Municipality of Sanikiluaq
ATTN: MOSES NOVALINGA / KENNY PEARCE
PO Box 157
Sanikiluaq NU X0A 0W0

Date Received: 07-AUG-14
Report Date: 20-AUG-14 14:16 (MT)
Version: FINAL

Client Phone: 867-266-7900

Certificate of Analysis

Lab Work Order #: L1498884

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

Craig Riddell
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1498884-1 SANI 2 (WASTE DISPOSAL GROUND - STREAM)							
Sampled By: Kenny Moses on 06-AUG-14 @ 12:40							
Matrix: Stream							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.010		0.010	mg/L		11-AUG-14	R2915259
Biochemical Oxygen Demand	<6.0		6.0	mg/L		08-AUG-14	R2916590
Conductivity	586		20	umhos/cm		12-AUG-14	R2916228
Fecal Coliforms	930		3	MPN/100mL		11-AUG-14	R2915919
Mercury (Hg)-Total	<0.000020		0.000020	mg/L	08-AUG-14	08-AUG-14	R2912147
Oil and Grease, Total	<2.0		2.0	mg/L	11-AUG-14	11-AUG-14	R2916271
Phenols (4AAP)	<0.0010		0.0010	mg/L	13-AUG-14	13-AUG-14	R2917237
Phosphorus (P)-Total	<0.010		0.010	mg/L		18-AUG-14	R2922325
Sulfate	41.6		0.50	mg/L		08-AUG-14	R2915861
Total Suspended Solids	<5.0	HTD	5.0	mg/L		13-AUG-14	R2917712
pH	7.81		0.10	pH units		12-AUG-14	R2916228
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.0070		0.0050	mg/L	19-AUG-14	19-AUG-14	R2923600
Antimony (Sb)-Total	0.00033		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Arsenic (As)-Total	0.00040		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Barium (Ba)-Total	0.0140		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Beryllium (Be)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Bismuth (Bi)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Boron (B)-Total	0.108		0.010	mg/L	19-AUG-14	19-AUG-14	R2923600
Cadmium (Cd)-Total	<0.000010		0.000010	mg/L	19-AUG-14	19-AUG-14	R2923600
Calcium (Ca)-Total	41.8		0.10	mg/L	19-AUG-14	19-AUG-14	R2923600
Cesium (Cs)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	19-AUG-14	19-AUG-14	R2923600
Cobalt (Co)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Copper (Cu)-Total	0.00441		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Iron (Fe)-Total	<0.10		0.10	mg/L	19-AUG-14	19-AUG-14	R2923600
Lead (Pb)-Total	<0.000090		0.000090	mg/L	19-AUG-14	19-AUG-14	R2923600
Lithium (Li)-Total	0.0047		0.0020	mg/L	19-AUG-14	19-AUG-14	R2923600
Magnesium (Mg)-Total	17.2		0.010	mg/L	19-AUG-14	19-AUG-14	R2923600
Manganese (Mn)-Total	0.00047		0.00030	mg/L	19-AUG-14	19-AUG-14	R2923600
Molybdenum (Mo)-Total	0.00040		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	19-AUG-14	19-AUG-14	R2923600
Phosphorus (P)-Total	<0.10		0.10	mg/L	19-AUG-14	19-AUG-14	R2923600
Potassium (K)-Total	2.76		0.020	mg/L	19-AUG-14	19-AUG-14	R2923600
Rubidium (Rb)-Total	0.00124		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Selenium (Se)-Total	<0.0010		0.0010	mg/L	19-AUG-14	19-AUG-14	R2923600
Silicon (Si)-Total	1.22		0.10	mg/L	19-AUG-14	19-AUG-14	R2923600
Silver (Ag)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Sodium (Na)-Total	41.1		0.030	mg/L	19-AUG-14	19-AUG-14	R2923600
Strontium (Sr)-Total	0.114		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Thallium (Tl)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Thorium (Th)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Tin (Sn)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Titanium (Ti)-Total	<0.00050		0.00050	mg/L	19-AUG-14	19-AUG-14	R2923600
Tungsten (W)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Uranium (U)-Total	0.00198		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Vanadium (V)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Zinc (Zn)-Total	0.0020		0.0020	mg/L	19-AUG-14	19-AUG-14	R2923600
Zirconium (Zr)-Total	<0.00040		0.00040	mg/L	19-AUG-14	19-AUG-14	R2923600

