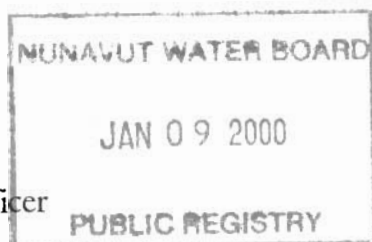




INAC, Nunavut District
Box 100
Iqaluit, NU
X0A 0H0

December 22, 2000.

Rita Mike
Senior Administrative Officer
Hamlet of Pangnirtung
P.O. Box 253
Pangnirtung, NU X0A 0R0



August 23, 2000 Water Licence Inspection - Report

Firstly, I wish to thank Tim Dialla for the much appreciated time and assistance provided during the tour of the Hamlet's water use and waste disposal facilities. Attached for your records is the Municipal Water Use Inspection Report pertaining to the August 23, 2000 inspection; generally, the facilities are managed in an satisfactory manner. However, the state of the facilities themselves, particularly the sewage disposal site, proves less than desirable. Overall, the following considerations were noted, and will need to be addressed:

- **Water supply:** Concern was raised over the proximity of new housing developments to the water intake facility (figure 1), and their potential negative impact on the quality of the Hamlet's water supply. Accordingly, the Inspector will collect a raw water sample during the next field season. In any case, the Licensee may wish to take a proactive approach by considering the feasibility of an eventual upstream relocation of the water intake. Further, especially due to the noted increase in winter water consumption, the Hamlet ought to ensure that sufficient chemicals are in stock to allow for the refill of the reservoir prior to fall freeze-up.
- **Sewage waste disposal:** Significant slumping was observed in the sewage discharge area, thus lessening the efficiency of the already negligible treatment provided by the facility. Indeed, the attached analytical results reveal that essentially untreated sewage effluent is discharged from the sewage disposal area (figure 2). In fact, while the ammonia level exceeds guidelines for the protection of both freshwater and marine life, the sampled concentrations of all regulated parameters violate the effluent quality standards set under the current Water licence (Part C, Item 4). Moreover, the Microtox sample, which constitutes a reliable indicator of the biological toxicity attributed to an associated discharge, indicates extreme toxicity: half of light-producing bacteria were inhibited by a sample concentration of 2.4%, whereas 45% and over is considered non-toxic.

Consequently, by copy of this letter to Community Government and Transportation (CG&T), the Inspector underlines the dire need of an effective and viable sewage treatment/disposal facility for the Hamlet.

- **Solid waste disposal:** Owing to prevailing windy conditions, the perimeter fence has been partly dismantled (figure 3). As a result, a fair quantity of windblown material was noticed beyond the compound. In this regards, the Licensee has already contacted CG&T on the proposed installation of stouter fence poles and wiring. Also, leachate has pooled in the old fish plant disposal area (figure 4), and is seeping out through the downslope berm (figure 5). As the highest tides now reportedly lick the toe of the dump, this area should be monitored for signs of slumping and instability. The attached analytical results relating to the dump leachate sample indicate elevated levels of suspended solids, ammonia, and numerous metals. In addition, a Microtox sample once again attributes a significant toxicity to the discharge: 22.9% versus the 45% non-toxic threshold. This being said, the Licensee pointed out to the Inspector that without formal transferral/ownership documents from the Government of Nunavut, the Licensee could not rightly be assigned responsibility over the status and upkeep of the solid waste disposal facility.

In parallel, the management of waste oil poses definite concerns. The storage area currently consists of a collection of drums, many of which are battered and leaking. Significant ground staining is also noticeable in the area, as oily runoff migrates downslope from the storage site (figure 6). In light of this, the Inspector requests that the Licensee file a spill report, thereby formally acknowledging the release from the waste oil storage area as an unauthorized discharge of waste. Further, the ground along the runoff path from the storage area is to be considered as hydrocarbon-contaminated soil, and consequently disposed of ensuring that waste does not migrate into waters. At the time of the inspection however, the Licensee mentioned that the Department of Sustainable Development had already been contacted on the matter, and that practical recommendations were pending.

- **Operation and Maintenance (O&M) plan:** While an O&M plan for the sewage and waste disposal facilities was due by July 1, 1991, the Licensee has yet to submit the relevant information to the Nunavut Water Board (NWB). As this constitutes an outstanding issue which will undoubtedly stand out during the course of the upcoming Water licence renewal process, the Inspector urges the Licensee to address the said licence condition (Part C, Item 7). In this regards, INAC and/or other implicated agencies can render assistance in the completion of the task.

