ANNUAL REPORT
FOR THE HAMLET OF REPULSE BAY

YEAR BEING REPORTED: 2014

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence No. **3BM-REP0409** issued to the **Hamlet of Repulse Bay**.

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 station REP-1 (water supply volume) and REP-3 (sewage discharge volume), as well as detailed chemical, physical and biological analysis required at REP-2, REP-4, and REP-7.

Month Reported	Quantity of Water Obtained from all Sources (m^3)	Quantity of Sewage Waste Discharged (m^3)
January	2,783.32590	Same
February	2,643.25680	Same
March	3,194.98400	Same
April	3,042.334.40	Same
May	3,043.53730	Same
June	2,847.86320	Same
July	2,997.82300	Same
August	3,160.23280	Same
September	3,094.48120	Same
October	3,209,51210	Same
November	3,137.35020	Same
December	2,829.95930	Same
ANNUAL TOTAL	**35,984.66020**	**35,984.66020**

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;

- No modifications and/or major work were carried out at the Water Truck Fill Station, Sewage Treatment Wetlands, or Solid Waste Site or the Sewage in 2014.
- Construction of the new Water Treatment Plant is scheduled to begin summer 2015 and be completed by the end of 2015.
- Construction of the Sewage Lagoon is scheduled to begin summer 2015 and be completed by the end of 2016.

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

- Spills:
  - 2014178, 2014-05-26, Repulse Bay Unit 16, Heating Oil, 3L
  - 2014293, 2014-08-11, House 17B, Heating Fuel, 207L
  - 2014328, 2014-08-15, House 66, Fuel Oil, 60L
  - 2014343, 2014-09-25, House 129A-B, Heating Fuel, 30L

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

- The existing Water Truck Fill Station will be demolished in 2015. The site will not be abandoned and restored because the new Water Treatment Plant will be constructed in the same location.
- The contaminated soil storage area will be returned to its natural state in 2015. An Abandonment and Restoration Plan will be submitted to the NWB for this work.

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;

- The Repulse Bay Water Licence No. 3BM-REP0409 Consolidated Renewal/Amendment Application was submitted to the NWB on March 25, 2014, and superseded all previous applications.
- The project to *Locate Alternative Sources of Drinking Water for Each Nunavut*

Hamlet prepared by Williams Engineering was submitted on December 5, 2014.

- *Sewage Lagoon Repulse Bay, "Issued for Tender" drawings* prepared by exp Services was submitted on December 5, 2014.
- *New Water Pump House Repulse Bay, "Issued for Tender" drawings* prepared by exp Services was submitted on December 5, 2014.
- Hamlet of Repulse Bay Water Licence No. 3BM-REP0409 "Landfarm" clarification letter was submitted December 5, 2014.

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.

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

- The Sewage Treatment System O&M Plan will be submitted to the NWB for approval upon completion of the Sewage Lagoon.
- The Water Treatment System O&M Plan will be submitted to the NWB for approval upon completion of the new Water Treatment Plant.
- The Solid Waste Site O&M Plan is currently being reviewed and updated. Changes/updates will be included in the 2015 Annual Report as an addendum.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- Notes regarding the 2014 sampling:
  - No effluent was discharged from the Landfarm Facility, therefore no sampling was required at REP-5.
  - There are no monitoring wells installed, subsequently REP-6 and REP-7 cannot be annually sampled. A sample was taken from a small pond downstream of the contaminated soil storage area and labelled REP-7.
  - Samples were not taken in June or July due to the number of polar bear sightings occurring and the hike required to reach all sampling locations.
  - Water at REP-2 (solid waste effluent) and REP-4 (sewage effluent)

thawed late and froze earlier in the year than normal, therefore no samples were taken in May or September.