* 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
L1498884-2 SANI (LAGOON - STREAM)							
Sampled By: Kenny Moses on 06-AUG-14 @ 12:10							
Matrix: Stream							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.010		0.010	mg/L		11-AUG-14	R2915259
Biochemical Oxygen Demand	<6.0		6.0	mg/L		08-AUG-14	R2916590
Conductivity	2260		20	umhos/cm		12-AUG-14	R2916228
Fecal Coliforms	3		3	MPN/100mL		11-AUG-14	R2915919
Mercury (Hg)-Total	<0.000020		0.000020	mg/L	08-AUG-14	08-AUG-14	R2912147
Oil and Grease, Total	<2.0		2.0	mg/L	11-AUG-14	11-AUG-14	R2916271
Phenols (4AAP)	<0.0010		0.0010	mg/L	13-AUG-14	13-AUG-14	R2917237
Phosphorus (P)-Total	0.109		0.010	mg/L		18-AUG-14	R2922325
Sulfate	133		2.5	mg/L		08-AUG-14	R2915861
Total Suspended Solids	5.0	HTD	5.0	mg/L		13-AUG-14	R2917712
pH	7.83		0.10	pH units		12-AUG-14	R2916228
Total Metals by ICP-MS							
Aluminum (Al)-Total	<0.0050		0.0050	mg/L	19-AUG-14	19-AUG-14	R2923600
Antimony (Sb)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Arsenic (As)-Total	0.00065		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Barium (Ba)-Total	0.0109		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Beryllium (Be)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Bismuth (Bi)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Boron (B)-Total	0.155		0.010	mg/L	19-AUG-14	19-AUG-14	R2923600
Cadmium (Cd)-Total	0.000018		0.000010	mg/L	19-AUG-14	19-AUG-14	R2923600
Calcium (Ca)-Total	78.7		0.10	mg/L	19-AUG-14	19-AUG-14	R2923600
Cesium (Cs)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	19-AUG-14	19-AUG-14	R2923600
Cobalt (Co)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Copper (Cu)-Total	0.00157		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Iron (Fe)-Total	<0.10		0.10	mg/L	19-AUG-14	19-AUG-14	R2923600
Lead (Pb)-Total	<0.000090		0.000090	mg/L	19-AUG-14	19-AUG-14	R2923600
Lithium (Li)-Total	0.0094		0.0020	mg/L	19-AUG-14	19-AUG-14	R2923600
Magnesium (Mg)-Total	39.6		0.010	mg/L	19-AUG-14	19-AUG-14	R2923600
Manganese (Mn)-Total	0.00757		0.00030	mg/L	19-AUG-14	19-AUG-14	R2923600
Molybdenum (Mo)-Total	0.00063		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	19-AUG-14	19-AUG-14	R2923600
Phosphorus (P)-Total	0.12		0.10	mg/L	19-AUG-14	19-AUG-14	R2923600
Potassium (K)-Total	5.28		0.020	mg/L	19-AUG-14	19-AUG-14	R2923600
Rubidium (Rb)-Total	0.00134		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Selenium (Se)-Total	<0.0010		0.0010	mg/L	19-AUG-14	19-AUG-14	R2923600
Silicon (Si)-Total	1.68		0.10	mg/L	19-AUG-14	19-AUG-14	R2923600
Silver (Ag)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Sodium (Na)-Total	266		0.030	mg/L	19-AUG-14	19-AUG-14	R2923600
Strontium (Sr)-Total	0.369		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Thallium (Tl)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Thorium (Th)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Tin (Sn)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Titanium (Ti)-Total	<0.00050		0.00050	mg/L	19-AUG-14	19-AUG-14	R2923600
Tungsten (W)-Total	<0.00010		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Uranium (U)-Total	0.00221		0.00010	mg/L	19-AUG-14	19-AUG-14	R2923600
Vanadium (V)-Total	<0.00020		0.00020	mg/L	19-AUG-14	19-AUG-14	R2923600
Zinc (Zn)-Total	<0.0020		0.0020	mg/L	19-AUG-14	19-AUG-14	R2923600
Zirconium (Zr)-Total	<0.00040		0.00040	mg/L	19-AUG-14	19-AUG-14	R2923600

