Chippewas of Mnjikaning (Band No. 139)

Date of Visit: April 14, 2001
By George Culhane (OCWA)
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Tribal Council Affiliation: Ogemawahj Tribal Council (OTC)
Operator: Roy Symes (Manager)
Location: The Chippewas of Mnjikaning First Nation community is located northeast and across Lake Couchiching from the City of Orillia
Population: 479 people in the community (December 2000 - INAC)
No. of Units: 274 housing units (CAIS)

1.0 Description of the Community Water Supply

Based on the CAIS report, water to the houses in the Chippewas of Mnjikaning community is treated as follows:

- 479 people are serviced by piped water.

- 274 houses are serviced by a communal water system.

2.0 Description of the Community Sewage Facilities

Based on information supplied to OCWA, sewage for the houses in the Chippewas of Mnjikaning community is treated as follows:

- 479 people are serviced by individual septic tanks; and
- Commercial and institutional establishments are serviced by a communal sewage treatment facility.

- 274 houses are serviced by septic tanks; and
- Commercial and institutional establishments are serviced by a communal sewage treatment facility.

3.0 Overall Assessment for Communal Water Treatment Supply

The questionnaire developed by PWGSC required OCWA to undertake a risk assessment of the Water Source, Design, Operation, Reporting, and Operators. To properly assess these areas, a revisit to the water treatment facilities would be required.

OCWA was requested to undertake the evaluation without a visit to the site. With the available information, OCWA has undertaken the requested assessment of the facilities.

The ranking system used is as follows:

0 = Not enough information to assess
1-4 = Low Risk
5-7 = Medium Risk
8-10 = High Risk

For more detailed information on the Risk Assessment used see the Terms of Reference, Appendix B.

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	No lab data available
Chemical	8	Turbidity
Physical	6	Colour
Overall Ranking for Water Source	7	
B. Design		
Biological	1	1 exceedance in 456 samples
Chemical	2	No exceedances
Physical	6	Exceedances noted for aluminum and manganese.
Risk to Public Health	3	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	4	
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	0	
Overall Ranking for Operations	1	All equipment present and functional
D. Reporting		
Ranking for Laboratories and Testing	1	Water testing 10 times per week
Ranking for Boil Water Advisories	1	No boil water advisories
Overall Ranking for Reporting	1	Meeting GCDWQ

SECTION Water	SECTION RANKING Water	RISK Water
E. Operators		
Overall Ranking for Operators	1	Certified operators
F. Statistical Data		
Overall Ranking for Individual Wells	4	12 exceedances in 392 samples (3%)
Overall Ranking for the System	3	Low Risk

4.0 Overall Assessment for Communal Sewage Treatment Facilities

The questionnaire developed by PWGSC required OCWA to undertake a risk assessment of the Effluent Receiver, Design, Operation, Reporting, and Operators. To properly assess these areas, a revisit to the sewage treatment facility would be required.

OCWA was requested to undertake the evaluation without a visit to the site. With the available information, OCWA has undertaken the requested assessment of the facilities.

The ranking system used is as follows:

0 = Not enough information to assess
1-4 = Low Risk
5-7 = Medium Risk
8-10 = High Risk

For more detailed information on the Risk Assessment used see the Terms of Reference, Appendix B.

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	0	
B. Design		
Quality of Treated Effluent	1	High quality effluent
Ranking of Design of Sewage Plant	1	
Ranking of Concerns and Hazards within the Plant	1	No reported problems
Condition of Laboratory Equipment	1	
Overall Ranking for Design	1	
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	1	No reported problems
D. Reporting		
Overall Ranking for Reporting	1	Regular sampling and no reported problems
E. Operators		
Overall Ranking for Operators	1	No reported problems
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	1	Low Risk

5.0 Communal Water Supply (254 houses)

5.1 Water Source

The raw water source is drawn from Lake Couchiching.

The following table summarizes all available raw water analyses from Health Canada:

Date	Exceedance	Result	GCDWQ Limit
Nov. 9, 1999	Colour	18 TCU	15 TCU (AO)
	Turbidity	1.9 NTU	1.0 NTU
Nov. 14, 2000	No Exceedances		
May 23, 2001	No Exceedances		

AO – aesthetic objective

5.2 Design

The community is serviced with a water treatment plant, constructed in 1996, which replaces the old facility. The raw water from Lake Couchiching flows by gravity to the low lift pumping station, is pumped to the water treatment plant for treatment, is stored in an on-site reservoir and off-site elevated storage tank, and flows by gravity and pump pressure to the water distribution system. The treatment plant is certified as a Class II Water Treatment System.

