuel	0 L	ST<	INAC
2014457	2015-01-30	NU	KEE	Baker Lake	Baker Lake Co-op	Fuel	114 L	TRU	GN

Total Spills on this Report: 11

This report contains information regarding spills that were reported to the NWT 24-Hour Spill Line. The absence of information on any particular location in no way guarantees that contamination has not occurred at that location.

LEGEND

Region: BAF - Baffin DEH - Deh Cho INU - Inuvik KEE - Keewatin KIT - Kitikmeot NSL - North Slave SAH - Sahtu SSL - South Slave	Source: AIR - Aircraft DRUM - Drum or Barrel MV - Marine Vessel NS - Natural Seepage OTH - Other Transportation PL - Pipe or Line RT - Rail Train SL - Sewage Lagoon ST< - Storage Tank <4000 litres ST> - Storage Tank >4000 litres TP - Tailings Pond TRU - Truck UK - Unknown WELL - Wet Wells, Flaring Boom	Agency: CCG - Canadian Coast Guard EP - Environment Canada GN - Government of Nunavut GNWT - Government of Northwest Territories ILA - Inuvialuit Land Administration INAC - Indian and Northern Affairs Canada NEB - National Energy Board
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Appendix C: BAK-5 Effluent Quality Limits

Baker Lake Monitoring Stations and Sampling Parameters for Licence No. 3BM-BAK1015
Part D, Item 5: BAK-5 Effluent Quality Limits

BAK-5

Parameter	Maximum Concentration of any Grab Sample	BAK-5
		30-Jul-14
BOD ₅	80 mg/L	15.2 mg/L
Total Suspended Solids	100 mg/L	28 mg/L
Faecal Coliforms	1x10 ⁴ CFU/100mL	2300 MPN/100mL
Oil and Grease	no visible sheen	<2.0 mg/L
pH	between 6 and 9	7.67

The annual sample taken at BAK-5, as per Part H, Item 1, was below maximum concentration for the effluent quality limits.

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**Appendix D: Monitoring Program Sampling Parameters
Summary**

Baker Lake Monitoring Stations and Sampling Parameters Summary for Licence No. 3BM-BAK1015

