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N6L4-1538 (expired)

October 26, 2001.

Arthur Osborne
Senior Administrative Officer
Hamlet of Chesterfield Inlet
P.O. Box 10
Chesterfield Inlet, NU X0C 0B0

August 28, 2001 Municipal Water Use Inspection - Report

Firstly, I wish to thank Harry Aggark 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 28, 2001 inspection; although improvements have been made since the previous inspection, several issues nonetheless warrant some attention. Accordingly, the following considerations were noted and will need to be addressed:

- **Water supply:** At the time of the inspection, final groundwork was being carried out in preparation for the annual refill, from First Lake (figure 1), of the municipal water reservoir (figure 2). However, concerns were expressed in regards to the refilling operation since murky water had recently been noted by municipal staff during truckfill, and a boiling order had consequently been issued. In light of this, the raw water sample taken during the inspection was collected from the reservoir instead of the supply source at First Lake. While the Inspector apologizes for the lateness of the report, the attached analytical results relating to the reservoir sample indicate that the municipal raw water supply meets the *Guidelines for Canadian Drinking Water Quality*, save for a single exception: a field pH of 8.7, which lies slightly above the 6.5-8.5 aesthetic objective. Given the above results, the Inspector recognizes that the new water truck awaited on the summer sealift ought to adequately address the matter.
- **Sewage disposal:** No concerns were noted in regards to the sewage disposal facility (figure 3). In fact, the abundant vegetation along the path of effluent discharge (figure 4) seemingly adds to the primary treatment provided by the initial retention time at the sewage disposal facility. Thus, the attached analytical results relating to a sample taken 50 metres downslope of the sewage discharge point reveal that all tested parameters meet the *Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*, save for field pH (9.1 vs 6.5-9.0).

Nevertheless, the Microtox sample, which constitutes a reliable toxicity indicator (IC_{50}), shows that half of light-producing bacteria were inhibited by a sample concentration of 42%, whereas 50% and over is considered non-toxic. Thus, in an attempt to pinpoint the cause of the faint toxicity attributed to the sewage effluent discharge, a wider range of parameters will be sampled during the next municipal water use and waste disposal inspection.

- **Solid waste disposal:** Combustible household wastes are well managed, as the wastepile is regularly burnt and periodically compacted/covered (figure 5). Further, bulky metal wastes are segregated, and a form of containment is now provided for batteries and similar hazardous materials. In addition, as opposed to observations made during the previous inspection, leachate was no longer flowing from the toe of wastepile. However, concerns remain in regards to waste oil management. Indeed, leaking drums and hydrocarbon-contaminated soil were both noticeable at the waste oil storage site (figure 6). Taking into account the associated potential for the deposit of waste into waters, the state of the waste oil storage needs to be remedied. As such, the Inspector acknowledges that the Hamlet plans to contact neighbouring communities equipped with waste oil furnaces regarding the possibility of dispatching them the Hamlet's waste oil on sealift backhauls.

- **Non-compliance of Act or Licence:** Since the expiry of Water licence N6L4-1538 on 1998/07/31, the Hamlet does not 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. Therefore, the Inspector again points out that a partial renewal application was provided in August 1998, and that the Nunavut Water Board's 1999/11/17 memo subsequently outlines the lacking information. In parallel, the Hamlet has omitted to produce the following licenced requirements: 1996 and 1997 Annual Reports, Operation and Management (O&M) and Abandonment and Restoration (A&R) plans relating to municipal waste disposal facilities. The Inspector trusts these outstanding issues will be seen to without further prompting.

Please feel free to contact me at (867) 975-4298 or lavallecp@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, Rankin Inlet (Don Forsyth)
- Keewatin Health & Social Services, Rankin Inlet (Wanda Poirier)
- EC Environmental Protection, Yellowknife (Anne Wilson)



MUNICIPAL WATER USE INSPECTION FORM

Date: 2001/08/28 Licensee Rep. (Name/Title): Harry Aggark / Foreman
Licensee: Hamlet of Chesterfield Inlet Licence No.: N6L4-1538 (expired)

WATER SUPPLY

Source(s): First Lake / Reservoir Quantity used: meter @ 978 050
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: Final groundwork being carried out in preparation for the annual refill, from First Lake, of the municipal water reservoir. Submersible pump and intake line at the reservoir not serviced since their installation; arrangements taken. Chlorination in use.

