Town of Niverville
ATTN: RYAN DYCK/ANDREW REMPEL
PO Box 267
Niverville MB R0A 1E0

Date Received: 27-APR-16
Report Date: 09-MAY-16 14:57 (MT)
Version: FINAL

Client Phone: 204-392-3012

Certificate of Analysis

Lab Work Order #: L1760582

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

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1760582-1 RAW							
Sampled By: ANDREW REMPEL on 27-APR-16 @ 07:30							
Matrix: water							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.66		0.10	mg/L		27-APR-16	R3447165
Hardness (as CaCO3)	183		0.30	mg/L		05-MAY-16	
Phosphorus (P)-Total	<0.010		0.010	mg/L		28-APR-16	R3447509
Total Dissolved Solids	1070		20	mg/L		28-APR-16	R3450179
Total Suspended Solids	<5.0		5.0	mg/L		29-APR-16	R3449516
pH	7.88		0.10	pH units		06-MAY-16	R3453811
Total Metals by ICP-MS							
Aluminum (Al)-Total	<0.020		0.020	mg/L	04-MAY-16	04-MAY-16	R3451271
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Arsenic (As)-Total	0.0031		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Barium (Ba)-Total	0.0286		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Boron (B)-Total	0.888		0.030	mg/L	04-MAY-16	04-MAY-16	R3451271
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	04-MAY-16	04-MAY-16	R3451271
Calcium (Ca)-Total	40.7		0.20	mg/L	04-MAY-16	04-MAY-16	R3451271
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Cobalt (Co)-Total	<0.00050		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Copper (Cu)-Total	<0.0020		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Iron (Fe)-Total	0.34		0.10	mg/L	04-MAY-16	04-MAY-16	R3451271
Lead (Pb)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Lithium (Li)-Total	0.0905		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Magnesium (Mg)-Total	19.6		0.050	mg/L	04-MAY-16	04-MAY-16	R3451271
Manganese (Mn)-Total	0.0061		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Molybdenum (Mo)-Total	0.00653		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Phosphorus (P)-Total	<0.50		0.50	mg/L	04-MAY-16	04-MAY-16	R3451271
Potassium (K)-Total	13.8		0.10	mg/L	04-MAY-16	04-MAY-16	R3451271
Rubidium (Rb)-Total	0.00701		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Selenium (Se)-Total	<0.0050		0.0050	mg/L	04-MAY-16	04-MAY-16	R3451271
Silicon (Si)-Total	4.62		0.30	mg/L	04-MAY-16	04-MAY-16	R3451271
Silver (Ag)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Sodium (Na)-Total	319		0.050	mg/L	04-MAY-16	04-MAY-16	R3451271
Strontium (Sr)-Total	0.591		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	04-MAY-16	04-MAY-16	R3451271
Thorium (Th)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Tin (Sn)-Total	0.00062		0.00060	mg/L	04-MAY-16	04-MAY-16	R3451271
Titanium (Ti)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Tungsten (W)-Total	<0.0020		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Uranium (U)-Total	<0.00050		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Vanadium (V)-Total	<0.0020		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Zinc (Zn)-Total	0.026		0.020	mg/L	04-MAY-16	04-MAY-16	R3451271
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Nitrogen Total							
Nitrate in Water by IC							
Nitrate (as N)	<0.040	DLM	0.040	mg/L		28-APR-16	R3448080
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		29-APR-16	
Nitrite in Water by IC							

