Hamlet of Rankin Inlet
ATTN: MEGAN LUSTY
BAG 002
Rankin Inlet NU X0C 0G0

Date Received: 23-JUL-15
Report Date: 31-JUL-15 12:13 (MT)
Version: FINAL

Client Phone: 867-645-2895

Certificate of Analysis

Lab Work Order #: L1647069

Project P.O. #: NOT SUBMITTED
Job Reference: 3BM-RAN1214
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1647069-1 RAN-2 3BM-RAN1214							
Sampled By: Joe Kaludjak on 22-JUL-15 @ 09:45							
Matrix: WATER							
Miscellaneous Parameters							
Total Organic Carbon	48.6		1.0	mg/L		27-JUL-15	R3233565
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	341		1.2	mg/L		31-JUL-15	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		31-JUL-15	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		31-JUL-15	
Ammonia by colour							
Ammonia, Total (as N)	1.53	DLA	0.10	mg/L		23-JUL-15	R3231684
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	26.9	DLA	6.0	mg/L		24-JUL-15	R3235808
Carbonaceous BOD							
BOD Carbonaceous	22.5	DLA	6.0	mg/L		24-JUL-15	R3235808
Chloride in Water by IC							
Chloride (Cl)	123		2.5	mg/L		24-JUL-15	R3233242
Conductivity							
Conductivity	1310		1.0	umhos/cm		29-JUL-15	R3235920
Fecal Coliform							
Fecal Coliforms	230	MBHT	3	MPN/100mL		23-JUL-15	R3234479
Hardness Calculated							
Hardness (as CaCO3)	483		0.30	mg/L		29-JUL-15	
Mercury Total							
Mercury (Hg)-Total	<0.00020	DLM	0.00020	mg/L	28-JUL-15	28-JUL-15	R3234932
Nitrate in Water by IC							
Nitrate (as N)	<0.10	DLM	0.10	mg/L		24-JUL-15	R3233242
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.11		0.11	mg/L		27-JUL-15	
Nitrite in Water by IC							
Nitrite (as N)	<0.050	DLM	0.050	mg/L		24-JUL-15	R3233242
Oil and Grease, Total							
Oil and Grease, Total	<2.0		2.0	mg/L	27-JUL-15	27-JUL-15	R3233501
Phenol (4AAP)							
Phenols (4AAP)	0.0029		0.0010	mg/L		30-JUL-15	R3236288
Phosphorus, Total							
Phosphorus (P)-Total	0.370		0.010	mg/L		29-JUL-15	R3234756
Sulfate in Water by IC							
Sulfate (SO4)	238		1.5	mg/L		24-JUL-15	R3233242
Total Alkalinity as CaCO3							
Alkalinity, Total (as CaCO3)	279		1.0	mg/L		29-JUL-15	R3235920
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.0472		0.0050	mg/L	27-JUL-15	27-JUL-15	R3233554
Arsenic (As)-Total	0.00470		0.00020	mg/L	27-JUL-15	27-JUL-15	R3233554
Cadmium (Cd)-Total	0.000416		0.000010	mg/L	27-JUL-15	27-JUL-15	R3233554
Calcium (Ca)-Total	152		0.10	mg/L	27-JUL-15	27-JUL-15	R3233554
Chromium (Cr)-Total	0.0022		0.0010	mg/L	27-JUL-15	27-JUL-15	R3233554
Cobalt (Co)-Total	0.0139		0.00020	mg/L	27-JUL-15	27-JUL-15	R3233554
Copper (Cu)-Total	0.0269		0.00020	mg/L	27-JUL-15	27-JUL-15	R3233554
Iron (Fe)-Total	8.14		0.10	mg/L	27-JUL-15	27-JUL-15	R3233554
Lead (Pb)-Total	0.00208		0.000090	mg/L	27-JUL-15	27-JUL-15	R3233554
Magnesium (Mg)-Total	25.4		0.010	mg/L	27-JUL-15	27-JUL-15	R3233554
Manganese (Mn)-Total	2.69	DLA	0.030	mg/L	27-JUL-15	28-JUL-15	R3234373

* 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
L1647069-1 RAN-2 3BM-RAN1214							
Sampled By: Joe Kaludjak on 22-JUL-15 @ 09:45							
Matrix: WATER							
Total Metals by ICP-MS							
Nickel (Ni)-Total	0.0240		0.0020	mg/L	27-JUL-15	27-JUL-15	R3233554
Potassium (K)-Total	34.0		0.020	mg/L	27-JUL-15	27-JUL-15	R3233554
Sodium (Na)-Total	104		0.030	mg/L	27-JUL-15	27-JUL-15	R3233554
Zinc (Zn)-Total	0.194		0.0020	mg/L	27-JUL-15	27-JUL-15	R3233554
Total Suspended Solids							
Total Suspended Solids	15.0		5.0	mg/L		27-JUL-15	R3234080
pH							
pH	7.92		0.10	pH units		29-JUL-15	R3235920

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

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.			
ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L			
ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.			
ALK-TITR-WP	Water	Total Alkalinity as CaCO3	APHA 2320B
The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.			
BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B
Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.			
BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B
Samples are diluted and seeded and then incubated in airtight bottles at 20°C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.			
CL-IC-N-WP	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-WP	Water	Conductivity	APHA 2510B
Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.			
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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.			
NO2+NO3-CALC-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-WP	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
NO3-IC-N-WP	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
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-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.			
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 cabon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.			

** 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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

ALS Environmental

L1647069-COFC

COC # _____

Page ____ of ____

Report To			
Company:	Hamlet of Rankin Inlet		
Contact:			
Address:	P.O. Box 310 Rankin Inlet, NU		
Phone:	(867) 645-2895	Fax:	
Invoice To	Same as Report ? ☑ Yes ☐ No		
Hardcopy of Invoice with Report?	☐ Yes ☐ No		
Company:			
Contact:			
Address:			
Phone:		Fax:	

☑ PDF ☐ Excel ☐ Digital ☐ Fax

Email 1: works@rankininlet.ca

Email 2: mlusty@gov.nu.ca

Email 3:

Client / Project Information

Job #: 3BM-RAN1214

PO / AFE:

LSD:

Quote #:

Lab Work Order # (lab use only):

ALS Contact: Craig Riddell

Sampler: Joe Kalvak

Service Requested (Rush for routine analysis subject to availability)

- ◉ Regular (Standard Turnaround Times - Business Days)
- ○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- ○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- ○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	Routine	28mL Metals	Mercury	Phenols	Nutrients	Bacteria	Oil + Grease					Number of Containers
RAN12	BOD 3BM-RAN1214	22-July-15	09:45am		P	P	P	P	P	P	P	P					8
	Routine																
	250mL + Metals + Pres																
	40 mL Mercury Vial + Pres																
	250mL Nutrients + Pres																
	125 mL Phenols																

Special Instructions / Regulations 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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			EE	7-23-15	11:26	13° °C				

GENF 20.00 Front