Indian and Northern Affairs Canada
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North Mackenzie District
P.O. Box 2100
Inuvik, NT

Telephone: 867-777-8900
Fax: 867-777-2090

February 21, 2011

Gwich'in Land and Water Board
P.O. Box 2018
Inuvik, NT X0E 0T0

Attn: Robert Alexie, Executive Director

RE: Municipal Water Licence (G03L3-001)

Dear Mr. Alexie,

Please find the enclosed Inspection Report for your review and/or records.

An electronic copy (un-editable Adobe pdf.) has also been provided by e-mail.

If you have any questions or concerns regarding the enclosed, and/or if additional information is required please contact me at 867-777-8909.

Sincerely,

Jan Davies
Water Resource Officer

Cc: Conrad Baetz, District Manager, North Mackenzie District, Inuvik, NT

Enclosure: Water Licence Inspection Report and Cover Letter (7 pages)

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February 21, 2011

Hamlet of Fort McPherson
P.O Box 57
Fort McPherson, NT, X0E 0J0

Attn: Senior Administrative Officer

RE: Municipal Water Licence (G03L3-001)

To Whom It May Concern,

An inspection was conducted of the Municipal Water Supply and Waste Disposal Facilities on September 17, 2010. Enclosed is a copy of the Municipal Water Licence Inspection Report.

There have been some improvements since the last inspection like the amount of sampling, repairs to the turn around pad at the Deep Water Lake Intake Facility and organizing the waste oil storage area. There were a number of violations as depicted on page three of the Inspection Report. Please review and address the concerns throughout the Inspection Report.

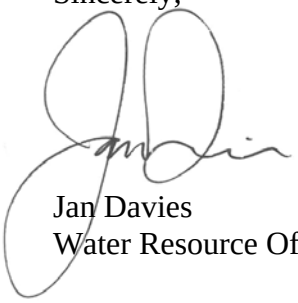
Progress is being made on certain issues, however, there are terms and conditions of your Water Licence that are being neglected resulting in non-compliance/violations. Upon review of previous years Inspection Reports it is apparent that many of the violations and concerns outlined in the Report are consistent with those in previous years. Please address the aforementioned items as Indian and Northern Affairs Canada considers non-compliance of Water Licences a serious matter.

Please note that it is the Hamlet's responsibility to ensure compliance with all of the terms and conditions of its Water Licence. INAC looks forward to working with you as much as possible to achieve compliance.

A copy of this report will be sent to the Gwich'in Land and Water Board for their review and/or public records.

If you have any questions, please contact me at 867-777-8909.

Sincerely,



Jan Davies
Water Resource Officer

Cc: Conrad Baetz, District Manager, North Mackenzie District, Inuvik, NT

Enclosure: Water Licence Inspection Report (5 pages)

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

WATER LICENCE INSPECTION FORM

DATE:	September 17, 2010	**COMPANY REP:**	Dennis Wright
LICENCEE:	Hamlet of Fort McPherson	**LICENCE #:**	G03L3-001

WATER SUPPLY

Source:	Deep Water Lake	Quantity Used:	27, 877 m^3

Owner/Operator: Hamlet / GNWT Dept. of Public Works

Indicate: A - Acceptable U - Unacceptable N/A - Not Applicable N/I - Not Inspected

Intake Facilities	A[1,2]	Storage Structures	A	Treatment Systems	A	Chem. Storage	A
Flow Meas. Device	A	Conveyance Lines	A	Pumping Stations	A		

Comments:
Concerns:
1. Deep Water Lake Intake Facility (DWLIF) generators still have issues with leaking oil and fuel on the floor. Drip trays are present in addition to spill pads which are soaked with oil. Larger drip trays are needed to provide more coverage and to prevent fluids from by-passing trays. Still evidence of oil that has gone along the generator room floor and dripped outside on metal skids in the back of the generator shed. It is difficult to determine if this is old staining but if the area is cleaned and monitored it can be determined if oil is still dripping outside on the skids. Please note that this oil is a potential contaminant to the environment and the Hamlet's water supply.
2. During the previous inspection on October 8, 2009 a potential source of leakage and evidence of contamination was noticed at the fuel storage tank at the DWLIF. See Fuel Storage Section.

Notes:
- The Hamlet and GNWT- Department of Public Works are to be commended for repairing the erosion damage at the DWLIF. The turn around pad next to the intake facility has had new fill and gravel placed there. Monitoring will need to continue to ensure erosion is managed and controlled.
- The Water Treatment Plant looked clean and organized. Future changes with Fuel Tank see Fuel Storage Section.
- There are a variety of stakeholder concerns for Deep Water Lake and the presence of skidoos and ATVs in addition to other activities since it is a lake that is used for the Hamlet of Fort McPherson's water supply. The issue of use and access still a concern for all stakeholders. Education is key when ensuring protection of the water by all users.
- Ensure equipment using the DWLIF are free from leaks as the area is frequently flooded with water and is in close proximity to the Hamlet's water supply.

