Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
P.O Box 119, Gjoa Haven, Nunavut
X0B 1J0
Phone (867) 360-6338 ext. 27 Fax (867) 360-6369
Email licensing@nunavutwaterboard.org

Date: March 28th 2013

RE: Water License 3AM-GRA1015 Rankin Inlet Utilidor System Annual Report 2013

Good afternoon Phyllis,

Please find attached the annual report for the above mentioned license, you will also find attachments with respect to the sample results as well as any other related information pertaining to the license requirements.

Please contact me should you have any questions, comments, or concerns.

Thanks

Jason Tologanak
Regional Director, Kivalliq Region
Community & Government Services
Rankin Inlet, Nunavut
X0C 0G0
Phone (867) 645-8101
Fax (867) 645- 8197
Cell (867) 645-7255

YEAR BEING REPORTED: 2012

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence 3AM-GRA1015 issued to the Rankin Inlet Utilidor System.
.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
January	46,317,625	Same
February	48,686,589	Same
March	47,114,260	Same
April	45,530,742	Same
May	46,710,972	Same
June	43,066,447	Same
July	44,400,258	Same
August	44,886,177	Same
September	43,816,021	Same
October	41,695,327	Same
November	40,263,312	Same
December	44,780,904	Same
ANNUAL TOTAL	**537,268,634**	Same

Note: No meter was existing to measure the effluent volume. Therefore Water extraction volume has been considered equal volume to the wastewater effluent 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;

Water Source:

- Nipissar Lake Replenishment Pipeline completed, Pipeline has been tested but yet not being utilized due to pending regulatory approvals. Design consultant was Stantec Architecture Ltd.

Utilidor System:

- Phase 1 completed- installed monster auger & effluent pumps
- Sewer outfall pipe repair assessment completed in 2011, repairs to commence in summer of 2013.
- Utilidor District Metering upgrades ongoing
- Area 5 phases 1& 2 Utilidor mains and services completed in summer of 2012. Phase 3 & 4 in design stages by exp services Inc., an engineering consulting company.
- In 2012 CGS purchased and installed district water meters to identify potable water losses. These meters are expected to be installed in February 2013.

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

- On Dec 1/12 at 3.30 pm The plant operators had no choice but to direct the raw sewage to the outflow force main for discharge into the Hudson's Bay. One of the major components (PLC- Programmable logic controller) of the sewage treatment plant stopped functioning. After investigation, it was identified that glycol leaked from a unit heater above the cabinet on the second floor dripping down and got inside the panel causing the control functions to shut down. Repairs completed and normal operations have been resumed at the Waste Water Treatment Plant, Rankin Inlet as of December 12, 2012 since 8.00 AM.
- Between May 10-June 13th 2012. Sewage treatment plant in Rankin Inlet is undergoing upgrades phase 1. An auger monster and effluent pumps were installed in 2011. The Contractor (GC) disconnected connections from old drum screener and connected to the auger screen monster. Since Auger screen monster was put in operation, there was no more on bypass of raw effluent to the ocean as of June 13, 2012.

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 were carried out this year and no anticipation for the next year.

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;

Yes.

Monitoring Program: Winnipeg based an Environmental accredited Lab ALS is being used for testing all water and wastewater samples.

Water License: Part H: GRA-1: Raw water supply prior to treatment: It is being followed and Lab Test results are attached.

Part H: GRA-5: Water Level gauge in Nipissar Lake: Water level was monitored and the monitoring data is attached.

Part H: Effluent discharge from Sewage Treatment Facility: Lab test Results are attached.

Study: A study on Bathymetric surveys is in progress on the Nipissar Lake and future Secondary sources. This study will be completed in 2014/15. The Engineering Consulting company is William Engineering Ltd.

viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and

- The Utilidor Water License deals with water supply and wastewater treatment Systems. The current source of water is Nipissar Lake and the Pump station is located at the source.
- The Winnipeg based accredited lab ALS is being used for testing water, sewage and leachate samples following their QA/QC plan.
- A meter will be activated to measure the wastewater effluent once design is finalized and construction is completed.

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

The Operation and Maintenance Plans for the Water distribution system and Wastewater collection system will be revised and updated once water distribution System and wastewater collection system are optimized along with the WWTP.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- The Licensed facilities are being maintained and operated in such a manner as to prevent structural failure to the satisfaction of the inspector.
- Follow approved "Environmental Emergency Contingency Plan"
- Follow National Drinking Water guidelines
- Continue extended sampling and testing program for water and wastewater
- Follow Spill Contingency Plan

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

The GN-CGS is the Licensee of the Utilidor system. CGS successfully addressed the concerns of the inspector, Inspection dated August 2, 2011:

- Annual reporting
- Water Level gauge
- Extended monitoring program.
- ➢ Extensive sampling and testing program will be followed as per the Water License from 2013.

The attachments are as follows:

1. Lab results of the bacteria tests of treated water

L1119565_COA.PDF L1102665_COA.PDF L1275195_COA.PDF

2. Lab results of the Waste water effluent

L1169425_COA.PDF L1185882_COA.PDF

3. Data of Nipissar Lake water elevation

From: Hunter, Jeffrey
Sent: Friday, June 22, 2012 11:43 AM
To: Thistle, Wayne; Concepcion, Cesar; Tologanak, Jason; Ruediger, Ralph; Strickland, Joe
Cc: Swanson, Luke
Subject: FW: Nipissar Lake Level

FYI Nipissar lake volumes are up 87mm from this time last year. This is the third consecutive year of volume increases based on survey shots taken mid-June.

No.	Date	B/S to BM	F/S to water	BM to water	year over year change (m)
1	June 11, 2008	1.3650	3.4300	2.0650	
2	June 24 2009	1.3100	3.6650	2.3550	-0.2900
3	Aug 11 2009	0.6150	2.9600	2.3450	-0.0100
4	June 14 2010	0.5600	3.0150	2.4550	0.1100
5	June 20 2011	0.6400	2.8300	2.1900	0.2650
7	June 22 2012	0.6320	2.735	2.1030	0.0870

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ᐱᓕᕆᐊᖑᓂᑦ ᐱᓕᕆᔨᒻᒪᕆᒃ
ᐅᖃᓚᐅᑖᒃ (867) 645-8177
jhunter@gov.nu.ca

Jeff Hunter, A.Sc.T.
Senior Project Officer
Community and Government Services
Kivalliq Regional Project Management Office
P.O. Bag 002, Projects/O&M Building
Rankin Inlet, Nunavut X0C 0G0
Tel. (867) 645-8177
Fax (867) 645-8196
email: jhunter@gov.nu.ca
Cel: (867) 645-6657
mobile: j.hunter@bell.blackberry.net

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Rankin Inlet, Nunavut X0C 0G0
Tel. (867) 645-8177
Fax (867) 645-8196
email: jhunter@gov.nu.ca
Cel: (867) 645-6657
mobile: j.hunter@bell.blackberry.net

Nunavut - Community & Government Services - Rankin Inl
P.O. Box 490
Rankin Inlet NU X0C 0G0
ATTN: Alex Sammurtok