Parameters	Unit	Detection Limit	BAK-2 (monthly)			BAK-3 (annually)			BAK-4 (annually)			BAK-5 (annually)		
			30-Jul-14	20-Aug-14	CCME Guideline ¹	30-Jul-14	20-Aug-14	CCME Guideline ¹	30-Jul-14	20-Aug-14	CCME Guideline ²	30-Jul-14	20-Aug-14	CCME Guideline ³
BOD ₅	mg/L	6.0	<6.0	8.6	n/g	<6.0		n/g	12.7		n/g	15.2		n/g
Alkalinity Total	mg/L	20	47	46	n/g	35		n/g	64		n/g	79		n/g
Ammonia Nitrogen	mg/L	0.010	0.053	1.03	4.84	<0.010		0.502	2.65		4.84	6.3		4.84
cBOD	mg/L	6.0	<6.0	<6.0	n/g	<6.0		n/g	8.9		n/g	6.2		n/g
Chloride	mg/L	0.50	31	31.1	120	9.2		120	38.3		120	47.8		120
Conductivity	umhos/cm	20	251	279	n/g	85		n/g	317		n/g	357		n/g
Fecal Coliforms	MPN/100mL	3	38	2300	n/g	<3		n/g	4		n/g	2300		n/g
Hardness Total	mg/L	0.30	57.4	65.5	n/g	23.5		n/g	59.9		n/g	43.7		n/g
Mercury Total	mg/L	0.000020	0.000058	<0.000020	0.000026	<0.000020	<0.000020	0.000026	<0.000020	<0.000020	0.000026	<0.000020	<0.000020	0.000026
Nitrite-Nitrate	mg/L	0.071	1.38	1.58	n/g	<0.071		n/g	0.902		n/g	2.29		n/g
Oil and Grease	mg/L	2.0	<2.0	<2.0	n/g	<2.0		n/g	2.3		n/g	<2.0		n/g
Organic Carbon Total (TOC)	mg/L	1.0	14.4	18.1	n/g	13.9		n/g	18.6		n/g	25.6		n/g
pH	pH units	0.10	7.51	7.47	6.5-9	8.46		6.5-9	7.42		6.5-9	7.67		6.5-9
Phenols Total	mg/L	0.0010	<0.0010	<0.0010	0.004	<0.0010		0.004	<0.0010		0.004	<0.0010		0.004
Sulphate	mg/L	0.50	15.6	26.8	n/g	4.12		n/g	17.9		n/g	3.5		n/g
Total Aluminium	mg/L	0.0050	0.0792	0.237	0.1	0.0706		0.1	0.204		0.1	0.0728		0.1
Total Arsenic	mg/L	0.00020	0.00112	0.00093	0.005	0.00063		0.005	0.00114		0.005	0.00158		0.005
Total Cadmium	mg/L	0.000010	<0.000010	0.000019	9.0 × 10 ⁻⁵	<0.000010		9.0 × 10 ⁻⁵	0.000017		9.0 × 10 ⁻⁵	<0.000010		9.0 × 10 ⁻⁵
Total Calcium	mg/L	0.10	16.8	19.5	n/g	7.01		n/g	17		n/g	11.9		n/g
Total Chromium	mg/L	0.0010	<0.0010	<0.0010	0.001	<0.0010		0.001	<0.0010		0.001	<0.0010		0.001
Total Cobalt	mg/L	0.00020	0.0046	0.00043	n/g	0.00026		n/g	0.00053		n/g	0.00061		n/g
Total Copper	mg/L	0.00020	0.00314	0.0049	0.002	0.00238		0.002	0.00379		0.002	0.00455		0.002
Total Iron	mg/L	0.10	1.18	1.03	0.3	0.46		0.3	1.3		0.3	0.73		0.3
Total Lead	mg/L	0.000090	0.000237	0.000495	0.001	<0.000090		0.001	0.000418		0.001	0.000176		0.001
Total Magnesium	mg/L	0.010	3.77	4.05	n/g	1.46		n/g	4.26		n/g	3.37		n/g
Total Manganese	mg/L	0.00030	0.141	0.0894	n/g	0.0811		n/g	0.239		n/g	0.166		n/g
Total Nickel	mg/L	0.0020	<0.0020	<0.0020	0.025	<0.0020		0.025	<0.0020		0.025	0.0022		0.025
Total Potassium	mg/L	0.020	6.05	5.3	n/g	1.54		n/g	7.54		n/g	9.43		n/g
Total Sodium	mg/L	0.030	22.1	21.6	n/g	5.81		n/g	25.7		n/g	32.9		n/g
Total Suspended Solids	mg/L	5.0	<5.0	13	25	15		25	25		25	28		25
Total Zinc	mg/L	0.0020	0.0117	0.0091	0.03	0.0038		0.03	0.0106		0.03	0.0067		0.03
F1 (C6-C10) ²	mg/L	0.10							<0.10		n/g			
F2 (C10-C16) ²	mg/L	0.25							<0.25		n/g			
F3 (C16-C34) ²	mg/L	0.25							0.32		n/g			
F4 (C34-C5) ²	mg/L	0.25							<0.25		n/g			
Polycyclic Aromatic Hydrocarbons ²	mg/L	0.250							0.32		0.000012			
Benzene ²	mg/L	0.00050							<0.00050		0.37			
Toluene ²	mg/L	0.0010							<0.0010		0.002			
Ethylbenzene ²	mg/L	0.00050							<0.00050		0.09			
Xylene ²	mg/L	0.00150							<0.0015		n/g			

¹Canadian Environmental Quality Guidelines - Water Quality Guidelines for the Protection of Aquatic Life

²Analysis required for BAK-4 only

n/g - no guideline

Exceeds Guidelines for Protection of Aquatic Life

Sample Not Required

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Appendix E: Certificates of Analysis, July 30, 2014 and August 20, 2014



Hamlet of Baker Lake
ATTN: DENNIS ZETTLER
PO Box 149
Baker Lake NU X0C 0A0

Date Received: 30-JUL-14
Report Date: 11-AUG-14 15:46 (MT)
Version: FINAL

Client Phone: 867-793-2874

Certificate of Analysis

Lab Work Order #: L1494780
Project P.O. #: NOT SUBMITTED
Job Reference: BAKER LAKE MONITORING PROGRAM
C of C Numbers:
Legal Site Desc:

Gail Hill
Account 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 A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1494780-1 BAK-2							
Sampled By: JOHN O on 29-JUL-14 @ 13:30							
Matrix: WW							
Miscellaneous Parameters							
Total Organic Carbon	14.4		1.0	mg/L	07-AUG-14	07-AUG-14	R2911390
Nunavut WW Group 1							
Alkalinity							
Alkalinity, Total (as CaCO3)	47		20	mg/L		06-AUG-14	R2912341
Bicarbonate (HCO3)	57		24	mg/L		06-AUG-14	R2912341
Carbonate (CO3)	<12		12	mg/L		06-AUG-14	R2912341
Hydroxide (OH)	<6.8		6.8	mg/L		06-AUG-14	R2912341
Ammonia by colour							
Ammonia, Total (as N)	0.053		0.010	mg/L		01-AUG-14	R2907530
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<6.0		6.0	mg/L		31-JUL-14	R2908365
Carbonaceous BOD							
BOD Carbonaceous	<6.0		6.0	mg/L		31-JUL-14	R2908365
Chloride by Ion Chromatography							
Chloride	31.0		0.50	mg/L		31-JUL-14	R2908015
Conductivity							
Conductivity	251		20	umhos/cm		06-AUG-14	R2912341
Fecal Coliform							
Fecal Coliforms	38		3	MPN/100mL		02-AUG-14	R2906951
Hardness Calculated							
Hardness (as CaCO3)	57.4		0.30	mg/L		11-AUG-14	
Mercury Total							
Mercury (Hg)-Total	0.000058		0.000020	mg/L	01-AUG-14	01-AUG-14	R2908160
Nitrate as N by Ion Chromatography							
Nitrate-N	1.30		0.050	mg/L		31-JUL-14	R2908015
Nitrate+Nitrite							
Nitrate and Nitrite as N	1.38		0.071	mg/L		05-AUG-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	0.089		0.050	mg/L		31-JUL-14	R2908015
Oil and Grease, Total							
Oil and Grease, Total	<2.0		2.0	mg/L	05-AUG-14	05-AUG-14	R2911550
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L	05-AUG-14	05-AUG-14	R2909388
Phosphorus, Total							
Phosphorus (P)-Total	1.72		0.010	mg/L		05-AUG-14	R2907972
Sulfate by Ion Chromatography							
Sulfate	15.6		0.50	mg/L		31-JUL-14	R2908015
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.0792		0.0050	mg/L	08-AUG-14	08-AUG-14	R2912990
Arsenic (As)-Total	0.00112		0.00020	mg/L	08-AUG-14	08-AUG-14	R2912990
Cadmium (Cd)-Total	<0.000010		0.000010	mg/L	08-AUG-14	08-AUG-14	R2912990
Calcium (Ca)-Total	16.8		0.10	mg/L	08-AUG-14	08-AUG-14	R2912990
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	08-AUG-14	08-AUG-14	R2912990
Cobalt (Co)-Total	0.00046		0.00020	mg/L	08-AUG-14	08-AUG-14	R2912990
Copper (Cu)-Total	0.00314		0.00020	mg/L	08-AUG-14	08-AUG-14	R2912990
Iron (Fe)-Total	1.18		0.10	mg/L	08-AUG-14	08-AUG-14	R2912990
Lead (Pb)-Total	0.000237		0.000090	mg/L	08-AUG-14	08-AUG-14	R2912990
Magnesium (Mg)-Total	3.77		0.010	mg/L	08-AUG-14	08-AUG-14	R2912990
Manganese (Mn)-Total	0.141		0.00030	mg/L	08-AUG-14	08-AUG-14	R2912990
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	08-AUG-14	08-AUG-14	R2912990
Potassium (K)-Total	6.05		0.020	mg/L	08-AUG-14	08-AUG-14	R2912990
Sodium (Na)-Total	22.1		0.030	mg/L	08-AUG-14	08-AUG-14	R2912990

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

[illegible]

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

[illegible]