* 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
L1498884-3 SANI 2 TROUT Sampled By: CLIENT Matrix: **Miscellaneous Parameters** Trout Bioassay - Pass/Fail	See attached.					07-AUG-14	R2920223
L1498884-4 SANI 2 DAPHNIA Sampled By: CLIENT Matrix: **Miscellaneous Parameters** Daphnia Magna - Pass/Fail	See attached.					07-AUG-14	R2920207
L1498884-5 SANI 4 TROUT Sampled By: CLIENT Matrix: **Miscellaneous Parameters** Trout Bioassay - Pass/Fail	See attached.					07-AUG-14	R2920223
L1498884-6 SANI 4 DAPHNIA Sampled By: CLIENT Matrix: **Miscellaneous Parameters** Daphnia Magna - Pass/Fail	See attached.					07-AUG-14	R2920207

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
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**
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.

DAPHNIA-P/F-WP	Water	Daphnia Magna Pass/Fail	EPS/1/RM/11,EPS 1/RM/14

Daphnia Magna, grown under controlled conditions, are introduced into a single 100% concentration of a sample in order to obtain an Pass/Fail indication of toxicity. A Fail occurs when greater than 50% of the organisms die.

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.

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.

OGG-TOT-WT	Water	Oil and Grease, Total	APHA 5520 B

Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH-WP	Water	pH	APHA 4500H

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

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

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

SO4-IC-WP	Water	Sulfate by Ion Chromatography	EPA 300.1 (Modified)

Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.

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

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

TROUT-P/F-WP	Water	Trout Bioassay Pass/Fail	EPS 1/RM/13, EPS 1/RM/9

Certified, disease-free rainbow trout (Oncorhynchus mykiss) are exposed to the full-strength (100%) sample, under static conditions in order to obtain a pass/fail indication of toxicity. A sample is considered to "fail" if >50% mortality is observed within a 96-hour exposure period.

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.

Rainbow Trout Bioassay Test Report - Pass/Fail

Sample ID:	L1498884-3

Summary Results

96-hour Pass/Fail:	PASS

Sample Information

Sample Origin:	Municipality of Sanikiluaq
Sample Description:	Sani 2 (Waste Disposal Ground - Stream)
Sampling Date and Time:	06-Aug-14 12:40
Sampling Method:	Grab
Sampled By:	Kenny/Moses
Container(s) Description:	1 x 20L polyethylene pail with liner
Sample Volume:	20L
Date and Time Received:	07-Aug-14 09:35
Transit Irregularities:	None
Storage Temperature (°C):	n/a

Test Information

Test Organism:	Oncorhynchus mykiss
Test Description:	Acute, 96-hour, Static, Pass/Fail
Reference Method(s):	EPS 1/RM/13, 2nd Ed. Dec. 2000, with May 2007 amendments, Environment Canada EPS 1/RM/9, May 1996 with May 2007 amendments, Environment Canada
Performed By:	KNY
Starting Date and Time:	07-Aug-14 15:00
Deviations from Reference Method:	None

Initial Parameters

Observations

Colour:	Light Yellow				
Odour:	Mild				
Turbidity:	Low				
Solids:	Low				
Hardness (mg/L):	2.0	mL Titration Solution/	10	mL of Sample x 1000 =	200
Alkalinity (mg/L):	1.9	mL Titration Solution/	10	mL of Sample x 1000 =	190
Temperature (°C):	15				
Dissolved Oxygen (mg/L):	8.93				
Conductivity (µmhos/cm):	544				
pH (5.5-8.5 pH units):	7.59				
pH Adjustment:	Not Adjusted				
pH Adjustment Procedure:	n/a				