- **Records & Reporting:** At the time of the inspection, signs pinpointing Surveillance Network Program (SNP) sampling stations were not visible. These need not be overly elaborate, but are nonetheless required to ensure the validity and continuity of the sampling data collected by both Hamlet and Inspector.

In addition, the Licensee must devote fitting attention to the submission of the overdue 1998 and 1999 Annual Reports. This matter is somewhat of a chronic issue, and the Inspector trusts that the Licensee will, without any further prompting, see to providing the NWB with the reports in a timely manner. Lastly, the Inspector hereby reminds the Licensee that Water licence N5L4-1447 expires on December 31, 2000. As the NWB's August 3, 2000 letter points out, the renewal procedures operate within a certain time frame. Accordingly, the Inspector recommends that the Licensee submit a renewal application without delay. Indeed, a Water licence is not a mere paperwork formality, but constitutes a legal requirement under both the *Northwest Territories Waters Act* and the *Nunavut Land Claims Agreement*. Again, INAC and/or other implicated agencies can render further assistance should it be required.

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

Sincerely,



Philippe Lavallée
Water Resources Officer
INAC, Nunavut District

- c.c. - Nunavut Water Board, Gjoa Haven
- CG&T, Iqaluit (Doug Sitland)
- Baffin Health & Social Services, Iqaluit (Bonnie Segal)
- EC Environmental Protection, Yellowknife (Anne Wilson)



MUNICIPAL WATER USE INSPECTION FORM

Date: 2000/08/23 Licensee Rep. (Name/Title): Tim Dialla / Foreman
Licensee: Hamlet of Pangnirtung Licence No.: N5L4-1447

WATER SUPPLY

Source(s): Duval River / Reservoir Quantity used: meter @ 4 245 674 000
Owner:/Operator: Hamlet

Indicate: A - Acceptable U - Unacceptable NA - Not Applicable NI - Not Inspected
Intake Facilities: A Storage Structure: A Treatment Systems: A Chemical Storage: A
Flow Meas. Device: A Convey. Lines: A Pumping Stations: A

Comments: Concerns raised over the proximity of new housing developments to the intake facility. Water use averages 120 m³/day. Reservoir is fenced, truckfill station is well-kept. Awaiting fluoride on upcoming sealift to begin refilling the reservoir. Chlorination in use.

WASTE DISPOSAL

Sewage: Sewage Treatment System (Prim./Sec/Ter.): none; discharge overland to ocean
Natural Water Body: Continuous Discharge (land or water): x
Seasonal Discharge: Wetlands Treatment: very limited Trench:
Solid Waste: Owner/Operator: GN/Hamlet
Landfill: Burn & Landfill: x Other:

Indicate: A - Acceptable U - Unacceptable NA - Not Applicable NI - Not Inspected
Discharge Quality: sampled Decant Structure: U Erosion: U
Discharge Meas. Device: none Dyke Inspection: NA Seepages: U
Dams, Dykes: NA Freeboard: NA Spills: none reported
Construction: NA O&M Plan: U A&R Plan: NA
Periods of Discharge: A Effluent Discharge Rate: not measured

Comments: Significant slumping noticeable in the sewage discharge area. Structure provides very minimal treatment of sewage effluent. The perimeter fence of the solid waste disposal facility is partly dismantled. Sections of the disposal area have recently been capped. No flow observed at the dump's discharge culvert, but leachate noted seeping through the downslope berm. Improper waste oil storage by the old incinerator building. Overdue Operation and Maintenance (O&M) plan.

FUEL STORAGE

Owner/Operator:
Indicate: A - Acceptable U - Unacceptable NA - Not Applicable NI - Not Inspected
Berms & Liners: Water within Berms: Evidence of Leaks:
Drainage Pipes: Pump Station & Catchment Berm:
Pipeline Condition: Not Applicable: x Condition of Tanks:

SURVEILLANCE NETWORK PROGRAM (SNP)

Samples Collected Hamlet: to be taken later in the summer
INAC: sewage discharge (1447-5), dump leachate (1447-7)
Signs Posted SNP: none Warning: yes
Records & Reporting: overdue 1998 and 1999 Annual Reports, renewal application not yet submitted
Geotechnical Inspection: none required

Non-Compliance of Act or Licence: O&M plan, 1998 and 1999 Annual Reports not submitted; respectively due by 1991/07/01, 1999/03/01, and 2000/03/01. Water licence renewal application not yet submitted; current licence expires 2000/12/31. Sewage discharge effluent quality standards exceeded. Improper waste oil management translates into an unauthorized discharge of waste, potentially into waters.

