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Nunavut District Office
Field Operations
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre reference

April 2, 2008

Our file - Notre référence
Unlicenced

Senior Administrative Officer
Hamlet of Kugaaruk
Kugaaruk, Nunavut X0A 0L0

RE: September 11th 2007 Kugaaruk Municipal Water Inspection

First of all, I would like to thank the recreational director 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 the municipality's water licence with the Hamlet 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

Raw water for the hamlet is taken from the Kugaaruk River. It is then pumped to a pumping station where delivery trucks transfer it to the hamlet. Chlorine is added to the water before it is transferred to the water trucks. Records for chlorine are kept up to date and stored in the pumping station. There are no signs identifying the hamlets drinking water source. A water sample was taken at the river near the pumping station.

Sewage Lagoon

At the time of the inspection the hamlet had already begun constructing a new sewage lagoon just above the old lagoon. In speaking with the hamlet staff it was understood that the old lagoon would be used as a back-up. A sample was taken at the first discharge point after the old lagoon.

Landfill

The landfill for the Hamlet is located adjacent to the sewage lagoon. The landfill is a burn and bury facility that should be better segregated. The landfill is not fenced in and there is wind blown garbage all over the place. A sample was taken in standing water at the toe of the landfill.

Part B: General Conditions

Item 1. In checking with the NWB website there have been no annual reports filed. Annual reports must be provided for all water usage including drinking water usage and waste discharge. Also, SNP data must be provided along with any unauthorized discharges and summary of follow up action.

Item 2. There are no SNP stations in place for the sampling program. The sampling locations should be clearly marked by GPS and with signs in order to provide consistent sampling from year to year.

Part C: Conditions applying to Water Use

Item 3. There have been no annual reports submitted to the NWB therefore it is uncertain how much water is actually used. Annual reports for water usage must be submitted by March 31, 2008 in order to comply with the hamlets water licence.

Part D: Conditions Applying to Waste Disposal

Table 1. Parameters that exceeded the Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories and CCME Guidelines for the Protection of Aquatic Life.

Sample ID	Sample Type	Sample Collect Date	Parameter Name	Reported Result	Guideline	Units
Water Intake	Freshwater	9/11/2007	Aluminum	17.2	5.0	µg/L
Water Outlet	Freshwater	9/11/2007	Aluminum	16.8	5.0	µg/L
Dump	Wastewater	9/11/2007	Ammonia as Nitrogen	23.0	0.019	mg/L
Dump	Wastewater	9/11/2007	Solids, Total Suspended	226	180	mg/L
Dump	Wastewater	9/11/2007	Iron	36600	300	µg/L
Dump	Wastewater	9/11/2007	Manganese	2690	50	µg/L
Dump	Wastewater	9/11/2007	Zinc	2360	500	µg/L
Lagoon	Sewage	9/11/2007	Ammonia as Nitrogen	74.2	0.019	mg/L
Lagoon	Sewage	9/11/2007	Nitrate+Nitrite as Nitrogen	0.13	0.06	mg/L
Lagoon	Sewage	9/11/2007	Nitrate as Nitrogen	0.13	0.06	mg/L
Lagoon	Sewage	9/11/2007	Iron	1880	300	µg/L
Lagoon	Sewage	9/11/2007	Manganese	532	500	µg/L

Item 2. All sewage effluent discharged from the sewage disposal facilities at "Surveillance Network Program" Station Number PEL-3 shall meet the following effluent quality standards:
Total Suspended Solids (TSS) – 180 mg/L
Faecal Coliforms – 1 x 10^4 CFU/100 ml
BOD_5 – 120 mg/L
pH – 6 to 9
Oil & Grease – No visible sheen

In the table above iron, manganese, ammonia, zinc and nitrogen greatly exceeded the

Guidelines for the Discharge of Treat Municipal Wastewater in the Northwest Territories (1992) and the CCME Guidelines for the Protection of Aquatic Life (2003).
Water quality results in the table above show that the Total Suspended Solids (TSS) concentration of 226 mg/L exceeds the Guidelines for the Discharge of Treated Municipal Wastewater in the Northwest Territories (1992) and is higher than the TSS concentration outlined in the Hamlet of Pelly Bay water licence. The TSS concentration for the water licence is 120 mg/L which is decided on by the Nunavut Water Board.

Part E: Conditions applying to Modifications
At the time of the inspection, the Hamlet of Kugaaruk had almost finished the construction of the new lagoon located just above the old one. In conversations with the SAO the old lagoon will be used as a back up system.

Part G: Conditions applying to Operation and Maintenance (O&M)
To my knowledge there are no O&M plans in place for the Sewage and Solid Waste Facilities.

Part H: Conditions Applying to Monitoring
An abandonment and restoration plan should be developed for the old sewage lagoon.

Non-Compliance of Act or Licence

1) The Hamlet of Kugaaruk must put up SNP stations for the water quality monitoring outlined in the water licence (PEL-1, PEL-2, and PEL-3). These stations should be marked with GPS in the event that the signs have been taken down or removed.
2) O&M Plans must be developed for the Sewage and Solid Waste Facilities.
3) Annual reports of water usage and waste discharge must be recorded and submitted to the NWB no later than March 31st of each year.
4) An A&R plan for the old sewage lagoon should be put in place in case the Hamlet decides to not use it as a back up or get rid of it.
5) Due to the high concentrations of ammonia and iron, more retention time is needed before wastewater and sewage can be discharged. This will hopefully be fixed when the new lagoon has been constructed and in use.

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

Sincerely,

Ian Rumbolt
Water Resources Technician
INAC, Nunavut Region

cc. Nunavut Water Board

Photos

Picture 1. Construction of new lagoon located above old lagoon.

Picture 2. Chlorine being added to the tanks before it gets distributed to the community.

Photo 3. No fence surrounding the solid waste facility and little segregation.

Photo 4. Raw water sampling point next to pumping station.