

Municipal Water License Annual Report

Village of Fort Simpson
License #: MV2015L3-0001
Reporting year: 2016
Expires: July 1, 2025

a) Water Use

Licensed Water Volume Withdrawal: 500,000 m³ annually

Approximate total yearly volume of water used: 141,072m³

Table 1: Monthly and annual water quantities obtained from the Mackenzie River raw water intake at the Intake House (SNP 2015-1)

Month	Volume from main source (m ³)	Volume from any other source (m ³)	TOTAL Volume (m ³)
January	8,807	0	8,807
February	11,334	0	11,334
March	11,904	0	11,904
April	10,753	0	10,753
May	11,126	0	11,126
June	12,631	0	12,631
July	11,768	0	11,768
August	12,946	0	12,946
September	12,276	0	12,276
October	12,002	0	12,002
November	13,300	0	13,300
December	13,225	0	13,225
TOTALS	141,072	0	141,072
% Increase/decrease from previous year	-11.3%	0%	-11.3%

Reasons for increase/decrease in water withdrawn: ***Minimal number of water main breaks and minimizing winter bleeder line flow.***

Reasons for exceeding licensed withdrawal volumes (if applicable): *N/A*

Name and location of other water source used (if any), and reason for its use: *N/A*

General information (e.g. information regarding any modifications to the water withdrawal procedure or facilities) should be included here. If necessary please attach any relevant reports as an appendix to this report.

No modifications to facilities and/or procedures has been made during 2016.

b) Waste Disposal

i) Solid Waste

Approximate total yearly volume of solid waste deposited: 5,217m³

Table 2: Monthly and annual quantities of solid waste deposited at the Fort Simpson Solid Waste Disposal Facilities

Month	Volume of solid waste deposited (m ³)	Volume of sludge from the Water Supply Facility (m ³)	Volume of biosolids from the Sewage Disposal Facility (m ³) (SNP 2015-6)
January	433	0	8.4 (16% solids)
February	349	0	8.4 (16% solids)
March	389	0	11.2 (16% solids)
April	381	0	8.4 (16% solids)
May	454	0	5.6 (16% solids)
June	533	0	14.0 (16% solids)
July	457	0	11.2 (16% solids)
August	519	0	14.0 (16% solids)
September	487	0	14.0 (16% solids)
October	447	0	11.2 (16% solids)
November	399	0	5.6 (16% solids)
December	368	0	16.8 (16% solids)
TOTALS	5,217	0	128.8 (16% solids)
% Increase/decrease from previous year	84.3%	0%	+ 18.0 %

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 Village of Fort Simpson, or a large influx of people into town)

Biosolids produced at the WWTP and stored at the Solid Waste Landfill Site have increased 18% over last year. This increase is attributed to more thorough treatment of the wastewater received at the WWTP attributed to an increase in process efficiencies as well as a 4.3% increase in the volume of wastewater treated this year. As time progresses, we will build a bigger data base to define future trends more accurately.

The “volume of solid waste deposited” shown in Table 2 is a combination of commercial and residential waste. The 84.3% increase is most likely a result of inaccuracies in past reports and improved record keeping will show more accurate trends in the coming years.

ii) Sewage

Table 3: Monthly and annual quantities of sewage deposited at Fort Simpson Sewage Disposal Facilities

Month	Volume of sewage waste deposited (m ³)
January	8,745.4
February	9,020.6
March	9,174.9
April	9,234.0
May	9,470.1
June	9,625.0
July	9,689.3
August	8,711.4
September	8,787.4
October	9,538.7
November	10,489.3
December	11,127.1
TOTALS	113,613.2
Is this an estimated volume? (yes/no)	No, this is a metered volume from a mag meter calibrated within the year.
% Increase/decrease from 2015(108,945 m3)	+ 4.3 %

To calculate monthly sewage waste deposited to the Sewage Disposal Facilities , 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: (e.g.: an industrial project close to the Village of Fort Simpson, or a large influx of people into town)

This 4.3% increase, although not negligible, it is a small percentage and did not negatively impact plant operations/treatment efficiencies. As we gain a larger data base over the next few years, we may see verified trends developing and will react/plan accordingly.

iii) Other Waste Sources

Are there any other types or sources of waste that are being deposited at the Village of Fort Simpson’s Waste Disposal Facilities? Please list the type/source, where it is being deposited, and monthly/annual volume for each waste below.

c) Waste Removed from Waste Disposal Facilities

Please list in the table below wastes removed from Waste Disposal Facilities (e.g. recyclables, tires, household hazardous waste, scrap metal, and other wastes that are periodically shipped out.)