Pre-Aeration

Aeration Rate (5.5-7.5 mL/min/L):	6.40 ± 0.6	
Aeration Time (min):	30	
Sample Test Concentration (v/v):	100%	0%
Dissolved Oxygen (D.O.) Before Pre-Aeration (%):	89.2	93.0
Average D.O. After Pre-Aeration (%):	95.3	95.8

Test Organism Data

Lot Number:	28/05/14 T7
Weekly Mortality Preceeding Test (%):	1.5
Sample Size:	10

Conditions Common to All Concentrations During Test

Source of Holding/Dilution Water:	Dechlorinated UV Treated City of Winnipeg Tap Water
Container Description:	20 L Polyethylene Pail with Liner
Aeration Method:	Compressed air bubbled through silica-glass air diffuser
Aeration Rate (5.5-7.5 mL/min/L):	6.40 ± 0.6
Test Solution Volume (L):	20
Test Solution Depth (cm):	34
Number of Test Organisms per Container:	10
Loading Density (g/L):	0.29

Conditions During Test

Concentration (% v/v)	Temperature (˚C) (15 ± 1˚C)					Dissolved Oxygen (mg/L)					pH (pH units)				
	0h	**24h**	**48h**	**72h**	**96h**	**0h**	**24h**	**48h**	**72h**	**96h**	**0h**	**24h**	**48h**	**72h**	**96h**
0	15	n/a	n/a	n/a	15	9.17	n/a	n/a	n/a	9.68	7.32	n/a	n/a	n/a	7.86
100	15	n/a	n/a	n/a	15	9.23	n/a	n/a	n/a	9.73	7.65	n/a	n/a	n/a	8.10

Conc. (% v/v)	Conductivity (µmhos/cm)	Number of Fish Dead				Number of Fish Stressed			
	0h	**24h**	**48h**	**72h**	**96h**	**24h**	**48h**	**72h**	**96h**
0	285	0	n/a	n/a	0	0	n/a	n/a	0
100	544	0	n/a	n/a	1	0	n/a	n/a	0

Control Fish Information at End of Test

Mean Fork Length (mm):	42
Lower Range Fork Length (mm):	37
Upper Range Fork Length (mm):	47
Mean Wet Weight:	0.59

Mortality and Stressed Behaviour Information

Conc. (% v/v)	Mean Number of Fish at End of Test		Mean Rate of Fish at End of Test (%)	
	Dead	**Stressed**	**Dead**	**Stressed**
0	0	0	0	0
100	1	0	10	0

Reference Toxicant Test Results

Reference Toxicant:	Zinc Sulfate
Date Reference Toxicant Initiated:	24-Jul-14
Recent 96h Reference Toxicant Test LC50 (mg/L Zinc):	0.45
Lower 95% Confidence Limit (mg/L Zinc):	0.31
Upper 95% Confidence Limit (mg/L Zinc):	0.61
Historic Geometric Mean LC50 (mg/L Zinc):	0.65
Lower 95% Confidence Limit (mg/L Zinc):	0.24
Upper 95% Confidence Limit (mg/L Zinc):	1.72
Method of Calculation:	Stephan LC50 Program, Probit
Confirmed by Graph:	Yes

Sublethal Biological Effects

No sublethal biological effects observed.

Observations/Comments

No toxicity observed.