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1494780-3 BAK-4							
Sampled By: JOHN O on 29-JUL-14 @ 14:00							
Matrix: WW							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	05-AUG-14	08-AUG-14	R2911959
Chrysene	<0.000020		0.000020	mg/L	05-AUG-14	08-AUG-14	R2911959
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	05-AUG-14	08-AUG-14	R2911959
Fluoranthene	<0.000020		0.000020	mg/L	05-AUG-14	08-AUG-14	R2911959
Fluorene	<0.000020		0.000020	mg/L	05-AUG-14	08-AUG-14	R2911959
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	05-AUG-14	08-AUG-14	R2911959
Naphthalene	<0.000050		0.000050	mg/L	05-AUG-14	08-AUG-14	R2911959
Phenanthrene	<0.000050		0.000050	mg/L	05-AUG-14	08-AUG-14	R2911959
Pyrene	<0.000010		0.000010	mg/L	05-AUG-14	08-AUG-14	R2911959
Quinoline	0.000054		0.000020	mg/L	05-AUG-14	08-AUG-14	R2911959
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	05-AUG-14	08-AUG-14	R2911959
Surrogate: Acenaphthene d10	65.2		40-130	%	05-AUG-14	08-AUG-14	R2911959
Surrogate: Acridine d9	82.1		40-130	%	05-AUG-14	08-AUG-14	R2911959
Surrogate: Chrysene d12	66.6		40-130	%	05-AUG-14	08-AUG-14	R2911959
Surrogate: Naphthalene d8	41.8		40-130	%	05-AUG-14	08-AUG-14	R2911959
Surrogate: Phenanthrene d10	72.9		40-130	%	05-AUG-14	08-AUG-14	R2911959
Nunavut WW Group 1							
Alkalinity							
Alkalinity, Total (as CaCO3)	64		20	mg/L		06-AUG-14	R2912341
Bicarbonate (HCO3)	79		24	mg/L		06-AUG-14	R2912341
Carbonate (CO3)	<12		12	mg/L		06-AUG-14	R2912341
Hydroxide (OH)	<6.8		6.8	mg/L		06-AUG-14	R2912341
Ammonia by colour							
Ammonia, Total (as N)	2.65	DLA	0.10	mg/L		01-AUG-14	R2907530
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	12.7		6.0	mg/L		31-JUL-14	R2908365
Carbonaceous BOD							
BOD Carbonaceous	8.9		6.0	mg/L		31-JUL-14	R2908365
Chloride by Ion Chromatography							
Chloride	38.3		0.50	mg/L		31-JUL-14	R2908015
Conductivity							
Conductivity	317		20	umhos/cm		06-AUG-14	R2912341
Fecal Coliform							
Fecal Coliforms	4		3	MPN/100mL		02-AUG-14	R2906951
Hardness Calculated							
Hardness (as CaCO3)	59.9		0.30	mg/L		11-AUG-14	
Mercury Total							
Mercury (Hg)-Total	<0.000020		0.000020	mg/L	01-AUG-14	01-AUG-14	R2908160
Nitrate as N by Ion Chromatography							
Nitrate-N	0.400		0.050	mg/L		31-JUL-14	R2908015
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.902		0.071	mg/L		05-AUG-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	0.502		0.050	mg/L		31-JUL-14	R2908015
Oil and Grease, Total							
Oil and Grease, Total	2.3		2.0	mg/L	05-AUG-14	05-AUG-14	R2911550
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L	05-AUG-14	05-AUG-14	R2909388
Phosphorus, Total							
Phosphorus (P)-Total	2.16		0.010	mg/L		05-AUG-14	R2907972
Sulfate by Ion Chromatography							
Sulfate	17.9		0.50	mg/L		31-JUL-14	R2908015

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

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1494780-3	BAK-4							
Sampled By: JOHN O on 29-JUL-14 @ 14:00								
Matrix: WW								
Total Metals by ICP-MS								
Aluminum (Al)-Total		0.204		0.0050	mg/L	08-AUG-14	08-AUG-14	R2912990
Arsenic (As)-Total		0.00114		0.00020	mg/L	08-AUG-14	08-AUG-14	R2912990
Cadmium (Cd)-Total		0.000017		0.000010	mg/L	08-AUG-14	08-AUG-14	R2912990
Calcium (Ca)-Total		17.0		0.10	mg/L	08-AUG-14	08-AUG-14	R2912990
Chromium (Cr)-Total		<0.0010		0.0010	mg/L	08-AUG-14	08-AUG-14	R2912990
Cobalt (Co)-Total		0.00053		0.00020	mg/L	08-AUG-14	08-AUG-14	R2912990
Copper (Cu)-Total		0.00379		0.00020	mg/L	08-AUG-14	08-AUG-14	R2912990
Iron (Fe)-Total		1.30		0.10	mg/L	08-AUG-14	08-AUG-14	R2912990
Lead (Pb)-Total		0.000418		0.000090	mg/L	08-AUG-14	08-AUG-14	R2912990
Magnesium (Mg)-Total		4.26		0.010	mg/L	08-AUG-14	08-AUG-14	R2912990
Manganese (Mn)-Total		0.239		0.00030	mg/L	08-AUG-14	08-AUG-14	R2912990
Nickel (Ni)-Total		<0.0020		0.0020	mg/L	08-AUG-14	08-AUG-14	R2912990
Potassium (K)-Total		7.54		0.020	mg/L	08-AUG-14	08-AUG-14	R2912990
Sodium (Na)-Total		25.7		0.030	mg/L	08-AUG-14	08-AUG-14	R2912990
Zinc (Zn)-Total		0.0106		0.0020	mg/L	08-AUG-14	08-AUG-14	R2912990
Total Suspended Solids								
Total Suspended Solids		25.0		5.0	mg/L		01-AUG-14	R2907802
pH								
pH		7.42		0.10	pH units		06-AUG-14	R2912341
L1494780-4	BAK-5							
Sampled By: JOHN O on 29-JUL-14 @ 13:50								
Matrix: WW								
Miscellaneous Parameters								
Total Organic Carbon		25.6		1.0	mg/L	07-AUG-14	07-AUG-14	R2911390
Nunavut WW Group 1								
Alkalinity								
Alkalinity, Total (as CaCO3)		79		20	mg/L		06-AUG-14	R2912341
Bicarbonate (HCO3)		96		24	mg/L		06-AUG-14	R2912341
Carbonate (CO3)		<12		12	mg/L		06-AUG-14	R2912341
Hydroxide (OH)		<6.8		6.8	mg/L		06-AUG-14	R2912341
Ammonia by colour								
Ammonia, Total (as N)		6.3	DLA	1.0	mg/L		05-AUG-14	R2908889
Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand		15.2		6.0	mg/L		31-JUL-14	R2908365
Carbonaceous BOD								
BOD Carbonaceous		6.2		6.0	mg/L		31-JUL-14	R2908365
Chloride by Ion Chromatography								
Chloride		47.8		0.50	mg/L		31-JUL-14	R2908015
Conductivity								
Conductivity		357		20	umhos/cm		06-AUG-14	R2912341
Fecal Coliform								
Fecal Coliforms		2300		3	MPN/100mL		02-AUG-14	R2906951
Hardness Calculated								
Hardness (as CaCO3)		43.7		0.30	mg/L		11-AUG-14	
Mercury Total								
Mercury (Hg)-Total		<0.000020		0.000020	mg/L	01-AUG-14	01-AUG-14	R2908160
Nitrate as N by Ion Chromatography								
Nitrate-N		0.672		0.050	mg/L		31-JUL-14	R2908015
Nitrate+Nitrite								
Nitrate and Nitrite as N		2.29		0.071	mg/L		05-AUG-14	
Nitrite as N by Ion Chromatography								
Nitrite-N		1.62		0.050	mg/L		31-JUL-14	R2908015