Table 4: Monthly and annual quantities of waste removed from the Waste Disposal Facilities by Type

Month	Waste type 1 (fill in type)	Waste type 2 (fill in type)	Waste type 3 (fill in type)
January	0	0	0
February	0	0	0
March	0	0	0
April	0	0	0
May	0	0	0
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	0	0	0
December	0	0	0
	0	0	0
TOTALS	0	0	0

Is this an estimated volume? (yes/no)			
% Increase/decrease from previous year	0	0	0

d) Waste Volume

Table 5: Monthly waste volumes deposited by commercial and industrial operators

Month	Solid Waste Disposal Facility (m ³)	Sewage Disposal Facility (m ³)	TOTAL
January	81	N/A	81
February	18	N/A	18
March	43	N/A	43
April	25	N/A	25
May	110	N/A	110
June	172	N/A	172
July	101	N/A	101
August	147	N/A	147
September	147	N/A	147
October	111	N/A	111
November	51	N/A	51
December	18	N/A	18
TOTALS	1,025	N/A	1,025
Is this an estimated volume? (yes/no)	Yes, from estimating truckloads based on invoices issued.	No method to differentiate commercial/industrial from residential.	
% Increase from previous year	606.9%	N/A	606.9%

The figures shown in Table 5 are the result of improved record keeping and the % increase most likely shows the inaccuracies of the 2015 volumes and is not a true representative of the actual increase.

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.

e) Tabular summaries of data generated under the Surveillance Network Program

Tabular summaries of all data generated under the Surveillance Network Program (SNP) should be included using the tables in Appendix A. All lab results should be attached in an appendix to this report.

f) Solid Waste Disposal Facility Fencing Plan Update
Fence to be built in the Summer of 2018

g) Commercial and Industrial Operators Waste Management Plan Update
Addressed in Section d) and Table 5 above.

h) Sludge Management Plan Update

Total volume (m³) OR weight (kg) of treated sewage sludge used as landfill cover material at the Solid Waste Disposal Facilities:

None has yet to be used as top cover.

Was treated sewage sludge used for any other purposes during the previous calendar year? If so, please list the use(s), location of use, and monthly/annual volume or weight used below.

To date, no biosolids have been removed from the sanitary landfill for any other purposes.

Monthly and annual volume of sewage sludge deposited to the Solid Waste Disposal Facilities should be reported in column 3 of Table 2.

Results of samples taken of composted sewage sludge should be included with SNP data in Appendix A. Any maintenance or construction work completed on the Sewage Sludge Treatment Facility should be described in section i) and j) below.

i) Construction completed during the year

Include a summary of any construction activities conducted in accordance with Part F of this License, undertaken during the previous calendar year;

WWTP: A temporary bermed and lined biosolids storage pad was constructed at the Solid Waste Landfill Site. This is a temporary measure to allow for the secure storage of biosolids from the WWTP until a permanent composting facility can be permitted and constructed in the summer of 2018.

j) Modifications and/or maintenance work completed during the year on the Water Supply Facilities and Waste Disposal Facilities

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 appendix to this report.

None

k) Spill Contingency Plan Update

Addressed in Sections l) and m) below.

l) List of Unauthorized Discharges

List all unauthorized discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, and summary of the circumstances and follow-up actions taken, and the status (i.e. open or closed), in accordance with the reporting requirements referred to in Part H, item 4 of the License. Please attach copies of spill reports, correspondence with the GNWT Water License Inspector or any other pertinent documentation as an appendix to this report.

None

m) Spill Training and Communications Exercises

List any spill training and communications exercises that have been carried out during the previous calendar year including courses on spills prevention, waste management, SNP sampling, etc.

n) Operations and Maintenance Activities

Addressed in Section j) above.

Only routine operations, minor repairs and preventive maintenance activities.

o) Closure and Reclamation Activities

Summarize any closure and reclamation work completed during the year and an outline of any work anticipated for the next year. Attach any relevant as-built drawings or reports as an appendix to this report.

p) Studies requested by the Board

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

q) Actions taken to address concerns, non-conformances, or deficiencies identified by an Inspector

Include any non-compliance items identified in GNWT Water License Inspection reports and detail how the Village of Fort Simpson is addressing them.

