M'chigeeng First Nation (West Bay) (Band No. 181)

Date of Visit: February 6, 2001
By John McGhee (OCWA)
Site Address: P.O. Box 333
West Bay, Ontario, P0P 1G0
Phone No.: 705-377-5362 **Fax No.:** 807-377-4980
Tribal Council Affiliation: United Chiefs and Councils of Manitoulin (UCCM)
Operators: Elvis Debassige and Greg Debassige
Location: The M'chigeeng (West Bay) First Nation community is located on Manitoulin Island approximately 25 km southwest of Little Current on Hwy. 540
Population: 981 people in the community (October 2000 - INAC)
No. of Units: 279 housing units (CAIS)

1.0 Description of the Community Water Supply

The M'chigeeng community is serviced by two communal water systems, Lakeview and Village. The CAIS report did not specify the number of houses serviced by each of the two systems. Based on the CAIS report, water to the houses in the M'chigeeng (West Bay) community is treated as follows:

- 724 people are serviced by a communal water system;
- 169 people are serviced by individual water holding tanks with trucked water; and
- 88 people have other services.

- 206 houses are serviced by a communal water system;
- 48 houses are serviced by individual water holding tanks with trucked water; and
- 25 houses have other services.

2.0 Description of the Community Sewage Facilities

The M'chigeeng community is serviced by two sewage lagoon systems, Lakeview and Village. Based on the CAIS report, sewage from the houses in the M'chigeeng (West Bay) community is treated as follows:

- 376 people are serviced by a communal sewage system; and
- 605 people are serviced by septic tanks.

- 107 houses are serviced by a communal sewage system; and
- 172 houses are serviced by septic tanks.

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.

3.1 Lakeview Communal Water Supply

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	8	Water intake is close to sewage outfall.
B. Design		
Biological	2	2 exceedances
Chemical	1	No exceedances
Physical	6	Hardness exceedance
Risk to Public Health	1	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	3	
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	5	No emergency plan
Overall Ranking for Operations	8	No chlorine residual analyzer, no turbidity meter, no O & M manuals
D. Reporting		
Ranking for Laboratories and Testing	2	Health Canada conducts tests regularly
Ranking for Boil Water Advisories	1	No boil water advisory
Overall Ranking for Reporting	2	

SECTION Water	SECTION RANKING Water	RISK Water
E. Operators		
Overall Ranking for Operators	4	Received training and appear confident
F. Statistical Data		
Overall Ranking for Individual Wells	8	6 exceedances out of 13 samples (46%)
Overall Ranking for the System	5	Medium Risk

3.2 Village Communal Water Supply

SECTION Water	SECTION RANKING Water	RISK Water
A. Water Source		
Biological	0	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	10	Intake is near sewage outfall
B. Design		
Biological	1	No exceedances
Chemical	1	No exceedances
Physical	1	No exceedances
Risk to Public Health	1	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	8	System is old and needs professional assistance
C. Operations		
Reservoir Cleanliness	0	
Emergency Plan	10	No emergency plan
Overall Ranking for Operations	10	Malfunctioning equipment, chemicals are not properly stored
D. Reporting		
Ranking for Laboratories and Testing	1	Health Canada conducts tests regularly
Ranking for Boil Water Advisories	1	No boil water advisories
Overall Ranking for Reporting	1	
E. Operators		
Overall Ranking for Operators	4	Received training and appear confident
F. Statistical Data		
Overall Ranking for Individual Wells	8	6 exceedances out of 13 samples (46%)
Overall Ranking for the System	10	High 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.

4.1 Lakeview Communal Sewage Treatment Facility

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	8	Effluent discharges close to water intake
B. Design		
Quality of Treated Effluent	0	No lab data available
Ranking of Design of Sewage Plant	1	
Ranking of Concerns and Hazards within the Plant	1	None noted
Condition of Laboratory Equipment	0	
Overall Ranking for Design	5	No backup power for pump station
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	5	Excessive weed growth, and rodent problem in berms
D. Reporting		
Overall Ranking for Reporting	6	Sewage collection back-ups and bypasses
E. Operators		
Overall Ranking for Operators	4	Some training
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
Overall Ranking for the Systems	6	Medium Risk

4.2 Village Communal Sewage Treatment Facility:

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	10	Village water intake is approx. 500m from lagoon outfall
B. Design		
Quality of Treated Effluent	0	No lab data available
Ranking of Design of Sewage Plant	1	
Ranking of Concerns and Hazards within the Plant	1	None noted
Condition of Laboratory Equipment	0	Not Evaluated
Overall Ranking for Design	5	No backup power for pump station
C. Operations		
Ranking for Emergency Plan	0	Not Evaluated
Overall Ranking for Operations	6	Service disruptions, excessive weed growth and rodent problem at lagoon
D. Reporting		
Overall Ranking for Reporting	7	Sewage back-ups and basement flooding
E. Operators		
Overall Ranking for Operators	7	Some training
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	8	High Risk

5.0 Lakeview Communal Water Supply0

5.1 Water Source

The water source for this community is Otter Lake.