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

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1494780-4	BAK-5							
Sampled By: JOHN O on 29-JUL-14 @ 13:50								
Matrix: WW								
Oil and Grease, Total								
Oil and Grease, Total		<2.0		2.0	mg/L	05-AUG-14	05-AUG-14	R2911550
Phenol (4AAP)								
Phenols (4AAP)		<0.0010		0.0010	mg/L	05-AUG-14	05-AUG-14	R2909388
Phosphorus, Total								
Phosphorus (P)-Total		2.32		0.010	mg/L		05-AUG-14	R2907972
Sulfate by Ion Chromatography								
Sulfate		3.50		0.50	mg/L		31-JUL-14	R2908015
Total Metals by ICP-MS								
Aluminum (Al)-Total		0.0728		0.0050	mg/L	08-AUG-14	08-AUG-14	R2912990
Arsenic (As)-Total		0.00158		0.00020	mg/L	08-AUG-14	08-AUG-14	R2912990
Cadmium (Cd)-Total		<0.000010		0.000010	mg/L	08-AUG-14	08-AUG-14	R2912990
Calcium (Ca)-Total		11.9		0.10	mg/L	08-AUG-14	08-AUG-14	R2912990
Chromium (Cr)-Total		<0.0010		0.0010	mg/L	08-AUG-14	08-AUG-14	R2912990
Cobalt (Co)-Total		0.00061		0.00020	mg/L	08-AUG-14	08-AUG-14	R2912990
Copper (Cu)-Total		0.00455		0.00020	mg/L	08-AUG-14	08-AUG-14	R2912990
Iron (Fe)-Total		0.73		0.10	mg/L	08-AUG-14	08-AUG-14	R2912990
Lead (Pb)-Total		0.000176		0.000090	mg/L	08-AUG-14	08-AUG-14	R2912990
Magnesium (Mg)-Total		3.37		0.010	mg/L	08-AUG-14	08-AUG-14	R2912990
Manganese (Mn)-Total		0.166		0.00030	mg/L	08-AUG-14	08-AUG-14	R2912990
Nickel (Ni)-Total		0.0022		0.0020	mg/L	08-AUG-14	08-AUG-14	R2912990
Potassium (K)-Total		9.43		0.020	mg/L	08-AUG-14	08-AUG-14	R2912990
Sodium (Na)-Total		32.9		0.030	mg/L	08-AUG-14	08-AUG-14	R2912990
Zinc (Zn)-Total		0.0067		0.0020	mg/L	08-AUG-14	08-AUG-14	R2912990
Total Suspended Solids								
Total Suspended Solids		28.0		5.0	mg/L		01-AUG-14	R2907802
pH								
pH		7.67		0.10	pH units		06-AUG-14	R2912341

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
SP	Sample was Preserved at the laboratory

