Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

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Your file - Votre reference

Our file - Notre référence
Unlicenced

March 11, 2004

Chief Administrative Officer
City of Iqaluit
Iqaluit, Nunavut
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Re: Water Licence Inspection

The City of Iqaluit Water Licence Inspection was performed on October 17, 2003. I would like to thank Brad Sokach and his staff for their time and assistance during the inspection.

In the course of the inspection, problems were identified with ponding and uncontrolled discharge of landfill leachate, the presence of hazardous materials in the landfill, improper disposal of waste in the North 40 Metal Dump and gravel extraction in an area known to contain unclassified waste. It was also noted that the sewage lagoon does not have the capacity to effectively treat the communities wastewater and that there have been a number of uncontrolled sewage discharges into Koojessie Inlet in the past year.

Freshwater Reservoir-Lake Geraldine (figure 1)

Grab samples of Lake Geraldine were taken approximately 20 m above the spillway. All parameters measured were within the *Summary of Guidelines for Canadian Drinking Water Quality 2003*. However, there is no signage identifying the reservoir as the drinking water source for the City of Iqaluit. Warning signs should be placed around the reservoir to ensure people realize that Lake Geraldine supplies the communities freshwater.

The water treatment plant was under construction at the time of the inspection. A detailed inspection of the construction was not conducted but according to documents posted by the Nunavut Water Board, the community of Iqaluit is upgrading the water treatment facility to address the current shortage in production capacity. The upgrades at the plant will allow for the production of 9500 cubic metres of treated water per day, which meets the estimated requirement for the community in 2022. In addition to increased production capacity, the upgrades will include the addition of ultraviolet

treatment to address expected Canadian Guidelines for the elimination of *Giardia* and *Cryptosporidium* and a switch from lime to caustic soda for pH adjustment.

Solid Waste Disposal (Shredding and Compacting Landfill)

The current municipal landfill utilizes a mechanical shredder (figure 2) in combination with compaction and covering to maximize the capacity of the landfill. Efforts have been made to segregate waste in the landfill with a fenced-off area just north of the landfill set aside for hazardous waste (figure 3). Materials are reasonably segregated although further work needs to be done. At the time of the inspection a large number of lead acid batteries were piled in the landfill site (figure 4). Hazardous materials need to be stored according to the *Nunavut Hazardous Waste Management Manual 2003*. The overall appearance of the landfill has improved greatly since the shredder has been added to the operation and Darcy Reist appears to be doing a good job of compacting the incoming waste.

One of the most serious problems currently faced at the landfill is the infiltration of water leading to the uncontrolled transport of contaminants towards Frobisher Bay (figure 5). The culvert put in place to control the movement of leachate off site is inoperable (figure 6). Darcy Reist informed me that he is aware of the problem and that the engineers are working on fixing the problem. The valve either needs to be repaired or blocked before the spring thaw so that the leachate can be tested before it is released. Otherwise the municipality may be acting in contravention of section 12 (3) of the NWNSRTA.

The addition of berms and a drainage ditch were designed to prevent infiltration and the transport of contaminated leachate off the landfill site. However, the significant ponding in the South end of the landfill suggests the desired result was not achieved. At the time of the inspection, the discharge culvert was clogged with ice; when this melts there will be a significant flow of landfill leachate off site towards Frobisher Bay. The area is known to contain contaminants in addition to municipal landfill waste (Environmental Sciences Group, 1995) and uncontrolled release will result in contravention of the NWNSRTA. The leachate is a deep rust colour and plumes of hydrocarbons can be observed when the sediment in the ditch below the culvert is disturbed (figure 7). Samples taken of the landfill leachate should indicate the level of contamination in the diversion ditch below the discharge culvert.

North 40 Metal Dump/ Gravel Quarry

The City of Iqaluit needs to seriously examine alternative sources of granular material to supply the requirements of the community. The city currently utilizes the North 40 fluvial plain as a source of granular material for construction in the community. This area has been used as a granular source as far back as the 1950's, when the US military operated in the region. Unfortunately, the area has also been used as an all purpose dump by both the military and the community. The historical use of the current site, combined with the presence of Carney Creek and the elevated water table in the area

"The North 40 Dump is currently the primary source of granular material for the town. This activity is in conflict with waste disposal activities also undertaken at the site. (Environmental Sciences Group, 1995).