5.2 Design

The Lakeview system is gravity-fed from Otter Lake to a small pumping station with two small Mulligan pressure filters, disinfection, and pumped to the distribution system from a high lift pumping station at the plant. There is a reservoir at the plant.

The following table summarizes the treated water chemical exceedance data available from Health Canada:

Date	Exceedance	Result	GCDWQ Limit
Jan. 11, 2000	Hardness	192 mg/L	80 – 100 mg/L (OG)
	Phenol	<0.002 mg/L	0.001 mg/L (AO)
Mar. 20, 2001	Hardness	180 mg/L	80 – 100 mg/L (OG)
	Total Phenolics	<0.002	0.001 mg/L (AO)

AO – aesthetic objective; OG – operational guideline

The operators stated that the Lakeview plant was constructed in 1989. The rated design capacity of the plant is not available.

There is no designated chemical storage area. There is a diesel operated pump for fire protection and it is tested on a regular basis with a timer. There is no backup power supply for the water treatment facilities. There is some safety equipment on site. There are no adequate designated laboratory, office/filing and workshop areas in the plant.

5.3 Operations

There are some safety hazards in the plant including no emergency lighting.

Sodium hypochlorite (5%) is used for disinfection and the disinfection equipment is functional. There is a sufficient supply of the disinfectant on site and the operators order a supply every two months.

There is no on-line chlorine residual analyzer. The operators check the chlorine residual once per day.

There are no operating and maintenance manuals for the water treatment plant and no as-built drawings on site.

There is an annual hydrant flushing and maintenance program in place. There is no annual main valve operating/maintenance program in place. Emergency repair parts are available on-site and there are contact listings of technicians/trades people available. The response time of technicians/trades people is 24 hours.

5.4 Reporting

The operators of the water treatment plants take chlorine samples four times weekly. Health Canada takes regular bacteriological tests once per month and submits the samples to the Sudbury laboratory. The sample results are kept at the plant and the Administration Office.

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

Period	Frequency	Regularity	Exceedances
99/10/06 to 01/10/31	1 – 6 times per month	▪ Months missing 2001: Jun.	▪ 2 Background count exceedances noted

No boil water advisories have been issued on either water treatment plant.

Sampling for all chemical substances of treated water is conducted once/year by Health Canada.

6.0 Village Communal Water Supply

6.1 Water Source

The raw surface water source is the North Channel of Lake Huron.

6.2 Design

The Village plant is gravity fed from the North Channel of Lake Huron to a low lift pumping station, which pumps to a reservoir at the plant, disinfection, and a high lift pumping station that pumps to the distribution system with pressure controlled by a series of pressure tanks.

The following table summarizes the treated water chemical exceedance data available from Health Canada:

Date	Exceedance	Result	GCDWQ Limit
Jan. 11, 2000	Phenol	<0.002 mg/L	0.001 mg/L (AO)
Mar. 20, 2001	No Exceedances	N/A	N/A

AO – aesthetic objective

The operators stated that the Village facility was constructed in 1969. The rated design capacity of the plant is not available.

There is no designated chemical storage area. There is a diesel operated pump for fire protection and it is tested on a regular basis with a timer. There is no backup power supply for the water treatment facilities. There is some safety equipment on site. There are no adequate designated laboratory, office/filing and workshop areas in the plant.

6.3 Operations

There are some safety hazards in the plant including no emergency lighting. The fuel containment area drains to the lake and there is a leak in the wall of the building.

Sodium hypochlorite (5%) is used for disinfection and the disinfection equipment is functional. There is a sufficient supply of the disinfectant on site and the operators order a supply every two months.

There is no on-line chlorine residual analyzer. The operators check the chlorine residual once per day.

There are no operating and maintenance manuals for the water treatment plant and no as-built drawings on site.

There is an annual hydrant flushing and maintenance program in place. There is no annual main valve operating/maintenance program in place. Emergency spare parts are available on-site and there is a contact listing of technicians/trades people available. The average response time of technicians/trades people is 24 hours.

In the Village water supply, there is a re-occurring problem of the quick cycling of the high lift duty pumps. There are a series of pressure tanks to control pressure in the water distribution system, but the pressure tanks do not seem to be working.

The Village water intake is approximately 500 m from the lagoon sewage outfall.

6.4 Reporting

The operators of the water treatment plants take chlorine samples four times weekly. Health Canada takes regular bacteriological tests once per month and submits the samples to the Sudbury laboratory. The sample results are kept at the plant and the Administration Office.

