

NWB Annual Report

Year being reported:

2013

License No: 3BC-EUR1116

Issued Date: June 7, 2011

Expiry Date: June 7, 2016

Project Name: Eureka Weather Station

Licensee: Environment Canada

Mailing Address: 355 River Road,
Ottawa, ON, K1A 0H3
for Eureka Weather Station, Eureka, NU, X0A 0G0

Name of Company filing Annual Report (if different from Name of Licensee please clarify relationship between the two entities, if applicable):

Environment Canada

General Background Information on the Project (*optional):

Licence Requirements: the licensee must provide the following information in accordance with

Part B

Item 1

A summary report of water use and waste disposal activities, including, but not limited to: methods of obtaining water; sewage and greywater management; drill waste management; solid and hazardous waste management.

Water Source(s): Station Creek

Water Quantity:

10,000

1,582

0

0

Quantity Allowable Domestic (cu.m)

Actual Quantity Used Domestic (cu.m)

Quantity Allowable Drilling (cu.m)

Total Quantity Used Drilling (cu.m)

Waste Management and/or Disposal

☒ Solid Waste Disposal

☒ Sewage

☐ Drill Waste

☒ Greywater

☐ Hazardous

☐ Other:

Additional Details:

Appendix A: Quantity of Raw Water
Appendix B: Quality of Raw Water
Appendix C: Quality of Tap (non-drinking) Water
Appendix D: Quantity of Drinking Water Consumed
Appendix E: Quality of Drinking Water Consumed
Appendix F: Quantity of Waste Water Discharged
Appendix G: Quality of Waste Water Discharged
Appendix H: GPS Coordinates
Appendix K: Quality of Surface Water at monitoring stations EUR3 & EUR4

A list of unauthorized discharges and a summary of follow-up actions taken.

Spill No.: (as reported to the Spill Hot-line)

Date of Spill:

Date of Notification to an Inspector:

Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

There were no unauthorized discharges during 2013.

Revisions to the Spill Contingency Plan

N/A - not applicable



Additional Details:

Revisions to the Abandonment and Restoration Plan

N/A - not applicable



Additional Details:

Progressive Reclamation Work Undertaken

Additional Details (i.e., work completed and future works proposed)

Work completed in 2013/14

- a. Electrical emergency distribution system installed for the Operations Complex
- b. Storage building replacement project design was re-tendered.
- c. Geotechnical drilling and analysis for Water Lagoon proposed location and identification of aggregate source quantity and quality of proposed borrow sources has been completed.
- d. Sewage treatment plant design and New Water Lagoon design are being merged into 1 design and is to be initiated in 2014/15
- e. Runway Surface Recapitalization project design at 99% completion.
- f. Building demolition audit completed.
- g. Barrel washer crusher system contract awarded. System to be delivered on sealift 2014.
- h. Fuel tank farm supply piping retrofit project design completed. Construction to take place summer 2014.

Work planned for 2014/15

- a. Runway design to be completed early to early 2014 and move into construction phase. Design to be forwarded to NWB for review once 100% completed.
- b. Building decommissioning project has been temporarily put on hold until the completion of the large Eureka Infrastructure Projects.
- c. Barrel washer crusher to be shipped on sealift 2014 for installation in September 2014.
- d. Fuel tank farm retrofit project to proceed into construction for summer of 2014 and completed by mid August 2014.
- e. Weekly surveillance of the East Landfill monitoring station by on site EC personnel will take place during spring/summer of 2014. The first series of samples were taken in 2013 but erroneous scope of parameter analysis was requested of the laboratory. Proper scope of parameter analysis has been corrected for future analysis.
- f. The Eureka Remedial Action Plan (RAP) is currently under development by our Contaminated Sites Division.

Results of the Monitoring Program including:

Details attached



Additional Details:

See Appendix H for GPS Co-ordinates of each location where sources of water are utilized

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where wastes associated with the licence are deposited;

Details attached



Additional Details:

See Appendix H for GPS Co-ordinates of each location where wastes associated with the licence are deposited.

Results of any additional sampling and/or analysis that was requested by an Inspector

Additional sampling requested by an Inspector or the Board (See below)



Additional Details: (date of request, analysis of results, data attached, etc)

See Appendix K for the results of the additional surface water runoff sample analysis required at the landfill area monitoring station EUR4 and the landfarm monitoring station EUR2

Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.

No additional sampling requested by an Inspector or the Board



Additional Details: (Attached or provided below)

Any responses or follow-up actions on inspection/compliance reports

No compliance report issued by INAC



Additional Details: (Dates of Report, Follow-up by the Licensee)

No inspection report issued by AANDC for 2013 as of March 2014. It was noted on an October 29th correspondence that the inspector will be out of office from October 29th to May 11th 2014.

Any additional comments or information for the Board to consider

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Date Submitted:

March 14, 2014

Submitted/Prepared by:

Carl Carroll

Contact Information:

Tel: 613-990-8376

Fax: 613-998-1062

email: Carl.Carroll@ec.gc.ca

Appendix A
Quantity of Raw Water

**QUANTITIES OF
FRESH WATER OBTAINED
Eureka 2013**

Fresh Water: Fresh Water Lagoon

2 pump capacities: Tsurmi Pumps Model LB2-400 with a 30' head at
~ 19 gal/min:

Pumping began on June 26th and ended July 20th
= 25 days x 24 hrs x 60 min/hr x 19 gal/min = 684,000 gallons

Pumping resumed August 1st and ended August 3rd
= 3 days x 24hrs x 60 min/hr x 19gal/min = ~82,000 gallons

Total water pumped = ~766,000 gallons or ~3,000 m³

Actual consumption of water from January to December 2013 indicated by
the water meter readings, as per the Eureka December Month end report,
is 1,581.8 m³ of total water was used.

Intake hose screen has ¼" diameter holes.

1st Pumping took place after initial rush of stream had taken place and the
amount of silt/mud had diminished.

2nd pumping took place once second melt runoff occurred, in order to top
up the lagoon before winter freeze up.

Appendix B

Quality of Raw Water

EUREKA RAW WATER ANALYSIS 2007-2012

RAW WATER

Lagoon

Parameter	2007	2008	2009	2010	2011	2012	2013
TDS			256	482	2150	1130	3170
Organic Carbon	61.2	40.8	0.9	<0.5	3.2	4.9	4.0
Hardness	1300	1330	132	292	1240	563	1600
Coliforms, Total		<1.0		<1.0	4.1	<1.0	47.3
Escherichia coli		<1.0		<1.0	<1.0	<1.0	<1.0
Aluminum	<0.030	0.0092	0.964	0.0044	0.036	0.039	0.049
Antimony			0.0002	<0.0001	<0.0001	0.0001	0.0002
Arsenic			<0.0002	<0.0002	0.0003	0.0142	0.0004
Barium	0.0781	0.0657	0.0064	0.0190	0.0687	0.0247	0.0642
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	0.233	0.103					
Cadmium	0.0003	<0.00005	<0.0001	<0.00005	<0.00005	<0.0005	<0.00005
Chromium	0.0003	0.0002	0.0002	<0.0001	0.0001	0.0007	0.0001
Cobalt	0.0006	0.0004	<0.0001	<0.0001	0.0007	0.0004	<0.0001
Copper	0.0016	0.022	0.0066	0.0282	0.0012	0.0066	0.0164
Iron	0.0536	<0.050	0.151	<0.050	0.009	0.09	0.032
Lead	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002
Lithium			0.0041	0.0094	0.0368	0.0184	0.0479
Manganese	0.0182	0.0347	0.0051	0.0071	0.0282	0.023	0.0031
Molybdenum	0.0006	0.0006	0.0001	0.0001	0.0004	0.0005	0.001
Nickel	0.0035	0.003	0.0006	0.0007	0.0061	0.0035	0.0027
Selenium			<0.0005	0.0006	0.0022	<0.0005	0.0031
Silver	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0007
Strontium	1.34	1.18	0.112	0.288	1.11	0.55	1.38
Thallium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium	0.0014	0.001	0.0013	0.0001	0.0003	0.0012	0.0032
Uranium			0.0002	0.0003	0.0001	0.0009	0.0025
Vanadium	0.0003	<0.0001	0.0003	<0.0001	<0.0001	0.0107	0.0002
Zinc	0.01	0.0039	<0.0005	0.0019	0.0021	<0.005	0.0092
Bromodicholormethane			<0.005	<0.005	n/a	<0.001	N/A
Bromoform			<0.005	<0.005	n/a	<0.001	N/A
Dibromochloromethane			<0.005	<0.005	n/a	<0.001	N/A
Trihalomethanes	0.005		<0.005	<0.005	n/a	<0.001	N/A

*Laboratory equipment / supply failure & unable to repeat measurement

Appendix B

Quality of Raw Water



Taiga Environmental Laboratory

4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3

Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:

130149

- FINAL REPORT -

Prepared For: Environment Canada
Eureka Weather Station

Address: 123 Main Street
Suite 150
Winnipeg, MB
R3C 4W2

Attn: John MacIver

Facsimile:

Final report has been reviewed and approved by:

Angelique Ruzindana
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

Report Date: Wednesday, April 03, 2013

Print Date: Wednesday, April 03, 2013

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Appendix B

Quality of Raw Water



Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT, X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUFW0313

Taiga Sample ID: 001

Client Project

Sample Type: Water Lagoon
Received Date: 07-Mar-13
Sampling Date: 07-Mar-13
Sampling Time: 7:00
Location: Eureka, NU
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Solids, Total Dissolved	3170	10	mg/L	11-Mar-13	SM2540:C	
Turbidity	0.80	0.05	NTU	08-Mar-13	SM2130:B	
<u>Major Ions</u>						
Calcium	356	0.1	mg/L	08-Mar-13	SM4110:B	
Hardness	1600	0.7	mg/L	08-Mar-13	SM2340:B	
Magnesium	171	0.1	mg/L	08-Mar-13	SM4110:B	
Sodium	413	0.1	mg/L	08-Mar-13	SM4110:B	
<u>Microbiology</u>						
Coliforms, Total	47.3	1.0	MPN/100mL	07-Mar-13	SM9223:B	6
Escherichia coli	< 1.0	1.0	MPN/100mL	07-Mar-13	SM9223:B	6
<u>Organics</u>						
Bromodichloromethane		0.005	mg/L	19-Mar-13	EPA8260B	29
Bromoform		0.005	mg/L	19-Mar-13	EPA8260B	29
Chloroform		0.005	mg/L	19-Mar-13	EPA8260B	29

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Appendix B

Quality of Raw Water



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 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUFW0313