* 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
L1760582-1 RAW							
Sampled By: ANDREW REMPEL on 27-APR-16 @ 07:30							
Matrix: water							
Nitrite in Water by IC							
Nitrite (as N)	<0.020	DLM	0.020	mg/L		28-APR-16	R3448080
Total Kjeldahl Nitrogen							
Total Kjeldahl Nitrogen	0.69		0.20	mg/L	06-MAY-16	09-MAY-16	R3453683
Total Nitrogen Calculated							
Total Nitrogen	0.69		0.20	mg/L		09-MAY-16	
L1760582-2 TREATED							
Sampled By: ANDREW REMPEL on 27-APR-16 @ 07:30							
Matrix: water							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.010		0.010	mg/L		27-APR-16	R3447165
Hardness (as CaCO3)	23.7		0.30	mg/L		05-MAY-16	
Phosphorus (P)-Total	0.011		0.010	mg/L		28-APR-16	R3447509
Total Dissolved Solids	165		20	mg/L		28-APR-16	R3450179
Total Suspended Solids	<5.0		5.0	mg/L		29-APR-16	R3449516
pH	7.29		0.10	pH units		06-MAY-16	R3453811
Total Metals by ICP-MS							
Aluminum (Al)-Total	<0.020		0.020	mg/L	04-MAY-16	04-MAY-16	R3451271
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Arsenic (As)-Total	0.0011		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Barium (Ba)-Total	0.00482		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Boron (B)-Total	0.594		0.030	mg/L	04-MAY-16	04-MAY-16	R3451271
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	04-MAY-16	04-MAY-16	R3451271
Calcium (Ca)-Total	5.43		0.20	mg/L	04-MAY-16	04-MAY-16	R3451271
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Cobalt (Co)-Total	<0.00050		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Copper (Cu)-Total	0.0165		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Iron (Fe)-Total	<0.10		0.10	mg/L	04-MAY-16	04-MAY-16	R3451271
Lead (Pb)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Lithium (Li)-Total	0.0136		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Magnesium (Mg)-Total	2.47		0.050	mg/L	04-MAY-16	04-MAY-16	R3451271
Manganese (Mn)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Molybdenum (Mo)-Total	0.00078		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Phosphorus (P)-Total	<0.50		0.50	mg/L	04-MAY-16	04-MAY-16	R3451271
Potassium (K)-Total	1.87		0.10	mg/L	04-MAY-16	04-MAY-16	R3451271
Rubidium (Rb)-Total	0.00104		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Selenium (Se)-Total	<0.0050		0.0050	mg/L	04-MAY-16	04-MAY-16	R3451271
Silicon (Si)-Total	0.67		0.30	mg/L	04-MAY-16	04-MAY-16	R3451271
Silver (Ag)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Sodium (Na)-Total	49.7		0.050	mg/L	04-MAY-16	04-MAY-16	R3451271
Strontium (Sr)-Total	0.0791		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271
Tellurium (Te)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Thallium (Tl)-Total	<0.0050		0.0050	mg/L	04-MAY-16	04-MAY-16	R3451271
Thorium (Th)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Tin (Sn)-Total	<0.00060		0.00060	mg/L	04-MAY-16	04-MAY-16	R3451271
Titanium (Ti)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Tungsten (W)-Total	<0.0020		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Uranium (U)-Total	<0.00050		0.00050	mg/L	04-MAY-16	04-MAY-16	R3451271

* 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
L1760582-2 TREATED							
Sampled By: ANDREW REMPEL on 27-APR-16 @ 07:30							
Matrix: water							
Total Metals by ICP-MS							
Vanadium (V)-Total	<0.0020		0.0020	mg/L	04-MAY-16	04-MAY-16	R3451271
Zinc (Zn)-Total	<0.020		0.020	mg/L	04-MAY-16	04-MAY-16	R3451271
Zirconium (Zr)-Total	<0.0010		0.0010	mg/L	04-MAY-16	04-MAY-16	R3451271
Nitrogen Total							
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		28-APR-16	R3448080
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		29-APR-16	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		28-APR-16	R3448080
Total Kjeldahl Nitrogen							
Total Kjeldahl Nitrogen	<0.20		0.20	mg/L	06-MAY-16	09-MAY-16	R3453683
Total Nitrogen Calculated							
Total Nitrogen	<0.20		0.20	mg/L		09-MAY-16	

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
ETL-N-TOT-ANY-WP	Water	Total Nitrogen Calculated	Calculated
MET-T-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-T

This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

N-TOTKJ-WP	Water	Total Kjeldahl Nitrogen	Quickchem method 10-107-06-2-E Lachat

Samples are digested with a sulphuric acid solution, cooled, diluted with water, and analyzed for ammonia. Total Kjeldahl nitrogen is the sum of free-ammonia and organic nitrogen compounds which are converted to ammonium sulphate through this digestion process. Analysis is performed by Flow Injection
Analysis (FIA). The pH of the digested sample is raised to a known, basic pH by neutralization with a concentrated buffer solution. This neutralization converts the ammonium cation to ammonia. The ammonia produced is heated with saliclyate and hypochlorite to produce blue colour which is proportional to the ammonia concentration.

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-N-WP	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-N-WP	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

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.

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.

TDS-WP	Water	Total Dissolved Solids (TDS)	APHA 2540 SOLIDS C,E

A well-mixed sample is filtered through a glass fiber filter paper. The filtrate is then evaportaed to dryness in a pre-weighed vial and dried at 180 – 2C. The increase in vial weight represents the total dissolved solids.