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

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

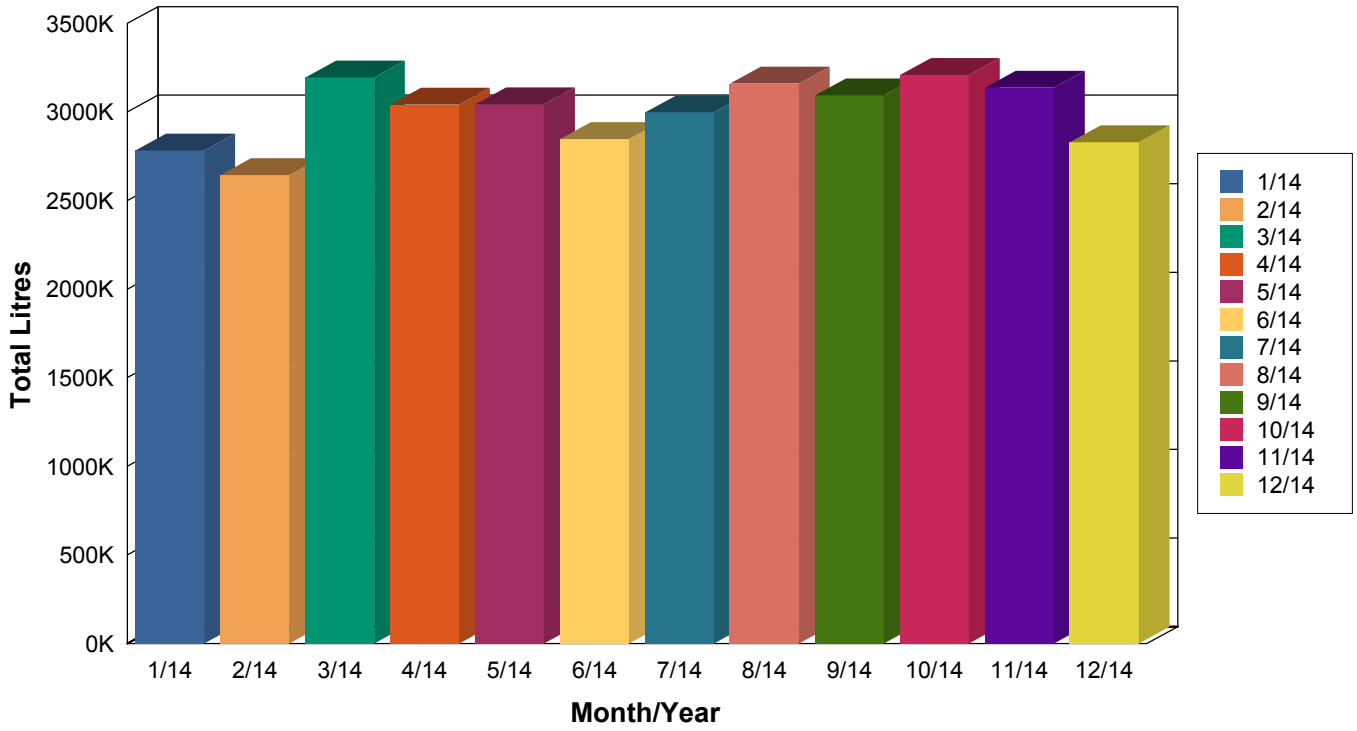
- No AANDC Inspection took place in 2014.
- The Hamlet of Repulse Bay Compliance Plan was submitted to the NWB on December 5, 2014.

Appendix A: Delivery Summary By Month and Year, January 1 to December 31, 2014 – 1 page
Appendix B: Hazardous Materials Spill Database, Repulse Bay 2014 – 1 page
Appendix C: REP-4 Effluent Quality Limits – 1 page
Appendix D: Monitoring Program Sampling Parameters Summary – 1 page
Appendix E: Certificate of Analysis, August 20, 2014 – 11 pages

Appendix A: Delivery Summary By Month and Year, January 1 to December 31, 2014

Delivery Summary By Month and Year

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



Month / Year	Litres Delivered
January 2014	2,783,325.90
February 2014	2,643,256.80
March 2014	3,194,984.00
April 2014	3,042,334.40
May 2014	3,043,537.30
June 2014	2,847,863.20
July 2014	2,997,823.00
August 2014	3,160,232.80
September 2014	3,094,481.20
October 2014	3,209,512.10
November 2014	3,137,350.20
December 2014	2,829,959.30
Grand Total:	**35,984,660.20**

Appendix B: Hazardous Materials Spill Database, Repulse Bay 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
2014178	2014-05-26	NU	KEE	Repulse Bay	Repulse Bay Unit 16	Heating Oil	3 L	ST<	GN
2014293	2014-08-11	NU	KEE	Repulse Bay	House 17B	Home Heating Fuel	207 L	ST<	GN
2014328	2014-09-15	NU	KEE	Repulse Bay	House 66	Fuel Oil	60 L	ST<	GN
2014343	2014-09-25	NU	KEE	Repulse Bay	House 129 A-B	Heating Fuel	30 L	ST<	GN

Total Spills on this Report: 4

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 - Unkown
WELL - Wet Wells, Flaring
Boom