Date: 07-MAR-12
PO No.:
WO No.: L1119565
Project Ref:
Sample ID: SCHOOL
Sampled By:
Date Collected: 28-FEB-12
Lab Sample ID: L1119565-1
Matrix: WATER

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		02-MAR-12
Escherichia Coli	0		MPN/100mL	0		02-MAR-12

CDWQG = Health Canada Guideline Limits updated **MAY 2008**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by Robert S. Kitlar
Robert S. Kitlar
Account Manager

Nunavut - Community & Government Services - Rankin Inl
P.O. Box 490
Rankin Inlet NU X0C 0G0
ATTN: Alex Sammurtok

Date: 07-MAR-12
PO No.:
WO No.: L1119565
Project Ref:
Sample ID: HAMLET OFFICE
Sampled By:
Date Collected: 28-FEB-12
Lab Sample ID: L1119565-2
Matrix: WATER

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		02-MAR-12
Escherichia Coli	0		MPN/100mL	0		02-MAR-12

CDWQG = Health Canada Guideline Limits updated MAY 2008

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by Robert S. Kitlar
Robert S. Kitlar
Account Manager

Nunavut - Community & Government Services - Rankin Inl
P.O. Box 490
Rankin Inlet NU X0C 0G0
ATTN: Alex Sammurtok

Date: 07-MAR-12
PO No.:
WO No.: L1119565
Project Ref:
Sample ID: RAW
Sampled By:
Date Collected: 28-FEB-12
Lab Sample ID: L1119565-3
Matrix: WATER

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
WP2 Drinking Water						
*Nitrate and Nitrite as N	<0.071		mg/L	10		01-MAR-12
pH						
pH	7.61		pH units			01-MAR-12
Total Metals by ICP-MS						
Calcium (Ca)-Total	23.4		mg/L			05-MAR-12
Copper (Cu)-Total	0.0208		mg/L		1.0	05-MAR-12
Iron (Fe)-Total	<0.10		mg/L		0.3	05-MAR-12
Magnesium (Mg)-Total	4.58		mg/L			05-MAR-12
Manganese (Mn)-Total	0.0021		mg/L		0.05	05-MAR-12
Potassium (K)-Total	1.28		mg/L			05-MAR-12
Sodium (Na)-Total	4.30		mg/L		200	05-MAR-12
Zinc (Zn)-Total	<0.020		mg/L		5.0	05-MAR-12
TDS (Calculated from EC)						
TDS (Calculated from EC)	100		mg/L		500	02-MAR-12
Sulfate						
Sulfate	4.15		mg/L		500	02-MAR-12
Nitrite as N						
*Nitrite-N	<0.050		mg/L	1		02-MAR-12
Nitrate as N						
*Nitrate-N	<0.050		mg/L	10		02-MAR-12
Hardness Calculated						
Hardness (as CaCO3)	77.3		mg/L		500	07-MAR-12
Hardness - grains/US gallon						
Hardness-grains/USgal	4.52		grn/USgal			01-MAR-12
Hardness - grains/Imperial gallon						
Hardness-grains/IMPgal	5.42		grn/IMPgal			01-MAR-12
Conductivity						
Conductivity	154		umhos/cm			01-MAR-12
Chloride						
Chloride	6.35		mg/L		250	02-MAR-12

Nunavut - Community & Government Services - Rankin Inl
P.O. Box 490
Rankin Inlet NU X0C 0G0
ATTN: Alex Sammurtok

Date: 07-MAR-12
PO No.:
WO No.: L1119565
Project Ref:
Sample ID: RAW
Sampled By:
Date Collected: 28-FEB-12
Lab Sample ID: L1119565-3
Matrix: WATER

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
CDWQG = Health Canada Guideline Limits updated	**MAY 2008**					

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by Robert S. Kitlar
Robert S. Kitlar
Account Manager

Guidelines & Objectives

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Manganese	Elevated levels may cause staining of laundry and porcelain.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

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.

L1119565

ALS laboratory Services

1329 Niakwa Road East Unit 12

Winnipeg Manitoba

Alex Sammurtok

Community Government Services

Government of Nunavut

Rankin Inlet, Nunavut

867-645-8166 , fax # 867-645-8197

Email: asammurtok@gov.nu.ca

We are requesting test result treated water sample

Total Coliform and e.coli

For the raw water we would like to know if there is any salt in the raw water.

School
HAMLET OFFICE

Alex Sammurtok

5 D MAR 12 12:55

Nunavut - Community & Government Services
- Rankin Inlet
ATTN: JOE STRICKLAND
BAG 002
Rankin Inlet NU X0C 0G0

Date Received: 10-JAN-12
Report Date: 13-JAN-12 11:01 (MT)
Version: FINAL

Client Phone: 867-645-8154

Certificate of Analysis

Lab Work Order #: **L1102665**
Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET - WILLIAMSON LAKE PUMPHOUSE

C of C Numbers:
Legal Site Desc:

Robert S. Kitlar
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1102665-1 1) RANKIN PUMP HOUSE - TOWN SUPPLY							
Sampled By: J STRICKLAND on 09-JAN-12 @ 13:00							
Matrix: WATER - MUNICIPAL TREATED							
Total Coliform, EColi Mcoli Blue & HPC							
Escherichia Coli mcoli blue MF							
E. Coli	<1		1	CFU/100mL	10-JAN-12	11-JAN-12	R2311056
Heterotrophic Plate Count							
Heterotrophic Plate Count	320		10	CFU/mL	10-JAN-12	12-JAN-12	R2311793
Total Coliform mcoli blue MF							
Total Coliforms	<1		1	CFU/100mL	10-JAN-12	11-JAN-12	R2311056
L1102665-2 2) RANKIN PUMP HOUSE - TOWN RETURN SUPPLY							
Sampled By: J STRICKLAND on 09-JAN-12 @ 13:00							
Matrix: WATER - MUNICIPAL TREATED							
Total Coliform, EColi Mcoli Blue & HPC							
Escherichia Coli mcoli blue MF							
E. Coli	<1		1	CFU/100mL	10-JAN-12	11-JAN-12	R2311056
Heterotrophic Plate Count							
Heterotrophic Plate Count	510		10	CFU/mL	10-JAN-12	12-JAN-12	R2311793
Total Coliform mcoli blue MF							
Total Coliforms	<1		1	CFU/100mL	10-JAN-12	11-JAN-12	R2311056

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-MCOLIMF-WP	Water	Escherichia Coli mcoli blue MF	APHA 9222B AND HACH 10029

This procedure is applicable to E. coli analysis for water samples. It is also used for Total Coliform analysis when only one 100 mL samples is submitted for both Total Coliforms and E. coli. If two sample bottles are submitted for these analyses, E. coli analysis is performed by this procedure, and Total Coliform analysis can be performed by A151.