Daphnia Magna Bioassay Test Report - Pass/Fail

Sample ID:	L1498884-4

Summary Results

48-hour Pass/Fail:	PASS

Sample Information

Sample Origin:	Municipality of Sanikiluaq
Sample Description:	Sani 2 (Waste Disposal Ground - Stream)
Sampling Date and Time:	06-Aug-14 12:40
Sampling Method:	Grab
Sampled By:	Kenny/Moses
Container(s) Description:	1 x 2L clear glass jar
Sample Volume:	2L
Date and Time Received:	07-Aug-14 09:35
Transit Irregularities:	None
Storage Temperature (°C):	n/a

Test Information

Test Organism:	Daphnia magna
Test Description:	Acute, 48-hour, Static, Pass/Fail
Reference Method(s):	EPS 1/RM/14, 2nd Ed. Dec. 2000, Environment Canada
	EPS 1/RM/11, July 1990, Environment Canada
Performed By:	KNY
Starting Date and Time:	07-Aug-14 17:30
Deviations from Reference Method:	None

Condition of Effluent at 100% v/v Before Preparing Dilutions

Observations

Colour:	Light Yellow					
Odour:	Mild					
Turbidity:	Low					
Solids:	Low					
Temperature (°C):	20					
Dissolved Oxygen (mg/L):	9.11					
Conductivity (µmhos/cm):	544					
pH:	7.51					
pH Adjustment:	Not Adjusted					
pH Adjustment Procedure:	n/a					
Hardness (mg/L) Before Adjustment:	2	mL Titration Solution/	10	mL of Sample x 1000 =	200	
Hardness (mg/L) After Adjustment:	n/a	mL Titration Solution/	n/a	mL of Sample x 1000 =	n/a	
Alkalinity (mg/L):	1.9	mL Titration Solution/	10	mL of Sample x 1000 =	190	

Pre-Aeration

Aeration Rate (25-50 mL/min/L):	33.5 ± 0.2	
Aeration Time (min):	0	
Sample Test Concentration (v/v):	100%	0%
Dissolved Oxygen (D.O.) Before Pre-Aeration (%):	98.0	90.1
Average D.O. After Pre-Aeration (%):	n/a	n/a

Test Organism Data

Average age of daphnia at first brood (days):	12
Average number of neonates per brood:	23
Weekly Mortality Preceeding Test (%):	7.6
Date Parents Born:	3-Jul-14
Loading Density (organisms/20 mL):	1
Age of test organisms at beginning of test (hrs):	<24

Conditions Common to All Concentrations During Test

Volume Tested:	200 mL (for control and 100%)
Triplicate solutions for control & 100%:	Yes
Neonates per Vessel:	10
Volume per Neonate:	20 mL
Test Solution Depth:	70 mm
Container Description:	Plastic Cups
Source of Holding/Dilution Water:	Dechlorinated UV Treated City of Winnipeg Tap Water

Conditions During Test

Concentration	Temperature (°C)			Dissolved Oxygen (mg/L)		pH		Conductivity (µmhos/cm)	Hardness (mg/L)	Immobility (# of daphnids)		Mortality (# of daphnids)
(% v/v)	0h	24h	48h	0h	48h	0h	48h	0h	0h	24h	48h	48h
0	20	20	20	8.24	8.77	7.62	7.80	335	80	n/a	0	0
0	20	20	20	8.29	8.78	7.62	7.80	336	80	n/a	0	0
0	20	20	20	8.27	8.70	7.63	7.78	335	80	n/a	0	0
100	20	20	20	8.99	8.73	7.57	8.11	580	200	n/a	0	0
100	20	20	20	9.01	8.75	7.58	8.10	587	200	n/a	0	0
100	20	20	20	9.03	8.71	7.59	8.09	587	200	n/a	0	0

Mortality and Immobility Information

Conc.	Mean Number of Daphnids at End of Test		Mean Rate of Daphnids at End of Test (%)	
(% v/v)	Dead	Immobile	Dead	Immobile
0	0	0	0	0
100	0	0	0	0

Reference Toxicant Test Results

Reference Toxicant:	Sodium Chloride
Date Reference Toxicant Initiated:	9-Aug-14
Recent 48h Reference Toxicant Test LC50 (mg/L NaCl):	6187
Lower 95% Confidence Limit (mg/L NaCl):	6052
Upper 95% Confidence Limit (mg/L NaCl):	6326
Historic Geometric Mean LC50 (mg/L NaCl):	5806
Lower Warning Limit (-2 S.D.):	5220
Upper Warning Limit (+2 S.D.):	6459
Method of Calculation:	Stephan LC50 Program, Probit
Confirmed by Graph:	Yes

Observations/Comments

No toxicity observed.