Agency:
CCG - Canadian Coast Guard
EP - Environment Canada
GN - Government of Nunavut
GNWT - Government of Northwest Territories
ILA - Inuvialiut Land Administration
INAC - Indian and Northern Affairs Canada
NEB - National Energy Board

Appendix C: REP-4 Effluent Quality Limits

2014 Repulse Bay Monitoring Stations and Sampling Parameters Summary for Water License No. 3BM-REP0409
Part D, Item 2: REP-4 Effluent Quality Standards

Parameter	Unit	Maximum Average Concentration	REP-4
			20-Aug-14
Feacal Coliforms	CFU/100 mL	10000	4300
BOD_5	mg/L	80	21.1
Total Suspended Solids	mg/L	100	42
Oil and Grease	mg/L	No visible sheen	<2.0
pH	pH units	between 6 and 9	8.07

The sample taken at REP-4 was below maximum average concentration for the effluent quality limits.

Appendix D: Monitoring Program Sampling Parameters Summary

2014 Repulse Bay Monitoring Stations and Sampling Parameters Summary for Water License No. 3BM-REP0409

			REP-2		REP-4		REP-7	
Parameters	**Unit**	**Detection Limit**	**20-Aug-14**	**CCME Guideline[1]**	**20-Aug-14**	**CCME Guideline[1]**	**20-Aug-14**	**CCME Guideline[1]**
BOD_5	mg/L	6.0	<6.0	n/g	21.9	n/g	<6.0	n/g
pH	pH units	0.1	8.24	6.5-9	8.07	6.5-9	8.04	6.5-9
Total Suspended Solids	mg/L	5.0	6.0		42.0		<5.0	
Nitrate-Nitrite	mg/L	0.071	0.161	n/g	0.862	n/g	<0.071	n/g
Total Phenols	mg/L	0.0010	<0.0010	0.004	<0.0010	0.004	<0.0010	0.004
Total Hardness	mg/L	0.30	223	n/g	146	n/g	158	n/g
Magnesium	mg/L	0.050	13.7	n/g	8.54	n/g	10.9	n/g
Sodium	mg/L	0.050	30.3	n/g	27	n/g	20.3	n/g
Total Arsenic	mg/L	0.0010	0.00023	0.005	0.00035	0.005	<0.00020	0.005
Total Copper	mg/L	0.0020	0.00151	0.0034	0.00607	0.00253	0.00149	0.002
Total Iron	mg/L	0.10	<0.10	0.3	0.3	0.3	<0.10	0.3
Total Mercury	mg/L	0.00002	<0.000020	0.000026	<0.000020	0.000026	<0.000020	0.000026
Feacal Coliforms	MPN/100mL	3	75	n/g	4300	n/g	93	n/g
Conductivity	umhos/cm	20	565	n/g	456	n/g	373	n/g
Ammonia Nitrogen	mg/L	0.010	<0.010	1.54	5.6	0.502	<0.010	1.54
Oil and Grease	mg/L	<2.0	<2.0	n/g	<2.0	n/g	<2.0	n/g
Total Alkalinity	mg/L	20	185	n/g	157	n/g	119	n/g
Calcium	mg/L	0.20	66.6	n/g	44.3	n/g	45.4	n/g
Potassium	mg/L	0.10	4.03	n/g	6.77	n/g	2.89	n/g
Sulphate	mg/L	0.50		n/g		n/g		n/g
Total Cadmium	mg/L	0.00001	<0.000010	0.00009	0.000013	0.00009	<0.000010	0.00009
Total Chromium	mg/L	0.0010	<0.0010	n/g	<0.0010	n/g	<0.0010	n/g
Total Lead	mg/L	0.000090	<0.000090	0.053	0.000173	0.00351	<0.000090	0.00229
Total Nickel	mg/L	0.0020	<0.0020	0.13	<0.0020	0.101	<0.0020	0.07879
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					<0.25	n/g
F4 (C34-C50)[2]	mg/L	0.25					<0.25	n/g
Total Hydrocarbons (C6-C50)	mg/L	0.44					<0.44	n/g
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					<0.00050	n/g