A suitable sample volume is poured through a membrane filter and placed in a petri dish prepared with m-Coli Blue 24 broth. The inverted plates are incubated at 35C +/- 0.5C for 24hrs. Coliforms that are not E. coli turn red because they reduce TTC (2,3,5 triphenyltetrazolium chloride) in the medium. E. coli turn blue due to the reaction between the enzyme beta glucuronidase and BCIG (5-bromo-4 chloro-3 indolyl-beta-D-glucuronide) in the medium.

HPC-PP-WP	Water	Heterotrophic Plate Count	APHA 9215B, 2005

This is a procedure for estimating the number of live heterotrophic bacteria in water and measuring changes during water treatment and distribution or in swimming pools. In the pour plate method, samples are diluted and plated on to media. After incubation, the colonies are counted and reported as CFU/mL.

TC-MCOLIMF-WP	Water	Total Coliform mcoli blue MF	APHA 9222B and HACH 10029

This procedure is applicable to E. coli analysis for water samples. It is also used for Total Coliform analysis when only one 100 mL samples is submitted for both Total Coliforms and E. coli. If two sample bottles are submitted for these analyses, E. coli analysis is performed by this procedure, and Total Coliform analysis is performed by A151.

A suitable sample volume is poured through a membrane filter and placed in a petri dish prepared with m-Coli Blue 24 broth. The inverted plates are incubated at 35C +/- 0.5C for 24hrs. Coliforms that are not E. coli turn red because they reduce TTC (2,3,5 triphenyltetrazolium chloride) in the medium. E. coli turn blue due to the reaction between the enzyme beta glucuronidase and BCIG (5-bromo-4 chloro-3 indolyl-beta-D-glucuronide) in the medium.

** 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

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 Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

10-026472

L1102665

Page ___ of ___

L1102665-COFC

Report To	JOE STRICKLAND
Company:	COMMUNITY GOVERNMENT SERVICES
Contact:	
Address:	P.O. BAG 002 RANKIN INLET, NUNAVUT
Phone:	867-645-8154 Fax: 867-645-8197
Invoice To	Same as Report ? (circle) (Yes) or No (if No, provide details)
	Copy of Invoice with Report? (circle) (Yes) or No
Company:	
Contact:	
Address:	
Phone:	Fax:
Lab Work Order # (lab use only)	

Report Format / Distribution	
Standard:	Other (specify):
Select: PDF ___ Excel ___ Digital ___ Fax ___	
Email 1:	
Email 2:	
Client / Project Information	
Job #:	RANKIN INLET – Williamson Lake pumphouse
PO / AFE:	
LSD:	
Quote #:	
ALS Contact:	**Sampler:**

Service Requested: (Rush subject to availability)	
	Regular (Standard Turnaround Times))
	Priority, Date Req'd: __________ (Surcharges apply)
	Emergency (1 Business Day) - 100% Surcharge
	For Emergency < 1 Day, ASAP or Weekend - Contact ALS

Analysis Request
(Indicate Filtered or Preserved, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	~~[illegible]~~	TCEC-BL, HPC [illegible]	Number of Containers
(1)	RANKIN PUMP HOUSE TOWN SUPPLY	9/01/12	1:00PM	SUPPLY		✓	
(2)	RANKIN PUMP HOUSE TOWN RETURN SUPPLY	9/01/12	1:00PM	RETURN		✓	

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: [signature]	Date: 10JAN12	Time: 13:45	Temperature: 5 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

GENF 18.01 Front

Nunavut - Community & Government Services
- Rankin Inlet
ATTN: JOE STRICKLAND - FACILITY MGR
P.O. Box 490
Rankin Inlet NU X0C 0G0

Date Received: 05-MAR-13
Report Date: 06-MAR-13 15:17 (MT)
Version: FINAL

Client Phone: 867-645-8158

Certificate of Analysis

Lab Work Order #: L1275195

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

LEAH HAYWARD
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1275195-1 RANKIN INLET OLD TOWN - PUMPHOUSE							
Sampled By: ROB HOGAN on 04-MAR-13 @ 10:30							
Matrix: Water							
Total Coliform and E.coli							
Total Coliforms	0		0	MPN/100mL		05-MAR-13	R2549629
Escherichia Coli	0		0	MPN/100mL		05-MAR-13	R2549629
L1275195-2 RANKIN INLET NEW TOWN - PUMPHOUSE							
Sampled By: ROB HOGAN on 04-MAR-13 @ 10:30							
Matrix: Water							
Total Coliform and E.coli							
Total Coliforms	0		0	MPN/100mL		05-MAR-13	R2549629
Escherichia Coli	0		0	MPN/100mL		05-MAR-13	R2549629
L1275195-3 RANKIN INLET AREA 5 L - PUMPHOUSE							
Sampled By: ROB HOGAN on 04-MAR-13 @ 10:30							
Matrix: Water							
Total Coliform and E.coli							
Total Coliforms	0		0	MPN/100mL		05-MAR-13	R2549629
Escherichia Coli	0		0	MPN/100mL		05-MAR-13	R2549629
L1275195-4 RANKIN INLET NAVAH - PUMPHOUSE							
Sampled By: ROB HOGAN on 04-MAR-13 @ 10:30							
Matrix: Water							
Total Coliform and E.coli							
Total Coliforms	0		0	MPN/100mL		05-MAR-13	R2549629
Escherichia Coli	0		0	MPN/100mL		05-MAR-13	R2549629
L1275195-5 RANKIN INLET TOWN SUPPLY - PUMPHOUSE							
Sampled By: ROB HOGAN on 04-MAR-13 @ 10:30							
Matrix: Water							
Total Coliform and E.coli							
Total Coliforms	0		0	MPN/100mL		05-MAR-13	R2549629
Escherichia Coli	0		0	MPN/100mL		05-MAR-13	R2549629
L1275195-6 RANKIN INLET KIVALLIQ - PUMPHOUSE							
Sampled By: ROB HOGAN on 04-MAR-13 @ 10:30							
Matrix: Water							
Total Coliform and E.coli							
Total Coliforms	0		0	MPN/100mL		05-MAR-13	R2549629
Escherichia Coli	0		0	MPN/100mL		05-MAR-13	R2549629

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
TC,EC-QT51-WP	Water	Total Coliform and E.coli	APHA 9223

The analysis of Total Coliform (TC) & Escherichia coli (EC) is processed by Quanti-tray (QT): Two substrates, ONPG for TC detection and MUG for EC detection are used. The substrates are added to the 100 ml sample dispensed into the 51 well tray. The tray is incubated at 35 Celcius for 24 hours. A colour reaction develops to indicate a positve reaction (presence of TC, EC). The number of positive wells are counted and converted to Most Probable Number Units (MPNU) per 100 ml. This test is also called 'rapid MPN method', therefore, the MPN results are derived from a statistical table with a 95% confidence and report as MPN units. The QT detection limit for a negative result is reported as zero.

TC,EC-QT51-WP	Water	Total Coliform and E.coli	APHA 9223 QT

The analysis of Total Coliform (TC) & Escherichia coli (EC) is processed by Quanti-tray (QT): Two substrates, ONPG for TC detection and MUG for EC detection are used. The substrates are added to the 100 ml sample dispensed into the 51 well tray. The tray is incubated at 35 Celcius for 24 hours. A colour reaction develops to indicate a positve reaction (presence of TC, EC). The number of positive wells are counted and converted to Most Probable Number Units (MPNU) per 100 ml. This test is also called 'rapid MPN method', therefore, the MPN results are derived from a statistical table with a 95% confidence and report as MPN units. The QT detection limit for a negative result is reported as zero.