Taiga Sample ID: 001

Dibromochloromethane	0.005	mg/L	19-Mar-13	EPA8260B	29
Trihalomethanes, Total	0.005	mg/L	19-Mar-13	EPA8260B	29

Trace Metals, Total

Aluminum	49.2	0.6	µg/L	08-Mar-13	EPA200.8
Antimony	0.2	0.1	µg/L	08-Mar-13	EPA200.8
Arsenic	0.4	0.2	µg/L	08-Mar-13	EPA200.8
Barium	64.2	0.1	µg/L	08-Mar-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Cadmium	< 0.05	0.05	µg/L	08-Mar-13	EPA200.8
Cesium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Chromium	0.1	0.1	µg/L	08-Mar-13	EPA200.8
Cobalt	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Copper	16.4	0.2	µg/L	08-Mar-13	EPA200.8
Iron	32	5	µg/L	08-Mar-13	EPA200.8
Lead	0.2	0.1	µg/L	08-Mar-13	EPA200.8
Lithium	47.9	0.2	µg/L	08-Mar-13	EPA200.8
Manganese	3.1	0.1	µg/L	08-Mar-13	EPA200.8
Molybdenum	1.0	0.1	µg/L	08-Mar-13	EPA200.8
Nickel	2.7	0.1	µg/L	08-Mar-13	EPA200.8
Rubidium	4.3	0.1	µg/L	08-Mar-13	EPA200.8
Selenium	3.1	0.3	µg/L	08-Mar-13	EPA200.8
Silver	0.7	0.1	µg/L	08-Mar-13	EPA200.8
Strontium	1380	0.1	µg/L	08-Mar-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8

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Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUPW0313

Taiga Sample ID: 001

Titanium	3.2	0.1	µg/L	08-Mar-13	EPA200.8
Uranium	2.5	0.1	µg/L	08-Mar-13	EPA200.8
Vanadium	0.2	0.1	µg/L	08-Mar-13	EPA200.8
Zinc	9.2	0.4	µg/L	08-Mar-13	EPA200.8

Subcontracted Nutrients

Organic Carbon, Total	4.0	0.5	mg/L	08-Mar-13	SM5310.B
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Quality of Raw Water



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUTAPKIT0313

Taiga Sample ID: 005

- DATA QUALIFIERS -

Data Qualifier Descriptions:

- 6 *Sample received above the recommended temperature*
29 *Equipment/supply failure, unable to repeat measurement.*

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

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Appendix C Quality of Tap Water

EUREKA WATER ANALYSIS 2008-2012: TAP WATER

TAP WATER

GUIDELINES (mg/l)

Parameter	2009	2010	2011	2012	2013	CANADIAN ¹		US EPA ²	
						MAC ⁴	OG ⁵ /AO ³	MCL ⁶	MCLG ⁷
TDS	524	1510	1920	1290	2270				
Organic Carbon	1.5	1.8	2.7	3.3	3.2				
Hardness	112	26.7	664	15.3	55.3				
Coliforms, Total	<1.0	<1.0	<1.0	<1.0	<1.0	0/100 ml		100/100ml	0
Escherichia coli	<1.0	<1.0	<1.0	<1.0	<1.0	0/100 ml			0
Aluminum	0.046	0.007	0.0291	0.024	0.0035		0.2	0.05-0.2	
Antimony	0.0002	<0.0001	<0.0001	0.0001	0.0001				
Arsenic	<0.0002	0.0003	0.0003	0.0007	0.0004				
Barium	0.0054	0.0027	0.0213	0.0004	0.0015	1		2	2
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			0.004	
Boron						5			
Cadmium	<0.0001	<0.00005	<0.00005	<0.0005	<0.00005	0.005		0.005	0.005
Chromium	0.0002	0.0002	0.0001	<0.0001	<0.0001	0.05		0.1	0.1
Cobalt	<0.0001	<0.0001	0.0005	<0.0001	<0.0001				
Copper	0.0652	0.371	0.101	0.0447	0.0709		<1.0		1.3
Iron	0.101	0.012	0.008	0.023	0.009		<0.3	0.3	
Lead	0.0001	0.0003	<0.0001	<0.0001	<0.0001	0.01		0.015	0
Lithium	0.0037	0.0317	0.0421	0.0013	0.0026				
Manganese	0.0036	0.0037	0.0188	0.0018	0.0012		<0.05	0.05	
Molybdenum	0.0002	0.0003	0.0003	0.0006	0.0007				
Nickel	0.0007	0.0024	0.0037	0.0009	0.0003				
Selenium	0.0005	0.0012	0.0018	0.0007	0.0026				
Silver	<0.0001	<0.0001	<0.0001	0.0005	<0.0001			0.1	
Strontium	0.0898	0.0393	0.363	0.0041	0.003				
Thallium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Titanium	<0.0001	0.0004	0.0004	0.0032	0.0001				
Uranium	0.0003	0.0009	0.0015	0.001	0.0018				
Vanadium	0.0002	<0.0001	<0.0001	0.0005	<0.0001				
Zinc	0.047	0.0656	0.0549	0.009	0.0222		<5.0	5	
Bromodichloromethane	0.01	0.006	n/a	<0.005	0.005	0.016			
Bromoform	0.052	0.068	n/a	0.036	0.183				
Dibromochloromethane	0.027	0.026	n/a	0.02	0.038				
Trihalomethanes	0.092	0.101	n/a	0.062	0.227	0.1		0.08	

*Subcontracted organics are in concentrations less than detectable levels except for those listed immediately above

¹Guidelines for Canadian Drinking Water Quality Summary Table, May 2008

http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/chemical-chimiques-eng.php#tbl6

²US Environmental Protection Agency Drinking Water Standards

<http://www.epa.gov/safewater/contaminants/index.html>

⁴Maximum Acceptable Concentration

⁵Aesthetic Objectives

³Operational Guidance Values

⁶Maximum Contaminant Level

⁷Maximum Contaminant Level Goal

Appendix C Quality of Tap Water



Taiga Environmental Laboratory

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Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:

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- FINAL REPORT -

Prepared For: Environment Canada
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Address: 123 Main Street
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R3C 4W2

Atttn: John MacIver

Facsimile:

Final report has been reviewed and approved by:

Angelique Ruzindana
Quality Assurance Officer

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Appendix C

Quality of Tap Water



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 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUTAPKIT0313

Taiga Sample ID: 005

Client Project:
Sample Type: Tap Kitchen
Received Date: 07-Mar-13
Sampling Date: 07-Mar-13
Sampling Time: 7:00
Location: Eureka, NU
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Solids, Total Dissolved	2270	10	mg/L	11-Mar-13	SM2540:C	
Turbidity	0.21	0.05	NTU	08-Mar-13	SM2130:B	
<u>Major Ions</u>						
Calcium	11.9	0.1	mg/L	08-Mar-13	SM4110:B	
Hardness	55.3	0.7	mg/L	08-Mar-13	SM2340:B	
Magnesium	6.2	0.1	mg/L	08-Mar-13	SM4110:B	
Sodium	787	0.1	mg/L	08-Mar-13	SM4110:B	
<u>Microbiology</u>						
Coliforms, Total	< 1.0	1.0	MPN/100mL	07-Mar-13	SM9223:B	
Escherichia coli	< 1.0	1.0	MPN/100mL	07-Mar-13	SM9223:B	
<u>Organics</u>						
Bromodichloromethane		0.005	mg/L	19-Mar-13	EPA8260B	29
Bromoform		0.005	mg/L	19-Mar-13	EPA8260B	29
Chloroform		0.005	mg/L	19-Mar-13	EPA8260B	29

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Appendix C

Quality of Tap Water



Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUTAPKIT0313

Taiga Sample ID: 005

Dibromochloromethane	0.005	mg/L	19-Mar-13	EPA8260B	29
Trihalomethanes, Total	0.005	mg/L	19-Mar-13	EPA8260B	29

Trace Metals, Total

Aluminum	3.5	0.6	µg/L	08-Mar-13	EPA200.8
Antimony	0.1	0.1	µg/L	08-Mar-13	EPA200.8
Arsenic	0.4	0.2	µg/L	08-Mar-13	EPA200.8
Barium	1.5	0.1	µg/L	08-Mar-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Cadmium	< 0.05	0.05	µg/L	08-Mar-13	EPA200.8
Cesium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Chromium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Cobalt	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Copper	70.9	0.2	µg/L	08-Mar-13	EPA200.8
Iron	9	5	µg/L	08-Mar-13	EPA200.8
Lead	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Lithium	2.6	0.2	µg/L	08-Mar-13	EPA200.8
Manganese	1.2	0.1	µg/L	08-Mar-13	EPA200.8
Molybdenum	0.7	0.1	µg/L	08-Mar-13	EPA200.8
Nickel	0.3	0.1	µg/L	08-Mar-13	EPA200.8
Rubidium	1.4	0.1	µg/L	08-Mar-13	EPA200.8
Selenium	2.6	0.3	µg/L	08-Mar-13	EPA200.8
Silver	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Strontium	30.0	0.1	µg/L	08-Mar-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8

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Appendix C

Quality of Tap Water



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUTAPKIT0313

Taiga Sample ID: 005

Titanium	1.0	0.1	µg/L	08-Mar-13	EPA200.8
Uranium	1.8	0.1	µg/L	08-Mar-13	EPA200.8
Vanadium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Zinc	22.2	0.4	µg/L	08-Mar-13	EPA200.8

Subcontracted Nutrients

Organic Carbon, Total	3.2	0.5	mg/L	08-Mar-13	SM5310.B
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Report Date: Wednesday, April 03, 2013

Print Date: Wednesday, April 03, 2013

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Appendix C Quality of Tap Water



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUTAPKIT0313

Taiga Sample ID: 005

- DATA QUALIFIERS -

Data Qualifier Descriptions:

- 6 *Sample received above the recommended temperature*
- 29 *Equipment/supply failure, unable to repeat measurement.*

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

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Appendix C

Quality of Tap Water



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT, X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130206

- FINAL REPORT -

Prepared For: Environment Canada
Eureka Weather Station

Address: 123 Main Street
Suite 150
Winnipeg, MB
R3C 4W2

Attn: Harvey Pukin

Facsimile:

Final report has been reviewed and approved by:

Angelique Ruzindana
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

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Appendix C

Quality of Tap Water



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130206

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUTAP0413

Taiga Sample ID: 003

Client Project:
Sample Type: Tap Water
Received Date: 04-Apr-13
Sampling Date: 04-Apr-13
Sampling Time: 7:00
Location: Eureka, NU
Report Status: Final