There are a significant number of old, leaky and rusted out barrels of asphalt tar in and around the North 40 metal dump (figure 8). It is my understanding that they were left there when the airstrip was paved. It is likely that the majority of Volatile Organic Carbon has already off gassed from the asphalt tar, never the less, the asphalt tar and rusted drums are improperly disposed industrial/municipal waste. These barrels need to be crushed and landfilled in an appropriate facility. If any unsolidified asphalt tar remains it should be collected and reused or contained and as hazardous waste.

The removal of sand and gravel from the area could result in the incorporation of contaminated soils into construction activities within the town (figure 9) . Two sites were identified in 1995 by the ESG as requiring remediation. The first site, in the Northwest end of the North 40, was identified as containing soils exceeding the CCME Guidelines for *Copper* (119 mg/kg Cu > 91 mg/kg *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health 1999)*. The other site, located in the south end of the North 40, contained lead at a concentration of 249 mg/kg which approaches the maximum concentration for a Commercial land use (260 mg/kg) but exceeds the maximum for a Residential/ Parkland land use (140 mg/kg). As the sand and gravel in the North 40 is used throughout the community it seems reasonable to apply the residential criteria. If the city has any information on reclamation performed with respect to these sites I would be interested in looking it over.

The City of Iqaluit needs to submit a spill report with respect to the presence of Diesel fuel in water in the North 40 and its subsequent entry into Carney Creek the week August 29, 2003.

Sewage Lagoon

The sewage lagoon is operating beyond its capacity as there is less than 1 metre of free board in the lagoon and the retention time is less than optimal (Figure 10). Never the less samples of the effluent discharged from the Iqaluit sewage lagoon (figure 11 and figure 12) were within licenced parameters as well as the *Canadian Water Quality Guidelines for the Protection of Aquatic Life 2002*. The level of sewage treatment will almost certainly be addressed through the development of a new sewage treatment facility, however the new facility may not address the large number of spills in the community and the potential threat to public heath that they pose. There have been a number of uncontrolled discharges of raw sewage into Koojessie Inlet near the breakwater. One discharge occurred near the Northwestel building, flowing through the ditch past the Elders Centre. These discharges have apparently occurred because of blockages in the utilidoor system and, on one occasion, an apparent wiring error.

Appropriate action must be taken to eliminate, or at least reduce the frequency of these discharges.

Non-Compliance of the Act or Licence

The City of Iqaluit does not currently hold the Water Licence it requires under the NWNSRTA but I understand that the necessary steps required to obtain a Water Licence are being taken. The City of Iqaluit will likely be in contravention of the Act in the spring of 2004 if measures are not taken to control the release of leachate from the municipal landfill. The City of Iqaluit has also been out of compliance with respect to sewage discharges, both in town and at the lift station near the breakwater. The City of Iqaluit should contact the Nunavut Water Board to request authorization before continuing gravel extraction in the North 40. If you have any questions or concerns please contact me.

Sincerely,

Scott Stewart

Scott Stewart
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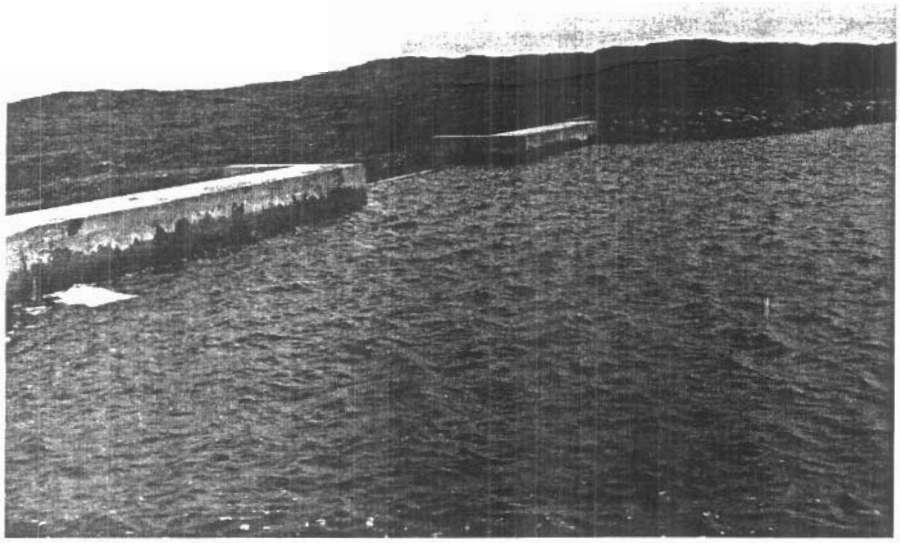

Figure 1. Lake Geraldine above the spillway of the freshwater source for the City of Iqaluit.