** 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

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.

W8133

10- 300906

L1275195

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Page ____ of ____

Report To		Report Format / Distribution		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)
Company:	Community Govt. Services Rankin	Standard:	Other (specify):	Regular (Standard Turnaround Times - Business Days)
Contact:	Rob Hogan / Blaine Chislett Inlet	Select: PDF	Excel Digital Fax	Priority (2-4 Business Days) - 50% surcharge - Contact ALS to confirm TAT
Address:	Po Box 490 Rankin Inlet X0C 0G0	Email 1:	bchislett@gov.nu.ca	Emergency (1-2 Business Days) - 100% Surcharge - Contact ALS to confirm TAT
		Email 2:		Same Day or Weekend Emergency - Contact ALS to confirm TAT
Phone:	867-645-8172 Fax:			
Invoice To	Same as Report ? (circle) Yes or No (if No, provide details)	Client / Project Information		Analysis Request
	Copy of Invoice with Report? (circle) Yes or No	Job #:	Rankin Inlet	(Indicate Filtered or Preserved, F/P)
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:		
Lab Work Order # (lab use only)		ALS Contact:	Sampler:	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TC_FEC-QTS1-WP
1	Rankin Inlet Old Town - Pumphouse	4-MAR-13	10:30	Water	✓
2	Rankin Inlet New Town - Pumphouse.	4-MAR-13	10:30	"	✓
3	Rankin Inlet - KIVAlliq - Pumphouse.	4-MAR-13	10:30	"	✓
4	Rankin Inlet - Area 5 - Pumphouse.	4-MAR-13	10:30	"	✓
5	Rankin Inlet - NAVAIR - Pumphouse	4-MAR-13	10:30	"	✓
6	Rankin Inlet - Town Supply - Pumphouse	4-MAR-13	10:30	"	✓

L1275195-COFC

Number of Containers

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:	Date:	Time:	Received by:	Date:	Time:	Temperature: °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

Department of Health & Social Services: Kivalliq
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Okoa Kavamat Monakhikakvilikiot Olasilikiot : Kivalliq
Ministère de la Santé et des Services Sociaux : Kivalliq

Environmental Health Officer
Bag 72, Rankin Inlet, NU, X0C 0G0
Phone: (867) 645-8273 Fax: (867) 645-8274

Mar 5/13
6.7°C
10:35 AM
SA

Bacteriological Analysis of Drinking Water
Sample Collection Information Form

(1)

Sample Collection Information

Community from which sample was collected:	Rankin Inlet / Old Town
Location of sample collection:	Pump House
Date of sample collection:	4-3-13
Time of sample collection:	1030
Name of person who collected sample:	Rob Holan
Telephone number of person who collected sample:	867-645-8122

For Laboratory Use Only

Date Received:	
Date Processed:	Processed by:
Results	
Total Coliform per 100ml:	E. *coli* per 100ml:
Date Read:	Read by:

☐ **No Significant Evidence of Bact**
Sample collected is bacteriologically safe fc

L1275195-COFC

☐ **Significant Evidence of Bacteriological Contamination**
Sample collected may be unsafe for human consumption as bacteriological contamination is present. Resample as soon as possible.

☐ **Unsafe to Drink**
Sample collected is unsafe for human consumption as fecal contamination is present. Resample as soon as possible.

The above results relate only to the sample tested. This water sample was only tested for the presence of both Total Coliform and E. *coli* bacterial indicators of contamination by using membrane filtration.

Department of Health & Social Services: Kivalliq
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Okoa Kavamat Monakhikakvilikiot Olasilikiot : Kivalliq
Ministère de la Santé et des Services Sociaux : Kivalliq

Environmental Health Officer
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10:35 AM
SA

Bacteriological Analysis of Drinking Water Sample Collection Information Form

(2)

Sample Collection Information

Community from which sample was collected:	New Town / Rankin Inlet
Location of sample collection:	Pump House
Date of sample collection:	4.3.13
Time of sample collection:	1030
Name of person who collected sample:	Ros Holan
Telephone number of person who collected sample:	862-645-8122

For Laboratory Use Only

Date Received:	
Date Processed:	Processed by:
Results	
Total Coliform per 100ml:	E. *coli* per 100ml:
Date Read:	Read by:

L1275195-COFC

☐ **No Significant Evidence of Bacteriological C**
Sample collected is bacteriologically safe for human consun

☐ **Significant Evidence of Bacteriological Contamination**
Sample collected may be unsafe for human consumption as bacteriological contamination is present. Resample as soon as possible.

☐ **Unsafe to Drink**
Sample collected is unsafe for human consumption as fecal contamination is present. Resample as soon as possible.

The above results relate only to the sample tested. This water sample was only tested for the presence of both Total Coliform and E. *coli* bacterial indicators of contamination by using membrane filtration.

Department of Health & Social Services: Kivalliq
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Ministère de la Santé et des Services Sociaux : Kivalliq

Environmental Health Officer
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Phone: (867) 645-8273 Fax: (867) 645-8274

Mar 5/13
6.7°C
10:35 AM
SA

Bacteriological Analysis of Drinking Water
Sample Collection Information Form

3

Sample Collection Information

Community from which sample was collected:	Kivalliq / Rankin Inlet
Location of sample collection:	Pump House
Date of sample collection:	4-3-13
Time of sample collection:	1030 am
Name of person who collected sample:	Rob Hogan
Telephone number of person who collected sample:	867-645-8122

For Laboratory Use Only

Date Received:	
Date Processed:	Processed by:
Results	
Total Coliform per 100ml:	E. *coli* per 100ml:
Date Read:	Read by:

☐ **No Significant Evidence of Bacteriolo**
Sample collected is bacteriologically safe for human

L1275195-COFC

☐ **Significant Evidence of Bacteriological**
Sample collected may be unsafe for human consumptio.. as bacteriological contamination is present. Resample as soon as possible.

☐ **Unsafe to Drink**
Sample collected is unsafe for human consumption as fecal contamination is present. Resample as soon as possible.

The above results relate only to the sample tested. This water sample was only tested for the presence of both Total Coliform and E. *coli* bacterial indicators of contamination by using membrane filtration.

Department of Health & Social Services: Kivalliq
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Ministère de la Santé et des Services Sociaux : Kivalliq

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Mar 5/13
10:35AM
6.7°C
3A

Bacteriological Analysis of Drinking Water
Sample Collection Information Form

(4)

Sample Collection Information

Community from which sample was collected:	AREA 5 / Rankin Inlet
Location of sample collection:	Pump House
Date of sample collection:	4.3.13
Time of sample collection:	1030A
Name of person who collected sample:	Rob Hogan
Telephone number of person who collected sample:	867-645-8122

For Laboratory Use Only

Date Received:	
Date Processed:	Processed by:
Results	
Total Coliform per 100ml:	E. *coli* per 100ml:
Date Read:	Read by:

☐ **No Significant Evidence of Bacteriological Contamination**
Sample collected is bacteriologically safe for human consumption.