Philippe Lavallée

Inspector's Name

Inspector's Signature



figure 1. Water intake facility, Duval river; 2000/08/23.



figure 2. Path of discharge from the sewage disposal site; 2000/08/23.



figure 3. Partially dismantled fence, solid waste disposal facility; 2000/08/23.



figure 4. Old fish plant disposal area, solid waste disposal facility; 2000/08/23.



figure 5. Leachate from the solid waste disposal facility; 2000/08/23.



figure 6. Waste oil storage site; 2000/08/23.

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# 201707

SAMPLE INFORMATION

Our Lab#: 201707

Your Sample ID: 1447-5

Sample Matrix: sewage

Collection:

Location: Pangnirtung

Date: 8/22/00

By: Philippe Lavallee

PROJECT:

Received Date: 8/23/00

Report Date: 11-Sep-00

Approved By: W. Lavallee**RECEIVED**

001 11 2000

- SAMPLE ANALYSIS REPORT -

Lab#	Test	Result	Units	Detection Limit	Analysis Date	Analytical Method
201707	Calcium	6.71	mg/L	0.05	8/28/2000	EC20003
	Magnesium	3.77	mg/L	0.01	8/28/2000	012102
	Sodium	142	mg/L	0.02	8/28/2000	011102
	Potassium	41.5	mg/L	0.03	8/28/2000	EC19102
	Sulphate	5	mg/L	3	8/30/2000	016306
	Tot-Suspended-Solids	189	mg/L	3	8/29/2000	EC10406
	Ammonia-N	247	mg/L	0.005	9/06/2000	EC7557
	Bio-Oxy-Demand	677	mg/L	2	8/24/2000	08208
	Faecal_Coliform	7000000	CFU/dL	1	8/25/2000	036014

Field Data (00/08/23) 1447-5

Temperature: 16.0 °C

Conductivity: 2310 µS

pH: 8.1

Time: 09:38

MICROTOX DATA REPORT
Basic Test

FILE: 00082501.X15

Pangnirlung Sewage Runoff sample - collected August 23/00 @ 09:35

Test Time: 15 minutes

Osmotic Adjustment: OAS

NUMBER	IO/IT	CONC.	CR/GAMMA	% EFFECT
Control	93.42/ 70.94	0.0	0.7594 #	
1	90.07/ 11.78	5.6250	4.806 #	82.8
2	90.79/ 5.03	11.2500	11.246 #	91.8
3	95.93/ 1.52	22.5000	46.925 #	97.9
4	100.21/ 0.50	45.0000	151.192 *	

