



Sahtu Land and Water Board

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November 15, 2019

File No. S18L3-003

Cathy Clarke
Senior Administrative Officer
Town of Norman Wells
Box 5
Norman Wells, NT, X0E 0V0

E-mail: senioradministrativeofficer@normanwells.com

Dear Ms. Clarke,

The Sahtu Land and Water Board (Board) met on November 15, 2019 to receive the 2018 Annual Water Licence Report which was submitted on June 5, 2019.

The Board appreciates the efforts by the Town of Norman Wells to submit the Water Licence Report in compliance with the Part B, Condition 21 of the Licence S18L3-003. However, following reporting deficiencies have to be overcome, in order to be in full compliance with the annual reporting requirements.

- **SNP sampling results for S07L3-002 (1)** (recorded in Table 4 of the Annual Report): parameters viz. temperature, conductivity, ammonia nitrogen, total nitrogen, nitrite-nitrogen, nitrate-nitrogen, total organic carbon and total phosphorous were not determined, as per Licence **Annex A, Part B (SNP site descriptions and monitoring requirements), item 3**;
- **SNP sites S07L3-002 (2) and S07L3-002 (3)** (recorded in Table 7 of the Annual Report) - parameters viz. temperature, ammonia nitrogen, total nitrogen, nitrite-nitrogen, nitrate-nitrogen, total organic carbon, total phosphorous, total silver and total thallium were not determined, as per Licence **Annex A, Part B (SNP site descriptions and monitoring requirements), item 3**;
- **SNP sites S07L3-002 (6) and S07L3-002 (7)** (recorded in Table 6 of the Annual Report) – SNP site **S07L3-002 (6)** was discontinued by the water licence. The only reporting requirement is for SNP site **S07L3-002 (7)**, which is monthly and annual monitoring of volume of water dispensed from the pumphouse for town use. This data was reported as a general annual reporting requirement as section 1 of the report, but not identified as SNP data. Instead, Table 6 of the report gives water quality data, which is not mandated by the water licence (reference - **SNP site descriptions and monitoring requirements - Annex A, Part B, item 3**);
- The interpretation of the sampling results was not provided (as per Licence **Annex A, Part A (SNP reporting requirements), Item 2 (a)**);
- Average concentration of Oil and Grease as well as Effluent Quality Criteria for “CBOD” were not recorded from **SNP station S07L3-002 (1)**, as per **Part D, Condition 5 and Annex A, Part A, Item 2 (b)** of the Licence;
- 2018 effluent quality data from SNP station **S07L3-002 (1)** were not compared against the data from the previous two consecutive years as per **Annex A, Part A, Item 2 (b)** of the licence. Also, Interpretation of the results were not provided;

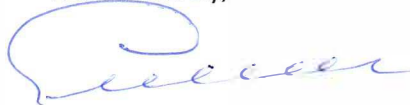
- **Annex A, Part A (SNP reporting requirements), Item 2 (c)** of the water licence requires an explanation of any actions taken in response to any exceedances of the Effluent Quality Criteria (EQCs). No statement was given in the Annual Report in this regard;
- **Annex A, Part A, Item 2 (d)** of the water licence requires the information regarding the calibration and status of the meters and devices referred to in Part B, Condition 19 of the Licence. No statement was given in the Annual Report in this regard;
- **Annex A, Part A, Item 2 (e)** of the water licence requires the exact coordinates of all SNP stations which were established within the year being reported. A map of the 7 SNP sites was included in the Annual Report, but the coordinates of the SNP sampling locations were not provided (map was not updated).
- **Schedule 1 (where requirements for the annual report are listed), 1(e)** of the water licence requires information on “details, such as the underlying cause or corrective measures, regarding any sample exceedances or monitoring concerns”. Although no concerns or sample exceedances were raised/recorded, no statement was given in the Annual Report in this regard.
- **Schedule 1, 1(f)** of the water licence requires information on “a summary of any Closure and Reclamation work completed during the year and an outline of any work anticipated for the next year”. No statement was given in the Annual Report in this regard; and,
- **Schedule 1, 1(n)** of the water licence requires information on “Sludge monitoring and management summary”. No statement was given in the Annual Report in this regard.

The Board would like to direct the Town of Norman Wells to fulfill the above requirements in subsequent annual reports in order to achieve full compliance with the Licence Conditions. Board staff has prepared an updated template for preparing the annual water licence reports for S18L1-003. The template is attached to this letter so as to help you prepare the Annual Water Licence Report, correcting the above-mentioned reporting deficiencies.