WASTE DISPOSAL

Sewage: Sewage Treatment System (Prim./Sec/Ter.): secondary; discharge overland to ocean
Natural Water Body: x Continuous Discharge (land or water):
Seasonal Discharge: x Wetlands Treatment: x Trench:

Solid Waste: Owner/Operator: Hamlet

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

Comments: No concerns noted in regards to the sewage disposal facility; abundant vegetation along path of discharge. Solid waste disposal facility apparently well-managed; wastepile to be compacted towards the toe of the dump and covered before fall freeze up. No noticeable leachate flowing from the facility. Bulky metal wastes are segregated. Containment now provided for the storage of batteries and similar hazardous materials. Signs of hydrocarbon contamination observed in the waste oil storage area. Overdue requirements of the now expired Water licence: Operation and Maintenance (O&M) and Abandonment and Restoration (A&R) plans.

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: raw water @ reservoir, sewage effluent 50m from discharge
Signs Posted SNP: none Warning: none @ waste disposal facilities
Records & Reporting: Overdue requirements of the now expired licence; renewal application pending
Geotechnical Inspection: not applicable

Non-Compliance of Act or Licence: Hamlet's water uses and waste disposals are unlicensed since Water licence N6L4-1538 expired on 1998/07/31. Handful of requirements relating to the now expired licence (1996 and 1997 Annual Reports, O&M plan, A&R plan) remain outstanding.

Philippe Lavallée

Inspector's Name

Inspector's Signature



figure 1. Water intake facility at First Lake; 2001/08/28.



figure 2. Municipal water reservoir, prior to refilling operations; 2001/08/28.



figure 3. Sewage disposal facility, adjacent to the solid waste disposal site; 2001/08/28.



figure 4. Path of effluent discharge from the sewage disposal facility; 2001/08/28.



figure 5. Solid waste disposal facility; 2001/08/28.

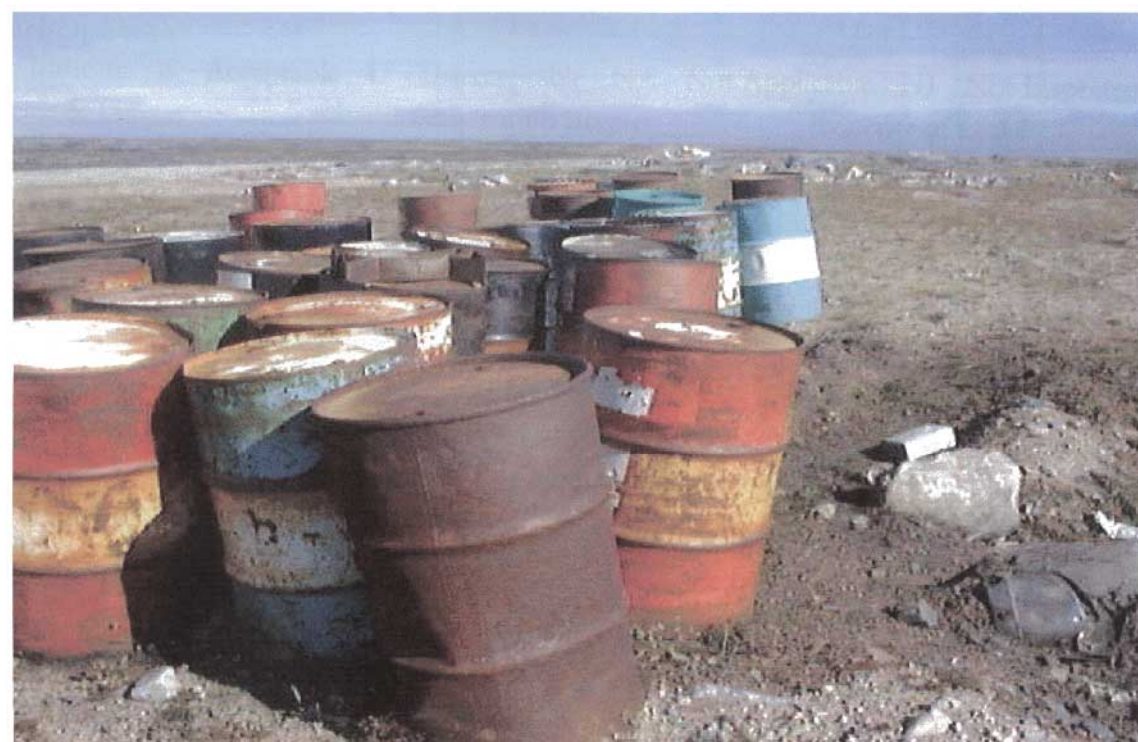


figure 6. Signs of hydrocarbon contamination at the waste oil storage site; 2001/08/28.