The following table summarizes all the chemical exceedances for treated water available from Health Canada:

Date	Exceedance	Result	GCDWQ Limit
Nov 9, 1999	Aluminum	0.100 mg/L	0.100 mg/L (OG)
Nov 14, 2000	Aluminum	0.130mg/L	0.100mg/L (OG)
May 23, 2001	Aluminum	0.156 mg/L	0.100 mg/L (OG)
	Dissolved Organic Carbon	8.7 mg/L	5.0 mg/L (AO)

AO = aesthetic objective, OG = operational guideline

The Chippewas of Mnjikaning water treatment plant uses an upflow gravel bed clarifier, multimedia filtration with granular activated carbon (GAC) and disinfection to treat water. The top anthracite layer of each of the filter units was replaced with granular activated carbon (GAC) in 1997 and later replaced with new GAC in the fall of 1998. The replacement of GAC also eliminated the taste and odour problems experienced by the community. Chlorine is added at various points of the treatment process to provide both zebra mussel control and disinfection.

The plant was designed for a total maximum day flow of 3,800 m^3/day. Currently, the plant produces an average of 1,045 m^3/day treated water on an annual average basis.

Treated water storage is provided by a below ground 1,300 m^3 and newly constructed 4500 m^3 reservoir at the plant along with a 640 m^3 storage in an elevated storage tank. There are two high lift pumps capable of providing 30 L/s, each backup pump rated for 45 L/s (started by low pressure only), and three high flow pumps rated for 100 L/s each.

There is adequate maintenance workshop space available along with proper tools.

5.3 Operations

A grab sample of raw water is collected by the plant's operators and tested daily at the plant's laboratory for pH, turbidity, and temperature. Bacteriological quality of raw water is tested weekly.

There are continuously on-line chlorine residual analyzers and turbidity meters. Grab samples are tested for chlorine residual, pH, turbidity and aluminum concentration at the point at which treated water enters the distribution system. There are also on-line pH and turbidity analyzers on the water entering the distribution system.

The water distribution system water testing is performed in order to ensure the disinfection process is functioning properly at all times. Water samples are collected and tested weekly for the presence of total coliform bacteria, free chlorine residual, E. Coli and fecal coliform.

5.4 Reporting

Inorganic and chemical analyses of raw and treated water quality were performed by the Medical Services Branch of First Nation and Northern Health Services.

Bacteriological tests are conducted on site by plant personnel where ten bacteria samples are collected per week. The results are filed on site and reported to Health Canada.

The following table summarizes the bacteriological data available from Health Canada:

Period	Frequency	Regularity	Exceedances
99/10/08 to 01/10/29	Weekly basis	▪ Testing carried out on a regular basis	▪ Total Coliform exceedance noted on 00/07/25

The table above shows that bacteriological sampling is undertaken regularly and treated water is excellent.

In the event of an adverse test result, a second sample would be taken and analyzed. No boiled water advisory has been issued in the last two years.

No taste and odour problems were reported in the treated water.

5.5 Operators

The manager of the water and sewage treatment plants is Roy Symes. The operators are Ted Benson, Richard Snache, David Simcoe, Ronald Benson. Ian Williams, Steward Comego, Kelvin Douglas, and Mark Shilling. These operators are working on their Class I and Class II operations levels for both water and wastewater.

The operators were familiar with calibrating and maintaining the disinfection equipment and they appear to be confident in their operational techniques.

6.0 Communal Sewage Facilities for Commercial and Institutional Establishments

6.1 Effluent Receiver

There is no available data regarding the effluent receiver.

6.2 Design

The Chippewas of Mnjikaning sewage treatment plant was constructed in 1996 with a capacity of 2,100 m^3/day with provisions for expansion to 3,150 m^3/d. The treatment facility provides service mainly to Casino Rama and other local commercial complexes. The treatment plant is certified as a Class II Wastewater Treatment System.

The plant is designed to produce tertiary quality effluent on a consistent year-round basis using the sequencing batch reactor (SBR) process and continuous backwash filtration. The treatment plant consists of a continuous inflow batch SBR, equalization tanks, filter feed pumps, aerobic digester, septage holding tank, and a chemical dosage system and UV disinfection.

6.3 Operations

A UV disinfection method is employed.

No other information on operations is available.

6.4 Reporting

An adequate monitoring program is in-place, where samples are collected and tested by the plant operators. Based on 1999, and 2000 test results received from Health Canada, all yearly averages of the effluent met all design criteria and effluent requirements for BOD, TSS ammonia, total phosphorus and E. Coli.

7.0 Deficiencies in the Communal Water Supply

1. No deficiencies in the communal water treatment system were noted.

8.0 Deficiencies in the Communal Sewage Facilities

1. No deficiencies in the communal sewage facilities were noted.

9.0 Classification

Based on the terms of reference - Appendix I – Plant Classification Guideline developed by Public Works and Government Services Canada and with discussions with the Ontario Ministry of the Environment Classification Group, OCWA classified these plants as follows:

Water Treatment Facility- Class II
Sewage Treatment Facility- Class II

10.0 Recommendations

- Implement a sewage septic tank inspection program to inspect all septic tanks in the community for proper operations and meeting the required standards.

11.0 Overall Community Risk Assessment

- **Water Category – Low Risk**
- **Sewage Category – Low Risk**

Note: Information within this report is based on discussions with the plant operator and a quick visual walkthrough of the facilities. No detailed review was undertaken by OCWA.