☐ **Significant Evidence of Bacteriological**
Sample collected may be unsafe for human consumpti
Resample as soon as possible.

L1275195-COFC

☐ **Unsafe to Drink**
Sample collected is unsafe for human consumption as fecal contamination is present.
Resample as soon as possible.

The above results relate only to the sample tested. This water sample was only tested for the presence of both Total Coliform and E. *coli* bacterial indicators of contamination by using membrane filtration.

Department of Health & Social Services: Kivalliq
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Okoa Kavamat Monakhikakvilikiot Olasilikiot : Kivalliq
Ministère de la Santé et des Services Sociaux : Kivalliq

Environmental Health Officer
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Phone: (867) 645-8273 Fax: (867) 645-8274

L1275195

Mar 5/13
6.6°c
10:35AM
SA

Bacteriological Analysis of Drinking Water Sample Collection Information Form

(5)

Sample Collection Information

Community from which sample was collected:	Naujah / Rankin Inlet
Location of sample collection:	Pump House
Date of sample collection:	4.3.13
Time of sample collection:	10^30 am
Name of person who collected sample:	Rob Hogan
Telephone number of person who collected sample:	867-645-8122

For Laboratory Use Only

Date Received:	
Date Processed:	Processed by:
Results	
Total Coliform per 100ml:	E. *coli* per 100ml:
Date Read:	Read by:

☐ **No Significant Evidence of Bacterio[...] Contamination**
Sample collected is bacteriologically safe for hur[...]

L1275195-COFC

☐ **Significant Evidence of Bacteriolog[...]**
Sample collected may be unsafe for human consu[...] [...]ent.
Resample as soon as possible.

☐ **Unsafe to Drink**
Sample collected is unsafe for human consumption as fecal contamination is present.
Resample as soon as possible.

The above results relate only to the sample tested. This water sample was only tested for the presence of both Total Coliform and E. *coli* bacterial indicators of contamination by using membrane filtration.

Department of Health & Social Services: Kivalliq
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Ministère de la Santé et des Services Sociaux : Kivalliq

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Mar 5/13
6.1°c
10:35AM
SA

(6)

Bacteriological Analysis of Drinking Water
Sample Collection Information Form

Sample Collection Information

Community from which sample was collected:	Rankin Inlet/Town Supply
Location of sample collection:	Pump House
Date of sample collection:	4.3.13
Time of sample collection:	10:30
Name of person who collected sample:	Rob Holstw
Telephone number of person who collected sample:	867-645-8172

For Laboratory Use Only

Date Received:	
Date Processed:	Processed by:
Results	
Total Coliform per 100ml:	E. *coli* per 100ml:
Date Read:	Read by:

☐ **No Significant Evidence of Bacteriol**
Sample collected is bacteriologically safe for hum

L1275195-COFC

☐ **Significant Evidence of Bacteriologica**
Sample collected may be unsafe for human consumption as bacteriological contamination is present.
Resample as soon as possible.

☐ **Unsafe to Drink**
Sample collected is unsafe for human consumption as fecal contamination is present.
Resample as soon as possible.

The above results relate only to the sample tested. This water sample was only tested for the presence of both Total Coliform and E. *coli* bacterial indicators of contamination by using membrane filtration.

Nunavut - Community & Government Services
- Rankin Inlet
ATTN: MEGAN LUSTY
BAG 002
Rankin Inlet NU X0C 0G0

Date Received: 27-JUN-12
Report Date: 24-JUL-12 15:56 (MT)
Version: FINAL

Client Phone: 867-645-8176

Certificate of Analysis

Lab Work Order #: L1169425
Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET MONITORING PROGRAM
C of C Numbers:
Legal Site Desc:

Paul Nicolas
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1169425-1 GRA-3							
Sampled By: CLIENT on 25-JUN-12							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	8.18	DLA	0.50	mg/L		10-JUL-12	R2396000
Biochemical Oxygen Demand	13.2		6.0	mg/L	28-JUN-12	03-JUL-12	R2391634
BOD Carbonaceous	75.3		6.0	mg/L	28-JUN-12	03-JUL-12	R2391633
Fecal Coliforms	>110000		3	MPN/100mL		01-JUL-12	R2391229
Oil and Grease, Total	24.5		2.0	mg/L	03-JUL-12	03-JUL-12	R2391401
Phenols (4AAP)	0.0060		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393500
Phosphorus (P)-Total	3.83		0.010	mg/L		29-JUN-12	R2391112
Total Organic Carbon	53.0		1.0	mg/L	07-JUL-12	07-JUL-12	R2394539
Total Suspended Solids	42.0		5.0	mg/L		06-JUL-12	R2394041
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	132		20	mg/L		28-JUN-12	R2390154
Bicarbonate (HCO3)	161		24	mg/L		28-JUN-12	R2390154
Carbonate (CO3)	<12		12	mg/L		28-JUN-12	R2390154
Hydroxide (OH)	<6.8		6.8	mg/L		28-JUN-12	R2390154
Chloride by Ion Chromatography							
Chloride	57.9		0.50	mg/L		28-JUN-12	R2392012
Conductivity							
Conductivity	533		20	umhos/cm		28-JUN-12	R2390154
Hardness Calculated							
Hardness (as CaCO3)	91.0		0.30	mg/L		03-JUL-12	
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		28-JUN-12	R2392012
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		27-JUN-12	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		28-JUN-12	R2392012
Sulfate by Ion Chromatography							
Sulfate	23.0		0.50	mg/L		28-JUN-12	R2392012
TDS calculated							
TDS (Calculated)	240		5.0	mg/L		03-JUL-12	
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.465		0.020	mg/L	29-JUN-12	30-JUN-12	R2391234
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Arsenic (As)-Total	0.0020		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Barium (Ba)-Total	0.0280		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Bismuth (Bi)-Total	0.00093		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Boron (B)-Total	0.100		0.030	mg/L	29-JUN-12	30-JUN-12	R2391234
Cadmium (Cd)-Total	0.00021		0.00020	mg/L	29-JUN-12	30-JUN-12	R2391234
Calcium (Ca)-Total	26.4		0.20	mg/L	29-JUN-12	30-JUN-12	R2391234
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Cobalt (Co)-Total	0.00057		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Copper (Cu)-Total	0.163		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Iron (Fe)-Total	0.35		0.10	mg/L	29-JUN-12	30-JUN-12	R2391234
Lead (Pb)-Total	0.0017		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Lithium (Li)-Total	0.0039		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Magnesium (Mg)-Total	6.07		0.050	mg/L	29-JUN-12	30-JUN-12	R2391234
Manganese (Mn)-Total	0.0436		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Molybdenum (Mo)-Total	0.00103		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234