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

[2]Analysis required for REP-6 and REP-7 only

n/g - no guideline

Exceeds Guidelines for Protection of Aquatic Life

Sample Not Required

Appendix E: Certificate of Analysis, August 20, 2014

Hamlet of Repulse Bay
ATTN: KEVIN TEGUMIAR
PO Box 10
Repulse Bay NU X0C 0H0

Date Received: 21-AUG-14
Report Date: 30-AUG-14 17:17 (MT)
Version: FINAL

Client Phone: 867-462-9952

Certificate of Analysis

Lab Work Order #: L1506076

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

Gail Hill
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1506076-1 REP-2							
Sampled By: JIMMY on 20-AUG-14 @ 08:30							
Matrix: WASTE WATER							
Nunavut WW Group 1							
Alkalinity							
Alkalinity, Total (as CaCO3)	185		20	mg/L		26-AUG-14	R2930538
Bicarbonate (HCO3)	225		24	mg/L		26-AUG-14	R2930538
Carbonate (CO3)	<12		12	mg/L		26-AUG-14	R2930538
Hydroxide (OH)	<6.8		6.8	mg/L		26-AUG-14	R2930538
Ammonia by colour							
Ammonia, Total (as N)	<0.010		0.010	mg/L		22-AUG-14	R2927606
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<6.0		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	41.7		0.50	mg/L		22-AUG-14	R2929232
Conductivity							
Conductivity	565		20	umhos/cm		26-AUG-14	R2930538
Fecal Coliform							
Fecal Coliforms	75		3	MPN/100mL		24-AUG-14	R2928217
Hardness Calculated							
Hardness (as CaCO3)	223		0.30	mg/L		28-AUG-14	
Mercury Total							
Mercury (Hg)-Total	<0.000020		0.000020	mg/L	25-AUG-14	25-AUG-14	R2927763
Nitrate as N by Ion Chromatography							
Nitrate-N	0.161		0.050	mg/L		22-AUG-14	R2929232
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.161		0.071	mg/L		26-AUG-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		22-AUG-14	R2929232
Oil and Grease, Total							
Oil and Grease, Total	<2.0		2.0	mg/L	24-AUG-14	24-AUG-14	R2927614
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L	27-AUG-14	27-AUG-14	R2931468
Phosphorus, Total							
Phosphorus (P)-Total	0.011		0.010	mg/L		25-AUG-14	R2928472
Sulfate by Ion Chromatography							
Sulfate	35.6		0.50	mg/L		22-AUG-14	R2929232
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.0080		0.0050	mg/L	27-AUG-14	27-AUG-14	R2930931
Arsenic (As)-Total	0.00023		0.00020	mg/L	27-AUG-14	27-AUG-14	R2930931
Cadmium (Cd)-Total	<0.000010		0.000010	mg/L	27-AUG-14	27-AUG-14	R2930931
Calcium (Ca)-Total	66.6		0.10	mg/L	27-AUG-14	27-AUG-14	R2930931
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	27-AUG-14	27-AUG-14	R2930931
Cobalt (Co)-Total	<0.00020		0.00020	mg/L	27-AUG-14	27-AUG-14	R2930931
Copper (Cu)-Total	0.00151		0.00020	mg/L	27-AUG-14	27-AUG-14	R2930931
Iron (Fe)-Total	<0.10		0.10	mg/L	27-AUG-14	27-AUG-14	R2930931
Lead (Pb)-Total	<0.000090		0.000090	mg/L	27-AUG-14	27-AUG-14	R2930931
Magnesium (Mg)-Total	13.7		0.010	mg/L	27-AUG-14	27-AUG-14	R2930931
Manganese (Mn)-Total	0.00352		0.00030	mg/L	27-AUG-14	27-AUG-14	R2930931
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	27-AUG-14	27-AUG-14	R2930931
Potassium (K)-Total	4.03		0.020	mg/L	27-AUG-14	27-AUG-14	R2930931
Sodium (Na)-Total	30.3		0.030	mg/L	27-AUG-14	27-AUG-14	R2930931
Zinc (Zn)-Total	0.0024		0.0020	mg/L	27-AUG-14	27-AUG-14	R2930931