WASTE DISPOSAL

Well Waste	Off-Site Removal	N/A	Drilling Sump	N/A	Downhole	N/A	Land spread	N/A
Sewage	Sewage Treatment System (primary, secondary, or tertiary)				Primary			
	Natural Water Body	N/A			Continuous Discharge (land or water)		N/A	
	Seasonal Disch.	Decant - Late Fall and/or Spring			Wetlands Treatment	N/A	Trench	N/A
Solid Waste	Owner/Operator:	Hamlet of Ft. McPherson						
	Landfill	✓			Burn & Landfill	Conditionally acceptable	Other	N/A

Indicate: A - Acceptable U - Unacceptable N/A - Not Applicable N/I - Not Inspected

Discharge Quality	A[1,3]	Construction	N/A	Disch. Meas. Dev.	A	Freeboard	A[1]
Decant Structures	U[2]	O&M Plan	U[11]	Dams, Dykes	A[1]	Seepages	U[2]
Dyke Inspections	N/I	A&R Plan	N/A	Erosion	N/A	Spills	U[4,7]

Periods of Discharge	Late Fall and/or Spring	Effluent Discharge Rate	By volume of water used

Comments:
Concerns:
1. At the time of inspection the freeboard of the sewage lagoon was close to the 1m threshold. The sewage lagoon needed to be discharged. It was unknown if the sewage lagoon was decanted in the Fall and what the discharge quality was. Samples had been taken but there was no communication with this office or further sampling results submitted.
2. During inspection it was noted there was very slow seepage from the culverts (decant structure and the other culvert beside it) at the sewage lagoon discharge (see Figure 1). The sewage lagoon was really high and there maybe bypassing wastes around the closed decant structure. This possible seepage should be confirmed to ensure the culverts/decant

structure is secure otherwise repairs will need to occur. There should not be any decanting material unless samples have been taken to confirm compliance with discharge criteria.
3. It was noticed there were two sheens on the north end of the sewage lagoon, one by the sewage discharge chute amongst garbage (see Figure 2) and another located in the northwest corner past the discharge chutes. It was unclear what the source of the sheen was but please note that if a sheen is detected a sample needs to be taken to determine the source. Please note that only sewage from domestic origins is to be discharged into the sewage lagoon.
4. Waste oil storage area was in the process of being cleaned up. A lot of oil is being put into a very large storage tank that is on site. The five gallon pails of oil have been emptied and stacked in the waste oil storage area. The oil soaked lids unfortunately were discarded in the vicinity of the waste metal area of the Solid Waste Disposal Facility as compared to remaining in the waste oil storage area to await final disposal. Lids were precariously sitting on an unstable waste metal pile and appear difficult or unsafe to move back to the waste oil storage area.

With the large storage tank now full of waste oil the Hamlet of Fort McPherson needs to submit notification of what they intend to do with the tank. This tank of oil is now a further risk if it gets vandalized or a leak. At the time of inspection there were lots of containers with waste oil that were still open. There was lots of waste oil spillage which may now be more evident with the area being cleaned up. This contaminated soil needs to be cleaned up, contained and properly disposed of (see Figure 3).