Rainbow Trout Bioassay Test Report - Pass/Fail

Sample ID:	L1498884-5

Summary Results

96-hour Pass/Fail:	PASS

Sample Information

Sample Origin:	Municipality of Sanikiluaq
Sample Description:	Sani 4 (Lagoon - Stream)
Sampling Date and Time:	06-Aug-14 12:10
Sampling Method:	Grab
Sampled By:	Kenny/Moses
Container(s) Description:	1 x 20L polyethylene pail with liner
Sample Volume:	20L
Date and Time Received:	07-Aug-14 09:35
Transit Irregularities:	None
Storage Temperature (°C):	n/a

Test Information

Test Organism:	Oncorhynchus mykiss
Test Description:	Acute, 96-hour, Static, Pass/Fail
Reference Method(s):	EPS 1/RM/13, 2nd Ed. Dec. 2000, with May 2007 amendments, Environment Canada EPS 1/RM/9, May 1996 with May 2007 amendments, Environment Canada
Performed By:	KNY
Starting Date and Time:	07-Aug-14 15:00
Deviations from Reference Method:	None

Initial Parameters

Observations

Colour:	Light Yellow/Brown				
Odour:	Mild				
Turbidity:	Low				
Solids:	Moderate				
Hardness (mg/L):	3.8	mL Titration Solution/	10	mL of Sample x 1000 =	380
Alkalinity (mg/L):	1.6	mL Titration Solution/	10	mL of Sample x 1000 =	160
Temperature (°C):	15				
Dissolved Oxygen (mg/L):	9.70				
Conductivity (µmhos/cm):	2040				
pH (5.5-8.5 pH units):	7.75				
pH Adjustment:	Not Adjusted				
pH Adjustment Procedure:	n/a				

Pre-Aeration

Aeration Rate (5.5-7.5 mL/min/L):	6.40 ± 0.6	
Aeration Time (min):	30	
Sample Test Concentration (v/v):	100%	0%
Dissolved Oxygen (D.O.) Before Pre-Aeration (%):	97.3	93.0
Average D.O. After Pre-Aeration (%):	99.7	96.0

Test Organism Data

Lot Number:	28/05/14 T7
Weekly Mortality Preceeding Test (%):	1.5
Sample Size:	10

Conditions Common to All Concentrations During Test

Source of Holding/Dilution Water:	Dechlorinated UV Treated City of Winnipeg Tap Water
Container Description:	20 L Polyethylene Pail with Liner
Aeration Method:	Compressed air bubbled through silica-glass air diffuser
Aeration Rate (5.5-7.5 mL/min/L):	6.40 ± 0.6
Test Solution Volume (L):	20
Test Solution Depth (cm):	34
Number of Test Organisms per Container:	10
Loading Density (g/L):	0.31

Conditions During Test

Concentration (% v/v)	Temperature (˚C) (15 ± 1˚C)					Dissolved Oxygen (mg/L)					pH (pH units)				
	0h	**24h**	**48h**	**72h**	**96h**	**0h**	**24h**	**48h**	**72h**	**96h**	**0h**	**24h**	**48h**	**72h**	**96h**
0	15	n/a	n/a	n/a	15	9.25	n/a	n/a	n/a	9.28	7.40	n/a	n/a	n/a	7.65
100	15	n/a	n/a	n/a	15	9.65	n/a	n/a	n/a	9.62	7.74	n/a	n/a	n/a	7.96

Conc. (% v/v)	Conductivity (µmhos/cm)	Number of Fish Dead				Number of Fish Stressed			
	0h	**24h**	**48h**	**72h**	**96h**	**24h**	**48h**	**72h**	**96h**
0	300	0	n/a	n/a	0	0	n/a	n/a	0
100	2150	0	n/a	n/a	0	0	n/a	n/a	0