* 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
L1169425-1 GRA-3							
Sampled By: CLIENT on 25-JUN-12							
Matrix: WATER							
Total Metals by ICP-MS							
Nickel (Ni)-Total	0.0048		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Phosphorus (P)-Total	4.34		0.50	mg/L	29-JUN-12	30-JUN-12	R2391234
Potassium (K)-Total	10.1		0.10	mg/L	29-JUN-12	30-JUN-12	R2391234
Rubidium (Rb)-Total	0.00860		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Selenium (Se)-Total	<0.0050		0.0050	mg/L	29-JUN-12	30-JUN-12	R2391234
Silicon (Si)-Total	1.26		0.30	mg/L	29-JUN-12	30-JUN-12	R2391234
Silver (Ag)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Sodium (Na)-Total	37.9		0.050	mg/L	29-JUN-12	30-JUN-12	R2391234
Strontium (Sr)-Total	0.132		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	29-JUN-12	30-JUN-12	R2391234
Thorium (Th)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Tin (Sn)-Total	0.00152		0.00060	mg/L	29-JUN-12	30-JUN-12	R2391234
Titanium (Ti)-Total	0.0075		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Tungsten (W)-Total	<0.0020		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Uranium (U)-Total	<0.00050		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Vanadium (V)-Total	<0.0020		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Zinc (Zn)-Total	0.143		0.020	mg/L	29-JUN-12	30-JUN-12	R2391234
Zirconium (Zr)-Total	0.0020		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
pH							
pH	7.52		0.10	pH units		28-JUN-12	R2390154
L1169425-2 RAN-2							
Sampled By: CLIENT on 25-JUN-12							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.437		0.010	mg/L		10-JUL-12	R2396000
Biochemical Oxygen Demand	10.2		6.0	mg/L	28-JUN-12	03-JUL-12	R2391634
BOD Carbonaceous	7.5		6.0	mg/L	28-JUN-12	03-JUL-12	R2391633
Fecal Coliforms	4		3	MPN/100mL		01-JUL-12	R2391229
Oil and Grease, Total	<2.0		2.0	mg/L	03-JUL-12	03-JUL-12	R2391401
Phenols (4AAP)	0.0020		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393500
Phosphorus (P)-Total	0.298		0.010	mg/L		29-JUN-12	R2391112
Total Organic Carbon	59.5		1.0	mg/L	07-JUL-12	07-JUL-12	R2394539
Total Suspended Solids	21.0		5.0	mg/L		06-JUL-12	R2394041
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	170		20	mg/L		28-JUN-12	R2390154
Bicarbonate (HCO3)	208		24	mg/L		28-JUN-12	R2390154
Carbonate (CO3)	<12		12	mg/L		28-JUN-12	R2390154
Hydroxide (OH)	<6.8		6.8	mg/L		28-JUN-12	R2390154
Chloride by Ion Chromatography							
Chloride	172		0.50	mg/L		28-JUN-12	R2392012
Conductivity							
Conductivity	1300		20	umhos/cm		28-JUN-12	R2390154
Hardness Calculated							
Hardness (as CaCO3)	369		0.30	mg/L		03-JUL-12	
Nitrate as N by Ion Chromatography							
Nitrate-N	0.079		0.050	mg/L		28-JUN-12	R2392012
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.079		0.071	mg/L		27-JUN-12	
Nitrite as N by Ion Chromatography							

* 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
L1169425-2 RAN-2							
Sampled By: CLIENT on 25-JUN-12							
Matrix: WATER							
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		28-JUN-12	R2392012
Sulfate by Ion Chromatography							
Sulfate	233		0.50	mg/L		28-JUN-12	R2392012
TDS calculated							
TDS (Calculated)	790		5.0	mg/L		03-JUL-12	
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.022		0.020	mg/L	29-JUN-12	30-JUN-12	R2391234
Antimony (Sb)-Total	0.0021		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Arsenic (As)-Total	0.0040		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Barium (Ba)-Total	0.0594		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Boron (B)-Total	0.664		0.030	mg/L	29-JUN-12	30-JUN-12	R2391234
Cadmium (Cd)-Total	0.00057		0.00020	mg/L	29-JUN-12	30-JUN-12	R2391234
Calcium (Ca)-Total	114		0.20	mg/L	29-JUN-12	30-JUN-12	R2391234
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Cobalt (Co)-Total	0.0108		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Copper (Cu)-Total	0.0225		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Iron (Fe)-Total	5.55		0.10	mg/L	29-JUN-12	30-JUN-12	R2391234
Lead (Pb)-Total	0.0033		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Lithium (Li)-Total	0.0077		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Magnesium (Mg)-Total	20.4		0.050	mg/L	29-JUN-12	30-JUN-12	R2391234
Manganese (Mn)-Total	1.56		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Molybdenum (Mo)-Total	0.00260		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Nickel (Ni)-Total	0.0238		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Phosphorus (P)-Total	<0.50		0.50	mg/L	29-JUN-12	30-JUN-12	R2391234
Potassium (K)-Total	20.7		0.10	mg/L	29-JUN-12	30-JUN-12	R2391234
Rubidium (Rb)-Total	0.00805		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Selenium (Se)-Total	<0.0050		0.0050	mg/L	29-JUN-12	30-JUN-12	R2391234
Silicon (Si)-Total	1.97		0.30	mg/L	29-JUN-12	30-JUN-12	R2391234
Silver (Ag)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Sodium (Na)-Total	128		0.050	mg/L	29-JUN-12	30-JUN-12	R2391234
Strontium (Sr)-Total	0.560		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	29-JUN-12	30-JUN-12	R2391234
Thorium (Th)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Tin (Sn)-Total	<0.00060		0.00060	mg/L	29-JUN-12	30-JUN-12	R2391234
Titanium (Ti)-Total	0.0043		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Tungsten (W)-Total	<0.0020		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Uranium (U)-Total	0.00116		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Vanadium (V)-Total	<0.0020		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Zinc (Zn)-Total	0.166		0.020	mg/L	29-JUN-12	30-JUN-12	R2391234
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
pH							
pH	8.07		0.10	pH units		28-JUN-12	R2390154
L1169425-3 MCHF STAFF ROOM							
Sampled By: CLIENT on 25-JUN-12							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.073		0.010	mg/L		10-JUL-12	R2396000