The Hamlet needs to ensure there is a proper procedure to maintain the organization and cleanliness of the waste oil storage area. When there has been spillage, make sure the soil and waste oil is cleaned up, contained and properly disposed of. Further, ensure that the hazardous waste storage area is regularily inspected, maintained and materials stored properly. This will ultimately keep the area clean and encourage the public to segregate waste properly.
5. There were 3 small separate areas at the Solid Waste Disposal Facility (SWDF) on fire in the household waste cell. It was told to Denis Wright, who was representing the Hamlet, you can't just burn refuse. You can burn approved materials in a designated area such as paper products, paperboard packaging and untreated wood wastes in accordance with the guideline Municipal Solid Wastes Suitable for Open Burning, developed by the GNWT Department of Environment and Natural Resources. It was difficult to confirm if the fires were originally for approved materials. Evidence it was otherwise as aerosol cans and oil filters were in one fire across from the waste oil storage.
6. The Hamlet should be commended as there was lots of signage for direction at the SWDF including: sewage, household waste, waste animals, used oil, waste metal, and tires. The honey bag pit sign needs to be re-installed. There should be signage for white metal waste(appliances), batteries, vehicles, and other inert metal waste like culverts etc. especially if these are in a different location.
7. Waste vehicles need to be emptied of their fluids as this is a source of contamination. There was evidence that this hasn't occurred as there appeared to be vehicular fluids that had been spilled (see Figure 4).
8. The waste metal area is becoming a dumping ground for general household waste. Culverts and inert metal waste are mixed in with everything else. The Hamlet needs to ensure waste segregation or this will become problematic and cost more money to maintain and operate.
9. The contaminated soil storage areas at the SWDF should not be for long term storage but allow for the remediation of soils and their permanent disposal. The soil needs to be tested to see if they are still contaminated and what criteria they comply with. The soil storage area by the waste oil is bermed while the soil storage areas by the used tires have liners and berms. The Hamlet needs to ensure the soil is turned and aerated. Testing needs to occur before the soil is used for anything else.
10. Demolition/building waste in greater quantity is being disposed in the area of the SWDF behind the honey bag pit on the north side of the sewage lagoon. It is recommended that this waste can be further segregated as there is clean wood present that could either be reused or burned as noted above in comment #5(see Figure 5).
11. There are many additional cells and storage areas that are not on the current Operation and Maintenance Plan. It is apparent that the current O&M Plan (1997) needs to be updated and to include these new cells and storage areas. As per Part I: Conditions Applying to Operation and Maintenance, Item 1, of the renewed Water Licence a revised Operation and Maintenance Plan (O&M Plan) for the Sewage and Solid Waste Disposal Facilities was required by March 1, 2008. To date a revised O&M Plan has not been received. Ensure the Hamlet Staff are aware of and follow the current O&M Plan to maintain consistency in how the Sewage Disposal Facility (SDF) and Solid Waste Disposal Facility (SWDF) are being operated.

Notes:
- Ensuring that waste is compacted and covered on a timely basis will assist with controlling windblown debris and making the site clean thus encouraging the public to properly segregate their waste. Fencing and other windbreaks will aid in providing more protection and catching debris.
- Wood material in behind household waste area up top is filling in a small area with ponded water, in addition regular garbage is just filling in the area.
- The Hamlet is to be congratulated for their initiative at the SWDF which now has a controlled entrance - locked gate, with a posted schedule and a building on site with an attendant present during hours of operation. It is recommended that an after hours drop off box or option be available for the public as this has been a beneficial solution in Aklavik. If required, part-time hours or reduce hours of operation might be required in slower periods like winter or summer months. Records should be kept of when public access the SWDF in order to plan the optimum schedule of hours to allow this program to continue.
- There are plans for a new SWDF which will use the other existing pit on site. There will be surface water management for the soil landfarm. With other soil contamination cleanup projects in the area there might be ways to work together and share cleanup and remediation costs like those associated with the operation of a landfarm.
- The two sewage discharge chutes are being used.
- A decant occurred intermittently every couple days between May 12, 2010 and June 28, 2010.
- The SDF should be upgraded to facilitate continuous discharge as opposed to decanting sewage effluent.
- As mentioned in the 2004 Annual Report and Study - Performance and Potential Improvements to Anaerobic Lagoon in Fort McPherson (Earthtech, N.W.T. May, 2004) it is suggested that "the sewage treatment "system" for the lagoon discharge could be expanded in the future to include the downstream wetland areas"
- The Sewage Disposal Facility (SDF) needs to be upgraded to effectively address the high ammonia in sewage effluent as mentioned in the Fort McPherson Wetland Study (Ferguson Simek Clark, March 2005).

FUEL STORAGE

Owner:	Hamlet of Fort McPherson	Operator:	Department of Public Works	Condition of tanks:	Good
Berms & Liners	A	Water within Berm:	U[1]	Evidence of Leaks:	Yes[3]

Drainage Pipes	N/A	Pump Station and Catchment Berm	A[3,4]
Pipeline Condition	A[2,4]	Not Applicable:	N/A

Comments:
Concerns:
1. At the time of inspection the outside fuel storage tank at the Water Treatment Plant had less water within the berm. Compared to previous inspections the water level within the berm was greatly reduced (see Figure 6). There was a lot of debris present in the bottom of the berm. There was a distinct odour eminatting from within the berm that smelled of hydrocarbons and a sheen that was present on the remaining water. The Hamlet of Fort McPherson needs to provide details of where the water was disposed of. There was another double walled tank present that appeared to be a replacement for the old tank.
2. The pipeline from the outside fuel storage tank to the Water Treatment Plant building is showing signs of movement. The flex pipe appears to be strained. This is a risk for spillage and should continue to be monitored or even replaced.
3. As noted in previous inspections, the Deep Water Lake Intake Facility (DWLIF) fuel storage tank is a double walled tank that is mounted on a wood platform on a gravel pad. During the September 25, 2008 Inspection the gravel pad smelled of fuel mainly on the south side of the tank. Shane Debastien who was present mentioned that the south side of the tank with the pipe in the bottom was sunken originally and had to be repaired. During this time there might have been a leak and/or the tank at times has been overfilled. With the fuel/water draining off the tank the area would smell of fuel. It is recommended that there should be an environmental assessment to determine the levels and extent of contaminated gravel. If necessary the area should be excavated of contaminated gravel and properly disposed of as the presence of contamination is a potential risk to the Hamlet's water supply.
4. The fuel storage tank at the DWLIF is a potential source of leakage and contamination. The fuel supply line is connected to the bottom of the fuel storage tank and is susceptible to tank movement and subsequent leakage of fuel. Due to the position of the of the fuel line connection there is a risk of a large volume fuel spill. A spill from this fuel tank would pose an immediate risk to the Hamlet's water supply. It is recommended that an alternate fuel tank is installed with fuel lines that connect to the top of the fuel tank.