Control Fish Information at End of Test

Mean Fork Length (mm):	41
Lower Range Fork Length (mm):	36
Upper Range Fork Length (mm):	45
Mean Wet Weight:	0.61

Mortality and Stressed Behaviour Information

Conc. (% v/v)	Mean Number of Fish at End of Test		Mean Rate of Fish at End of Test (%)	
	Dead	**Stressed**	**Dead**	**Stressed**
0	0	0	0	0
100	0	0	0	0

Reference Toxicant Test Results

Reference Toxicant:	Zinc Sulfate
Date Reference Toxicant Initiated:	24-Jul-14
Recent 96h Reference Toxicant Test LC50 (mg/L Zinc):	0.45
Lower 95% Confidence Limit (mg/L Zinc):	0.31
Upper 95% Confidence Limit (mg/L Zinc):	0.61
Historic Geometric Mean LC50 (mg/L Zinc):	0.65
Lower 95% Confidence Limit (mg/L Zinc):	0.24
Upper 95% Confidence Limit (mg/L Zinc):	1.72
Method of Calculation:	Stephan LC50 Program, Probit
Confirmed by Graph:	Yes

Sublethal Biological Effects

No sublethal biological effects observed.

Observations/Comments

No toxicity observed.

Daphnia Magna Bioassay Test Report - Pass/Fail

Sample ID:	L1498884-6

Summary Results

48-hour Pass/Fail:	PASS

Sample Information

Sample Origin:	Municipality of Sanikiluaq
Sample Description:	Sani 4 (Lagoon - Stream)
Sampling Date and Time:	06-Aug-14 12:10
Sampling Method:	Grab
Sampled By:	Kenny/Moses
Container(s) Description:	1 x 2L clear glass jar
Sample Volume:	2L
Date and Time Received:	07-Aug-14 09:35
Transit Irregularities:	None
Storage Temperature (°C):	n/a

Test Information

Test Organism:	Daphnia magna
Test Description:	Acute, 48-hour, Static, Pass/Fail
Reference Method(s):	EPS 1/RM/14, 2nd Ed. Dec. 2000, Environment Canada
	EPS 1/RM/11, July 1990, Environment Canada
Performed By:	KNY
Starting Date and Time:	07-Aug-14 17:30
Deviations from Reference Method:	None

Condition of Effluent at 100% v/v Before Preparing Dilutions

Observations

Colour:	Light Yellow/Brown					
Odour:	Mild					
Turbidity:	Low					
Solids:	Moderate					
Temperature (°C):	20					
Dissolved Oxygen (mg/L):	9.24					
Conductivity (µmhos/cm):	2040					
pH:	7.57					
pH Adjustment:	Not Adjusted					
pH Adjustment Procedure:	n/a					
Hardness (mg/L) Before Adjustment:	3.8	mL Titration Solution/	10	mL of Sample x 1000 =	380	
Hardness (mg/L) After Adjustment:	n/a	mL Titration Solution/	n/a	mL of Sample x 1000 =	n/a	
Alkalinity (mg/L):	1.6	mL Titration Solution/	10	mL of Sample x 1000 =	160	

Pre-Aeration

Aeration Rate (25-50 mL/min/L):	33.5 ± 0.2	
Aeration Time (min):	0	
Sample Test Concentration (v/v):	100%	0%
Dissolved Oxygen (D.O.) Before Pre-Aeration (%):	99.2	91.1
Average D.O. After Pre-Aeration (%):	n/a	n/a

Test Organism Data

Average age of daphnia at first brood (days):	12
Average number of neonates per brood:	23
Weekly Mortality Preceeding Test (%):	7.6
Date Parents Born:	3-Jul-14
Loading Density (organisms/20 mL):	1
Age of test organisms at beginning of test (hrs):	<24