CR = Control Ratio
Used for calculations

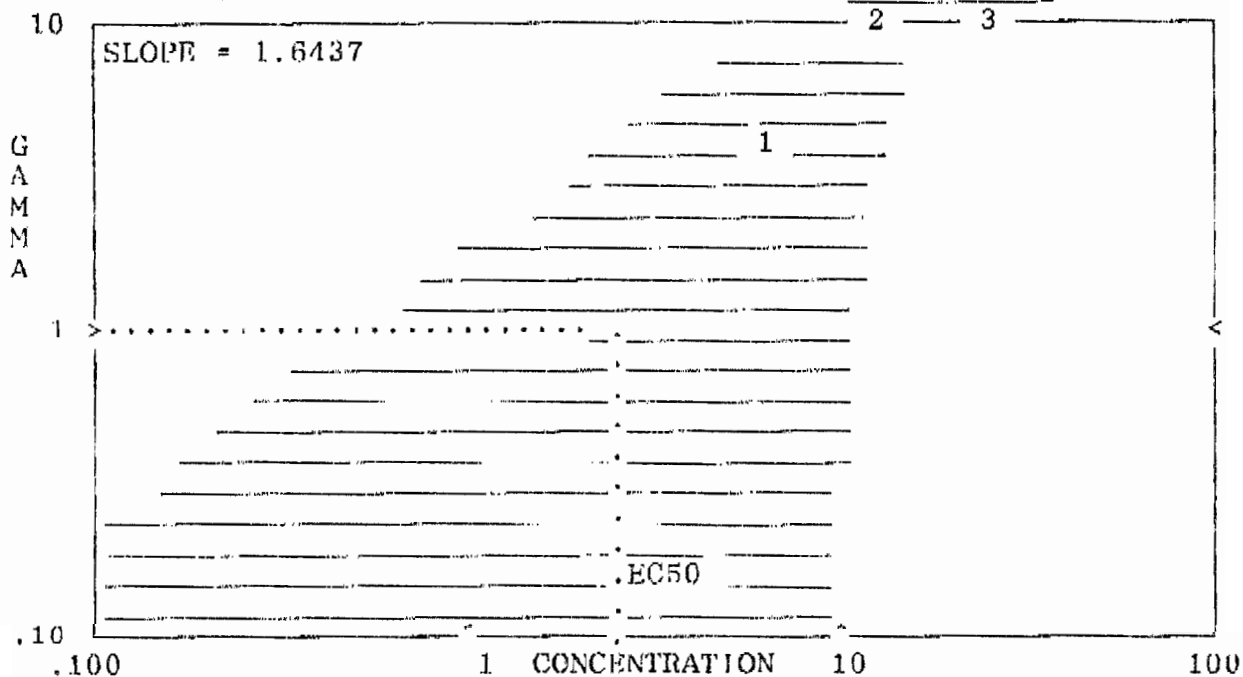
CORRECTION FACTOR = 0.7594
* Invalid data or controls

EC50 2.373 % (95% CONFIDENCE RANGE: 0.109 TO %51.637)

RECOMMEND: RERUN ASSAY AT LOWER CONCENTRATIONS

Signature W. Romanillo

TEST DATE: AUG 25/00
TIME: _____



ESTIMATING EQUATION: $\log C = 0.5956 \times \log I' + 0.3753$
95% CONFIDENCE FACTOR: 21.75885 FOR EC50
COEFFICIENT OF DETERMINATION: $R^2 = 0.97897$

SAMPLE 1447-5

PH 7.9

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Fax: (867) 669-2718

To: NUNAVUT

Operations Directorate, DIAND

BOX 100

IQALUIT

X0A 0H0

Att'n: Philippe Lavallee

LAB# 201708

SAMPLE INFORMATION

Our Lab#: 201708
Your Sample ID: 1447-7
Sample Matrix: dump leachate

Collection:

Location: Pangnirtung
Date: 8/22/00
By: Philippe Lavallee

PROJECT:

Received Date: 8/23/00

Report Date: 29-Sep-00

Approved By: W. Lavallee

RECEIVED

7 OCT 11 2000

D.I.A.N.D.
IQALUIT, NT**- SAMPLE ANALYSIS REPORT -**

Lab#	Test	Result	Units	Detection Limit	Analysis Date	Analytical Method
201708	Tot-Suspended-Solids	258	mg/L	3	8/29/2000	EC10406
	NO3-N+NO2-N	0.066	mg/L	0.008	9/15/2000	07110
	Ammonia-N	149	mg/L	0.005	9/06/2000	EC7557
	T-Phosphorous	0.782	mg/L	0.004	9/11/2000	EC15411
	Total Arsenic(w)-GFAA	11	ug/L	1	9/06/2000	GFAA
	Tot-Cadmium(ICP-MS)	0.8	ug/L	0.3	8/25/2000	ICP-MS
	Tot-Cobalt(ICP-MS)	121	ug/L	1	8/25/2000	ICP-MS
	Tot-Chromium(ICP-MS)	9	ug/L	3	8/25/2000	ICP-MS
	Tot-Copper(ICP/MS)	107	ug/L	2	8/25/2000	ICP-MS
	Tot-Iron(AA)	52.0	mg/L	0.03	8/30/2000	ICP-MS
	Tot-Manganese(ICP-MS)	8420	ug/L	1	8/25/2000	ICP-MS
	Tot-Nickel(ICP-MS)	49	ug/L	1	8/25/2000	ICP-MS
	Tot-Lead(ICP-MS)	4	ug/L	1	8/25/2000	ICP-MS
	Tot-Zinc(ICP-MS)	656	ug/L	10	8/25/2000	ICP-MS