A copy of this letter of direction has been filed on the Public Registry at the SLWB office. Please be advised that this letter is part of the Public Registry and is intended to keep all interested parties informed of the manner in which the Licence conditions are being met.

The full cooperation of Town of Norman Wells is anticipated and appreciated. If you have any questions or concerns, please contact Aswathy Mary Varghese at (867) 598-2413 ext. 223 or by e-mail at ash.varghese@slwb.com.

Yours Sincerely,



Larry Wallace
Chair, Sahtu Land and Water Board

Attachment: Template for Annual Water Licence (S18L1-003) Report

Copied: Tulita Distribution List

Laurel McDonald, Manager, Wildlife and Environment, Sahtu, GNWT-ENR

Municipal Water Licence Annual Report
Town of Norman Wells
Licence Number: S18L3-003
 (Renewal of S07L3-002)

Reporting year: _____
 Expires: November 18, 2028

Licence Part B, Condition 21

Beginning March 31, 2019 and no later than every March 31 thereafter, the Licensee shall submit an Annual Water Licence Report to the Board. The Report shall be in accordance with Schedule 1, Condition 1.

1. Water Usage (Licensed Water Volume Withdrawal: 250,000 m³)

(Licence, Schedule 1, Condition 1 (a): *The monthly and annual quantities in cubic meters of fresh water obtained from all sources)*

Total volume withdrawn for reporting year: _____ m³

Table 1 – Monthly withdrawal volumes

Month	Volume from main source (m ³)	Volume from any other source (m ³)	TOTAL Volume (m ³)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
TOTAL			
% Increase from previous year			

Reasons for increase / decrease:

Reasons for exceeding licensed withdrawal volumes (if applicable):

2. Solid Waste Disposal

Approximate total yearly volume of solid waste deposited: _____ m³

Table 2 – Monthly solid waste disposal volumes

Month	Volume of solid waste deposited (m ³)
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	
TOTAL	
% Increase from previous year	

*GNWT – MACA has provided a standard formula for estimating the amount of solid waste deposited into a Solid Waste Facility in the absence of a metered Garbage Truck. The following can be used: **Volume per person per day X number of days X population***

*e.g. **0.015 m³** X 30 days X 860 people = 387 m³ of domestic trash deposited into Solid Waste Facility in a 30 day month*

Reasons for increase / decrease: (e.g. an industrial project close to the Town of Norman Wells, or a large influx of people into town for an IORL shutdown)

General information:

Information regarding any agreements with outside organizations to be a waste receiving facility should be outlined here along with an estimate of the amount and type of waste to be received.

3. Sewage Deposited to Primary Sewage Cells
(Licence, Schedule 1, Condition 1 (b): The monthly and annual quantities in cubic metres of all sewage discharged to Seepage Lake).

Table 3 – Monthly sewage waste volumes deposited

Month	Volume of sewage waste deposited (m ³)		
	Pumper Truck	Utilidor	TOTAL
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
TOTAL			
% Increase from previous year			

To calculate monthly sewage waste deposited to the Primary Lagoons on Seepage Lake, please provide the above information if metered information is available. If metered information is not available, please fill in the table using the corresponding TOTAL water volumes from Table 1. This provides estimation only and equals water in/sewage out.

Reasons for increase / decrease: (Some examples are: an industrial project close to the Town of Norman Wells, or a large influx of people into town for a festival)

4. Sludge monitoring and management

(Licence, Schedule 1, Condition 1 (m)): *The monthly and annual quantities of sludge removed from Seepage Lake.*

Licence, Schedule 1, Condition 1 (n)): *Sludge monitoring and management summary.)*

Has any sludge been removed from the primary sewage cells or from Seepage Lake during this reporting year? If so, what volume of sludge was removed? What testing was completed on the sludge and where it was disposed of? Please provide documentation for testing and GNWT Water License Inspector approval of placement.

Was there any decanting at Seepage Lake this reporting year? Please provide dates. What was the decant duration and the approximate volume decanted? As this is a Surveillance Network Program (SNP) site, the resulting testing is to be presented as part of the tabular SNP data to be provided as per the Water Licence Annex A.