Conditions Common to All Concentrations During Test

Volume Tested:	200 mL (for control and 100%)
Triplicate solutions for control & 100%:	Yes
Neonates per Vessel:	10
Volume per Neonate:	20 mL
Test Solution Depth:	70 mm
Container Description:	Plastic Cups
Source of Holding/Dilution Water:	Dechlorinated UV Treated City of Winnipeg Tap Water

Conditions During Test

Concentration	Temperature (°C)			Dissolved Oxygen (mg/L)		pH		Conductivity (µmhos/cm)	Hardness (mg/L)	Immobility (# of daphnids)		Mortality (# of daphnids)
(% v/v)	0h	24h	48h	0h	48h	0h	48h	0h	0h	24h	48h	48h
0	20	20	20	8.37	8.72	7.60	7.74	333	80	n/a	0	0
0	20	20	20	8.37	8.81	7.59	7.76	334	80	n/a	0	0
0	20	20	20	8.37	8.79	7.61	7.75	334	80	n/a	0	0
100	20	20	20	9.09	8.73	7.59	8.00	2280	380	n/a	0	0
100	20	20	20	9.16	8.74	7.60	8.03	2330	380	n/a	0	0
100	20	20	20	9.16	8.78	7.60	8.01	2340	380	n/a	0	0

Mortality and Immobility Information

Conc.	Mean Number of Daphnids at End of Test		Mean Rate of Daphnids at End of Test (%)	
(% v/v)	Dead	Immobile	Dead	Immobile
0	0	0	0	0
100	0	0	0	0

Reference Toxicant Test Results

Reference Toxicant:	Sodium Chloride
Date Reference Toxicant Initiated:	9-Aug-14
Recent 48h Reference Toxicant Test LC50 (mg/L NaCl):	6187
Lower 95% Confidence Limit (mg/L NaCl):	6052
Upper 95% Confidence Limit (mg/L NaCl):	6326
Historic Geometric Mean LC50 (mg/L NaCl):	5806
Lower Warning Limit (-2 S.D.):	5220
Upper Warning Limit (+2 S.D.):	6459
Method of Calculation:	Stephan LC50 Program, Probit
Confirmed by Graph:	Yes

Observations/Comments

No toxicity observed.

ALS Environmental

L1498884-COFC

Analytical Request Form
ee: 1 800 668 9878
:global.com

COC # L1498884

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Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	Municipality of SANIKILUAQ (W1[illegible])	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	ANDRE LARABIE SAO	☑ PDF ☐ Excel ☐ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	Box 157	Email 1: sanisao@qiniq.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Sanikiluaq, NU, X0A 0W0	Email 2: sanilands@qiniq.com	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	867-266-7900 Fax: 867-266-8919	Email 3: broy@gov.nu.ca	
Invoice To	Same as Report ? ☐ Yes ☐ No	Client / Project Information	Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☐ No	Job #: SANIKILUAQ WWTP	Please Indicate below Filtered, Preserved or both (F, P, F/P)
Company:	(W10375)	PO / AFE:	
Contact:		LSD:	
Address:			
Phone:	Fax:	Quote #: Q37083	

Lab Work Order # (lab use only):

ALS Contact:

Sampler: KENNY MOSES

# Samples	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD-WP	pH, Cond	TSS, SO4	FC-MPN (Fecal Coliform)	NH3, P-Total	Mel-T-L-MS-WP	HG-T-CVAF-WP	Phenols-4AAP-WT	OGG-TOT-WT		TROUT-P/F-WP	DAPHNIA-P/F-WP	Number of Containers
	Sani 2 (Waste Disposal Ground - Stream)	06-08-14	12:40 PM	STREAM	X	X	X	X	X	X	X	X	X		X	X	
	Sani 4 (Lagoon - Stream)	" " "	12:10 PM	STREAM	X	X	X	X	X	X	X	X	X		X	X	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Bottles Required - 500 ml BOD, 125 ml Sterile Bacti, 250 ml Nutrient, 1 L Amber WWM OGG, 1 L Routine, 250 ml Metals, 250ml Phenols , 20 L Pail w liner

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
			LD	Aug 7/14	9:35	11.5°C				

GENF 18.01 Front