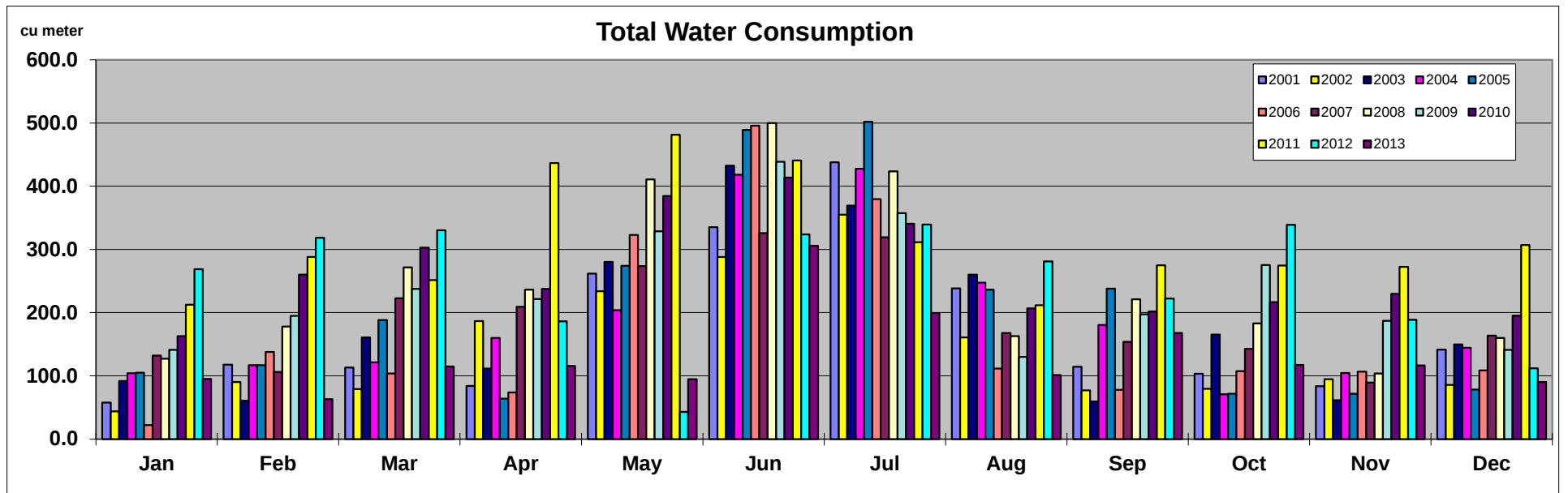
Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
Subcontracted Organics						
Bromodichloromethane	0.005	0.001	mg/L	10-Apr-13	EPA8260B	
Bromoform	0.183	0.001	mg/L	10-Apr-13	EPA8260B	
Chloroform	0.001	0.001	mg/L	10-Apr-13	EPA8260B	
Dibromochloromethane	0.038	0.001	mg/L	10-Apr-13	EPA8260B	
Trihalomethanes, Total	0.227	0.001	mg/L	10-Apr-13	EPA8260B	

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APPENDIX D **QUANTITY OF DRINKING WATER**

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		
57.8	43.8	91.7	104.0	104.9	22.0	131.9	126.9	140.9	162.7	212.5	268.6	95.0		Jan
117.5	90.0	60.6	116.7	117.0	137.9	106.3	178.0	194.9	260.0	288.2	318.2	63.1		Feb
113.0	79.2	160.6	121.2	188.2	103.5	222.6	271.4	237.7	302.9	251.4	330.1	114.9		Mar
84.1	186.8	111.7	160.1	63.7	73.6	209.2	236.3	221.5	237.5	436.6	186.3	115.6		Apr
261.8	233.8	280.3	203.7	273.9	322.8	273.8	410.7	328.8	384.5	481.3	43.1	94.6		May
335.3	287.9	432.5	418.2	489.0	495.7	325.6	499.7	438.7	413.7	440.6	323.9	305.7		Jun
438.0	354.8	369.1	427.6	501.8	379.6	319.3	423.3	357.6	340.4	311.4	339.4	199.5		Jul
238.5	160.6	260.3	247.4	236.3	111.3	167.7	163.0	130.0	206.9	211.6	281.2	101.3		Aug
114.5	77.1	59.4	180.3	237.8	77.8	153.9	221.1	197.2	202.0	274.9	222.4	167.9		Sep
103.1	79.6	165.3	70.8	71.5	107.4	142.6	183.1	275.1	216.5	274.4	339.1	117.4		Oct
83.5	94.6	61.5	104.6	71.5	106.4	89.2	103.9	187.0	229.6	272.4	188.8	116.5		Nov
141.5	85.5	149.5	144.2	78.1	108.6	163.6	159.9	141.0	195.3	307.0	111.9	90.3		Dec
2088.6	1773.7	2202.5	2298.8	2433.7	2046.6	2305.7	2977.3	2850.4	3152.0	3762.3	2953.0	1581.8		Total (cu M)
174.1	147.8	183.5	191.6	202.8	170.6	192.1	248.1	237.5	262.7	313.5	246.1	131.8		Monthly Avg



Appendix E

Quality of Drinking Water Consumed

EUREKA WATER ANALYSIS 2007-2012: REVERSE OSMOSIS REVERSE OSMOSIS DRINKING WATER

GUIDELINES (mg/l)

Parameter	2008	2009	2010	2011	2012	2013	CANADIAN ¹		US EPA ¹¹	
							MAC ⁴	OG ⁶ /AO ³	MCL ⁷	MCLG ³
TSS		208	<10	40	<10	18				
Organic Carbon		0.5	<0.5	<0.5	<0.5	<0.5				
Hardness		11.1	2.1	3.2	<0.7	0.0027				
Coliforms, Total	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0/100 ml		100/100ml	0
Escherichia coli	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0/100 ml			0
Aluminum	0.0019	0.017	0.0012	<0.6	<0.0005	<0.0006		0.2	0.05-0.2	
Antimony		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Arsenic		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002				
Barium	0.0027	0.0022	0.0003	<0.0001	<0.0001	<0.0001	1		2	2
Beryllium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			0.004	
Boron	0.0092						5			
Cadmium	<0.00005	<0.00005	0.00009	<0.00005	<0.0005	<0.00005	0.005		0.005	0.005
Chromium	0.001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.05		0.1	0.1
Cobalt	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Copper	0.0297	0.0133	0.0096	0.0026	0.0072	0.0335		<1.0		1.3
Iron	<0.050	0.01	<0.050	<0.005	<0.005	<0.005		<0.3	0.3	
Lead	0.0057	0.0001	0.0007	<0.0001	0.0003	0.0003	0.01		0.015	0
Lithium		0.0009	0.0006	0.0014	<0.0002	0.0002				
Manganese	0.0001	0.0005	0.0002	<0.0001	<0.0001	<0.0001		<0.05	0.05	
Molybdenum	0.0003	<0.0001	0.0002	<0.0001	0.0001	<0.0001				
Nickel	0.0013	0.0016	0.0005	0.0002	0.0002	0.0002				
Selenium		0.0003	<0.0003	<0.0003	<0.0005	<0.0003				
Silver	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			0.1	
Strontium	0.0007	0.0072	0.0022	0.0015	0.0001	0.0002				
Thallium	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Titanium	<0.0001	0.0003	0.0001	<0.0001	<0.0001	<0.0001				
Uranium		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
Vanadium	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001				
Zinc	0.819	0.0588	0.07	0.0175	0.111	0.123		<5.0	5	
*Bromodichloromethane		<0.005	<0.005	n/a	<0.005	0.002	0.016			
Bromoform		<0.005	0.01	n/a	<0.005	0.012				
Dibromochloromethane		<0.005	0.008	n/a	<0.005	0.006				
Trihalomethanes		<0.005	0.024	n/a	0.012	0.02	0.1		0.08	

*Subcontracted organics are in concentrations less than detectable levels except for those listed immediately above

¹Guidelines for Canadian Drinking Water Quality Summary Table, May 2008

http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/chemical-chimiques-eng.php#tbl6

¹¹US Environmental Protection Agency Drinking Water Standards

<http://www.epa.gov/safewater/contaminants/index.html>

⁴Maximum Acceptable Concentration

⁶Aesthetic Objectives

³Operational Guidance Values

⁷Maximum Contaminant Level

³Maximum Contaminant Level Goal

Appendix E

Quality of Drinking Water Consumed



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- FINAL REPORT -

Prepared For: Environment Canada
Eureka Weather Station

Address: 123 Main Street
Suite 150
Winnipeg, MB
R3C 4W2

Attn: John MacIver

Facsimile:

Final report has been reviewed and approved by:

Angelique Ruzindana
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

Report Date: Wednesday, April 03, 2013
Print Date: Wednesday, April 03, 2013

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Appendix E

Quality of Drinking Water Consumed



Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUROW0313

Taiga Sample ID: 004

Client Project:
Sample Type: Osmosis Water
Received Date: 07-Mar-13
Sampling Date: 07-Mar-13
Sampling Time: 7:00
Location: Eureka, NU
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Solids, Total Dissolved	18	10	mg/L	11-Mar-13	SM2540:C	
Turbidity	0.07	0.05	NTU	08-Mar-13	SM2130:B	
<u>Major Ions</u>						
Calcium	0.7	0.1	mg/L	08-Mar-13	SM4110:B	
Hardness	2.7	0.7	mg/L	08-Mar-13	SM2340:B	
Magnesium	0.2	0.1	mg/L	08-Mar-13	SM4110:B	
Sodium	9.1	0.1	mg/L	08-Mar-13	SM4110:B	
<u>Microbiology</u>						
Coliforms, Total	< 1.0	1.0	MPN/100mL	07-Mar-13	SM9223:B	
Escherichia coli	< 1.0	1.0	MPN/100mL	07-Mar-13	SM9223:B	
<u>Organics</u>						
Bromodichloromethane		0.005	mg/L	19-Mar-13	EPA8260B	29
Bromoform		0.005	mg/L	19-Mar-13	EPA8260B	29
Chloroform		0.005	mg/L	19-Mar-13	EPA8260B	29

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Appendix E

Quality of Drinking Water Consumed



Taiga Environmental Laboratory
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 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUROW0313

Taiga Sample ID: 004

Dibromochloromethane	0.005	mg/L	19-Mar-13	EPA8260B	29
Trihalomethanes, Total	0.005	mg/L	19-Mar-13	EPA8260B	29