* 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
L1169425-3 MCHF STAFF ROOM							
Sampled By: CLIENT on 25-JUN-12							
Matrix: WATER							
Biochemical Oxygen Demand	<6.0		6.0	mg/L	28-JUN-12	03-JUL-12	R2391634
BOD Carbonaceous	<6.0		6.0	mg/L	28-JUN-12	03-JUL-12	R2391633
Fecal Coliforms	<3		3	MPN/100mL		01-JUL-12	R2391229
Total Suspended Solids	5.0		5.0	mg/L		06-JUL-12	R2394041
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	93		20	mg/L		28-JUN-12	R2390154
Bicarbonate (HCO3)	113		24	mg/L		28-JUN-12	R2390154
Carbonate (CO3)	<12		12	mg/L		28-JUN-12	R2390154
Hydroxide (OH)	<6.8		6.8	mg/L		28-JUN-12	R2390154
Chloride by Ion Chromatography							
Chloride	77.3		0.50	mg/L		28-JUN-12	R2392012
Conductivity							
Conductivity	484		20	umhos/cm		28-JUN-12	R2390154
Hardness Calculated							
Hardness (as CaCO3)	115		0.30	mg/L		03-JUL-12	
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		28-JUN-12	R2392012
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		27-JUN-12	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		28-JUN-12	R2392012
Sulfate by Ion Chromatography							
Sulfate	27.4		0.50	mg/L		28-JUN-12	R2392012
TDS calculated							
TDS (Calculated)	249		5.0	mg/L		03-JUL-12	
Total Metals by ICP-MS							
Aluminum (Al)-Total	<0.020		0.020	mg/L	29-JUN-12	30-JUN-12	R2391234
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Arsenic (As)-Total	0.0015		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Barium (Ba)-Total	0.0373		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Bismuth (Bi)-Total	0.00081		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Boron (B)-Total	0.083		0.030	mg/L	29-JUN-12	30-JUN-12	R2391234
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	29-JUN-12	30-JUN-12	R2391234
Calcium (Ca)-Total	32.5		0.20	mg/L	29-JUN-12	30-JUN-12	R2391234
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Chromium (Cr)-Total	0.0021		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Cobalt (Co)-Total	0.00093		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Copper (Cu)-Total	5.94		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Iron (Fe)-Total	0.46		0.10	mg/L	29-JUN-12	30-JUN-12	R2391234
Lead (Pb)-Total	0.0132		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Lithium (Li)-Total	0.0022		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Magnesium (Mg)-Total	8.34		0.050	mg/L	29-JUN-12	30-JUN-12	R2391234
Manganese (Mn)-Total	0.0244		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Molybdenum (Mo)-Total	0.00077		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Nickel (Ni)-Total	0.0832		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Phosphorus (P)-Total	<0.50		0.50	mg/L	29-JUN-12	30-JUN-12	R2391234
Potassium (K)-Total	4.49		0.10	mg/L	29-JUN-12	30-JUN-12	R2391234
Rubidium (Rb)-Total	0.00314		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Selenium (Se)-Total	<0.0050		0.0050	mg/L	29-JUN-12	30-JUN-12	R2391234
Silicon (Si)-Total	0.42		0.30	mg/L	29-JUN-12	30-JUN-12	R2391234

* 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
L1169425-3 MCHF STAFF ROOM							
Sampled By: CLIENT on 25-JUN-12							
Matrix: WATER							
Total Metals by ICP-MS							
Silver (Ag)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Sodium (Na)-Total	43.7		0.050	mg/L	29-JUN-12	30-JUN-12	R2391234
Strontium (Sr)-Total	0.166		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	29-JUN-12	30-JUN-12	R2391234
Thorium (Th)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Tin (Sn)-Total	0.00119		0.00060	mg/L	29-JUN-12	30-JUN-12	R2391234
Titanium (Ti)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
Tungsten (W)-Total	<0.0020		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Uranium (U)-Total	<0.00050		0.00050	mg/L	29-JUN-12	30-JUN-12	R2391234
Vanadium (V)-Total	<0.0020		0.0020	mg/L	29-JUN-12	30-JUN-12	R2391234
Zinc (Zn)-Total	0.352		0.020	mg/L	29-JUN-12	30-JUN-12	R2391234
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	29-JUN-12	30-JUN-12	R2391234
pH							
pH	8.11		0.10	pH units		28-JUN-12	R2390154

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

Reference Information

Qualifiers for Individual Samples Listed:

Sample Numbe	Client ID	Qualifier	Description
L1169425-3	MCHF STAFF ROOM	LPM	Lab Preserved for Metals. Sample received with pH > 2, preserved at the lab and held for 16 hours as per EPA 200.8

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution

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.

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
ETL-SOLIDS-CALC-WP	Water	TDS calculated	CALCULATION
FC-MPN-WP	Water	Fecal Coliform	APHA 9221A-C

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.

IONBALANCE-OP05-WP	Water	Ion Balance Calculation No Reporting	APHA 1030E
MET-T-MS-WP	Water	Total Metals by ICP-MS	U.S. EPA 200.8-T

Total Metals by ICP-MS: This analysis is carried out using sample preparation procedures adapted from Standard Methods for the examination of Water and Wastewater Method 3030E and analytical procedures adapted from U.S EPA Method 200.8 for analyis of metals by inductively coupled-mass spectrometery.

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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.			
PH-WP	Water	pH	APHA 4500H
The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-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.			
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
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.

W8133
935176
L1169425

L1169425-COFC

Sample Integrity Form

Date: 2? June ?

Client: ?

ALS Contact: ______

COC #: ______

Phone #: ______

Work Order #: ______

Please note the following observations that prevent your samples from being processed.
ALS is attempting to contact you for further instructions.
If our attempts fail, please contact us as soon as possible to ensure your analytical needs are met.

	Observation	Details
[ ]	Temperature < freezing point	actual temp. (breakdown by cooler)
[ ]	Temperature ≥ 10 Celsius	actual temp. (breakdown by cooler)
[ ]	Containers broken in transit	details:
[ ]	Sample integrity compromised	details:
[ ]	Regulatory non-compliance	details:
[X]	No COC with shipment	details:
[ ]	Discrepancy between COC and label	details:
[ ]	COC incomplete or unclear	details:
[ ]	Container incompatible with test	details:
[ ]	Volume is insufficient for test	details:
[ ]	Preservation incompatible with test	details:
[ ]	No preservation	details:
[ ]	Other observation	details:

Additional Information (list all affected sample portions):

Project [illegible] Monitoring Program
[illegible] CWA [illegible]
[illegible]
[illegible] Staff [illegible]

Received [illegible] — 3

NA-FM-0325a v01 Sample Integrity Form
16 May 2008
Page 1 of 1

Hamlet of Rankin Inlet
ATTN: TROY AKSALNIK
PO Box 210
Rankin Inlet NU X0C 0G0

Date Received: 30-JUL-12
Report Date: 13-MAR-13 14:49 (MT)
Version: FINAL REV. 2

Client Phone: 867-645-2895

Certificate of Analysis

Lab Work Order #: **L1185882**
Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET MONITORING PROGRAM
C of C Numbers:
Legal Site Desc:

Paul Nicolas
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1185882-1 RAN-2							
Sampled By: TROY on 27-JUL-12 @ 11:00							
Matrix: WASTE WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.031		0.010	mg/L		08-AUG-12	R2413396
Biochemical Oxygen Demand	<6.0		6.0	mg/L	28-JUL-12	02-AUG-12	R2409612
BOD Carbonaceous	<6.0		6.0	mg/L	28-JUL-12	02-AUG-12	R2409607
Fecal Coliforms	23		3	MPN/100mL		31-JUL-12	R2408848
Oil and Grease, Total	<2.0		2.0	mg/L	31-JUL-12	31-JUL-12	R2408545
Phenols (4AAP)	0.0030		0.0010	mg/L	01-AUG-12	01-AUG-12	R2408919
Phosphorus (P)-Total	0.138		0.010	mg/L		31-JUL-12	R2408598
Total Organic Carbon	39.0		1.0	mg/L		08-AUG-12	R2413236
Total Suspended Solids	24.0		5.0	mg/L		30-JUL-12	R2408126
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	289		20	mg/L		31-JUL-12	R2408608
Bicarbonate (HCO3)	347		24	mg/L		31-JUL-12	R2408608
Carbonate (CO3)	<12		12	mg/L		31-JUL-12	R2408608
Hydroxide (OH)	<6.8		6.8	mg/L		31-JUL-12	R2408608
Chloride by Ion Chromatography							
Chloride	233		2.5	mg/L		28-JUL-12	R2409084
Conductivity							
Conductivity	1830		20	umhos/cm		31-JUL-12	R2408608
Hardness Calculated							
Hardness (as CaCO3)	560		0.30	mg/L		02-AUG-12	
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.25	DLM	0.25	mg/L		28-JUL-12	R2409084
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.35		0.35	mg/L		08-AUG-12	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.25	DLM	0.25	mg/L		28-JUL-12	R2409084
Sulfate by Ion Chromatography							
Sulfate	415		2.5	mg/L		28-JUL-12	R2409084
TDS calculated							
TDS (Calculated)	1260		5.0	mg/L		02-AUG-12	
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.041		0.020	mg/L	01-AUG-12	01-AUG-12	R2409601
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
Arsenic (As)-Total	0.0038		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
Barium (Ba)-Total	0.0712		0.00050	mg/L	01-AUG-12	01-AUG-12	R2409601
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	01-AUG-12	01-AUG-12	R2409601
Boron (B)-Total	1.55		0.030	mg/L	01-AUG-12	01-AUG-12	R2409601
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	01-AUG-12	01-AUG-12	R2409601
Calcium (Ca)-Total	174		0.20	mg/L	01-AUG-12	01-AUG-12	R2409601
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	01-AUG-12	01-AUG-12	R2409601
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	01-AUG-12	01-AUG-12	R2409601
Cobalt (Co)-Total	0.00616		0.00050	mg/L	01-AUG-12	01-AUG-12	R2409601
Copper (Cu)-Total	0.0059		0.0020	mg/L	01-AUG-12	01-AUG-12	R2409601
Iron (Fe)-Total	5.00		0.10	mg/L	01-AUG-12	01-AUG-12	R2409601
Lead (Pb)-Total	<0.0010		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
Lithium (Li)-Total	0.0164		0.0020	mg/L	01-AUG-12	01-AUG-12	R2409601
Magnesium (Mg)-Total	30.5		0.050	mg/L	01-AUG-12	01-AUG-12	R2409601
Manganese (Mn)-Total	1.31		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
Molybdenum (Mo)-Total	0.00213		0.00050	mg/L	01-AUG-12	01-AUG-12	R2409601

* 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
L1185882-1 RAN-2							
Sampled By: TROY on 27-JUL-12 @ 11:00							
Matrix: WASTE WATER							
Total Metals by ICP-MS							
Nickel (Ni)-Total	0.0196		0.0020	mg/L	01-AUG-12	01-AUG-12	R2409601
Phosphorus (P)-Total	<0.50		0.50	mg/L	01-AUG-12	01-AUG-12	R2409601
Potassium (K)-Total	28.8		0.10	mg/L	01-AUG-12	01-AUG-12	R2409601
Rubidium (Rb)-Total	0.00722		0.00050	mg/L	01-AUG-12	01-AUG-12	R2409601
Selenium (Se)-Total	<0.0050		0.0050	mg/L	01-AUG-12	01-AUG-12	R2409601
Silicon (Si)-Total	3.41		0.30	mg/L	01-AUG-12	01-AUG-12	R2409601
Silver (Ag)-Total	<0.0010		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
Sodium (Na)-Total	205		0.050	mg/L	01-AUG-12	01-AUG-12	R2409601
Strontium (Sr)-Total	0.841		0.00050	mg/L	01-AUG-12	01-AUG-12	R2409601
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	01-AUG-12	01-AUG-12	R2409601
Thorium (Th)-Total	<0.0010		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
Tin (Sn)-Total	<0.00060		0.00060	mg/L	01-AUG-12	01-AUG-12	R2409601
Titanium (Ti)-Total	0.0098		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
Tungsten (W)-Total	<0.0020		0.0020	mg/L	01-AUG-12	01-AUG-12	R2409601
Uranium (U)-Total	0.00148		0.00050	mg/L	01-AUG-12	01-AUG-12	R2409601
Vanadium (V)-Total	<0.0020		0.0020	mg/L	01-AUG-12	01-AUG-12	R2409601
Zinc (Zn)-Total	<0.020		0.020	mg/L	01-AUG-12	01-AUG-12	R2409601
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	01-AUG-12	01-AUG-12	R2409601
pH							
pH	8.33		0.10	pH units		31-JUL-12	R2408608

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted For 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.

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
ETL-SOLIDS-CALC-WP	Water	TDS calculated	CALCULATION
FC-MPN-WP	Water	Fecal Coliform	APHA 9221A-C

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.

IONBALANCE-OP05-WP	Water	Ion Balance Calculation No Reporting	APHA 1030E
MET-T-MS-WP	Water	Total Metals by ICP-MS	U.S. EPA 200.8-T

Total Metals by ICP-MS: This analysis is carried out using sample preparation procedures adapted from Standard Methods for the examination of Water and Wastewater Method 3030E and analytical procedures adapted from U.S EPA Method 200.8 for analyis of metals by inductively coupled-mass spectrometery.

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.			
PH-WP	Water	pH	APHA 4500H
The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-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.			

** 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.

Request Form

68 9878

L1185882-COFC

COC # L1185882

Page 1 of 1

Report To	Troy Aksalnik		
Company:	Hamlet of Rankin Inlet		
Contact:		☑ PDF ☐ Excel ☐ Digital ☑ Fax	
Address:	P.O. Box 210, Rankin Inlet, NU X0C 0G0	Email 1:	works@rankininlet.ca
		Email 2:	sao@rankininlet.ca
Phone:	(867) 645-2895 Fax: (867) 645-2146	Email 3:	mlusty@gov.nu.ca
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	
Hardcopy of Invoice with Report?	☑ Yes ☐ No	Job #:	Rankin Inlet Monitoring Program
Company:	W8133	PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #:	Q35176
Lab Work Order # (lab use only)		ALS Contact:	Craig Riddell
		Sampler:	TJA

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	Carbonaceous BOD	Biochemical Oxygen Demand	Total Organic Carbon	Fecal Coliform	Ammonia by colour	Oil and Grease, Total	Phosphorus, Total	Phenol (4AAP)	Routine Soluble + Metal Scan	Total Suspended Solids	BTEX plus F1-F4	Polyaromatic Hydrocarbons	Number of Containers
	RAN-2	27-07-12	11:00	wastewater	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			8

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
	27 07 12	11:27		28 July 2012	9:40	4.6 °C				

GENF 20.00 Front