5. Modifications and Maintenance Work

(Licence, Schedule 1, Condition 1 (c)):

A summary of all Modifications and/or major maintenance work carried out on the water intake infrastructure, Water Treatment, Storage and Distribution Facilities, Solid Waste Disposal Facilities and the Sewage Lagoon, including all associated structures).

Include any work done to infrastructure for all facilities completed during the year in this section. This includes any changes, repairs and modifications. If any problems occurred during the year, please note them here. If there are no changes, make note of that. If required please attach any as-built drawings or reports as an attachments to this report.

- I. Water Treatment, Storage and Distribution Facilities
- II. Solid Waste Disposal Facilities
- III. Sewage Lagoon

Information regarding any modifications to the water withdrawal procedure or facilities should be included here. If necessary please attach any relevant reports to the end of this document.

6. Surveillance Network Program Data

Surveillance Network Program (SNP) information (**Schedule 1, 1 (d) and Licence Annex A**) is to be submitted in a tabular format and shall indicate date of testing, parameters tested for and any other information requested by the GNWT Water Licence Inspector or the SLWB. [Laboratory results should be summarized. Results tables 5 to 8 have been provided below for your convenience. Note: it is possible to copy/paste from Excel into Word provided the same number of cells are selected in each table].

PLEASE ATTACH SNP SAMPLE LOCATIONS MAP as ATTACHMENT A (according to Licence Annex A, Part A, 2 (e))

Table 4 - Sampling Station Locations (Licence Annex A, Part B, item 3) and

SNP Station	Location	Sampling Frequency	Rationale
S07L3-002-(1) Approximate Location 65.289176°N, - 126.810419°W	Location _____°N, - _____°W Sewage effluent directly below the decant structure at Seepage Lake	Weekly during periods of decant; or in the fall if no decant occurs	To ensure discharge Water from Seepage Lake meets Part D, condition 5. Site of compliance, prior to discharge to the Receiving Environment.
S07L3-002-(2) Approximate Location 65.279666°N, - 126.766394°W	Location _____°N, - _____°W Monitors waters in Seepage Creek directly upstream of the culvert conveying Seepage Creek under Quarry Road	Monthly during periods of flow	To monitor the quality of treated wastewater discharge beyond the point of compliance and downgradient of the Solid Waste Facility to determine the effectiveness of wetland treatment before final discharge to the Mackenzie River.
S07L3-002-(3) Approximate Location 65.264579°N, - 126.736201°W	Location _____°N, - _____°W Monitors waters in Seepage Creek directly upstream of the culvert conveying Seepage Creek under Mackenzie Drive	Monthly during periods of flow	To monitor the quality of treated wastewater discharge beyond the point of compliance and downgradient of the Solid Waste Disposal Facility to determine the effectiveness of wetland treatment before final discharge to the Mackenzie River.
S07L3-002-(4) Groundwater Well installed in 2018. Approximate Location as per the Licence	Location _____°N, - _____°W Monitors Groundwater below (downgradient) of the Solid Waste	Semi-annually following spring freshet and before freeze-up	To measure the extent and magnitude of groundwater leachates contamination (if any) underneath and/or migrating from the SWDF.

65.294976°N, - 126.730765°W	Disposal Facilities		
S07L3-002-(5) Groundwater Well installed in 2018. Approximate Location as per the Licence 65.295353°N, - 126.731991°W	Location _____°N, - _____°W Monitors Groundwater below (downgradient) of the Solid Waste Disposal Facilities	Semi-annually following spring freshet and before freeze-up	To measure the extent and magnitude of groundwater leachates contamination (if any) underneath and/or migrating from the SWDF.
S07L3-002-(6) Approximate Location 65.278374°N, - 126.833631°W	Monitors storm drain effluent at Mackenzie River upstream of water intake line.	Discontinued	To monitor the quality of runoff water discharging from a storm drain in the Town of Norman Wells into the Mackenzie River. The outlet is upstream from the water intake line.
S07L3-002-(7) Approximate Location 65.280734°N, - 126.832649°W	Location _____°N, - _____°W Monitors water dispensed from the pumphouse for Town use.	Monthly and Annually	To monitor the quantity (volume in cubic metres) of water dispensed for municipal purposes.

Table 5 – SNP Station S07L3-002 – (1) Effluent Monitoring Results – sampled at the beginning, and every three (3) days thereafter during periods of decant or, if no decant, sampled in the spring and fall, and analyzed for the parameters listed.