Trace Metals, Total

Aluminum	< 0.6	0.6	µg/L	08-Mar-13	EPA200.8
Antimony	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Arsenic	< 0.2	0.2	µg/L	08-Mar-13	EPA200.8
Barium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Cadmium	< 0.05	0.05	µg/L	08-Mar-13	EPA200.8
Cesium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Chromium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Cobalt	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Copper	33.5	0.2	µg/L	08-Mar-13	EPA200.8
Iron	< 5	5	µg/L	08-Mar-13	EPA200.8
Lead	0.3	0.1	µg/L	08-Mar-13	EPA200.8
Lithium	0.2	0.2	µg/L	08-Mar-13	EPA200.8
Manganese	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Molybdenum	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Nickel	0.2	0.1	µg/L	08-Mar-13	EPA200.8
Rubidium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Selenium	< 0.3	0.3	µg/L	08-Mar-13	EPA200.8
Silver	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Strontium	0.2	0.1	µg/L	08-Mar-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8

Report Date: Wednesday, April 03, 2013
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Appendix E

Quality of Drinking Water Consumed



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130149

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUROW0313

Taiga Sample ID: 004

Titanium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Uranium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Vanadium	< 0.1	0.1	µg/L	08-Mar-13	EPA200.8
Zinc	123	0.4	µg/L	08-Mar-13	EPA200.8

Subcontracted Nutrients

Organic Carbon, Total	< 0.5	0.5	mg/L	08-Mar-13	SM5310:B
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Appendix E
Quality of Drinking Water Consumed



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130206

- FINAL REPORT -

Prepared For: Environment Canada
Eureka Weather Station

Address: 123 Main Street
Suite 150
Winnipeg, MB
R3C 4W2

Attn: Harvey Pukin

Facsimile:

Final report has been reviewed and approved by:

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Quality Assurance Officer

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Report Date: Tuesday, April 16, 2013
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Appendix E
Quality of Drinking Water Consumed



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130206

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EURO0413

Taiga Sample ID: 004

Client Project:

Sample Type: Reverse Osmosis

Received Date: 04-Apr-13

Sampling Date: 04-Apr-13

Sampling Time: 7:00

Location: Eureka, NU

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Subcontracted Organics</u>						
Bromodichloromethane	0.002	0.001	mg/L	10-Apr-13	EPA8260B	
Bromoform	0.012	0.001	mg/L	10-Apr-13	EPA8260B	
Chloroform	< 0.001	0.001	mg/L	10-Apr-13	EPA8260B	
Dibromochloromethane	0.006	0.001	mg/L	10-Apr-13	EPA8260B	
Trihalomethanes, Total	0.020	0.001	mg/L	10-Apr-13	EPA8260B	

ReportDate: Tuesday, April 16, 2013

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Appendix F
Quantity of Waste Water Discharged

**QUANTITIES OF
WASTE WATER DISCHARGED**

Eureka 2013

Waste Water: Sewage Lagoon

1. 1 pump capacity:

-Monarch Pump Model TT30 Type E with attached hose ~ 150 gal/min

2. Pump time:

-July decanting began on July 3 and ended July 5 = 34 hours total

34hours x 60 min x 150 gal/min = ~306,000 gal or ~1158 m³

-Second decanting was on August 14 and lasted 14 hours

9 hours x 60 min x 150 gal/min = ~81,000 gal or ~307 m³

-Total for both decanting was = ~1,465 m³

*Mid-August second decantation occurred prior to regular charter flight arrival required for sample analysis. This was necessary due to colder than normal weather conditions and early ice formation occurring on the sewage lagoon. Samples would not have been flown out to the Laboratory for 2 weeks, making any collected samples non-viable for testing. Notification of the necessity for early second decantation was given to and acknowledged by Andrew Keim of AANDC.

Appendix G

Quality of Waste Water Discharged

ANALYSIS OF EUREKA SEWAGE PARAMETERS

Wastewater effluent at Eureka is governed by two guidelines: CCME's Canada-wide Strategy for the Management of Municipal Wastewater Effluent, 2009; and Guidelines for the Discharge of Municipal Wastewater in the Northwest Territories (NWT), 1992. The CCME guidelines address municipal wastewater facilities (owned by municipalities, communities, federal and other government entities, and facilities on federal and aboriginal lands) discharging effluent into surface water, including combined and sanitary sewer overflows. The NWT guidelines are also applicable to the Eureka lagoon. Under Eureka's water licence with the Nunavut Water Board, the NWT guidelines are referenced as the criteria to be used to assess compliance.

The Eureka wastewater lagoon effluent was sampled 2008 through to 2013 in order to determine the level of compliance with CCME and NWT guidelines for wastewater. This report discusses the exceeding parameters, their potential causes of exceedances, and identifies corrective solutions if applicable.

It is noted that the previous years' exceedances in the levels of Total suspended solids, and PH, have been reduced below guidelines for 2013. The previous years' exceedances in the levels of Iron (Fe) and Manganese (Mn) have reduced to near standards maximum levels.

Fecal Coliform sample analyses were incomplete due to either the inability of the laboratory to repeat analysis at higher dilution, as the holding times were exceeded, or due to the lack of transportation available at the required time of the second sewage decantation. The second decantation had to be performed earlier than anticipated due to weather conditions causing the early freeze up of the lagoon.

Effluent exceedances

1. Iron (Fe)

Effluent iron averaged between 0.07 to 0.08 mg/L which is slightly above the Territorial guidelines. The possible sources of iron (Fe) are²:

- a. Natural sources (land, water)
- b. Iron sediments or deposits in the lagoon which are being dissolved; and
- c. Holding tank prior to evacuation to the lagoon.

Source 1.a noted above concerning natural sources is reinforced by the Franz Environmental report of 2012 entitled "2012 Supplemental Investigation Eureka High Arctic Weather Station, Nunavut" (Included with this Annual Report). Specifically as follows:

"....Chemical analysis of background surface water samples indicated naturally elevated concentrations of aluminum, cadmium, copper, lead, iron, manganese, and zinc in surface water..."

The Sewage Treatment System Recapitalization Project was planned to enter into the Design Phase in 2013/14 fiscal year. However, large changes in scope, increase in cost estimation, and resource requirements have led to the delay in the design phase which is now intended to occur in the 2014/15 fiscal year. The design of the sewage treatment system has deviated from the initial plan of replacing the single cell sewage lagoon with a 2 cell lagoon to that of incorporating a mechanical treatment system. This deviation is in order to meet the more stringent Federal Guidelines for sewage discharge as per the comments received from the NWB in the last Water License Renewal process.

Appendix G

Quality of Waste Water Discharged

2. Manganese (Mn)

Manganese has been found at a level averaging between 0.013 mg/L to 0.020 mg/l which is slightly above Territorial guidelines. Possible sources are natural sources which was reinforced, as indicated above, from the Franz Environmental report findings.

- a. Natural sources (soils, rocks, and water). Manganese can be found naturally in water in levels as high as 1.0mg/L. Manganese and iron are often found together in water.

Additional Parameters for Analysis

Both monitoring stations EUR2 (Landfill Solid Waste Disposal Area) and EUR4 (Landfarm area) ,as per the Nunavut Water Board recommendations, is to be analyzed for the same parameters currently being analyzed for EUR3 (Sewage Lagoon) . Additional sampling for EUR2, EUR3, and EUR4 is to include analysis for Chloride, Total Hardness, Total Mercury, Total Alkalinity, and Total Organic Carbon. In addition, effluent discharge from EUR 4 is to be analyzed for Benzene, Toluene, and Ethylbenzene, as stated in the Water License Agreement. These additional parameters were not obtained in 2013 as these parameters were erroneously absent in the parameters requested from the laboratory facility. This will be rectified for sampling beginning in 2014.

¹Richard, Michael. Microbiological and Chemical Testing for Troubleshooting lagoons.2003

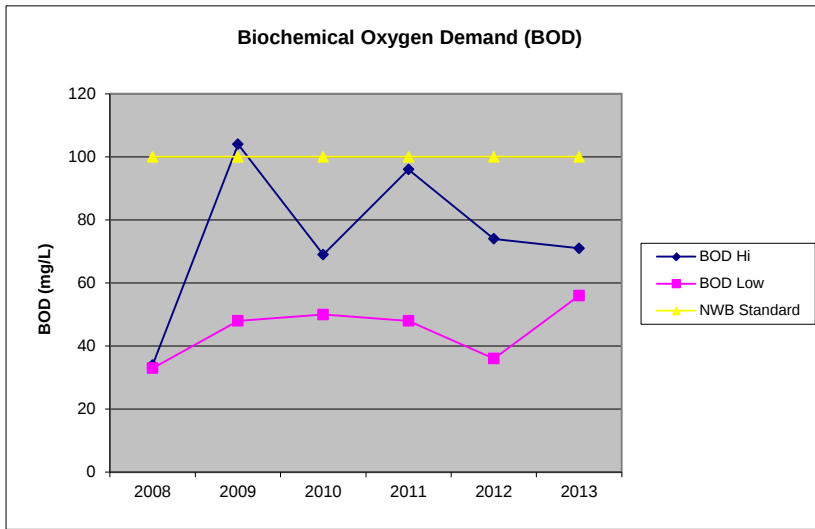
²Tillman, Glenn. Wastewater Treatment: Troubleshooting and Problem Solving.

³Connecticut Department of Public Health. Fact Sheet: Manganese in Drinking Water. 2001

