INAC, Nunavut District
Box 100
Iqaluit, NU
X0A 0H0

tel.: (867) 975-4275
fax.: (867) 979-6445

Your file Votre référence

Our file Notre référence

November 7, 2000.

Rick Butler
Chief Administrative Officer
Town of Iqaluit
P.O. Box 180
Iqaluit, NU X0A 0H0

August 21, 2000 Municipal Water Use Inspection - Report

First of all, I wish to thank Chris Freda for the much appreciated time and assistance provided during the above inspection of Iqaluit's water use and waste disposal facilities.

Attached for your records is the Municipal Water Use Inspection Report pertaining to the August 21, 2000 inspection; generally, the water and waste disposal facilities appeared in a satisfactory condition. However, the Town of Iqaluit will need to address the following matters:

- Water Supply: At the time of the inspection, water consumption records were not available on-site. While a 1999 monthly report establishing the total municipal water use at 355 605 m^3 was soon afterwards forwarded to the Inspector, recent consumption logs should ideally be readily accessible on-site.

- Solid waste disposal: The discharge culvert of the active West 40 waste disposal facility lies in a state of disrepair, and in consequence, dump leachate is freely flowing through and around the structure (see figure 1). The reestablishment of a gated decant structure could prove useful to both minimize the impact on the receiving waters, and to ensure that periodic leachate samples can be taken at the outlet of the waste disposal area.

- Sewage disposal: In order to prevent overtopping and/or breaching of the sewage lagoon, the Town has successfully maintained an adequate freeboard (figure 2). However, the resulting shorter retention time within the lagoon may ultimately impact the quality of the effluent at the point of final discharge (figure 3), especially during periods of the year when biological activity is minimal. Indeed, the attached sampling results seem to indicate that the final discharge from the sewage lagoon may be harmful to the receiving environment.

In light of this, the Inspector trusts that the Town of Iqaluit is devoting all possible efforts to the timely commissioning of the faulty sewage treatment plant.

Please feel free to contact me at (867) 975-4298 or lavalleep@inac.gc.ca if any questions/comments arise.

Sincerely,

Philippe Lavallée
Water Resources Officer
INAC, Nunavut District

c.c. - Nunavut Water Board, Gjoa Haven
- EC Environmental Protection, Yellowknife (Anne Wilson)
- DFO Habitat Management, Iqaluit (Jordan DeGroot)
- Environmental Health Officer, Iqaluit (Bonnie Segal)
- CG&T, Iqaluit (Doug Sitland)

Indian and Northern Affairs Canada
Affaires Indiennes et du Nord Canada

MUNICIPAL WATER USE INSPECTION FORM

Date: 2000/08/21 **Licensee Rep.** (Name/Title)**:** Chris Freda / Utilidor Foreman

Licensee: Town of Iqaluit **Licence No.:** unlicenced

WATER SUPPLY

Source(s): Lake Geraldine **Quantity used:** meter reading @ 584 563 000

Owner:/Operator: Town

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Intake Facilities: NI **Storage Structure:** A **Treatment Systems:** A **Chemical Storage:** A

Flow Meas. Device: A **Convey. Lines:** NI **Pumping Stations:** A

Comments: Facility well kept; fairly extensive maintenance has been undertaking during the year. Water consumption records unavailable at the time of the inspection, but were to be forwarded forthwith.

WASTE DISPOSAL

Sewage: **Sewage Treatment System** (Prim./Sec/Ter.)**:** Primary; 7 days retention lagoon, to ocean

Natural Water Body: **Continuous Discharge** (land or water)**:** x

Seasonal Discharge: **Wetlands Treatment:** NA **Trench:** NA

Solid Waste: **Owner/Operator:** Town

Landfill: **Burn & Landfill:** x **Other:**

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Discharge Quality: sampled **Decant Structure:** A **Erosion:** A

Discharge Meas. Device: none **Dyke Inspection:** none **Seepages:** U

Dams, Dykes: A **Freeboard:** A **Spills:** 00-069; sewer line blockage

Construction: U **O&M Plan:** NA **A&R Plan:** NA

Periods of Discharge: A **Effluent Discharge Rate:** not measured

Comments: The dump's discharge culvert is in a state of disrepair; leachate is freely flowing through and around the structure. The Sewage treatment plant is still not operational.