* 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
L1506076-1 REP-2							
Sampled By: JIMMY on 20-AUG-14 @ 08:30							
Matrix: WASTE WATER							
Total Organic Carbon							
Total Organic Carbon	9.7		1.0	mg/L		27-AUG-14	R2930506
Total Suspended Solids							
Total Suspended Solids	6.0		5.0	mg/L		22-AUG-14	R2929247
pH							
pH	8.24		0.10	pH units		26-AUG-14	R2930538
L1506076-2 REP-4							
Sampled By: JIMMY on 20-AUG-14 @ 09:30							
Matrix: WASTE WATER							
Nunavut WW Group 1							
Alkalinity							
Alkalinity, Total (as CaCO3)	157		20	mg/L		26-AUG-14	R2930538
Bicarbonate (HCO3)	192		24	mg/L		26-AUG-14	R2930538
Carbonate (CO3)	<12		12	mg/L		26-AUG-14	R2930538
Hydroxide (OH)	<6.8		6.8	mg/L		26-AUG-14	R2930538
Ammonia by colour							
Ammonia, Total (as N)	5.6	DLA	1.0	mg/L		26-AUG-14	R2930092
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	21.9		6.0	mg/L		21-AUG-14	R2929126
Carbonaceous BOD							
BOD Carbonaceous	21.1		6.0	mg/L		21-AUG-14	R2929126
Chloride by Ion Chromatography							
Chloride	27.4		0.50	mg/L		22-AUG-14	R2929232
Conductivity							
Conductivity	456		20	umhos/cm		26-AUG-14	R2930538
Fecal Coliform							
Fecal Coliforms	4300		3	MPN/100mL		24-AUG-14	R2928217
Hardness Calculated							
Hardness (as CaCO3)	146		0.30	mg/L		28-AUG-14	
Mercury Total							
Mercury (Hg)-Total	<0.000020		0.000020	mg/L	25-AUG-14	25-AUG-14	R2927763
Nitrate as N by Ion Chromatography							
Nitrate-N	0.638		0.050	mg/L		22-AUG-14	R2929232
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.862		0.071	mg/L		26-AUG-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	0.223		0.050	mg/L		22-AUG-14	R2929232
Oil and Grease, Total							
Oil and Grease, Total	<2.0		2.0	mg/L	24-AUG-14	24-AUG-14	R2927614
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L	27-AUG-14	27-AUG-14	R2931468
Phosphorus, Total							
Phosphorus (P)-Total	1.83		0.010	mg/L		25-AUG-14	R2928472
Sulfate by Ion Chromatography							
Sulfate	17.1		0.50	mg/L		22-AUG-14	R2929232
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.0653		0.0050	mg/L	27-AUG-14	27-AUG-14	R2930931
Arsenic (As)-Total	0.00035		0.00020	mg/L	27-AUG-14	27-AUG-14	R2930931
Cadmium (Cd)-Total	0.000013		0.000010	mg/L	27-AUG-14	27-AUG-14	R2930931
Calcium (Ca)-Total	44.3		0.10	mg/L	27-AUG-14	27-AUG-14	R2930931
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	27-AUG-14	27-AUG-14	R2930931
Cobalt (Co)-Total	<0.00020		0.00020	mg/L	27-AUG-14	27-AUG-14	R2930931

* 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
L1506076-2 REP-4							
Sampled By: JIMMY on 20-AUG-14 @ 09:30							
Matrix: WASTE WATER							
Total Metals by ICP-MS							
Copper (Cu)-Total	0.00607		0.00020	mg/L	27-AUG-14	27-AUG-14	R2930931
Iron (Fe)-Total	0.30		0.10	mg/L	27-AUG-14	27-AUG-14	R2930931
Lead (Pb)-Total	0.000173		0.000090	mg/L	27-AUG-14	27-AUG-14	R2930931
Magnesium (Mg)-Total	8.54		0.010	mg/L	27-AUG-14	27-AUG-14	R2930931
Manganese (Mn)-Total	0.0354		0.00030	mg/L	27-AUG-14	27-AUG-14	R2930931
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	27-AUG-14	27-AUG-14	R2930931
Potassium (K)-Total	6.77		0.020	mg/L	27-AUG-14	27-AUG-14	R2930931
Sodium (Na)-Total	27.0		0.030	mg/L	27-AUG-14	27-AUG-14	R2930931
Zinc (Zn)-Total	0.0103		0.0020	mg/L	27-AUG-14	27-AUG-14	R2930931
Total Organic Carbon							
Total Organic Carbon	25.4		1.0	mg/L		28-AUG-14	R2933649
Total Suspended Solids							
Total Suspended Solids	42.0		5.0	mg/L		22-AUG-14	R2929247
pH							
pH	8.07		0.10	pH units		26-AUG-14	R2930538
L1506076-3 REP-7							
Sampled By: JIMMY on 20-AUG-14 @ 09:00							
Matrix: WASTE WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		23-AUG-14	R2927786
Toluene	<0.0010		0.0010	mg/L		23-AUG-14	R2927786
Ethyl benzene	<0.00050		0.00050	mg/L		23-AUG-14	R2927786
o-Xylene	<0.00050		0.00050	mg/L		23-AUG-14	R2927786
m+p-Xylenes	<0.00050		0.00050	mg/L		23-AUG-14	R2927786
F1 (C6-C10)	<0.10		0.10	mg/L		23-AUG-14	R2927786
Surrogate: 4-Bromofluorobenzene (SS)	98.3		70-130	%		23-AUG-14	R2927786
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		29-AUG-14	
F2-Naphth	<0.25		0.25	mg/L		29-AUG-14	
F3-PAH	<0.25		0.25	mg/L		29-AUG-14	
Total Hydrocarbons (C6-C50)	<0.44		0.44	mg/L		29-AUG-14	
F2-F4 PHC method							
F2 (C10-C16)	<0.25		0.25	mg/L	22-AUG-14	22-AUG-14	R2926689
F3 (C16-C34)	<0.25		0.25	mg/L	22-AUG-14	22-AUG-14	R2926689
F4 (C34-C50)	<0.25		0.25	mg/L	22-AUG-14	22-AUG-14	R2926689
Surrogate: 2-Bromobenzotrifluoride	96.0		60-140	%	22-AUG-14	22-AUG-14	R2926689
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.0015		0.0015	mg/L		26-AUG-14	
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368
Acenaphthene	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368
Acenaphthylene	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368
Anthracene	<0.000010		0.000010	mg/L	27-AUG-14	29-AUG-14	R2933368
Acridine	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368
Benzo(a)anthracene	<0.000010		0.000010	mg/L	27-AUG-14	29-AUG-14	R2933368
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	27-AUG-14	29-AUG-14	R2933368
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	27-AUG-14	29-AUG-14	R2933368
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368