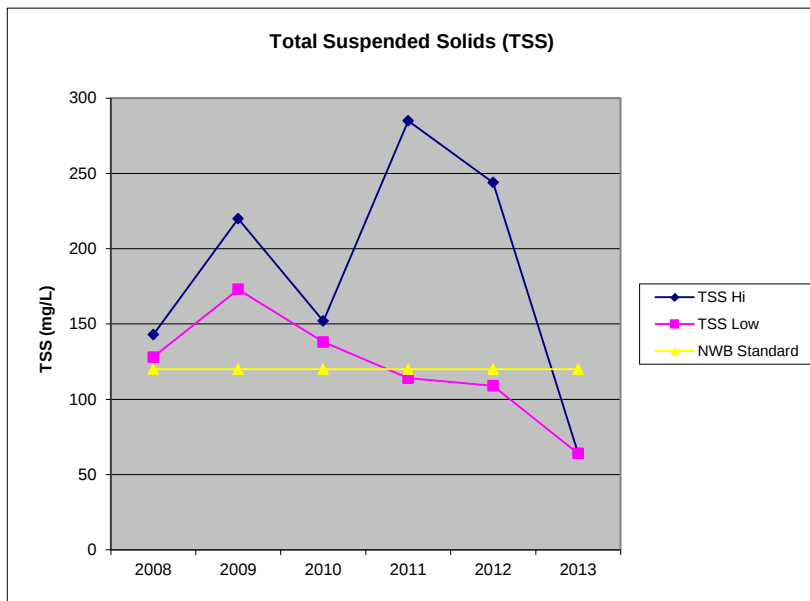
Appendix G

Quality of Waste Water Discharged

BOD Results for Eureka Wastewater Lagoon Effluent



TSS Results for Eureka Wastewater Lagoon Effluent

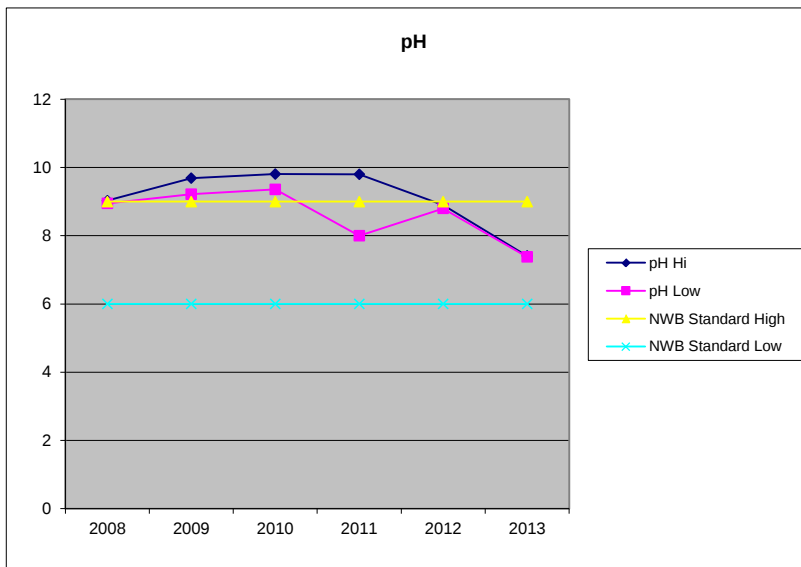


Note: Sewage volumes and TSS levels were high in 2012 due to excessive humidifier and water softener backwashes during winter. This seasons, backwash frequency was greatly reduced fin an effort to minimize sewage lagoon volumes and TSS levels. Maximizing time period available for settling of solids and ensuring pump hose intake pick up remains off sludge bed was also performed in order to minimize TSS levels.

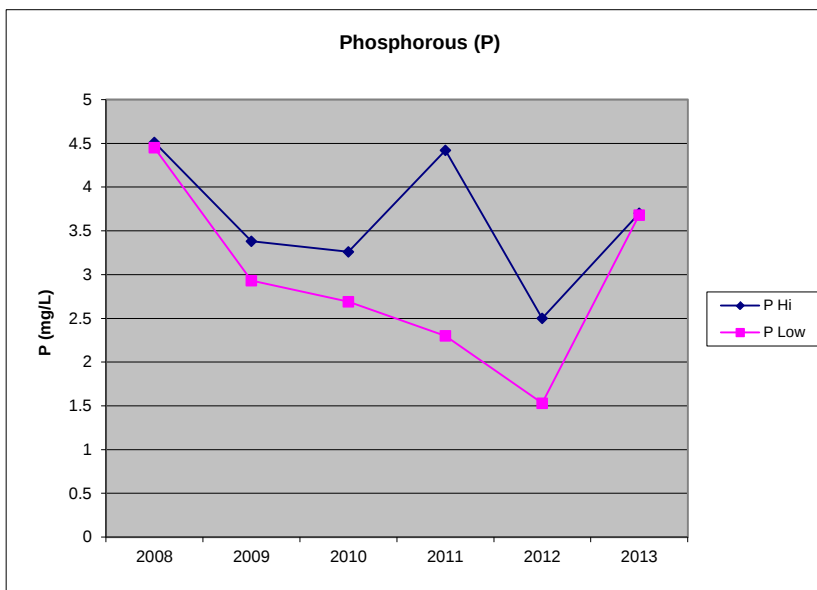
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Quality of Waste Water Discharged

pH Results for Eureka Wastewater Lagoon Effluent



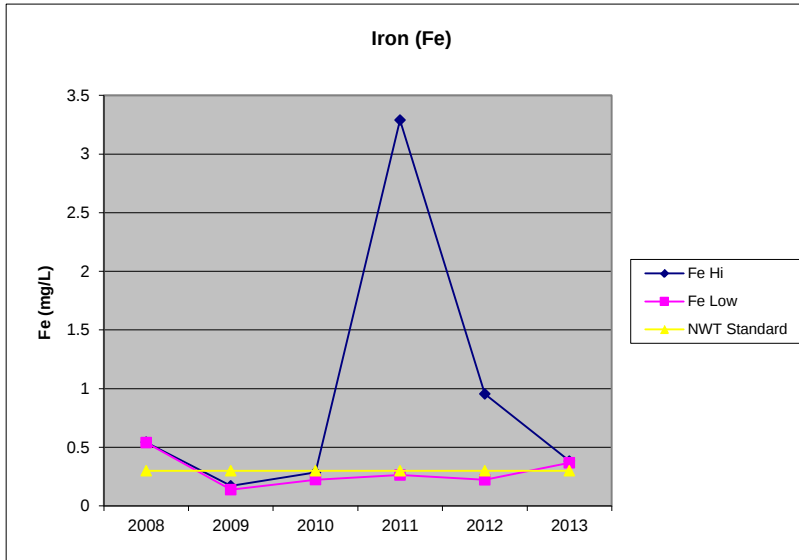
Phosphorous Results for Eureka Wastewater Lagoon Effluent



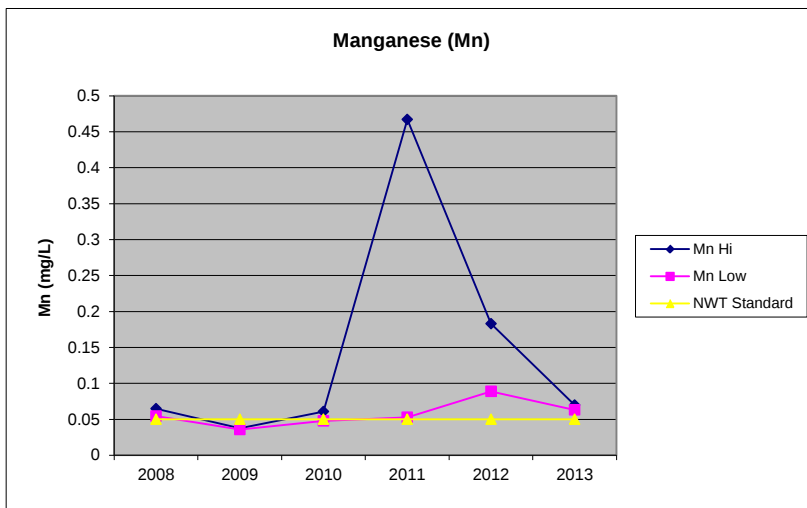
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Quality of Waste Water Discharged

Iron Results for Eureka Wastewater Lagoon Effluent



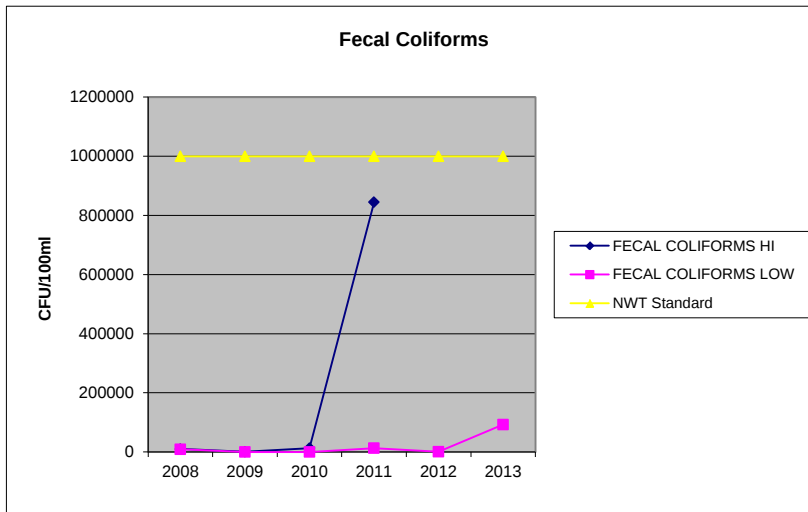
Manganese Results for Eureka Wastewater Lagoon Effluent



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Quality of Waste Water Discharged

Fecal Coliform Results for Eureka Wastewater Lagoon Effluent



Note: CFU/100ml = Colony Forming Units/100ml

Note: partial results for 2013 decantation as per Taiga Laboratory- "Too numerous to count. Unable to obtain second decantation analysis for comparison due to unavailable charter flight to laboratory at time of second decantation"

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Quality of Waste Water Discharged

EUREKA SEWAGE LAGOON: ANALYSIS RESULTS: 2013



Taiga Environmental Laboratory

4601-52nd Ave., Box 1500, Yellowknife, NT, X1A 2R3

Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:

130469

- FINAL REPORT -

Prepared For: Environment Canada
Eureka Weather Station

Address: 123 Main Street
Suite 150
Winnipeg, MB
R3C 4W2

Attn: John MacIver

Facsimile:

Final report has been reviewed and approved by:

Angelique Ruzindana
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

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Quality of Waste Water Discharged



Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-ST-13

Taiga Sample ID: 001

Client Project:
Sample Type: Sewage Tank
Received Date: 04-Jul-13
Sampling Date: 08-Jul-13
Sampling Time: 19:00
Location: Eureka Sewage Lagoon
Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Conductivity, Specific (@ 25°C)	10500	0.4	µS/cm	04-Jul-13	SM2510:B	
pH	6.80		pH units	04-Jul-13	SM4500-H:B	
Solids, Total Suspended	130	3	mg/L	07-Jul-13	SM2540:D	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	31.5	0.005	mg/L	11-Jul-13	SM4500-NH3:	
Biochemical Oxygen Demand	>236.40	2	mg/L	05-Jul-13	SM5210:B	62
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	05-Jul-13	SM4110:B	
Phosphorous, Total	5.63	0.002	mg/L	10-Jul-13	SM4500-P:D	
<u>Major Ions</u>						
Calcium	422	0.1	mg/L	05-Jul-13	SM4110:B	
Magnesium	205	0.1	mg/L	05-Jul-13	SM4110:B	
Potassium	39.8	0.1	mg/L	05-Jul-13	SM4110:B	
Sodium	1610	0.1	mg/L	05-Jul-13	SM4110:B	
Sulphate	< 1	1	mg/L	05-Jul-13	SM4110:B	

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Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-ST-13

Taiga Sample ID: 001

Microbiology

Coliforms, Fecal (other)	TNTC	10000	CFU/100mL	04-Jul-13	SM9222:D	86
Coliforms, Total	>2420000	1000	MPN/100mL	04-Jul-13	SM9223:B	74