FUEL STORAGE

Owner/Operator: Town

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Berms & Liners: NI **Water within Berms:** NI **Evidence of Leaks:** NI

Drainage Pipes: NI **Pump Station & Catchment Berm:** NI

Pipeline Condition: NI **Not Applicable:** **Condition of Tanks:** NI

SURVEILLANCE NETWORK PROGRAM (SNP)

Samples Collected **Hamlet:** monthly during flow

INAC: sewage lagoon discharge, dump leachate

Signs Posted **SNP:** yes **Warning:** yes

Records & Reporting: Water consumption recorded; spill reported

Geotechnical Inspection: None required in the absence of a binding licence

Non-Compliance of Act or Licence: The Town of Iqaluit does not hold a valid Water Licence. However, proper renewal application documents have been submitted to the Nunavut Water Board.

Philippe Lavallée

Inspector's Name

Inspector's Signature

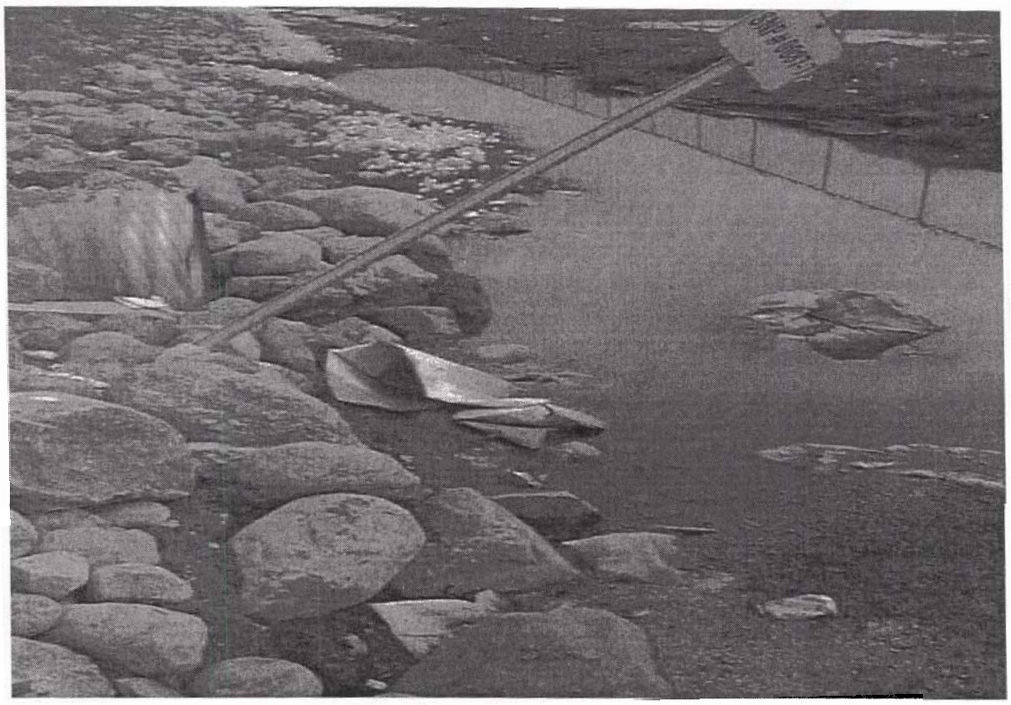

figure 1. Dump leachate at the discharge culvert; August 21, 2000.