* 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
L1506076-3 REP-7							
Sampled By: JIMMY on 20-AUG-14 @ 09:00							
Matrix: WASTE WATER							
Polyaromatic Hydrocarbons (PAHs)							
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	27-AUG-14	29-AUG-14	R2933368
Chrysene	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	27-AUG-14	29-AUG-14	R2933368
Fluoranthene	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368
Fluorene	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	27-AUG-14	29-AUG-14	R2933368
Naphthalene	<0.000050		0.000050	mg/L	27-AUG-14	29-AUG-14	R2933368
Phenanthrene	<0.000050		0.000050	mg/L	27-AUG-14	29-AUG-14	R2933368
Pyrene	<0.000010		0.000010	mg/L	27-AUG-14	29-AUG-14	R2933368
Quinoline	<0.000020		0.000020	mg/L	27-AUG-14	29-AUG-14	R2933368
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	27-AUG-14	29-AUG-14	R2933368
Surrogate: Acenaphthene d10	86.8		40-130	%	27-AUG-14	29-AUG-14	R2933368
Surrogate: Acridine d9	96.1		40-130	%	27-AUG-14	29-AUG-14	R2933368
Surrogate: Chrysene d12	74.8		40-130	%	27-AUG-14	29-AUG-14	R2933368
Surrogate: Naphthalene d8	81.6		40-130	%	27-AUG-14	29-AUG-14	R2933368
Surrogate: Phenanthrene d10	92.1		40-130	%	27-AUG-14	29-AUG-14	R2933368
Nunavut WW Group 1							
Alkalinity							
Alkalinity, Total (as CaCO3)	119		20	mg/L		26-AUG-14	R2930538
Bicarbonate (HCO3)	146		24	mg/L		26-AUG-14	R2930538
Carbonate (CO3)	<12		12	mg/L		26-AUG-14	R2930538
Hydroxide (OH)	<6.8		6.8	mg/L		26-AUG-14	R2930538
Ammonia by colour							
Ammonia, Total (as N)	<0.010		0.010	mg/L		22-AUG-14	R2927606
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<6.0		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	31.6		0.50	mg/L		22-AUG-14	R2929232
Conductivity							
Conductivity	373		20	umhos/cm		26-AUG-14	R2930538
Fecal Coliform							
Fecal Coliforms	93		3	MPN/100mL		24-AUG-14	R2928217
Hardness Calculated							
Hardness (as CaCO3)	158		0.30	mg/L		28-AUG-14	
Mercury Total							
Mercury (Hg)-Total	<0.000020		0.000020	mg/L	25-AUG-14	25-AUG-14	R2927763
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		22-AUG-14	R2929232
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		26-AUG-14	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		22-AUG-14	R2929232
Oil and Grease, Total							
Oil and Grease, Total	<2.0		2.0	mg/L	24-AUG-14	24-AUG-14	R2927614
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L	27-AUG-14	27-AUG-14	R2931468
Phosphorus, Total							
Phosphorus (P)-Total	0.012		0.010	mg/L		25-AUG-14	R2928472
Sulfate by Ion Chromatography							
Sulfate	17.2		0.50	mg/L		22-AUG-14	R2929232