WWTP: Construction of temporary biosolids storage at the Solid Waste Landfill Site(see item (i) above).

r) Calibration and Status of Meters and Devices

Summarize the calibration and status of the meters and devices used for measuring volumes of water used and waste discharged (Part B, item 8).

WWTP: All meters are on a yearly calibration program and monitored daily for irregularities.

s) Other Details Requested by the Board

If the Board has requested any other details on Water use, operating procedures, Modifications, maintenance work, or other topics, include details in this section with a summary of the outcome. Include any attachments with the submission of the Annual Report.

Other Information

- Include all correspondence between the Inspector and the Licensee.
- Include any other information here that may be valuable to the MVLWB.
- Include details on upcoming studies that will be completed.
- 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 Village of Fort Simpson. This can facilitate discussions to resolve the issues.

a) Approved biosolids composting facilities and operating procedures.

Appendix A: Tabular summaries of all data generated under the Surveillance Network Program for Fort Simpson (MV2015L3-0001)

Surveillance Network Program Lab Results Summary

Surveillance Network Program (SNP) information is to be summarized in a tabular format and shall indicate date of testing, parameters tested for and any other information requested by the GNWT Water License Inspector or the MVLWB. Summary tables have been provided below for your convenience. Laboratory analysis results may be appended in Appendix B.

1) SNP Lab Results Summary – Station number 2015-1 (Raw water from the Mackenzie River)

This information is reported in Table 1 of the Annual Report.

2) SNP Lab Results Summary – Station number 2015-2 (Sewage Disposal Facilities point of discharge)

Year: 2016

Water Licence Parameters	Effluent Quality Criteria	#1 160013	#2 160059	#3 160088	#4 160137	#5 160235	#6 160338	#7 160504	#8 160748	#9 160908	#10 161050	#11 161110	#12 161147
pH		7.00	7.27	7.19	7.08	7.29	7.20	7.33	7.31	7.35	7.41	7.13	7.26
CBOD		12	11	13	42	44	16	20	28	15	n/a	5	8
BOD5	75mg/L	12	10	10	45	45	18	20	29	14	n/a	5	9
Total Suspended Solids	75mg/L	10	13	9	36	26	9	17	18	13	7	5	13
Ammonia		26.8	19.2	28.2	24.4	32.3	31.8	27.5	31.9	29.8	28.7	20.8	26.3
Total Phosphorus		1.46	2.92	0.611	4.85	1.38	3.44	1.45	7.43	0.911	2.30	1.15	1.53
Nitrate		< 0.01	< 0.01	< 0.01	<0.01	0.12	0.21	0.34	<0.01	0.31	0.29	0.21	0.32
Nitrite		< 0.01	< 0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	<0.01
Fecal Coliforms	1x10 ⁶ CFU/100ml	900	8,900	4,000	139,000	54,000	34,000	17,000	380,000	62,000	n/a	4,000	73,000
Oil and Grease (HEM)	5mg/L	< 2.0	< 2.0	< 1.0	3.2	3.4	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

3) SNP Lab Results Summary – Station number 2015-5 (Wetlands at southwest corner of Solid Waste Disposal Facilities)

Sampling is usually possible only in Spring. For most of the year there is no surface water present, however in Spring of 2016 the rate of melting was slower than the rate of ground absorption / evaporation and therefor no sampling was possible.

4) SNP Lab Results Summary – Station number 2015-6 (Sewage sludge from the Sewage Disposal Facilities)

This information is reported in Table 2 of the Annual Report.

5) SNP Lab Results Summary – Station number 2015-7 (Composted sewage sludge)

Year: 2016

	Water License Criteria	Sample 1 – date	Sample 4 – date	Sample 5- date	Sample 6 – date	Sample 7 – date	Sample 8 - date	Sample 9 - date
Arsenic	75*							
Cobalt	150*							
Chromium	210*							
Copper	400*							
Molybdenum	20*							
Selenium	14*							
Zinc	1850*							
Cadmium	20*							
Mercury	5*							
Nickel	180*							
Lead	500*							

Fecal Coliform	1000 MPN/g**								
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*Parameters to be tested from a single Composite Sample, made up of 10 representative, random sub-samples

**7 separate grab samples