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Your file Votre référence

Our file Notre référence
unlicenced

November 8, 2001.

Jonathan Palluq
Senior Administrative Officer
Municipality of Clyde River
P.O. Box 89
Clyde River, NU X0A 0E0

August 2, 2001 Municipal Water Use Inspection - Report

Firstly, I wish to thank David Arreak for the much appreciated time and assistance provided during the tour of the Municipality's water use and waste disposal facilities. Attached for your records is the Municipal Water Use Inspection Report pertaining to the August 2, 2001 inspection; a handful of concerns, some of which outstanding since the previous inspection, were encountered. Accordingly, the following considerations were outlined and will need to be addressed:

- **Water supply:** No concerns were noted with the water intake and supply facility. Further, the attached analytical results relating to a sample collected from the vicinity of the intake station reveal that all tested parameters meet the *Guidelines for Canadian Drinking Water Quality*, save for a slight exception: a turbidity value of 1.5 Nephelometric Turbidity Unit (NTU) which hovers between the 1 NTU maximum acceptable concentration and the 5 NTU aesthetic objective.

- **Sewage disposal:** At the time of the inspection, the sewage disposal facility had already been almost entirely decanted (figure 1). However, it was mentioned that recurring concerns with the sewage lagoon's freeboard and decant structure were again noted this summer. In relation to the annual decant, the inspector points out that it may be advisable to restrict the flow of discharge, thus spreading the decant over a longer period of time in order to maximize aerobic decomposition and secondary biological treatment. Indeed, the attached analytical results relating to a sewage effluent sample collected 10 metres downstream of the decant structure (figure 2) reveal that concentrations of ammonia (118 mg/L vs 2.2 mg/L) and phenol (590 μg/L vs 4 μg/L) considerably exceed the *Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*. Furthermore, while values of biological oxygen demand (291 mg/L) and of faecal coliform (510 000 CFU/100 ml) are also high, the Microtox sample, constituting a reliable toxicity indicator (IC_{50}), shows that half of light-producing bacteria were inhibited by a sample concentration of 5.6%, whereas 50% and over is considered non-toxic.

In parallel, it was mentioned during the inspection that since the retention capacity of the sewage disposal facility is nearly exceeded before the annual decant, the Municipality intends to commission a replacement sewage disposal facility. In this regards, the Inspector underlines that both the abandonment of the current facility and the establishment of a replacement one are undoubtedly of concern to the Nunavut Water Board (NWB), even though the Municipality has not yet been issued its Water licence. Therefore, the Inspector trusts that the Municipality will adopt a diligent stance and provide relevant plans to the NWB before reclamation and/or construction work is undertaken.

- **Solid waste disposal:** Combustible wastes are regularly burnt and covered, and the wastepile at the solid waste disposal facility is covered on an annual basis (figure 3). Further, despite the fact that a section of fence was erected according to prevailing winds, a considerable amount of windblown waste is nonetheless noticeable beyond the perimeter of the facility. Therefore, the Inspector reiterated during the inspection that the existing fence should be expanded upon to fully enclose the solid waste disposal facility. Additionally, while pooled water and marshy areas were noted immediately downslope of the wastepile (figure 4), no flow of leachate could be observed along an apparent path of runoff from the site (figure 5). In related matters, hydrocarbon contamination was once more noted at the waste oil storage site (figure 6). Consequently, the Inspector acknowledges that the Municipality's plans to install a larger form of containment, and is investigating different on-site disposal options.

- **Non-compliance of Act:** The Municipality does not currently hold the Water licence it requires under both the *Northwest Territories Waters Act* and the *Nunavut Land Claims Agreement* for its municipal water use and waste disposal. However, the Municipality has submitted an application to the NWB in September 2000, and the procedural delay is primarily linked to third party material remaining lacking despite numerous requests from the NWB. Hence, by copy of this letter to Community Government and Transportation, the Inspector stresses that this situation is unacceptable, and consequently trusts that the NWB will forthwith receive the required information, thus enabling the timely issuance of a Water licence.