Figure 2. Shredder at the City of Iqaluit landfill facility.

Figure 3. Segregated hazardous materials stored in the fenced off area reserved for hazardous waste just North of the City of Iqaluit landfill.

Figure 4. Lead acid batteries piled in the City of Iqaluit landfill.

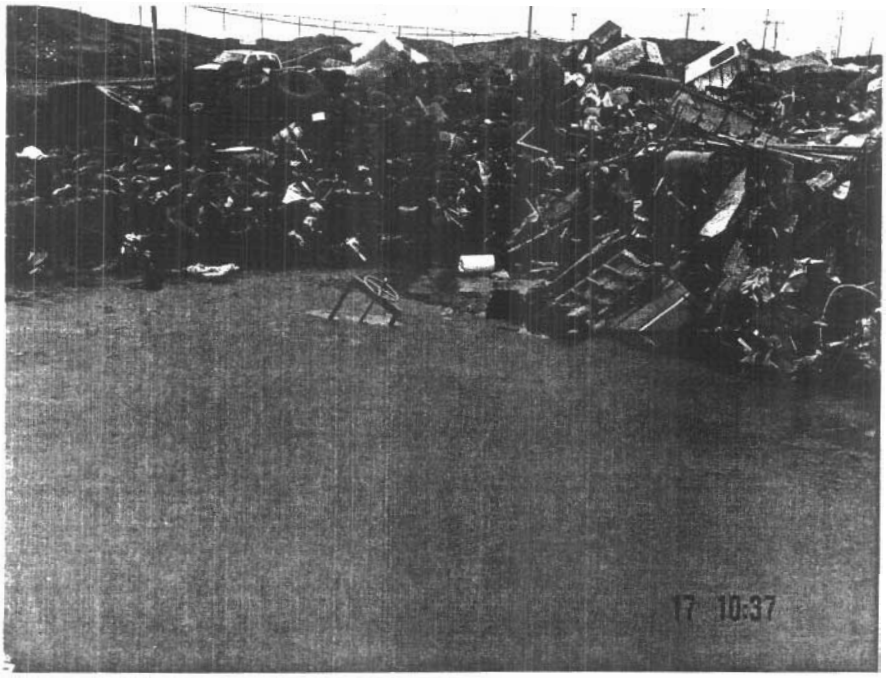

Figure 5. Collection of water at South end of Iqaluit landfill with unsegregated waste visible.

