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**Nunavut District Office  
Field Operations  
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**Your file - Votre référence**

**January 7, 2008**

**Our file - Notre référence  
NWB3GJO0409**

**Raymond Kamookak  
Senior Administrative Officer  
Hamlet of Gjoa Haven  
Box 200  
Gjoa Haven, NU XOB 1J0  
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**RE: September 11<sup>th</sup> 2007 Gjoa Haven Municipal Water Inspection**

First of all, I would like to thank Raymond Kamookak for his time and assistance during the municipal inspection. Due to time and weather constraints, INAC representatives only had 2 hours on the ground to conduct this inspection. These constraints made it very difficult to conduct the physical inspection and to go through Gjoa Haven's water licence with the Hamlet's staff. INAC will schedule additional time needed next year to complete a thorough inspection along with a sit down with the Hamlet SAO and staff.

**Water Supply:**

Water for the community is taken from Water Lake and then transferred to a holding and storage tank located at the site of the old pumping station within the community of Gjoa haven. The new building was completed last year and was built to hold enough water for the community for 5 – 7 days. The water is treated with chlorine before it is distributed to the community residents.

**Sewage Lagoon:**

An inspection of the lagoon showed sufficient capacity and more than a metre of freeboard. The lagoon continuously discharges into a wetland treatment area before it is discharged into the ocean. The continuous discharge is through (and perhaps over) one section of the lagoon which seems to have been washed out and not sufficiently repaired. The flow from the lagoon flows past the landfill so some mixing of sewage and effluent from the landfill occurs.

**Landfill:**

The landfill is located adjacent to the sewage lagoon. The landfill is a fenced burn and bury facility, however one section of fence is missing and needs to be repaired. Wastes are poorly segregated in the landfill, with metal wastes mixed in with the general garbage. No standing water or run-off was evident at the time of the inspection so no samples could be taken from this SNP site.

**Part B: General Conditions**

Item 1. Requires the licensee to file an annual report by March 31<sup>st</sup> of the year following the issuance of this license. **No annual reports have been filed with the NWB since 2001.**

**Part C: Conditions applying to Water Use**

At the time of the inspection, access was not provided to the water supply facility, therefore the volume water used this past year is unknown. This item will be placed in the priority list of things to look at during next year's inspections.

**Part D: Conditions Applying to Waste Disposal**

Sample ID	Sample Type	Sample Collect Date	Parameter Name	Result Flag	CCME Guidelines	Report ed Result	Units	Calc MDL
Lagoon	Sewage	9/11/2007	Ammonia as Nitrogen		19	37800	μg/L	0.005
Lagoon	Sewage	9/11/2007	Nitrate+Nitrite as Nitrogen		60	90	μg/L	0.01
Lagoon	Sewage	9/11/2007	Solids, Total Suspended		120	214	mg/L	3
Lagoon	Sewage	9/11/2007	Nitrate as Nitrogen		60	90	μg/L	0.01
Lagoon	Sewage	9/11/2007	Copper		200	19.1	μg/L	0.3
Lagoon	Sewage	9/11/2007	Iron		300	1480	μg/L	50
Lagoon	Sewage	9/11/2007	Manganese		50	92.8	μg/L	0.1

Parameters that exceeded the *Guidelines for the Discharge of Treated Municipal Waste Water in the Northwest Territories* were as follows:

Parameter	Sample result	Guideline
Iron	1480 µg/L	300 µg/L
Manganese	92.8 µg/L	50 µg/L
Nitrate and Nitrite as N	90 µg/L	60 µg/L
Nitrate as Nitrogen	90 µg/L	60 µg/L
Ammonia as N	37800 µg/L	19 µg/L
TSS	241 mg/L	100 mg/L

The copper concentration was lower than the *Guidelines for the Discharge of Treated Municipal Waste Water in the Northwest Territories*, but exceeded the CCME Guidelines for the Protection of Aquatic Life (2003).

Item 3. There was sufficient freeboard (1 metre) at the time of the inspection, but storage is not available due to a washed out section of the lagoon berm, lowering the lagoon's capacity.

#### **Part F: Conditions applying to Operation and Maintenance.**

Item 1. An Operation and Maintenance Manual and a Spill Contingency plan for the sewage lagoon and solid waste disposal facility could not be found on the NWB's ftp site. The licensee should make every effort to comply with the terms and conditions of the license prior to the next inspection.

Item 4. The washed out section of the lagoon berm was repaired to a lower level with rocks, which allows continuous discharge. The licensee should notify the NWB and INAC Field Operations when final repairs are completed on the washed out section and if continuous discharge through seepage will continue.

#### **Part H: Conditions Applying to Monitoring.**

Item 1. No SNP stations are in place for the monitoring program. Stations (signage) should be put in place for the sewage lagoon, raw water supply, and solid waste area. Four stations in total must be put in place for sampling purposes.

Item 2. No records of monthly sampling at stations GJO-2 or GJO-4 during the months of May to August are available. Also, no annual reports have been submitted to the NWB since 2001.

Item 6. No documents for the QA/QC plan could be found at the time of this inspection. No reports are posted on the NWB ftp site pertaining to quality assurance and quality control.

### **Non-Compliance of Act or Licence:**

As noted in previous inspections, sewage is not adequately treated before flowing into the environment. This inadequate treatment is due mainly to the washed out area of the lagoon berm, which reduces available storage and retention time. This section will have to be repaired in order for the lagoon to work properly and give the sewage enough retention time before it is released for wetland treatment. The Hamlet should plan to have the berm repaired by the next inspection during the summer of 2008.

As per the water licence issued to the Municipality, the Hamlet must provide an Operation and Maintenance Manual for operating and maintaining waste disposal and sewage lagoon sites. It is not clear if this has been done. The operation manual should include identification of decant points and times. If the Hamlet wishes to allow continuous summer discharge, the Hamlet should inform the Nunavut Water Board and provide a copy of its operation plan.

The releases from the sewage lagoon flow past the landfill and probably mix with leachate from the landfill. The Hamlet should re-align the flow-path of the lagoon releases or improve the wetland treatment of the flows from the sewage lagoon and landfill. Satellite and previous photos seem to indicate that previous lagoon releases occurred at a different location and the flows followed a different path. The Hamlet should clarify its preferred location for releases and flow path in its operation manual and annual report to the Board.

The Hamlet of Gjoa Haven is required to have a Surveillance Network Program (SNP) in place and develop a Quality Assurance/ Quality Control Plan. INAC hopes that a QA/QC plan will be submitted by March 31, 2008 to the Nunavut Water Board and this office and SNP locations will be clearly marked by the summer of 2008. The Inspector can offer assistance on choosing and marking the SNP locations.

Annual reports from the Hamlet of Gjoa Haven have not been submitted to the NWB since 2001. It is highly recommended that annual reports be completed and submitted to the NWB each year, beginning for 2007, with summaries of previous years included. These reports give NWB and INAC a better understanding of what is happening in the community with regards to water usage and waste/sewage disposal.

If there are any concerns or questions in regards to this inspection please contact me at (867) 975 4568 or [RumboltI@inac.gc.ca](mailto:RumboltI@inac.gc.ca)

Sincerely,

Ian Rumbolt  
Water Resources Technician  
INAC, Nunavut Region

cc. Nunavut Water Board  
CGS, Government of Nunavut

## Photos



Photo 1: Continuous sewage discharge due to washed out section of berm.



Photo 2. Section of fence missing from solid waste facility.





Photo 3. Poor segregation in solid waste facility. Metal waste mixed in with general garbage.



Photo 4. Pathway of sewage effluent from lagoon to ocean.