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-WP	Water	Alkalinity	APHA 2320B
Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. It is determined by titration with a standard solution of strong mineral acid to the successive HCO ₃ ⁻ and H ₂ CO ₃ endpoints indicated electrometrically.			
BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B-5 day Incub.-O ₂ electrode
A sample of water is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at beginning and end of incubation provides a measure of Biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis. Surface waters have a DL of 1 mg/L. Effluents are diluted according to their history and will have a sample DL of 6 mg/L or greater, depending on the dilutions used.			
BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B
The sample is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at the beginning and end of incubation provides a measure of biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis. Surface waters have a DL of 1 mg/L. Effluents are diluted according to their history and will have a sample DL of 6 mg/L or greater, depending on the dilutions used.			
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 transferred into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
CL-IC-WP	Water	Chloride by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
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.			
ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC DEC-2000 - PUB# 1310-L
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			
In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.			
In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.			
In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.			
Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.			
3. Linearity of gasoline response within 15% throughout the calibration range.			
Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.			
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.			
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.			
F2-F4-FID-WP	Water	F2-F4 PHC method	CWS (CCME)
Petroleum Hydrocarbons (F2-F4) in Water Method is adapted from US EPA Method 3511: Organic Compounds in Water by Micro-extraction" (Nov 2002) with instrumental analysis as per the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method" (CCMS, Dec 2000) Water samples (in their entirety) are extracted using hexane prior to capillary column gas chromatography with flame ionization detection (GC/FID).			
FC-MPN-WP	Water	Fecal Coliform	APHA 9221E

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.</p>			
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-L-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-TL
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
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-WP	Water	Nitrite as N by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
NO3-IC-WP	Water	Nitrate as N by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
OGG-TOT-WT	Water	Oil and Grease, Total	APHA 5520 B
Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus 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
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-WP	Water	Sulfate by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aqueous matrices is determined gravimetrically after drying the residue at 103 105°C.			
TOC-WT	Water	Total Organic Carbon	APHA 5310B
Sample is injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

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

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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 ww - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

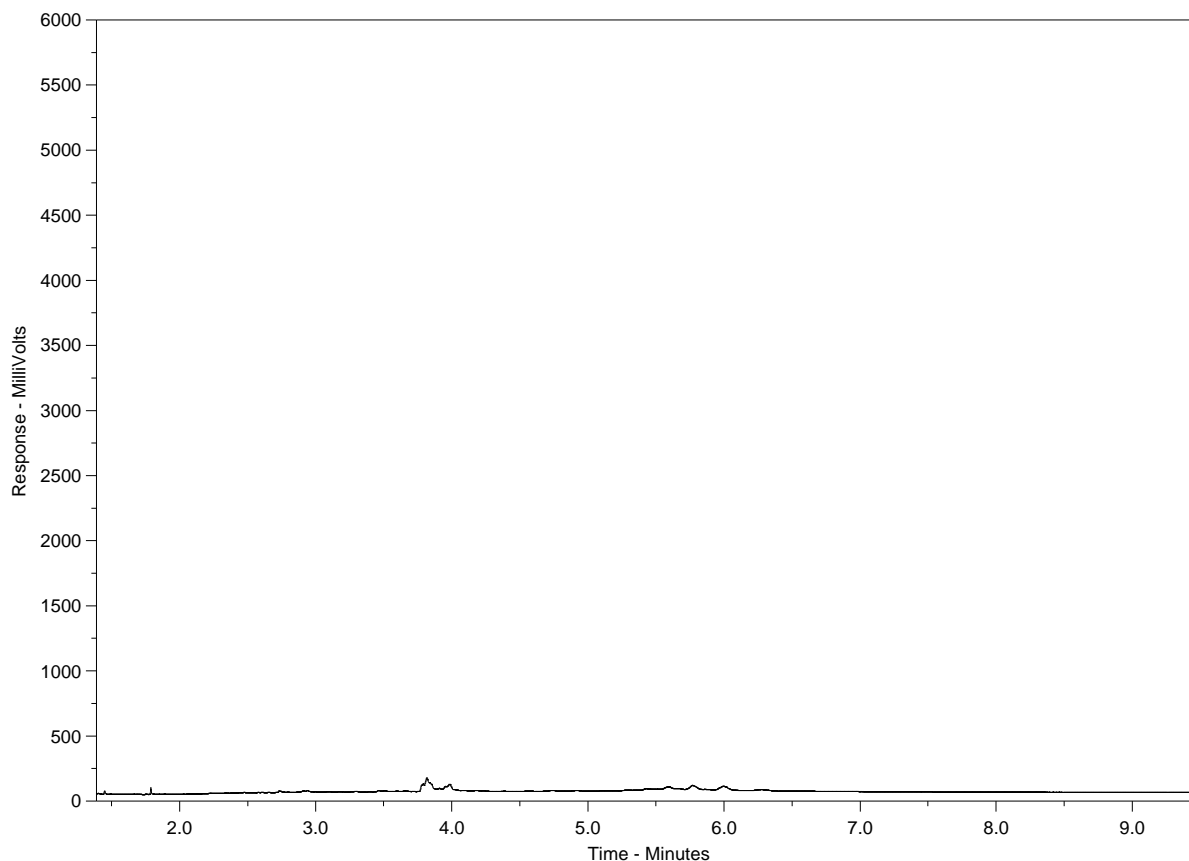
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L1494780-3
Client Sample ID: BAK-4