* 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
L1506076-3 REP-7							
Sampled By: JIMMY on 20-AUG-14 @ 09:00							
Matrix: WASTE WATER							
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.0056		0.0050	mg/L	27-AUG-14	27-AUG-14	R2930931
Arsenic (As)-Total	<0.00020		0.00020	mg/L	27-AUG-14	27-AUG-14	R2930931
Cadmium (Cd)-Total	<0.000010		0.000010	mg/L	27-AUG-14	27-AUG-14	R2930931
Calcium (Ca)-Total	45.4		0.10	mg/L	27-AUG-14	27-AUG-14	R2930931
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	27-AUG-14	27-AUG-14	R2930931
Cobalt (Co)-Total	<0.00020		0.00020	mg/L	27-AUG-14	27-AUG-14	R2930931
Copper (Cu)-Total	0.00149		0.00020	mg/L	27-AUG-14	27-AUG-14	R2930931
Iron (Fe)-Total	<0.10		0.10	mg/L	27-AUG-14	27-AUG-14	R2930931
Lead (Pb)-Total	<0.000090		0.000090	mg/L	27-AUG-14	27-AUG-14	R2930931
Magnesium (Mg)-Total	10.9		0.010	mg/L	27-AUG-14	27-AUG-14	R2930931
Manganese (Mn)-Total	0.00488		0.00030	mg/L	27-AUG-14	27-AUG-14	R2930931
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	27-AUG-14	27-AUG-14	R2930931
Potassium (K)-Total	2.89		0.020	mg/L	27-AUG-14	27-AUG-14	R2930931
Sodium (Na)-Total	20.3		0.030	mg/L	27-AUG-14	27-AUG-14	R2930931
Zinc (Zn)-Total	0.0129		0.0020	mg/L	27-AUG-14	27-AUG-14	R2930931
Total Organic Carbon							
Total Organic Carbon	7.3		1.0	mg/L		29-AUG-14	R2933649
Total Suspended Solids							
Total Suspended Solids	<5.0		5.0	mg/L		22-AUG-14	R2929247
pH							
pH	8.04		0.10	pH units		26-AUG-14	R2930538

* 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 HCO3- and H2CO3 endpoints indicated electrometrically.

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B-5 day Incub.-O2 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.

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-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
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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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

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)

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 aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.

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

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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

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

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

Chain of Custody Numbers:

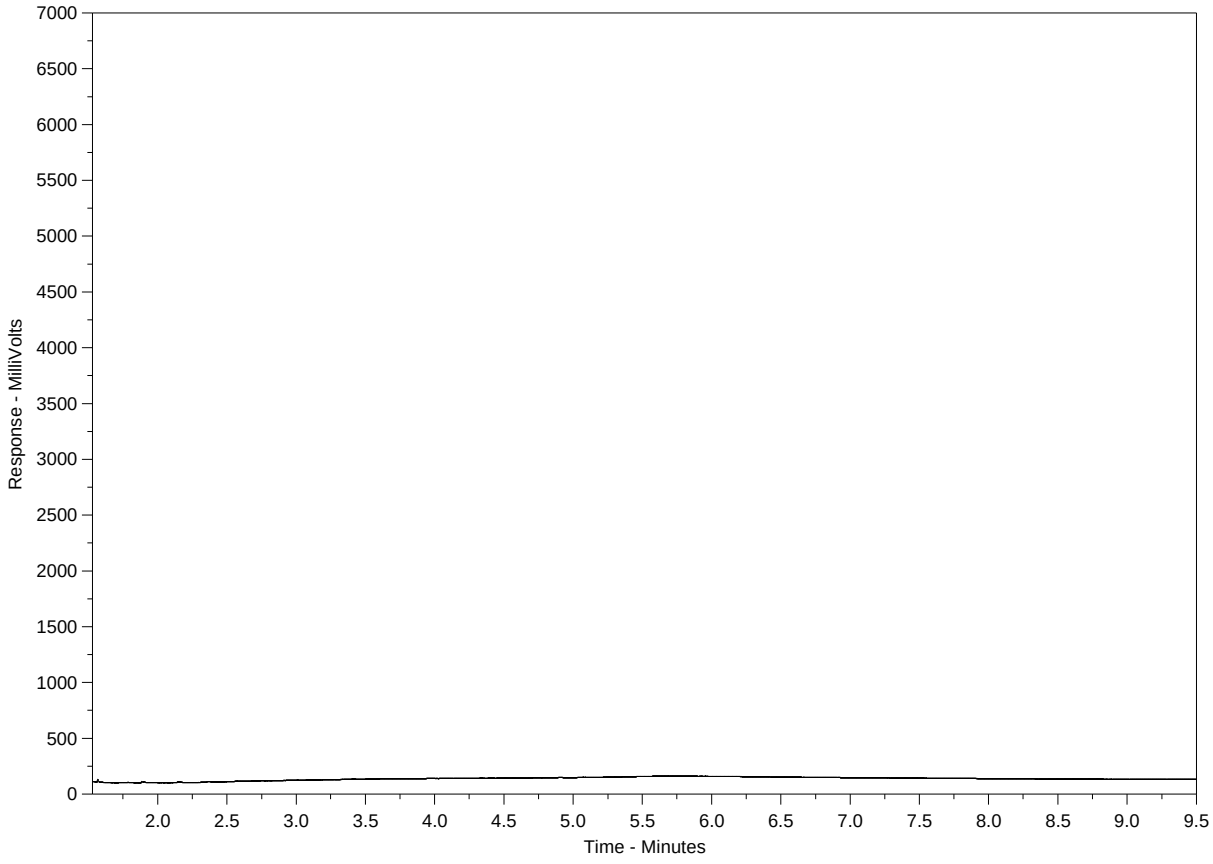
GLOSSARY OF REPORT TERMS

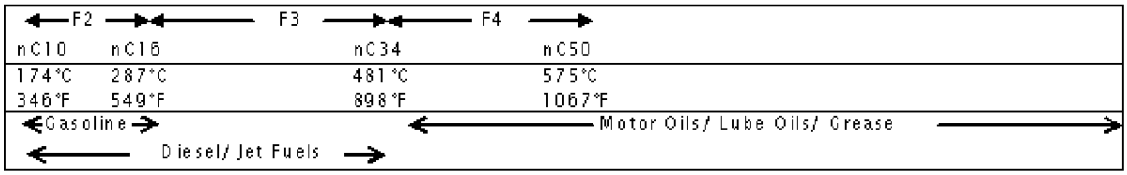
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1506076-3
Client Sample ID: REP-7





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

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

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

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

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

L1506076-COFC

Form **10-026471**

Page ____ of ____

Report To	Report Format / Distribution	Service Requested: (Rush subject to availability)
Company: HAMLET OF REPULSE BAY	Standard: ____ Other (specify): ____	✓ Regular (Standard Turnaround Times))
Contact: KEVIN TEGU	Select: PDF ✓ Excel ____ Digital ____ Fax ____	Priority, Date Req'd: ____ (Surcharges apply)
Address: PO BOX 10	Email 1: MMOS@REPULSEBAY.CA	Emergency (1 Business Day) - 100% Surcharge
	Email 2: mkusty@gov.nu.ca	For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone: 867 462 9952 Fax: 867 462 4411		
Invoice To Same as Report ? (circle) (Yes) or No (if No, provide details)	**Client / Project Information**	**Analysis Request** (Indicate Filtered or Preserved, F/P)
Copy of Invoice with Report? (circle) (Yes) or No	Job #:	
Company:	PO / AFE:	
Contact:	LSD:	
Address:		
Phone: Fax:	Quote #:	
Lab Work Order # (lab use only) [redacted]	**ALS Contact:**	**Sampler:** Jimmy

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	Routine	Metals	Nutrients	Phenols	Bacteria	Oil + Grease	PAH	BTEX, F1	F2-F4			Number of Containers
[redacted]	REP-2	20 Aug 14	08:30	WASTE WATER	✓	✓	P	P	P	P	P						7
[redacted]	REP-4	20 Aug 14	09:30	" "	✓	✓	P	P	P	P	P						8
[redacted]	REP-7	20 Aug 14	09:00	" "	✓	✓	P	P		P	P	P	P	P			12
[redacted]																	
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Special Instructions / Regulations / 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:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
[redacted]	Aug 20/14	11:15	LD	Aug 21/14	1:00	9 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — GENF 18.01 Front