** 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:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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 Gr
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

1329 Niakwa Rd. E. 3T4

L1760582-COFC

5

Chain of Custody / Analytical Request Form
CHEMISTRY INFO: (204) 255 9739
MICRO INFO: (204) 255 9740 OR (204) 255 9737

WORK ORDER NO: _____

FOR LABORATORY USE ONLY 12

LAB NO.: _____

Sample Condition Upon Receipt: ☐ ACCEPTABLE ☐ NON ACCEPTABLE

DATE RECEIVED: April 27

☐ Frozen ☐ Cold ☐ Ambient ☐ Broken ☐ Leakage ☐ Incorrect Sample Container

TIME RECEIVED: @ 9:00

COMMENT: _____

BY: JS

Date Sampled: Apr. 27/16 Time: 7 : 30 A.M. ☑ P.M. ☐

Date Required: _____

Location: Town of Niverville
(Town, Community, City)

Submitter's Name Printed: Andrew Rempel

Sample Submitted By: Andrew Rempel

Community Code Number: _____

Rural Municipality/LGC/UVD: _____

SAMPLE TYPE

DRINKING WATER
- ☑ Untreated Well
- ☐ Treated Well
- ☑ Treated Municipal
- ☐ Non-Treated Municipal
- ☐ Water-Surface-Raw
- ☐ Water-Surface-Treated

PURPOSE OF TEST
☐ Private ☐ Real Estate ☐ Water Main

PLEASE PRINT & PRESS FIRMLY

NON-DRINKING WATER
- ☐ Sewage/Waste Water
- ☐ Lake/River
- ☐ Swimming Pool
- ☐ Whirl Pool
- ☐ Other

NOTES & CONDITIONS
1. Quote number must be provided to insure proper pricing.
2. Failure to properly complete all portions of this form may delay analysis.
3. ALS's liability limited to cost of analysis.

SERVICE REQUESTED
☑ **REGULAR** ☐ **PRIORITY** (50% SURCHARGE) ☐ **EMERGENCY** (100% SURCHARGE)

LAB NUMBER	SAMPLE IDENTIFICATION
	Raw - Metals - 7:36 am
	Raw - Nutrients - 7:36 am
	Raw - Routine - 7:34 am
	Treated - Metals - 7:29 am
	Treated - Nutrients - 7:30 am
	Treated - Routine - 7:28 am

ALS CUSTOMER #: _____ *QUOTE #:* _____

REPORT TO BE SENT TO

NAME: Andrew Rempel
COMPANY: Town of Niverville
ADDRESS: 86 Main St or Box 267
CITY/TOWN: Niverville / PROV.: MB
POSTAL CODE: R0A 1E0
PHONE: 204-371-0363
BY: *MAIL* ☐ *FAX* ☐ _____ (FAX NUMBER)
PICKUP ☐ *E-MAIL* ☑ Utilities@Whereyoubelong.ca (EMAIL ADDRESS)

CC
NAME: Ryan Dyck
ADDRESS: _____
CITY/TOWN: _____ / PROV.: _____
POSTAL CODE: _____
PHONE: _____
BY: *MAIL* ☐ *FAX* ☐ _____ (FAX NUMBER)
PICKUP ☐ *E-MAIL* ☑ ryan@Whereyoubelong.ca (EMAIL ADDRESS)

Analyses required Metals / Nutrients / PH/TSS/TDS /Hardness /

SAMPLING INSTRUCTIONS ON REVERSE SIDE

BILLING ADDRESS **SAME AS REPORT TO** ☐

NAME: _____
COMPANY: _____
ADDRESS: _____
CITY/TOWN: _____ / PROV.: _____
POSTAL CODE: _____

PAYMENT PARTICULARS
- ☐ INVOICE NEEDED / CLIENT'S P.O. NO. _____
- ☐ INTERAC
- ☐ CASH — Subtotal $ _____
- ☐ CHEQUE — G.S.T. $ _____
- ☐ VISA / MASTERCARD — Total $ _____

* OUR POLICY IS NOT TO ACCEPT SAMPLES FROM THE PRIVATE CITIZEN WITHOUT PREPAYMENT

ENTERED IN LIMS BY: _____

Manitoba Technology Centre Ltd.
Part of the **ALS Laboratory Group**
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