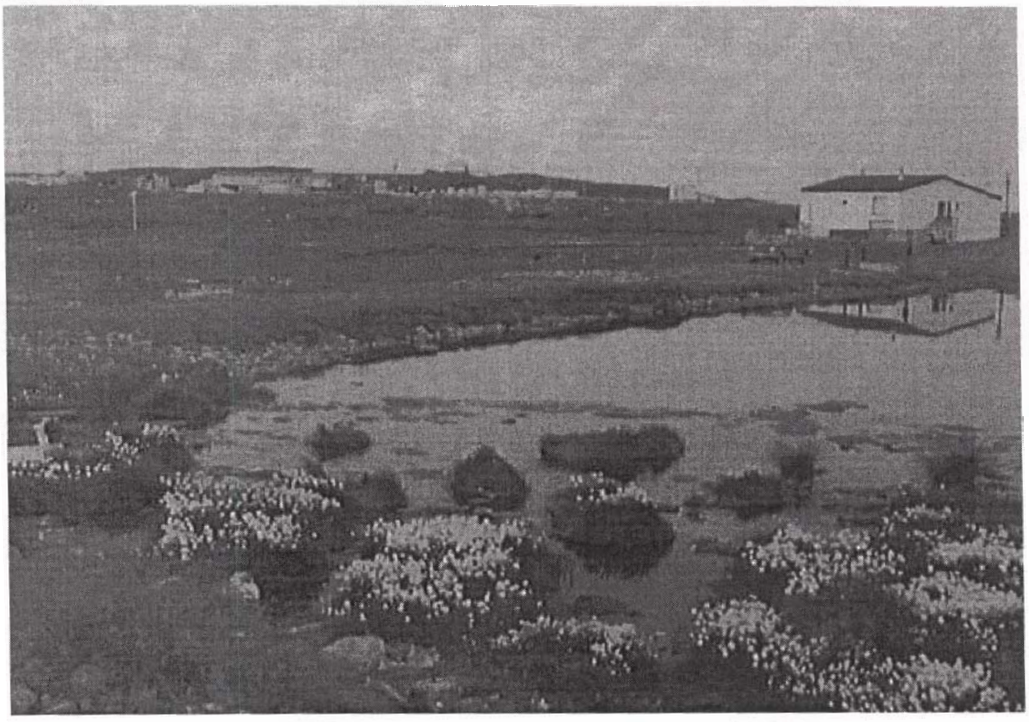

figure 2. Sewage lagoon freeboard and sewage treatment plant; August 21, 2000.

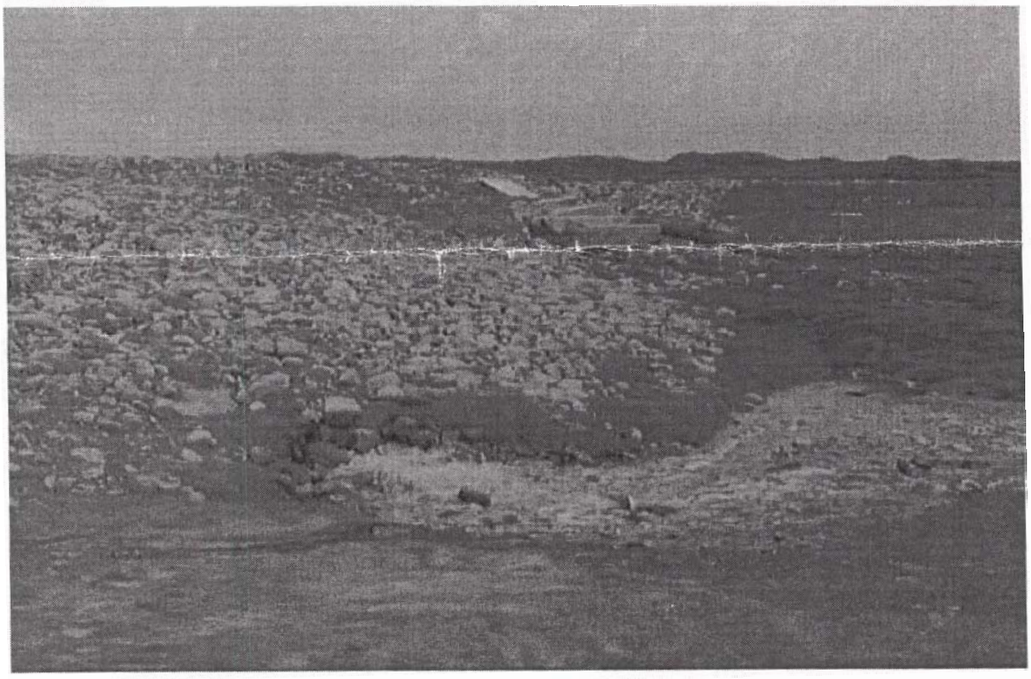

figure 3. Final discharge from the sewage lagoon; August 21, 2000.

TAIGA ENVIRONMENTAL LABORATORY
Dept. Indian Affairs & Northern Development
4601-52 nd Ave., Box 1500
Yellowknife, NT. X1A 2R3
Tel. (867) 669-2788
Fax: (867) 669-2718

To: NUNAVUT
Operations Directorate, DIAND
BOX 100

IQALUIT X0A 0H0

Att'n: Philippe Lavallee

LAB# 201687

SAMPLE INFORMATION

Our Lab#: 201687
Your Sample ID: Lagoon Discharge
Sample Matrix: water

PROJECT:

Collection:
Location: Iqaluit Lagoon/Dump
Date: 8/21/00
By: Philippe Lavallee

Received Date: 8/22/00
Report Date: 30-Aug-00
Approved By:

- SAMPLE ANALYSIS REPORT -

Lab#	Test	Result	Units	Detection Limit	Analysis Date	Analytical Method
201687						
	Calcium	29.3	mg/L	0.05	8/28/2000	EC20003
	Magnesium	4.37	mg/L	0.01	8/28/2000	012102
	Sodium	36.7	mg/L	0.02	8/28/2000	011102
	Potassium	8.09	mg/L	0.03	8/28/2000	EC19102
	Sulphate	15	mg/L	3	8/30/2000	016306
	Tot-Suspended-Solids	48	mg/L	3	8/25/2000	EC10406
	Ammonia-N	22.3	mg/L	0.005	8/24/2000	EC7557
	Bio-Oxy-Demand	97	mg/L	2	8/22/2000	08208
	Faecal_Coliform	630000	CFU/dL	1	8/22/2000	036014

Field Results
Temperature: 14.5°C
Conductivity: 516 µS
pH: 7.5
Time: 08:10

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To: NUNAVUT
Operations Directorate, DIAND
BOX 100

IQALUIT X0A 0H0

Att'n: Philippe Lavallee

LAB# 201688

SAMPLE INFORMATION

Our Lab#: 201688
Your Sample ID: Dump Leachage
Sample Matrix: water

PROJECT:

Collection:
Location: Iqaluit Lagoon/Dump
Date: 8/21/00
By: Philippe Lavallee

Received Date: 8/22/00
Report Date: 29-Sep-00
Approved By:

- SAMPLE ANALYSIS REPORT -

Lab#	Test		Result	Units	Detection Limit	Analysis Date	Analytical Method
201688							
	Tot-Suspended-Solids		27	mg/L	3	8/25/2000	EC10406
	NO3-N+NO2-N		0.241	mg/L	0.008	9/15/2000	07110
	Ammonia-N		6.04	mg/L	0.005	8/24/2000	EC7557
	Total Arsenic(w)-GFAA		1	ug/L	1	9/06/2000	GFAA
	Tot-Cadmium(ICP-MS)		1.4	ug/L	0.3	8/25/2000	ICP-MS
	Tot-Cobalt(ICP-MS)		19	ug/L	1	8/25/2000	ICP-MS
	Tot-Chromium(ICP-MS)		3	ug/L	3	8/25/2000	ICP-MS
	Tot-Copper(ICP/MS)		9	ug/L	2	8/25/2000	ICP-MS
	Tot-Iron(AA)		3.19	mg/L	0.03	8/30/2000	ICP-MS
	Tot-Manganese(ICP-MS)		3540	ug/L	1	8/25/2000	ICP-MS
	Tot-Nickel(ICP-MS)		26	ug/L	1	8/25/2000	ICP-MS
	Tot-Lead(ICP-MS)		3	ug/L	1	8/25/2000	ICP-MS
	Tot-Zinc(ICP-MS)		1870	ug/L	10	8/25/2000	ICP-MS
	Tot-Mercury(water)	<	0.01	ug/L	0.01	9/08/2000	080314

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To: NUNAVUT
Operations Directorate, DIAND
BOX 100
IQALUIT X0A 0H0
Att'n: Philippe Lavallee

LAB# 201688

Phenols	21.5	ug/L	2.00	9/20/2000	006536

Field Tests
Temperature: 11,5°C
Conductivity: 4600 µS
pH: 7,5
Time: 09:40

Environment Canada / Environnement Canada

Memorandum - Note de service

To/À: Philippe Lavallee
Fax # 867-979-6445 (4 pages)

Prepared by/ Préparé par:

Security/ Sécurité: UNCLASSIFIED

From/ De: Anne Wilson

File/ Dossier:

Date: 2000-08-24

Subject/ Objet: **MICROTOX RESULTS**

Hi Philippe!

Attached are the Microtox results for the Iqaluit dump leachate samples, and the sewage effluent sample. The dump leachate sample was non-toxic (the EC50 was greater than the 45% concentrations tested), but the sewage effluent sample was toxic (EC50 at 14%).

Again, if you have any questions, please don't hesitate to call me at 867-669-4735 or Wade Romanko at 867-669-4736.