SURVEILLANCE NETWORK PROGRAM

Samples Collected Hamlet	Samples are being collected.[1, 2]		
Samples Collected DIAND	None.		
Signs Posted: SNP	1696-1B present. 1696-1A, 2, 3, 5 and 6 were not inspected.	Warning	Yes present for all facilities.
Record & Reporting	2009 Annual Report was submitted. An action plan to maintain freeboard at Sewage Disposal Facilities was due May 30, 2008. Terms of reference for a bio-physical assessment of the environment receiving sewage effluent discharges was due March 28, 2008. A plan outlining steps to improve sewage treatment efficiency (trucked sewage system) including measures to reduce Ammonia Nitrogen in the waste water effluent stream to meet applicable water quality guidelines was due October 30, 2009.		
Geotechnical Inspection	N/A		

Comments:
Concerns:
1. It is noted that there has been an improvement in the sampling for the 2009 year. However, according to the sampling data submitted with the 2009 Annual Report it appears that Surveillance Network Program (SNP) 1696-6 was not able to be sampled twice due to a low flow. This had been communicated to the Gwich'in Land and Water Board according to the Annual Report. Efforts should be made to sample the site again during periods of higher flow; this may be remedied if instructions are followed in comment #2 below. From the results submitted it was observed that there was no sampling conducted for Oil and Grease for SNP 1696-5 and 6. Ensure sampling occurs as per Part B: General Conditions, Item 2, of the Water Licence.
2. Please note the Surveillance Network Program states in Part B: Sampling and Analysis Requirements, Item 2 and 3, for SNP 1696-3, 5, and 6, that they "shall be sampled two times per year, preferably in July and October". The Hamlet is encouraged to sample in July and October as per the Surveillance Network Program.

Violations of Act of Licence:
Part B: General Conditions, Item 2,
“The Licensee shall comply with the “Surveillance Network Program” annexed to this Licence, and any amendment to the said “Surveillance Network Program” as may be made from time to time, pursuant to the conditions of this Licence.”

Part B: General Conditions, Item 9,
“The Licensee shall submit to the Board for approval, no later than May 30, 2008, an action plan outlining what steps will be taken to consistently maintain the specified freeboard at the trucked sewage disposal facilities...”

Part B: General Conditions, Item 10,
“The Licensee shall prepare, and submit to the Board and Fisheries and Oceans Canada for approval, no later than March 28, 2008, terms of reference for a bio-physical assessment of the environment receiving the sewage effluent discharges, namely Sewage Lake and the lake and wetlands downstream from the trucked sewage retention lagoon...”

Part B: General Conditions, Item 11,
“The Licensee shall submit to the Board for approval, no later than October 30, 2009, a detailed plan outlining what steps will be taken to improve sewage treatment efficiency (trucked sewage system). The plan shall include, but not be limited to, measures to reduce Ammonia Nitrogen in the waste water effluent stream to meet the applicable water quality guideline (CCME - Canadian Water Quality Guideline for the Protection of Aquatic Life)...”

Part I: Conditions Applying to Operation an Maintenance, Item 1,
“The Licensee shall, within six(6) months of the issuance of this Licence, submit to the Board, with a copy to the Inspector, for approval, a revised plan for the Operation and Maintenance of the Sewage and Solid Waste Disposal Facilities…”

Inspector’s Signature: _____

WATER LICENCE INSPECTION REPORT Pg. 5

(Continued)

Date:	September 17, 2010	Licence #:	G03L3-001

Inspection Images:

Figure 1

Slow seepage of what appears to be effluent from sewage decant structure when it is closed.

Figure 2

Sheen observed at North end of sewage lagoon.

Figure 3

Waste Oil storage area, oil put into the large brown tank, but further work is needed to clean up the site.

Figure 4

Waste vehicles need to have fluids removed. It appears this has not occurred and is a source of contamination.

Figure 5

Building/demo. waste in behind honey bag pit that can be further segregated, reused, or clean wood can be burned.

Figure 6

Water Treatment Plant outside fuel storage tank had water removed from metal berm, which smelled of hydrocarbons.