(According to Licence Annex A, Part A, items 2(a) and 2 (b); Licence Part D, Condition 5; Licence, Schedule 1, Condition 1 (o); and, Licence Annex A, Part B, item 3 - Site Descriptions and Monitoring Requirements)

Parameter	Max. Average Concentration	S07L3-002 – (1) Spring	S07L3-002 – (1) Fall	Average Concentration
pH	6.0-9.0			
Fecal Coliforms (CFU/100ml)	< 106			
Suspended Solids (mg/L)	125			
Oil and Grease (mg/L)	5 mg/L and no visible sheen			
CBOD (mg/L)	160			
Temperature (°C)	-			
Conductivity (S/m)	-			
Ammonia Nitrogen (mg/L)	-			
Total Nitrogen (mg/L)	-			
Nitrite-Nitrogen (mg/L)	-			
Nitrate-Nitrogen (mg/L)	-			
Total Organic Carbon (mg/L)	-			
Total Phosphorous (mg/L)	-			
Water Levels (m)		_____m	_____m	

Please record the interpretation of the results here (Example statements: “The water quality standards are met.” Or “All the parameters are within the maximum allowable concentrations except ___). Please indicate if there are any exceedences with respect to the water quality criteria/CCME guideline values.

Table 6 – SNP Station S07L3-002 – (1) Effluent quality data compared against the data from previous two consecutive years . (For example, if the reporting year is 2019, you have to record the average concentration of the required effluent quality data for 2019, 2018 and 2017 in this section).

*(According to Licence Annex A, Part A, item 2 (b);
Licence Part D, Condition 5; and,
Licence Annex A, Part B, item 3 - Site Descriptions and Monitoring Requirements)*

Parameter	Max. Average Concentration	S07L3-002 – (1) Avg. Concentration. Reporting Year 20__	S07L3-002 – (1) Avg. Concentration. Reporting Year - 1 20__	S07L3-002 – (1) Avg. Concentration. Reporting Year - 2 20__
pH	6.0-9.0			
Fecal Coliforms (CFU/100ml)	< 106			
Suspended Solids (mg/L)	125			
Oil and Grease (mg/L)	5 mg/L and no visible sheen			
CBOD (mg/L)	160 mg/L			

**Table 7 – SNP Station S07L3-002 – (2) and (3) Water Monitoring Results - sampled monthly during periods of flow and analyzed for suite of parameters listed.
 (According to Licence Annex A, Part A, item 2 (a); and,
 Licence Annex A, Part B, item 3 site descriptions and monitoring requirements**

Parameter	Seepage Creek – Quarry Road							Seepage Creek – Mackenzie Drive						
	SNP S07L3-002 – (2)							SNP S07L3-002 – (3)						
	May	Jun	July	Aug	Sep	Oct	Nov	May	Jun	July	Aug	Sep	Oct	Nov
Sample Collection Date														
Fecal Coliforms (CFU/100ml)														
BOD ₅ (mg/L)														
Suspended Solids (mg/L)														
pH														
Oil and Grease (mg/L)														
CBOD (mg/L)														
Calcium (mg/L)														
Sodium (mg/L)														
Temperature (°C)														
Conductivity (S/m)														
Ammonia Nitrogen (mg/L)														
Total Nitrogen (mg/L)														

Nitrite-Nitrogen (mg/L)														
Nitrate-Nitrogen (mg/L)														
Total Organic Carbon (mg/L)														
Total Phosphorous (mg/L)														
Magnesium (mg/L)														
Sulphate (mg/L)														
Potassium (mg/L)														
Total Arsenic (µg/L)														
Total Copper (µg/L)														
Total Lead (µg/L)														
Total Zinc (µg/L)														
Total Nickel (µg/L)														
Total Mercury (µg/L)														
Total Chromium (µg/L)														
Total Cadmium														

(µg/L)														
Total Iron (µg/L)														
Total Silver (µg/L)														
Total Thallium (µg/L)														
Total Phenols (mg/L)														

Please record the interpretation of the results here. Please indicate if there are any exceedances with respect to the CCME guideline values.

Table 8 – SNP Station S07L3-002 – (4) and (5) Groundwater Monitoring Results - sampled semi-annually in the spring and fall and at the request of an Inspector and analyzed for suite of parameters listed.