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BOX 100

IQALUIT

X0A 0H0

Att'n: Philippe Lavallee**LAB#** 201708

Tot-Mercury(water)		0.04	ug/L	0.01	9/08/2000	080314
Phenols	H	376	ug/L	2.00	9/20/2000	006536

Field Data (00/08/23) 1447-7

Temperature: 6.0 °C

Conductivity: 2760 µS

pH: 6.9

Time: 09:28

MICROTOX DATA REPORT
Basic Test

FILE: 00082502.K15

Pangnirtung Dump Leachate sample 1447-7 - collected Aug 23/00

@ 09:20

Test Time: 15 minutes

Osmotic Adjustment: OAS

NUMBER	IO/IT	CONC.	CR/GAMMA	% EFFECT
Control	94.15/ 81.87	0.0	0.8696 #	
1	82.37/ 62.29	5.6250	0.150 #	13.0
2	82.96/ 61.01	11.2500	0.182 #	15.4
3	82.78/ 33.70	22.5000	1.136 #	53.2
4	84.71/ 19.03	45.0000	2.871 #	74.2

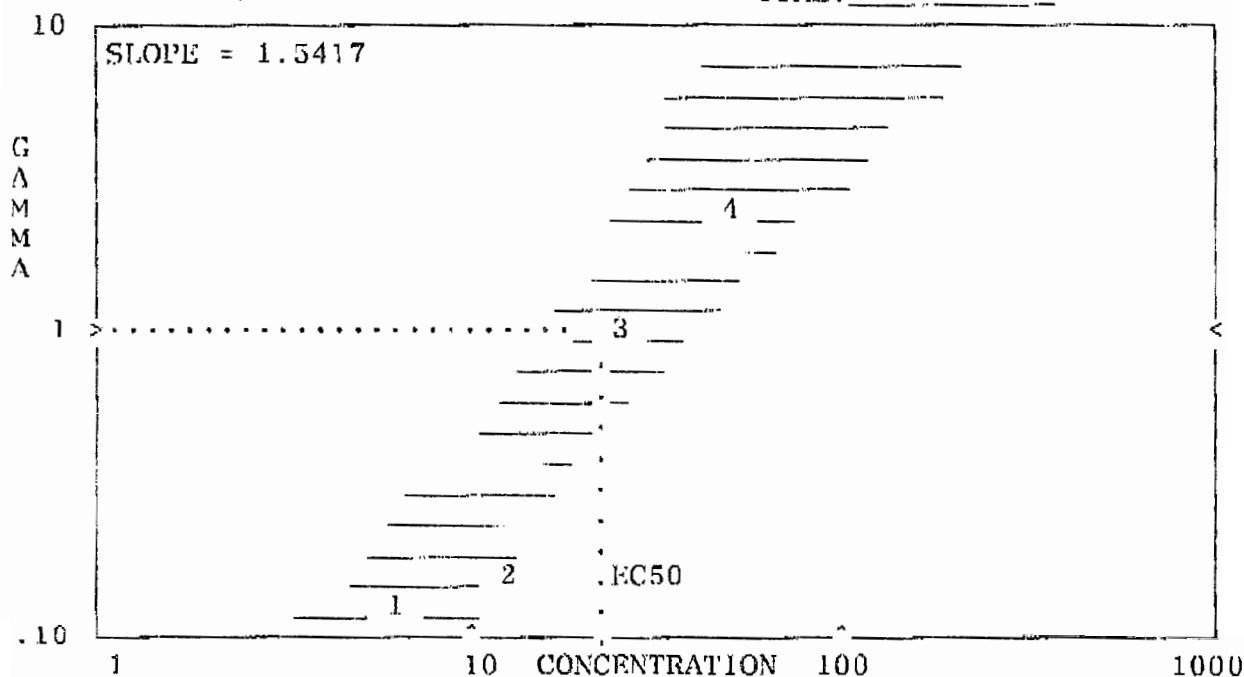
CR = Control Ratio
Used for calculations

CORRECTION FACTOR - 0.8696

EC50 22.87 % (95% CONFIDENCE RANGE: 11.22 TO 46.63)

Signature U. Romand

TEST DATE: AUG 25/00
TIME: _____



ESTIMATING EQUATION: $\log C = 0.6008 \times \log \Gamma + 1.3593$

95% CONFIDENCE FACTOR: 2.03841 FOR EC50

COEFFICIENT OF DETERMINATION: $R^2 = 0.92625$

PH 6.5