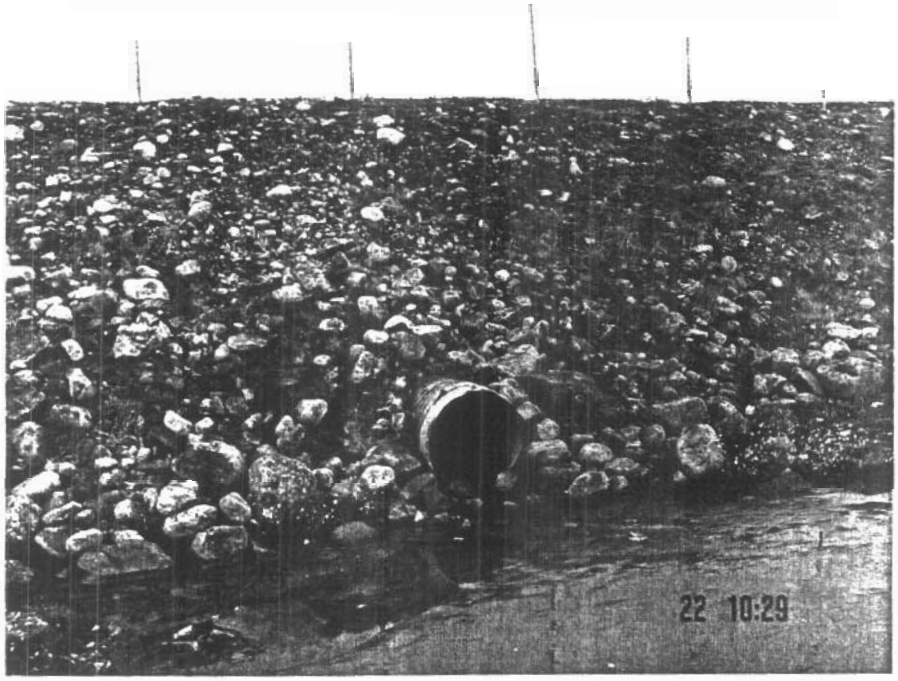

Figure 6. Plugged discharge culvert at the South end of the City of Iqaluit landfill.

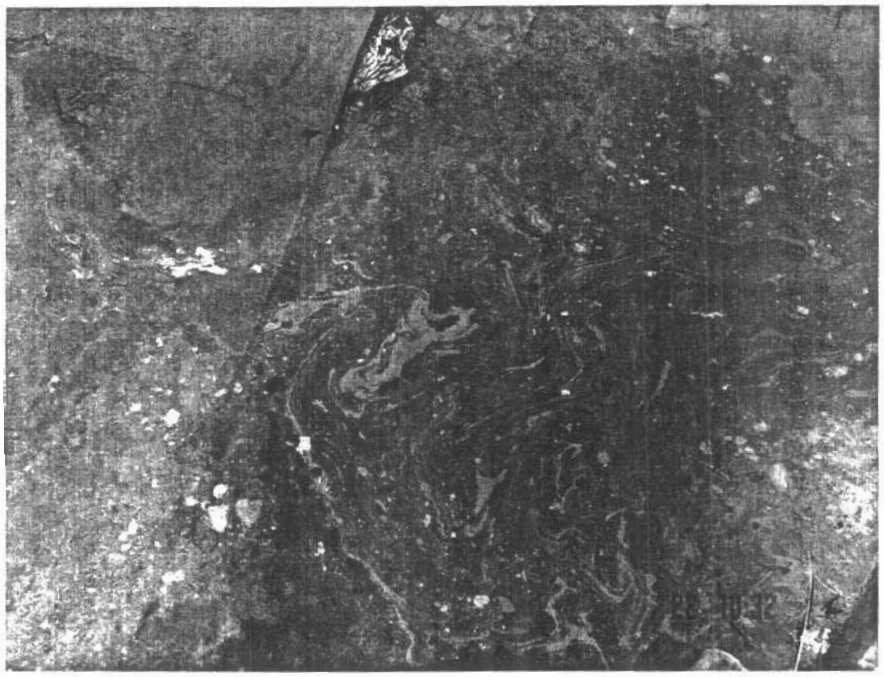

Figure 7. Plume of hydrocarbons visible in the ditch below the discharge culvert in the City of Iqaluit landfill.

Figure 8. Old asphalt tar drums stockpiled in the North 40 at the old metal dump/ gravel quarry.

Figure 9. A small spill of hydrocarbons in the former Iqaluit metal dump.