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

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- CERTIFICATE OF ANALYSIS -

Prepared For: Nunavut District Office

DIAND, Operations

Attn: Philippe Lavallee

Sample ID: raw water

Taiga Sample ID: 212230

Client Project:

Sample Type: freshwater

Received Date: 29-Aug-01

Location: Chesterfield Inlet

Sampling Date: 28-Aug-01

Report Status: Final

Approved by:

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Colour	< 5		5	31-Aug-01
Solids, Total Dissolved	58	mg/L	10	04-Sep-01
Turbidity	0.8	NTU	0.1	31-Aug-01
Nutrients				
Ammonia as N	< 0.005	mg/L	0.005	07-Sep-01
Biological Oxygen Demand	3	mg/L	2	29-Aug-01
Nitrate+Nitrite as N	< 0.008	mg/L	0.008	31-Aug-01
Major Ions				
Sodium	14.9	mg/L	0.02	29-Aug-01
Microbiology				
Coliforms, Fecal	< 1	CFU/100mL	1	29-Aug-01
Metals, Total				
Arsenic	< 1.0	µg/L	1.0	13-Sep-01
Cadmium	< 0.3	µg/L	0.3	09-Sep-01
Chromium	< 3	µg/L	3	09-Sep-01



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Prepared For: Nunavut District Office

DIAND, Operations

Attn: Philippe Lavalllee

Sample ID: raw water

Taiga Sample ID: 212230

Cobalt	<1	µg/L	1	09-Sep-01
Copper	<2	µg/L	2	09-Sep-01
Iron	<30	µg/L	30	08-Sep-01
Lead	<1	µg/L	1	09-Sep-01
Manganese	<1	µg/L	1	09-Sep-01
Mercury	<0.01	µg/L	0.01	13-Sep-01
Nickel	<1	µg/L	1	09-Sep-01
Zinc	17	µg/L	10	09-Sep-01

Subcontracted Tests

Chloride	29.0	mg/L	0.1	17-Sep-01
Sulphate	4.0	mg/L	0.3	17-Sep-01

Field Data (01/08/28) raw water
Temperature: 11.5 °C
Conductivity: 129 µS/cm
pH: 8.7 **Time:** 10:31



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- CERTIFICATE OF ANALYSIS -

Prepared For: Nunavut District Office

DIAND, Operations

Attn: Philippe Lavalllee

Sample ID: sewage discharge

Taiga Sample ID: 212231

Client Project:

Sample Type: sewage

Received Date: 29-Aug-01

Location: Chesterfield Inlet

Sampling Date: 28-Aug-01

Report Status: Final

Approved by:

Lab Section	Test Parameter	Result	Units	Detection Limit	Analysis Date
Microbiology	Coliforms, Fecal	<1	CFU/100mL	1	29-Aug-01
Nutrients	Ammonia as N	0.026	mg/L	0.005	07-Sep-01
	Biological Oxygen Demand	<2	mg/L	2	29-Aug-01
	Nitrate+Nitrite as N	0.011	mg/L	0.008	10-Sep-01
	Phosphorous, Total	0.672	mg/L	0.004	13-Sep-01
Physicals	Solids, Total Suspended	<3	mg/L	3	11-Sep-01
Subcontract	Phenols	<0.5	µg/L	0.5	17-Sep-01

Field Data (01/08/28) sewage

Temperature: 12.5 °C

Conductivity: 420 µS/cm

pH: 9.1

Time: 11:30

REPORT OF TOXICITY USING MICROTOX

COMPAN .OCATION: Chesterfield - Sewage Discharge

Sample Collected By: Philippe Lavallee

Date/Time Sampled: August 28, 2001

Date/Time Received: August 28, 2001

Date/Time Test Start: August 29, 2001

Sample Type: Elutriate

Sampling Method: Grab

Method: *Environment Canada Laboratories SOP#830.0 Revision 1, for Microtox Testing in Compliance with 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 and procedures. The data proceeding from that testing is intended as a preliminary screening tool only, and cannot be used for any other purpose. This data is provided on the condition that it not be used in any report that is intended for public or official use.

RESULTS: TOXIC - IC₅₀ Concentration: 42.0% (Toxic 0 to 50%)

TEST ORGANISMS:

Species: Vibrio fisheri (Photobacterium phosphoreum)

Test Apparatus: Model 500 Analyzer

TEST SUBSTANCE/CONDITIONS

pH of Sample: N/A (No pH adjustment)

Lot # of Osmotic Adjusting Solution: OAS007

Sample Appearance: Clear, no colour adjustment

Lot # of Reconstitution Solution: RSN099Y

Lot # of Diluent: DIL034L

TEST METHODS AND CONDITIONS

Test Start Date/Time: August 29, 2001 / 02:53 PM

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

QUALITY CONTROL

Reference Toxicant: Zinc Sulfate Standard

Reagent Lot #: ACV026-6

IC₅₀ - 15 minutes mg/L: 2.8 mg/L

IC₅₀ Confidence Range: 2.7 to 2.9 mg/L

TEST ANALYST: Wade Romanko

INITIAL: WR