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)
- Environmental Health Officer, Iqaluit (Shaun Mackie)
- EC Environmental Protection, Yellowknife (Anne Wilson)

Indian and Northern Affairs Canada / Affaires Indiennes et du Nord Canada

MUNICIPAL WATER USE INSPECTION FORM

Date: 2001/08/02 **Licensee Rep.** (Name/Title): David Arreak / Foreman

Licensee: **Municipality of Clyde River** **Licence No.:** **unlicenced**

WATER SUPPLY

Source(s): Water Lake **Quantity used:** meter @ 10 994 600 L

Owner:/Operator: Municipality

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

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

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

Comments: No concerns noted in regards to the water intake facility. Water use is metered at intake and recorded at truck delivery. Chlorination in use.

WASTE DISPOSAL

Sewage: **Sewage Treatment System** (Prim./Sec/Ter.): primary; discharge overland to ocean

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

Seasonal Discharge: x **Wetlands Treatment:** limited **Trench:**

Solid Waste: **Owner/Operator:** Municipality

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

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

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

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

Dams, Dykes: A **Freeboard:** A **Spills:** none reported

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

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

Comments: Decant of the sewage disposal facility initiated through pump siphoning over the berm; active thawing of the drain valve again required. Reportedly very little freeboard remaining prior to the sewage lagoon's decant. Slightly slumped sections noticeable along the decant face of the lagoon berm, but less seepage noted than during the previous inspection. Bulky metal wastes and hazardous materials segregated (batteries are neutralized prior to disposal) from the household wastes which are regularly burnt, and annually covered. Pooled water and marshy areas present along the toe of the partially fenced solid waste disposal facility, but no flow observed along an apparent path of runoff. Signs of ground contamination at the waste oil storage site. Landfarm site for hydrocarbon-contaminated soil erected by a third party alongside the solid waste disposal facility; winter winds tore down part of its perimeter fence and snowdrifts from the site reportedly hindered access to the dumpsite.

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:** none

INAC: drinking water @ lake intake, sewage discharge 10m from decant point

Signs Posted **SNP:** not applicable **Warning:** none

Records & Reporting: not applicable

Geotechnical Inspection: not applicable

Non-Compliance of Act or Licence: Community is unlicenced; however, a Water licence application has been submitted to the Nunavut Water Board, and is currently being processed.

Philippe Lavallée

Inspector's Name **Inspector's Signature**

figure 1. Recently-decanted sewage disposal facility; 2001/08/02.

figure 2. Decant structure and path of discharge from the sewage lagoon; 2001/08/02.

figure 3. Solid waste disposal facility; 2001/08/02.

figure 4. Toe of the solid waste disposal facility; 2001/08/02.

figure 5. Apparent path of runoff from the solid waste disposal facility; 2001/08/02.

figure 6. Hydrocarbon contamination at the waste oil storage site; 2001/08/02.

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

- CERTIFICATE OF ANALYSIS -

Prepared For: Nunavut District Office DIAND, Operations *Attn:* Philippe Lavalllee

Sample ID: Raw Water **Taiga Sample ID:** 211888

Client Project: **Sample Type:** **Received Date:** 03-Aug-01

Location: Clyde River **Sampling Date:** 03-Aug-01

Report Status: **Final** ***Approved by:***

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Colour	5		5	08-Jul-01
Solids, Total Dissolved	11	mg/L	10	04-Sep-01
Turbidity	1.5	NTU	0.1	08-Jul-01
Nutrients				
Ammonia as N	< 0.005	mg/L	0.005	22-Aug-01
Biological Oxygen Demand	< 2	mg/L	2	03-Aug-01
Nitrate+Nitrite as N	< 0.008	mg/L	0.008	17-Aug-01
Major Ions				
Chloride	4.0	mg/L	0.2	14-Aug-01
Sodium	2.52	mg/L	0.02	15-Aug-01
Sulphate	< 3	mg/L	3	08-Aug-01
Microbiology				
Coliforms, Fecal	< 1	CFU/100mL	1	03-Aug-01
Metals, Total				
Arsenic	< 1.0	µg/L	1.0	10-Aug-01

Report Date: October 15, 2001

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- CERTIFICATE OF ANALYSIS -

Prepared For: Nunavut District Office DIAND, Operations *Attn:* Philippe Lavalllee