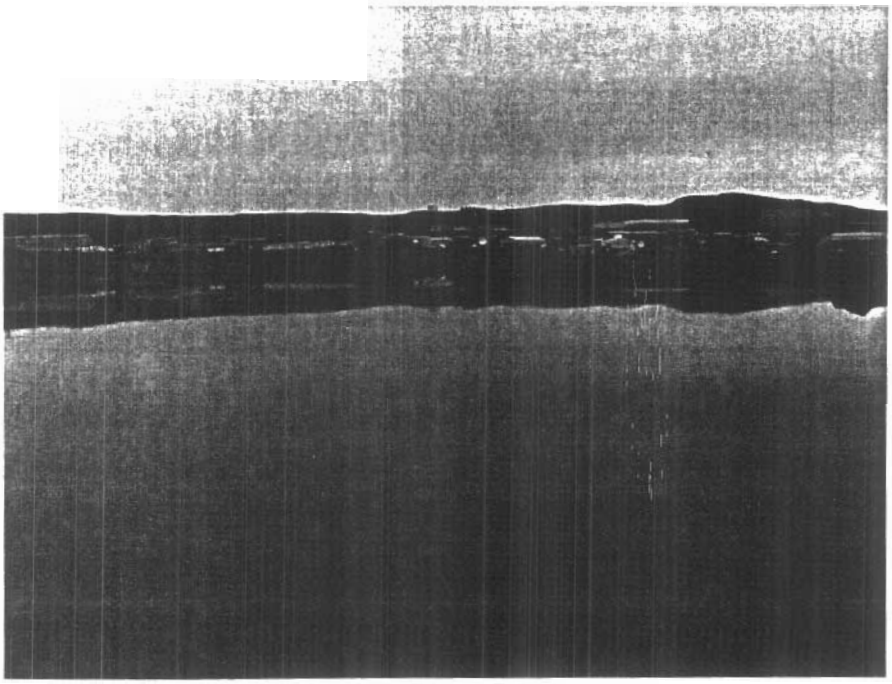

Figure 10. Sewage lagoon for the City of Iqaluit

Figure 11. Discharge point for the City of Iqaluit sewage lagoon.

Figure 12. The sample site at the discharge pipe for the City of Iqaluit sewage lagoon.

References

Environmental Sciences Group (ESG). 1995. *Environmental Study of a Military Installation and Six Waste Disposal Sites at Iqaluit, NWT. Volume One: Site Analysis*. Page V-78 to V-95. Royal Roads Military College Victoria, British Columbia, Canada.

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MUNICIPAL WATER USE INSPECTION REPORT

Date: October 17, 2003 **Licensee Rep.** (Name/Title): Brad Sokach

Licensee: Hamlet of Coral Harbour **Licence No.:**Unlicenced

WATER SUPPLY

Source(s): Lake Geraldine **Quantity used: Unknown**

Owner:/Operator: Municipality

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

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

Flow Meas. Device:NI **Conveyance Lines:** NI **Pumping Stations:** NI

Comments: The water treatment plant was under construction at the time of the inspection. A detailed inspection of the construction was not conducted.

WASTE DISPOSAL

Sewage: **Sewage Treatment System** (Prim./Sec/Ter.):**Primary**

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

Seasonal Discharge: **Wetlands Treatment:** Nil **Trench:** None

Solid Waste: **Owner/Operator:**

Shred and Landfill: x **Burn & Landfill:** **Other:**

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

Discharge Quality: Sampled **Decant Structure:** U **Erosion:** NA

Discharge Meas. Device: NA **Dyke Inspection:** NA **Seepages:** U

Dams, Dykes: NI **Freeboard:** U **Spills:** NA

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

Periods of Discharge: Seasonal **Effluent Discharge Rate:** U

Comments: There is insufficient freeboard in the lagoon. The lagoon discharges constantly in order to keep up with the sewage loading in the lagoon. Hopefully the newest sewage treatment plant will address the capacity problems. Samples of the lagoon effluent should reveal the effectiveness of the primary treatment.

FUEL STORAGE:

Not Inspected

Waste Oil Storage

Owner/Operator: NI

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

Berms & Liners:NI **Water within Berms:NI** **Evidence of Leaks:NI**

Drainage Pipes:NI **Pump Station & Catchment Berm:** NI

Pipeline Condition:NA **Not Applicable:** **Condition of Tanks:**

SURVEILLANCE NETWORK PROGRAM (SNP)

Samples Collected **Hamlet:**

INAC: Effluent below lagoon, ponding at metal dump and landfill, Lake Geraldine

Signs Posted **SNP:** 0087-2 (lagoon), 0087-5 (N-40) **Warning:** None

Records & Reporting: NI

Geotechnical Inspection:NI

Non-Compliance of Act or Licence:

Sewage treatment appears to be unacceptable. Lab results will illustrate the level to which the sewage is treated before flowing to Koojessie Inlet.The City of Iqaluit does not currently posses the Water Licence required under the Nunavut Waters Nunavut Surface Rights Tribunal Act. Problems were also identified with leachate in the City landfill and improper waste disposal in the North 40 area.

Scott Stewart

Inspector's Name Scott Stewart **Inspector's Signature**

Peter Kusugak

Managers Name **Managers Signature**