Organics

Oil and Grease, visible	Non-visible			10-Jul-13	Visual Exam
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Trace Metals, Total

Aluminum	173	0.6	µg/L	16-Jul-13	EPA200.8
Antimony	1.6	0.1	µg/L	16-Jul-13	EPA200.8
Arsenic	0.8	0.2	µg/L	16-Jul-13	EPA200.8
Barium	63.4	0.1	µg/L	16-Jul-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Cadmium	0.66	0.05	µg/L	16-Jul-13	EPA200.8
Cesium	0.1	0.1	µg/L	16-Jul-13	EPA200.8
Chromium	1.8	0.1	µg/L	16-Jul-13	EPA200.8
Cobalt	0.2	0.1	µg/L	16-Jul-13	EPA200.8
Copper	255	0.2	µg/L	16-Jul-13	EPA200.8
Iron	495	5	µg/L	16-Jul-13	EPA200.8
Lead	3.8	0.1	µg/L	16-Jul-13	EPA200.8
Lithium	37.7	0.2	µg/L	16-Jul-13	EPA200.8
Manganese	24.9	0.1	µg/L	16-Jul-13	EPA200.8
Molybdenum	1.5	0.1	µg/L	16-Jul-13	EPA200.8
Nickel	5.4	0.1	µg/L	16-Jul-13	EPA200.8
Rubidium	17.7	0.1	µg/L	16-Jul-13	EPA200.8
Selenium	2.7	0.3	µg/L	16-Jul-13	EPA200.8

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-ST-13

Taiga Sample ID: 001

Silver	0.5	0.1	µg/L	16-Jul-13	EPA200.8
Strontium	1510	0.1	µg/L	16-Jul-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Titanium	2.3	0.1	µg/L	16-Jul-13	EPA200.8
Uranium	1.7	0.1	µg/L	16-Jul-13	EPA200.8
Vanadium	0.9	0.1	µg/L	16-Jul-13	EPA200.8
Zinc	184	0.4	µg/L	16-Jul-13	EPA200.8

Subcontracted Organics

Phenols, Total	0.360	0.002	mg/L	15-Jul-13	APHA 5530D
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Subcontracted Nutrients

Kjeldahl Nitrogen, Total	63.1	0.06	mg/L	11-Jul-13	ISO 11905-2
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Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-WW-1/3-13

Taiga Sample ID: 002

Client Project:

Sample Type: Wastewater

Received Date: 04-Jul-13

Sampling Date: 08-Jul-13

Sampling Time: 19:00

Location: Eureka Sewage Lagoon

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Conductivity, Specific (@ 25°C)	5880	0.4	µS/cm	04-Jul-13	SM2510:B	
pH	7.41		pH units	04-Jul-13	SM4500-H:B	
Solids, Total Suspended	64	3	mg/L	07-Jul-13	SM2540:D	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	28.2	0.005	mg/L	11-Jul-13	SM4500-NH3:	
Biochemical Oxygen Demand	71	2	mg/L	05-Jul-13	SM5210:B	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	05-Jul-13	SM4110:B	
Phosphorous, Total	3.70	0.002	mg/L	10-Jul-13	SM4500-P:D	
<u>Major Ions</u>						
Calcium	173	0.1	mg/L	05-Jul-13	SM4110:B	
Magnesium	83.0	0.1	mg/L	05-Jul-13	SM4110:B	
Potassium	20.1	0.1	mg/L	05-Jul-13	SM4110:B	
Sodium	922	0.1	mg/L	05-Jul-13	SM4110:B	
Sulphate	< 1	1	mg/L	05-Jul-13	SM4110:B	

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Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-WW-1/3-13

Taiga Sample ID: 002

Microbiology

Coliforms, Fecal (other)	93000	1000	CFU/100mL	04-Jul-13	SM9222:D
Coliforms, Total	1550000	1000	MPN/100mL	04-Jul-13	SM9223:B

Organics

Oil and Grease, visible	Non-visible			10-Jul-13	Visual Exam
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Trace Metals, Total

Aluminum	40.4	0.6	µg/L	16-Jul-13	EPA200.8
Antimony	0.5	0.1	µg/L	16-Jul-13	EPA200.8
Arsenic	1.1	0.2	µg/L	16-Jul-13	EPA200.8
Barium	25.0	0.1	µg/L	16-Jul-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Cadmium	0.10	0.05	µg/L	16-Jul-13	EPA200.8
Cesium	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Chromium	0.5	0.1	µg/L	16-Jul-13	EPA200.8
Cobalt	0.5	0.1	µg/L	16-Jul-13	EPA200.8
Copper	33.4	0.2	µg/L	16-Jul-13	EPA200.8
Iron	383	5	µg/L	16-Jul-13	EPA200.8
Lead	0.5	0.1	µg/L	16-Jul-13	EPA200.8
Lithium	24.1	0.2	µg/L	16-Jul-13	EPA200.8
Manganese	69.8	0.1	µg/L	16-Jul-13	EPA200.8
Molybdenum	0.6	0.1	µg/L	16-Jul-13	EPA200.8
Nickel	4.3	0.1	µg/L	16-Jul-13	EPA200.8
Rubidium	10.1	0.1	µg/L	16-Jul-13	EPA200.8
Selenium	1.7	0.3	µg/L	16-Jul-13	EPA200.8

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-WW-1/3-13

Taiga Sample ID: 002

Silver	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Strontium	658	0.1	µg/L	16-Jul-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Titanium	0.9	0.1	µg/L	16-Jul-13	EPA200.8
Uranium	0.8	0.1	µg/L	16-Jul-13	EPA200.8
Vanadium	0.8	0.1	µg/L	16-Jul-13	EPA200.8
Zinc	51.2	0.4	µg/L	16-Jul-13	EPA200.8

Subcontracted Organics

Phenols, Total	0.080	0.002	mg/L	15-Jul-13	APHA 5530D
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Subcontracted Nutrients

Kjeldahl Nitrogen, Total	34.0	0.06	mg/L	11-Jul-13	ISO 11905-2
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Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT, X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-WW-2/3-13

Taiga Sample ID: 003

Client Project

Sample Type: Wastewater

Received Date: 04-Jul-13

Sampling Date: 04-Jul-13

Sampling Time: 6:00

Location: Eureka Sewage Lagoon

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Conductivity, Specific (@ 25°C)	6040	0.4	µS/cm	04-Jul-13	SM2510.B	
pH	7.38		pH units	04-Jul-13	SM4500-H.B	
Solids, Total Suspended	64	3	mg/L	07-Jul-13	SM2540.D	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	27.5	0.005	mg/L	11-Jul-13	SM4500-NH3	
Biochemical Oxygen Demand	56	2	mg/L	05-Jul-13	SM5210.B	
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	05-Jul-13	SM4110.B	
Phosphorous, Total	3.68	0.002	mg/L	10-Jul-13	SM4500-P.D	
<u>Major Ions</u>						
Calcium	173	0.1	mg/L	05-Jul-13	SM4110.B	
Magnesium	83.6	0.1	mg/L	05-Jul-13	SM4110.B	
Potassium	20.1	0.1	mg/L	05-Jul-13	SM4110.B	
Sodium	941	0.1	mg/L	05-Jul-13	SM4110.B	
Sulphate	< 1	1	mg/L	05-Jul-13	SM4110.B	

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Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-WW-2/3-13

Taiga Sample ID: 003

Microbiology

Coliforms, Fecal (other)	101000	1000	CFU/100mL	04-Jul-13	SM9222:D
Coliforms, Total	2420000	1000	MPN/100mL	04-Jul-13	SM9223:B

Organics

Oil and Grease, visible	Non-visible			10-Jul-13	Visual Exam
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Trace Metals, Total

Aluminum	39.4	0.6	µg/L	16-Jul-13	EPA200.8
Antimony	0.4	0.1	µg/L	16-Jul-13	EPA200.8
Arsenic	1.0	0.2	µg/L	16-Jul-13	EPA200.8
Barium	21.9	0.1	µg/L	16-Jul-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Cadmium	0.09	0.05	µg/L	16-Jul-13	EPA200.8
Cesium	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Chromium	0.5	0.1	µg/L	16-Jul-13	EPA200.8
Cobalt	0.5	0.1	µg/L	16-Jul-13	EPA200.8
Copper	29.9	0.2	µg/L	16-Jul-13	EPA200.8
Iron	368	5	µg/L	16-Jul-13	EPA200.8
Lead	0.4	0.1	µg/L	16-Jul-13	EPA200.8
Lithium	20.6	0.2	µg/L	16-Jul-13	EPA200.8
Manganese	63.1	0.1	µg/L	16-Jul-13	EPA200.8
Molybdenum	0.6	0.1	µg/L	16-Jul-13	EPA200.8
Nickel	3.8	0.1	µg/L	16-Jul-13	EPA200.8
Rubidium	8.9	0.1	µg/L	16-Jul-13	EPA200.8
Selenium	1.3	0.3	µg/L	16-Jul-13	EPA200.8

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Quality of Waste Water Discharged



Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-WW-2/3-13

Taiga Sample ID: 003

Silver	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Strontium	567	0.1	µg/L	16-Jul-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	16-Jul-13	EPA200.8
Titanium	0.9	0.1	µg/L	16-Jul-13	EPA200.8
Uranium	0.8	0.1	µg/L	16-Jul-13	EPA200.8
Vanadium	0.8	0.1	µg/L	16-Jul-13	EPA200.8
Zinc	43.4	0.4	µg/L	16-Jul-13	EPA200.8

Subcontracted Organics

Phenols, Total	0.080	0.002	mg/L	15-Jul-13	APHA 5530D
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Subcontracted Nutrients

Kjeldahl Nitrogen, Total	34.4	0.06	mg/L	11-Jul-13	ISO 11905-2
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Quality of Waste Water Discharged



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130469

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EU-WW-2/3-13

Taiga Sample ID: 003

- DATA QUALIFIERS -

Data Qualifier Descriptions:

- 62 *Residual DO was less than 1 mg/L. Unable to repeat analysis at lower dilution. Holding time exceeded.*
- 74 *Unable to repeat analysis at higher dilution. Holding time exceeded.*
- 86 *Too numerous to count. Unable to repeat analysis at higher dilution. Holding time exceeded.*

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater
EPA - United States Environmental Protection Agency

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Appendix H

GPS Coordinates

GPS Coordinates for water sources utilized

Source Description	Latitude			Longitude		
	Deg °	Min ,	Sec "	Deg °	Min ,	Sec "
Station Creek	79	59	21	85	57	4
Water Lagoon	79	59	20	85	56	46