Sample ID: Raw Water **Taiga Sample ID:** 211888

Cadmium	< 0.3	µg/L	0.3	09-Aug-01
Chromium	< 3	µg/L	3	09-Aug-01
Cobalt	< 1	µg/L	1	09-Aug-01
Copper	< 2	µg/L	2	09-Aug-01
Iron	56	µg/L	30	13-Aug-01
Lead	1	µg/L	1	09-Aug-01
Manganese	2	µg/L	1	09-Aug-01
Mercury	< 0.01	µg/L	0.01	03-Aug-01
Nickel	< 1	µg/L	1	09-Aug-01
Zinc	< 10	µg/L	10	09-Aug-01

Field Data (01/08/02) **raw water**
Temperature: 16.0 °C
Conductivity: 38 µS/cm
pH: 7.7 **Time:** 13:34

Report Date: October 15, 2001

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- CERTIFICATE OF ANALYSIS -

Prepared For: Nunavut District Office DIAND, Operations *Attn:* Philippe Lavalllee

Sample ID: Sewage Discharge **Taiga Sample ID:** 211889

Client Project: **Sample Type:** **Received Date:** 03-Aug-01

Location: Clyde River **Sampling Date:** 03-Aug-01

Report Status: **Final** ***Approved by:*** _____

Test Parameter	Result	Units	Detection Limit	Analysis Date	Data Qualifier
Physicals					
Solids, Total Suspended	106	mg/L	3	22-Aug-01	
Nutrients					
Ammonia as N	118	mg/L	0.005	22-Aug-01	
Biological Oxygen Demand	291	mg/L	2	03-Aug-01	
Nitrate+Nitrite as N	0.012	mg/L	0.008	17-Aug-01	
Phosphorous, Total	13.9	mg/L	0.004	13-Sep-01	
Microbiology					
Coliforms, Fecal	510000	CFU/100mL	1	03-Aug-01	
Organic					
Phenols	590.0	µg/L	0.5	22-Aug-01	
Metals, Total					
Mercury		µg/L	0.01		14

Field Data (01/08/02) sewage
Temperature: 19.5 °C
Conductivity: 1 367 µS/cm
pH: 7.7 Time: 14:13

Report Date: Tuesday, October 09, 2001

REPORT OF TOXICITY USING MICROTOX

COMP. Y/LOCATION: **Clyde River, Lagoon Discharge**

Sample Collected By: Philippe Lavallee

Date/Time Sampled: **August 2, 2001, 14:13**

Date/Time Received: **N/A**

Date/Time Test Start: **August 13, 2001, 11:51 AM**

Sample Type: Elutriate
Sampling Method: Grab

Method: ***Environment Canada Laboratories SOP#830.0 Revision 1, for Microtox Testing in Compliance wit November 1992: Biological Test Method: Toxicity Test Using Luminescent Bacteria Photobacterium phosphoreum), November 1992, EPS 1/RM/24.***

Environment Canada has conducted testing on the material sampled according to its own Microtox standards an procedures. The data proceeding from that testing is intended as a preliminary screening tool only, and cannot b used for any other purpose. This data is provided on the condition that it not be used in any report that is intende for public or official use.

RESULTS: **TOXIC - IC_{50} Concentration: 5.6%** **(Toxic 0 to 50%)**

TEST ORGANISMS:
Species: Vibrio fisheri (Photobacterium phosphoreum)
Test Apparatus: Model 500 Analyzer

TEST SUBSTANCE/CONDITIONS

pH of Sample: **6.6** (No pH adjustment)

Sample Appearance: **no colour adjustment**

Lot # of Osmotic Adjusting Solution: OAS007

Lot # of Reconstitution Solution: RSN099Y

Lot # of Diluent: DIL034L

TEST METHODS AND CONDITIONS

Test Start Date/Time: **August 13, 2001 / 11:51 AM**

Test Method: Basic 45% Test, 15 minute incubation.

QUALITY CONTROL

Reference Toxicant: Zinc Sulfate Standard

Reagent Lot #: ACV026-6

IC_{50} - 15 minutes mg/L: **3.4 mg/L**

IC_{50} Confidence Range: **2.3 to 5.1 mg/L**

TEST ANALYST: Ron Bujold

INITIAL: RB