Thanks,

Anne

cc: Wade Romanko

MICROTOX DATA REPORT
Basic Test

FILE: 00082302.K15
Iqaluit Dump Leachate - Sample collected August 21/2000 @ 09:38

Test Time: 15 minutes Osmotic Adjustment:y

NUMBER	IO/IT	CONC.	CR/GAMMA	% EFFECT
Control	94.91/ 76.44	0.0	0.8054 #	
1	93.02/ 77.04	5.6250	-0.028 *	
2	88.82/ 78.96	11.2500	0.094 *	
3	92.52/ 74.83	22.5000	-0.001 *	
4	95.01/ 66.48	45.0000	0.151	0.0

CR = Control Ratio CORRECTION FACTOR = 0.8054
* Invalid data or controls

EC50 IS GREATER THAN HIGHEST CONCENTRATION

Signature A Fernandes TEST DATE: August 23/2000
TIME: _____

PH 7.5

MICROTOX DATA REPORT
Basic Test

FILE: 00082301.K15
Igaluit Sewage Discharge - Sample collected August 21/2000 @ 09:05

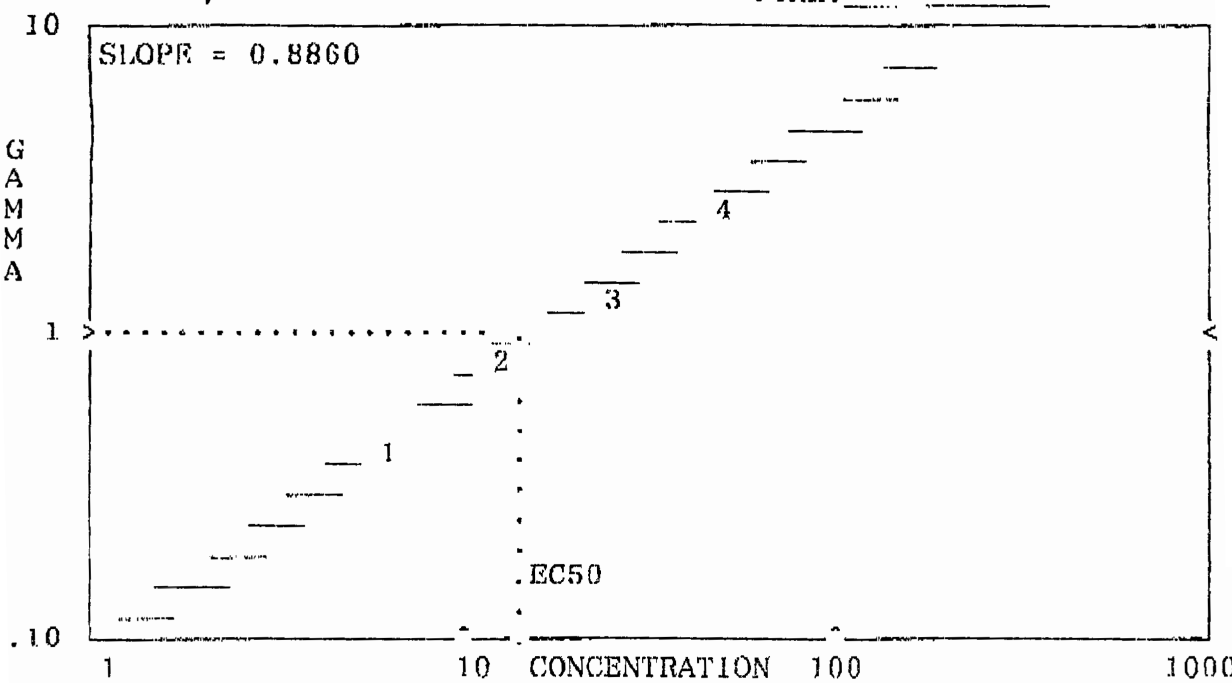
Test Time: 15 minutes Osmotic Adjustment:y

NUMBER	IO/IT	CONC.	CR/GAMMA	% EFFECT
Control	92.42/ 72.56	0.0	0.7851 #	
1	97.67/ 53.25	5.6250	0.440 #	30.6
2	94.63/ 40.35	11.2500	0.841 #	45.7
3	99.75/ 31.49	22.5000	1.487 #	59.8
4	91.25/ 18.76	45.0000	2.819 #	73.8

CR = Control Ratio CORRECTION FACTOR = 0.7851
# Used for calculations

EC50 14.06 % (95% CONFIDENCE RANGE:13.26 TO 14.90)

Signature: *[signature]* TEST DATE: *August 23/2000*
TIME: ______



ESTIMATING EQUATION: LOG C = 1.1280 x LOG Γ +1.1479
95% CONFIDENCE FACTOR: 1.05986 FOR EC50
COEFFICIENT OF DETERMINATION: R^2 = 0.99941

PH → 7.2