GPS Locations of areas of waste disposal

Location Description (type)	Latitude			Longitude		
	Deg °	Min ,	Sec "	Deg °	Min ,	Sec "
Sewage Lagoon	79	59	23	85	50	11
East Landfill	79	59	29	85	46	20
Asbestos Landfill	79	59	17	85	46	50
Crushed Barrel Landfill	79	59	38	85	49	38
Ash Landfill	79	59	32	85	47	52
Contaminated Soil Pit	79	59	40	85	49	34
Land Farm	79	59	40	85	50	11
DND Sewage Lagoon	79	59	23	85	50	11

EUREKA WATER ANALYSIS 2013: Landfill EUR3 and Landfarm EUR4

Parameter	SAMPLE ANALYSIS (mg/L)		GUIDELINES (mg/L)
	LANDFILL EUR 2 2013	LANDFARM EUR 4 2013	NWB Guidelines for EUR 4
Conductivity (microS/cm)	2500	2020	
TDS	26	12	
PH (PH units)	7.83	7.73	
BOD	8	6	
Amonia as Nitrogen	1.42	<0.005	
Nitrate + Nitrite as Nitrogen	2.46	0.04	
Hardness	N/A	N/A	
Total Organic Carbon	N/A	N/A	
Total Alkalinity	N/A	N/A	
Calcium	217	134	
Chloride	506	378	
Potassium	11.8	7.1	
Sodium	194	186	
Sulphate	460	451	
Coliforms, Fecal (CFU/100ml)	TNTC	<1	
Oil and Grease	NV	NV	NV
Aluminum	0.516	0.06	
Arsenic	0.0021	0.0007	
Cadmium	0.0001	<0.0001	
Chromium	0.0028	0.0007	
Cobalt	0.001	0.0005	
Copper	0.0043	0.0014	
Iron	1.56	0.266	
Lead	0.0013	0.0003	0.001
Manganese	0.0539	0.495	
Nickel	0.0052	0.002	
Zinc	<0.005	<0.005	
Total Mercury	N/A	N/A	
Total Phenols	<0.002	<0.002	0.02
Benzene	Not required	N/A	0.37
Toluene	Not required	N/A	0.002
Ethylbenzene	Not required	N/A	0.09

TNTC Too numerous to count. Unable to repeat analysis at higher dilution. Holding time exceeded

N/A: Parameter analysis not available

*Subcontracted organics are in concentrations less than detectable levels except for those listed immediately above

ⁱGuidelines for Canadian Drinking Water Quality Summary Table, May 2008

http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/chemical-chimiques-eng.php#tbl6

ⁱⁱUS Environmental Protection Agency Drinking Water Standards

<http://www.epa.gov/safewater/contaminants/index.html>

¹Maximum Acceptable Concentration

²Aesthetic Objectives

³Operational Guidance Values

⁴Maximum Contaminant Level

⁵Maximum Contaminant Level Goal



Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT, X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- FINAL REPORT -

Prepared For: Environment Canada
Eureka Weather Station

Address: 123 Main Street
Suite 150
Winnipeg, MB
R3C 4W2

Attn: Alan Gaudet

Facsimile:

Final report has been reviewed and approved by:

Angelique Ruzindana
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc (CALA) as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

Report Date: Wednesday, July 10, 2013

Print Date: Wednesday, July 10, 2013

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Taiga Environmental Laboratory

4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 4

Taiga Sample ID: 001

Client Project:

Sample Type: Land Farm

Received Date: 21-Jun-13

Sampling Date: 20-Jun-13

Sampling Time: 22:45

Location: Eureka Land Farm

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Conductivity, Specific (@ 25°C)	2020	0.4	µS/cm	21-Jun-13	SM2510:B	
pH	7.73		pH units	21-Jun-13	SM4500-H:B	
Solids, Total Suspended	12	3	mg/L	24-Jun-13	SM2540:D	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	28-Jun-13	SM4500-NH3:	
Biochemical Oxygen Demand	6	2	mg/L	22-Jun-13	SM5210:B	
Nitrate+Nitrite as Nitrogen	0.40	0.01	mg/L	22-Jun-13	SM4110:B	
Phosphorous, Total	0.015	0.002	mg/L	27-Jun-13	SM4500-P:D	
<u>Major Ions</u>						
Calcium	134	0.1	mg/L	22-Jun-13	SM4110:B	
Chloride	378	0.7	mg/L	22-Jun-13	SM4110:B	
Fluoride	0.2	0.1	mg/L	22-Jun-13	SM4110:B	
Magnesium	75.7	0.1	mg/L	22-Jun-13	SM4110:B	
Nitrate as Nitrogen	0.40	0.01	mg/L	22-Jun-13	SM4110:B	

Report Date: Wednesday, July 10, 2013

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Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR -4

Taiga Sample ID: 001

Nitrite as Nitrogen	< 0.01	0.01	mg/L	22-Jun-13	SM4110:B
Potassium	7.1	0.1	mg/L	22-Jun-13	SM4110:B
Sodium	186	0.1	mg/L	22-Jun-13	SM4110:B
Sulphate	451	1	mg/L	22-Jun-13	SM4110:B

Microbiology

Coliforms, Fecal (other)	< 1	1	CFU/100mL	21-Jun-13	SM9222:D
Coliforms, Total	< 1.0	1.0	MPN/100mL	21-Jun-13	SM9223:B

Organics

Oil and Grease, visible	Non-visible			10-Jul-13	Visual Exam
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Trace Metals, Total

Aluminum	60	5	µg/L	06-Jul-13	EPA200.8
Antimony	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Arsenic	0.7	0.2	µg/L	06-Jul-13	EPA200.8
Barium	17.6	0.1	µg/L	06-Jul-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Cadmium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Cesium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Chromium	0.7	0.1	µg/L	06-Jul-13	EPA200.8
Cobalt	0.5	0.1	µg/L	06-Jul-13	EPA200.8
Copper	1.4	0.2	µg/L	06-Jul-13	EPA200.8
Iron	266	5	µg/L	06-Jul-13	EPA200.8
Lead	0.3	0.1	µg/L	06-Jul-13	EPA200.8
Lithium	17.0	0.2	µg/L	06-Jul-13	EPA200.8
Manganese	495	0.1	µg/L	06-Jul-13	EPA200.8

Report Date: Wednesday, July 10, 2013

Print Date: Wednesday, July 10, 2013

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Taiga Environmental Laboratory

4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3

Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:

130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 4

Taiga Sample ID: 001

Molybdenum	0.3	0.1	µg/L	06-Jul-13	EPA200.8
Nickel	2.0	0.1	µg/L	06-Jul-13	EPA200.8
Rubidium	1.1	0.1	µg/L	06-Jul-13	EPA200.8
Selenium	< 0.5	0.5	µg/L	06-Jul-13	EPA200.8
Silver	0.1	0.1	µg/L	06-Jul-13	EPA200.8
Strontium	404	0.1	µg/L	06-Jul-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Titanium	1.2	0.1	µg/L	06-Jul-13	EPA200.8
Uranium	0.5	0.1	µg/L	06-Jul-13	EPA200.8
Vanadium	0.8	0.1	µg/L	06-Jul-13	EPA200.8
Zinc	< 5	5	µg/L	06-Jul-13	EPA200.8

ReportDate: Wednesday, July 10, 2013

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR -2

Taiga Sample ID: 002

Client Project:

Sample Type: Wastewater

Received Date: 21-Jun-13

Sampling Date: 20-Jun-13

Sampling Time: 22:45

Location: Solid Waste Disposal

Report Status: Final

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Conductivity, Specific (@ 25°C)	2500	0.4	µS/cm	21-Jun-13	SM2510:B	
pH	7.83		pH units	21-Jun-13	SM4500-H:B	
Solids, Total Suspended	26	3	mg/L	24-Jun-13	SM2540:D	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	1.42	0.005	mg/L	28-Jun-13	SM4500-NH3:	
Biochemical Oxygen Demand	8	2	mg/L	22-Jun-13	SM5210:B	
Nitrate+Nitrite as Nitrogen	2.46	0.01	mg/L	22-Jun-13	SM4110:B	
Phosphorous, Total	0.722	0.002	mg/L	27-Jun-13	SM4500-P:D	
<u>Major Ions</u>						
Calcium	217	0.1	mg/L	22-Jun-13	SM4110:B	
Chloride	506	0.7	mg/L	22-Jun-13	SM4110:B	
Fluoride	0.2	0.1	mg/L	22-Jun-13	SM4110:B	
Magnesium	84.9	0.1	mg/L	22-Jun-13	SM4110:B	
Nitrate as Nitrogen	2.15	0.01	mg/L	22-Jun-13	SM4110:B	
Nitrite as Nitrogen	0.32	0.01	mg/L	22-Jun-13	SM4110:B	

Report Date: Wednesday, July 10, 2013

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Taiga Environmental Laboratory
 4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
 Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR -2

Taiga Sample ID: 002

Potassium	11.8	0.1	mg/L	22-Jun-13	SM4110:B
Sodium	194	0.1	mg/L	22-Jun-13	SM4110:B
Sulphate	460	1	mg/L	22-Jun-13	SM4110:B

Microbiology

Coliforms, Fecal (other)	TNTC	10	CFU/100mL	21-Jun-13	SM9222:D	86
Coliforms, Total	3130	10.0	MPN/100mL	21-Jun-13	SM9223:B	

Organics

Oil and Grease, visible	Non-visible			10-Jul-13	Visual Exam
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Trace Metals, Total

Aluminum	516	5	µg/L	06-Jul-13	EPA200.8
Antimony	1.5	0.1	µg/L	06-Jul-13	EPA200.8
Arsenic	2.1	0.2	µg/L	06-Jul-13	EPA200.8
Barium	46.4	0.1	µg/L	06-Jul-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Cadmium	0.1	0.1	µg/L	06-Jul-13	EPA200.8
Cesium	0.1	0.1	µg/L	06-Jul-13	EPA200.8
Chromium	2.8	0.1	µg/L	06-Jul-13	EPA200.8
Cobalt	1.0	0.1	µg/L	06-Jul-13	EPA200.8
Copper	4.3	0.2	µg/L	06-Jul-13	EPA200.8
Iron	1560	5	µg/L	06-Jul-13	EPA200.8
Lead	1.3	0.1	µg/L	06-Jul-13	EPA200.8
Lithium	56.4	0.2	µg/L	06-Jul-13	EPA200.8
Manganese	53.9	0.1	µg/L	06-Jul-13	EPA200.8
Molybdenum	1.1	0.1	µg/L	06-Jul-13	EPA200.8