(According to Licence Annex A, Part A, item 2 (a); and, Licence Annex A, Part B, item 3 site descriptions and monitoring requirements)

Parameter	S07L3-002 – (4) Spring	S07L3-002 – (4) Fall	S07L3-002 - (5) Spring	S07L3-002 – (5) Fall
Sample Collection Date				
Calcium (mg/L)				
Sodium (mg/L)				
Temperature (°C)				
pH				
Suspended Solids (mg/L)				
Conductivity (S/m)				
Total Phosphorous (mg/L)				
Magnesium (mg/L)				
Chloride (mg/L)				
Sulphate (mg/L)				
Potassium (mg/L)				
Total Arsenic (µg/L)				
Total Copper (µg/L)				
Total Lead (µg/L)				
Total Zinc (µg/L)				
Total Nickel (µg/L)				
Total Mercury (µg/L)				
Total				

Chromium (µg/L)				
Total Cadmium (µg/L)				
Total Iron (µg/L)				
Thallium (µg/L)				
Silver (µg/L)				
Total Phenols (mg/L)				
Oil and Grease (mg/L)				

Please record the interpretation of the results here. Please indicate if there are any exceedances with respect to the CCME guideline values.

Table 9 – SNP Station S07L3-002 – (7) – Recorded in Table 1

**(According to Licence Annex A, Part A, item 2 (a); and,
Licence Annex A, Part B, item 3 site descriptions and monitoring requirements)**

7. Details, such as the underlying cause or corrective measures, regarding any sample exceedances or monitoring concerns (Licence, Schedule 1, Condition 1 (e)).

Any **sample exceedances or monitoring concerns** ?

Yes

No

If yes, provide details such as the underlying cause or corrective measures.

8. A summary of any Closure and Reclamation work completed during the year and an outline of any work anticipated for the next year (Licence, Schedule 1, Condition 1 (f))

Any **Closure and Reclamation Work Completed** during year being reported or any **Closure and Reclamation Work** anticipated for the next year?

Yes

No

If yes, provide details as follows.

Include any abandonment and restoration details here including any work anticipated to be completed during the next year. If required, please attach any as-built drawings or reports as an Attachment to this report.

9. A list of spills or unauthorized discharges (Licence, Schedule 1, Condition 1 (h))

List any unauthorized discharges here including any spills, how and when they were reported, and how they were cleaned up.

NT-NU Spill Reports? **Yes** **No**

If yes, please attach copies of spill reports, correspondence with the GNWT Water Licence Inspector or any other pertinent documentation as an Attachment to this report.

10. Copies of laboratory reports and QA/QC field sampling results (Licence, Schedule 1, Condition 1 (i)).

Please attach the reports as attachments. (Please provide the name(s); example Attachment C).

11. Updates or revisions to approved plans

Details on any changes to approved plans such as the Operation and Maintenance Plan or any other that is specific to this Municipal Water Licence. Please attach documents as attachments to this report. **(Licence, Schedule 1, 1 Conditions (j, k, l))**

- a. Updates or revisions to the Operations and Maintenance Plans referred to in Part G of the Licence:

Yes **No**
If yes, provide details.

- b. Updates or revisions to the Spill Contingency Plan referred to in Part H of the Licence:

Yes **No**
If yes, provide details.

- c. Updates or revisions to the Closure and Reclamation Plan referred to in Part I of the Licence:

Yes **No**
If yes, provide details

12. Any other details on water use or waste disposal requested by the board by November 1 of the year being reported (Licence, Schedule 1, Condition 1 (p, g)).

If the Board has requested that specific studies be completed, include details of the plan in this section with a summary of the outcome. Include any attachments/attachments with the submission of the Annual Report.

Did the Board request additional details?

- Yes** **No**
If yes, provide details

13. Other Information

- Include any other information here that may be valuable to the SLWB or to GNWT.
- Include details on upcoming studies that will be completed.
- Please include any non-compliance items identified in the GNWT Water Licence Inspection report and detail how the Town of Norman Wells is addressing them.
- If there are any contaminated soil piles currently in use (land farming), please list the details of containment, remediation and progress in this section.
- Please identify any on-going compliance issues for the Town of Norman Wells. This can facilitate discussions to resolve the issues.

14. Attachments

Attachment	Needed every year?
Attachment A - SNP Sample Locations Map	Yes
NT-NU Spill Reports	No
Copies of laboratory reports on SNP sampling	Yes
Other attachments as required (clearly indicate the name of the Attachment in the body of the report).	As required