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →			
← Diesel/ Jet Fuels →					

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

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

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

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



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Report To		Report Format / Distribution			Service Request: (Rush subject to availability - Contact ALS to confirm TAT)												
Company: Hamlet of Baker Lake		Standard: <input checked="" type="checkbox"/> Other (specify):			<input checked="" type="checkbox"/> Regular (Standard Turnaround Times - Business Days)												
Contact: Dennis Zettler		Select: PDF <input checked="" type="checkbox"/> Excel Digital Fax			Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT												
Address: PO Box 149 Baker Lake, NU X0C 0G0		Email 1: b.sagan@kaster.ca			Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT												
		Email 2: m.lusty@gov.nu.ca			Same Day or Weekend Emergency - Contact ALS to confirm TAT												
Phone: 867-7703-2874 Fax: 867-793-2509					Analysis Request												
Invoice To Same as Report? (circle) <input checked="" type="radio"/> Yes or No (if No, provide details)		Client / Project Information			(Indicate Filtered or Preserved, F/P)												
Copy of Invoice with Report? (circle) <input checked="" type="radio"/> Yes or No		Job #: Baker Lake Monitoring Program															
Company:		PO / AFE:															
Contact:		LSD:															
Address:		Quote #:															
Phone:																	
Fax:																	
Lab Work Order # (lab use only)		ALS Contact: Craig Kildell		Sampler: John Orkila													
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	BOD	Routine	Top Metals	Nutrients	Phenols	Bacteria	Oil & Grease	PAH	BTEX, FI	F2-F4	Number of Containers		
BAK-2		29-07-14	13:30	wastewater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	P	P	P	P	P				8		
BAK-3		29-07-14	13:15	wastewater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	P	P	P	P	P				8		
BAK-4		29-07-14	14:00	wastewater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	P	P	P	P	P	P	P		14		
BAK-5		29-07-14	13:50	wastewater	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	P	P	P	P	P				8		
Special Instructions / Regulation with water or land use (CCME - Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details																	
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.																	
By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.																	
SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)			SHIPMENT VERIFICATION (lab use only)											
Released by: J. Orkila	Date: 29/07/14	Time: 2:45	Received by: PD	Date: 30/7/14	Time: 11:00	Temperature: 12 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF							

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Hamlet of Baker Lake
ATTN: DENNIS ZETTLER
PO Box 149
Baker Lake NU X0C 0A0

Date Received: 20-AUG-14
Report Date: 28-AUG-14 13:39 (MT)
Version: FINAL

Client Phone: 867-793-2874

Certificate of Analysis

Lab Work Order #: L1505312
Project P.O. #: NOT SUBMITTED
Job Reference: BAKER LAKE MONITORING PROGRAM
C of C Numbers:
Legal Site Desc:

Judy Dalmaijer
Account 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 A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1505312-1 BAK-2							
Sampled By: PN on 18-AUG-14 @ 15:10							
Matrix: WASTE WATER							
Nunavut WW Group 1							
Alkalinity							
Alkalinity, Total (as CaCO3)	46		20	mg/L		23-AUG-14	R2929585
Bicarbonate (HCO3)	56		24	mg/L		23-AUG-14	R2929585
Carbonate (CO3)	<12		12	mg/L		23-AUG-14	R2929585
Hydroxide (OH)	<6.8		6.8	mg/L		23-AUG-14	R2929585
Ammonia by colour							
Ammonia, Total (as N)	1.03	DLA	0.10	mg/L		21-AUG-14	R2927569
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	8.6		6.0	mg/L		21-AUG-14	R2929126
Carbonaceous BOD							
BOD Carbonaceous	<6.0		6.0	mg/L		21-AUG-14	R2929126
Chloride by Ion Chromatography							
Chloride	31.1		0.50	mg/L		20-AUG-14	R2925236
Conductivity							
Conductivity	279		20	umhos/cm		23-AUG-14	R2929585
Fecal Coliform							
Fecal Coliforms	2300		3	MPN/100mL		23-AUG-14	R2927581
Hardness Calculated							
Hardness (as CaCO3)	65.5		0.30	mg/L		27-AUG-14	
Mercury Total							
Mercury (Hg)-Total	<0.000020		0.000020	mg/L	22-AUG-14	22-AUG-14	R2927796
Nitrate as N by Ion Chromatography							
Nitrate-N	1.38		0.050	mg/L		20-AUG-14	R2925236
Nitrate+Nitrite							
Nitrate and Nitrite as N	1.58		0.071	mg/L		21-AUG-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	0.198		0.050	mg/L		20-AUG-14	R2925236
Oil and Grease, Total							
Oil and Grease, Total	<2.0		2.0	mg/L	22-AUG-14	22-AUG-14	R2928125
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L	27-AUG-14	27-AUG-14	R2931468
Phosphorus, Total							
Phosphorus (P)-Total	1.08		0.010	mg/L		21-AUG-14	R2925380
Sulfate by Ion Chromatography							
Sulfate	26.8		0.50	mg/L		20-AUG-14	R2925236
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.237		0.0050	mg/L	26-AUG-14	26-AUG-14	R2929588
Arsenic (As)-Total	0.00093		0.00020	mg/L	26-AUG-14	26-AUG-14	R2929588
Cadmium (Cd)-Total	0.000019		0.000010	mg/L	26-AUG-14	26-AUG-14	R2929588
Calcium (Ca)-Total	19.5		0.10	mg/L	26-AUG-14	26-AUG-14	R2929588
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	26-AUG-14	26-AUG-14	R2929588
Cobalt (Co)-Total	0.00043		0.00020	mg/L	26-AUG-14	26-AUG-14	R2929588
Copper (Cu)-Total	0.00490		0.00020	mg/L	26-AUG-14	26-AUG-14	R2929588
Iron (Fe)-Total	1.03		0.10	mg/L	26-AUG-14	26-AUG-14	R2929588
Lead (Pb)-Total	0.000495		0.000090	mg/L	26-AUG-14	26-AUG-14	R2929588
Magnesium (Mg)-Total	4.05		0.010	mg/L	26-AUG-14	26-AUG-14	R2929588
Manganese (Mn)-Total	0.0894		0.00030	mg/L	26-AUG-14	26-AUG-14	R2929588
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	26-AUG-14	26-AUG-14	R2929588
Potassium (K)-Total	5.30		0.020	mg/L	26-AUG-14	26-AUG-14	R2929588
Sodium (Na)-Total	21.6		0.030	mg/L	26-AUG-14	26-AUG-14	R2929588
Zinc (Zn)-Total	0.0091		0.0020	mg/L	26-AUG-14	26-AUG-14	R2929588

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

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1505312-1	BAK-2							
Sampled By:	PN on 18-AUG-14 @ 15:10							
Matrix:	WASTE WATER							
Total Organic Carbon								
Total Organic Carbon		18.1		1.0	mg/L		26-AUG-14	R2930506
Total Suspended Solids								
Total Suspended Solids		13.0		5.0	mg/L		21-AUG-14	R2926902
pH								
pH		7.47		0.10	pH units		23-AUG-14	R2929585
L1505312-2	BAK-3							
Sampled By:	PN on 18-AUG-14 @ 15:05							
Matrix:	WASTE WATER							
Miscellaneous Parameters								
Mercury (Hg)-Total		<0.000020		0.000020	mg/L	22-AUG-14	22-AUG-14	R2927796
L1505312-3	BAK-4							
Sampled By:	PN on 18-AUG-14 @ 14:55							
Matrix:	WASTE WATER							
Miscellaneous Parameters								
Mercury (Hg)-Total		<0.000020		0.000020	mg/L	22-AUG-14	22-AUG-14	R2927796
L1505312-4	BAK-5							
Sampled By:	PN on 18-AUG-14 @ 14:55							
Matrix:	WASTE WATER							
Miscellaneous Parameters								
Mercury (Hg)-Total		<0.000020		0.000020	mg/L	22-AUG-14	22-AUG-14	R2927796

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
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-TOT-WP	Water	Alkalinity	APHA 2320B
Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. It is determined by titration with a standard solution of strong mineral acid to the successive HCO ₃ ⁻ and H ₂ CO ₃ endpoints indicated electrometrically.			
BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B-5 day Incub.-O ₂ electrode
A sample of water is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at beginning and end of incubation provides a measure of Biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis.			
BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B
The sample is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at the beginning and end of incubation provides a measure of biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis. Surface waters have a DL of 1 mg/L. Effluents are diluted according to their history and will have a sample DL of 6 mg/L or greater, depending on the dilutions used.			
C-TOT-ORG-WP	Water	Total Organic Carbon	APHA 5310 B-INSTRUMENTAL-WP
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-WP	Water	Chloride by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
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.			
ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
FC-MPN-WP	Water	Fecal Coliform	APHA 9221E
The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.			
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-L-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-TL
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
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-WP	Water	Nitrite as N by Ion Chromatography	EPA 300.1 (Modified)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
NO3-IC-WP	Water	Nitrate as N by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
OGG-TOT-WT	Water	Oil and Grease, Total	APHA 5520 B
Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus 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-WP	Water	Sulfate by Ion Chromatography	EPA 300.1 (Modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aqueous 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 ww - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

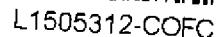
D.L. - The reporting limit.

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

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

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

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



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