Report Date: Wednesday, July 10, 2013

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 2

Taiga Sample ID: 002

Nickel	5.2	0.1	µg/L	06-Jul-13	EPA200.8
Rubidium	4.5	0.1	µg/L	06-Jul-13	EPA200.8
Selenium	< 0.5	0.5	µg/L	06-Jul-13	EPA200.8
Silver	0.5	0.1	µg/L	06-Jul-13	EPA200.8
Strontium	784	0.1	µg/L	06-Jul-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Titanium	11.5	0.1	µg/L	06-Jul-13	EPA200.8
Uranium	3.7	0.1	µg/L	06-Jul-13	EPA200.8
Vanadium	3.3	0.1	µg/L	06-Jul-13	EPA200.8
Zinc	< 5	5	µg/L	06-Jul-13	EPA200.8

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 2

Taiga Sample ID: 002

- DATA QUALIFIERS -

Data Qualifier Descriptions:

86 *Too numerous to count. Unable to repeat analysis at higher dilution. Holding time exceeded.*

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

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Taiga Environmental Laboratory

4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3

Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:

130407

- AMENDED REPORT -

Prepared For: Environment Canada
Eureka Weather Station

Address: 123 Main Street
Suite 150
Winnipeg, MB
R3C 4W2

Attn: Alan Gaudet

Facsimile:

Final report has been reviewed and approved by:

Angelique Ruzindana
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
 - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
 - Environment Canada
 - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

Report Date: Wednesday, July 10, 2013

Print Date: Wednesday, July 10, 2013

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Taiga Environmental Laboratory

4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3

Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:

130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 4

Taiga Sample ID: 001

Client Project:

Sample Type: Land Farm

Received Date: 21-Jun-13

Sampling Date: 20-Jun-13

Sampling Time: 22:45

Location: Eureka Land Farm

Report Status: Amended

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Conductivity, Specific (@ 25°C)	2020	0.4	µS/cm	21-Jun-13	SM2510:B	
pH	7.73		pH units	21-Jun-13	SM4500-H:B	
Solids, Total Suspended	12	3	mg/L	24-Jun-13	SM2540:D	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	28-Jun-13	SM4500-NH3:	
Biochemical Oxygen Demand	6	2	mg/L	22-Jun-13	SM5210:B	
Nitrate+Nitrite as Nitrogen	0.40	0.01	mg/L	22-Jun-13	SM4110:B	
Phosphorous, Total	0.015	0.002	mg/L	27-Jun-13	SM4500-P:D	
<u>Major Ions</u>						
Calcium	134	0.1	mg/L	22-Jun-13	SM4110:B	
Chloride	378	0.7	mg/L	22-Jun-13	SM4110:B	
Fluoride	0.2	0.1	mg/L	22-Jun-13	SM4110:B	
Magnesium	75.7	0.1	mg/L	22-Jun-13	SM4110:B	
Nitrate as Nitrogen	0.40	0.01	mg/L	22-Jun-13	SM4110:B	

ReportDate: Wednesday, July 10, 2013

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 4

Taiga Sample ID: 001

Nitrite as Nitrogen	< 0.01	0.01	mg/L	22-Jun-13	SM4110:B
Potassium	7.1	0.1	mg/L	22-Jun-13	SM4110:B
Sodium	186	0.1	mg/L	22-Jun-13	SM4110:B
Sulphate	451	1	mg/L	22-Jun-13	SM4110:B

Microbiology

Coliforms, Fecal (other)	< 1	1	CFU/100mL	21-Jun-13	SM9222:D
Coliforms, Total	< 1.0	1.0	MPN/100mL	21-Jun-13	SM9223:B

Organics

Oil and Grease, visible	Non-visible			10-Jul-13	Visual Exam
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Trace Metals, Total

Aluminum	60	5	µg/L	06-Jul-13	EPA200.8
Antimony	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Arsenic	0.7	0.2	µg/L	06-Jul-13	EPA200.8
Barium	17.6	0.1	µg/L	06-Jul-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Cadmium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Cesium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Chromium	0.7	0.1	µg/L	06-Jul-13	EPA200.8
Cobalt	0.5	0.1	µg/L	06-Jul-13	EPA200.8
Copper	1.4	0.2	µg/L	06-Jul-13	EPA200.8
Iron	266	5	µg/L	06-Jul-13	EPA200.8
Lead	0.3	0.1	µg/L	06-Jul-13	EPA200.8
Lithium	17.0	0.2	µg/L	06-Jul-13	EPA200.8
Manganese	495	0.1	µg/L	06-Jul-13	EPA200.8

ReportDate: Wednesday, July 10, 2013

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Taiga Environmental Laboratory

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Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 4

Taiga Sample ID: 001

Molybdenum	0.3	0.1	µg/L	06-Jul-13	EPA200.8
Nickel	2.0	0.1	µg/L	06-Jul-13	EPA200.8
Rubidium	1.1	0.1	µg/L	06-Jul-13	EPA200.8
Selenium	< 0.5	0.5	µg/L	06-Jul-13	EPA200.8
Silver	0.1	0.1	µg/L	06-Jul-13	EPA200.8
Strontium	404	0.1	µg/L	06-Jul-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Titanium	1.2	0.1	µg/L	06-Jul-13	EPA200.8
Uranium	0.5	0.1	µg/L	06-Jul-13	EPA200.8
Vanadium	0.8	0.1	µg/L	06-Jul-13	EPA200.8
Zinc	< 5	5	µg/L	06-Jul-13	EPA200.8

Subcontracted Organics

Phenols, Total	< 0.002	0.002	mg/L	03-Jul-13	APHA 5530D
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Subcontracted Nutrients

Kjeldahl Nitrogen, Total	0.30	0.06	mg/L	01-Jul-13	ISO 11905-2
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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 2

Taiga Sample ID: 002

Client Project

Sample Type: Wastewater
Received Date: 21-Jun-13
Sampling Date: 20-Jun-13
Sampling Time: 22:45
Location: Solid Waste Disposal
Report Status: Amended

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifier
<u>Inorganics - Physicals</u>						
Conductivity, Specific (@ 25°C)	2500	0.4	µS/cm	21-Jun-13	SM2510:B	
pH	7.83		pH units	21-Jun-13	SM4500-H:B	
Solids, Total Suspended	26	3	mg/L	24-Jun-13	SM2540:D	
<u>Inorganics - Nutrients</u>						
Ammonia as Nitrogen	1.42	0.005	mg/L	28-Jun-13	SM4500-NH3:	
Biochemical Oxygen Demand	8	2	mg/L	22-Jun-13	SM5210:B	
Nitrate+Nitrite as Nitrogen	2.46	0.01	mg/L	22-Jun-13	SM4110:B	
Phosphorous, Total	0.722	0.002	mg/L	27-Jun-13	SM4500-P:D	
<u>Major Ions</u>						
Calcium	217	0.1	mg/L	22-Jun-13	SM4110:B	
Chloride	506	0.7	mg/L	22-Jun-13	SM4110:B	
Fluoride	0.2	0.1	mg/L	22-Jun-13	SM4110:B	
Magnesium	84.9	0.1	mg/L	22-Jun-13	SM4110:B	
Nitrate as Nitrogen	2.15	0.01	mg/L	22-Jun-13	SM4110:B	
Nitrite as Nitrogen	0.32	0.01	mg/L	22-Jun-13	SM4110:B	

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Taiga Environmental Laboratory
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Taiga Batch No:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 2

Taiga Sample ID: 002

Potassium	11.8	0.1	mg/L	22-Jun-13	SM4110:B
Sodium	194	0.1	mg/L	22-Jun-13	SM4110:B
Sulphate	460	1	mg/L	22-Jun-13	SM4110:B

Microbiology

Coliforms, Fecal (other)	TNTC	10	CFU/100mL	21-Jun-13	SM9222:D	86
Coliforms, Total	3130	10.0	MPN/100mL	21-Jun-13	SM9223:B	

Organics

Oil and Grease, visible	Non-visible			10-Jul-13	Visual Exam
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Trace Metals, Total

Aluminum	516	5	µg/L	06-Jul-13	EPA200.8
Antimony	1.5	0.1	µg/L	06-Jul-13	EPA200.8
Arsenic	2.1	0.2	µg/L	06-Jul-13	EPA200.8
Barium	46.4	0.1	µg/L	06-Jul-13	EPA200.8
Beryllium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Cadmium	0.1	0.1	µg/L	06-Jul-13	EPA200.8
Cesium	0.1	0.1	µg/L	06-Jul-13	EPA200.8
Chromium	2.8	0.1	µg/L	06-Jul-13	EPA200.8
Cobalt	1.0	0.1	µg/L	06-Jul-13	EPA200.8
Copper	4.3	0.2	µg/L	06-Jul-13	EPA200.8
Iron	1560	5	µg/L	06-Jul-13	EPA200.8
Lead	1.3	0.1	µg/L	06-Jul-13	EPA200.8
Lithium	56.4	0.2	µg/L	06-Jul-13	EPA200.8
Manganese	53.9	0.1	µg/L	06-Jul-13	EPA200.8
Molybdenum	1.1	0.1	µg/L	06-Jul-13	EPA200.8

Report Date: Wednesday, July 10, 2013

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Taiga Environmental Laboratory
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Tel: (867)-669-2788 Fax: (867)-669-2718

Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR -2

Taiga Sample ID: 002

Nickel	5.2	0.1	µg/L	06-Jul-13	EPA200.8
Rubidium	4.5	0.1	µg/L	06-Jul-13	EPA200.8
Selenium	< 0.5	0.5	µg/L	06-Jul-13	EPA200.8
Silver	0.5	0.1	µg/L	06-Jul-13	EPA200.8
Strontium	784	0.1	µg/L	06-Jul-13	EPA200.8
Thallium	< 0.1	0.1	µg/L	06-Jul-13	EPA200.8
Titanium	11.5	0.1	µg/L	06-Jul-13	EPA200.8
Uranium	3.7	0.1	µg/L	06-Jul-13	EPA200.8
Vanadium	3.3	0.1	µg/L	06-Jul-13	EPA200.8
Zinc	< 5	5	µg/L	06-Jul-13	EPA200.8

Subcontracted Organics

Phenols, Total	< 0.002	0.002	mg/L	03-Jul-13	APHA 5530D
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Subcontracted Nutrients

Kjeldahl Nitrogen, Total	2.89	0.06	mg/L	01-Jul-13	ISO 11905-2
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Taiga Batch No.:
130407

- CERTIFICATE OF ANALYSIS -

Client Sample ID: EUR - 2

Taiga Sample ID: 002

- DATA QUALIFIERS -

Data Qualifier Descriptions:

86 *Too numerous to count. Unable to repeat analysis at higher dilution. Holding time exceeded.*

" Taiga analytical methods are based on the following standard analytical methods

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

Comments *Amended report to include missing TKN and phenols results.*

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