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

Period	Frequency	Regularity	Exceedances
99/10/06 to 01/10/31	1 – 6 times per month	▪ Months missing 2001: Jun.	▪ No exceedances noted

No boil water advisories have been issued on either water treatment plant.

Sampling for all chemical substances of treated water is conducted once/year by Health Canada.

7.0 Lakeview Communal Sewage Treatment Facility

7.1 Effluent Receiver

The Lakeview lagoon discharges into Lake Mindemoya.

7.2 Design

The Lakeview sewage system consists of a sewage collection system with one pumping station to a four-cell lagoon and discharges to Lake Mindemoya. The operators stated that the facility was constructed in 1999. The rated design capacity of the facility is not available.

7.3 Operations

There are no operating and maintenance manuals or as built drawings for the sewage collection and treatment system.

The sewage pumping station wet wells are cleaned every two months. The sewage pumping station spare parts are not readily available. There is no backup power for the sewage pumping staions. There is a contact listing of technicians/trades people available.

The Lakeview lagoons are discharged once per year to Lake Mindemoya.

7.4 Reporting

Health Canada conducts effluent tests of biological oxygen demand (BOD) and suspended solids (SS) when the lagoon is discharged. The results are kept at the Band Office. No results were available from Health Canada.

No complaints of odour are recorded. There has been one sewage collection backup causing one basement to be flooded. Suspected cause of the backup is reported to be due to grease build up in a manhole.

8.0 Village Communal Sewage Facility

8.1 Effluent Receiver

The Village lagoon is discharged every six months to the North Channel of Lake Huron.

8.2 Design

The Village sewage system consists of a sewage collection system with one pumping station to a two-cell lagoon, which discharges into the North Channel of Lake Huron. The operators stated that the facility was constructed in 1999. The rated design capacity of the facility is not available.

8.3 Operations

There are no operating and maintenance manuals or as built drawings for the sewage collection and treatment system

The sewage pumping station wet wells are cleaned every two months. The sewage pumping station spare parts are not readily available. There is a contact listing of technicians/trades people available.

There have been raw sewage bypasses from the pumping station caused by power failures. These events have been reported to Health Canada. There is no backup power for the sewage pumping stations. The pumping station control panel is causing problems.

The Village lagoon is discharged every six months to the North Channel of Lake Huron. There is excessive reed growth for the Village lagoon system.

8.4 Reporting

Health Canada conducts effluent tests of biological oxygen demand (BOD) and suspended solids (SS) when the lagoon is discharged. The results are kept at the Band Office. No results were available from Health Canada.

No complaints of odour are recorded. There has been one sewage collection backup causing one basement to be flooded. Suspected cause of the backup is reported to be due to grease build up in a manhole.

9.0 Personnel

Elvis Debassige and Greg Debassige are the operators of the water and sewage treatment facilities. The operators are not certified, but they are taking three-day courses every two months through the Circuit Rider Training Program. The operators back each other up during vacation or sickness absence.

10.0 Deficiencies in the Communal Water Supply

1. The intake piping should be reviewed for depth of water cover, potential freezing, and potential ice damage. Zebra Mussels are also present. The operators noted there is a displaced or separated pipe in the intake piping.

2. Some safety equipment is available on site including a face shield, and basic protective clothing. There is no eyewash station.

3. There are no designated chemical storage area, and no laboratory, office/filing or workshop areas.

4. There is no on-line chlorine residual analyzer.

5. Turbidity monitoring equipment is available but sample results of the treated water are not recorded.

6. Several safety hazards were noted on site. The Village water treatment plant fuel containment area drains to the lake and there is a leak in the wall of the plant building.

7. There are no operating and maintenance manuals for the treatment plant and no as-built drawings on site.

10. There is no main valve operating and maintenance program on the water distribution system.

11. There is no written contingency plan available.

12. The pressure tanks on the Village water distribution system are not working and are causing the high lift pumps to cycle frequently.

13. The operators [redacted] and should have additional training. **s.19(1)**

14. There are no alarms on the water supply systems.

15. The Village water intake is approximately 500 m from the Village lagoon sewage outfall. There is a potential to contaminate the raw water source for the Village water supply system from the Village lagoon outfall.

11.0 Deficiencies in the Communal Sewage Facilities

1. No operating and maintenance manuals for the sewage treatment plants and no as-built drawings on site.

2. The Village system has re-occurring pump failure problems. Leaks into the gravity system cause the pumps to be overloaded.

3. There are no emergency spare pumps available on site.

4. There have been raw sewage bypasses from the pumping stations caused by power failures. There is no backup power for the pumping stations.

5. There has been one event of a sewage collection backup and one basement flooding.

6. The operators are not certified and should have additional training. s.19(1)

12.0 Classification

12.1 Lakeview System

Based upon 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:

Lake View and Village Water Treatment Facility - Class I
Lake View and Village Sewage Treatment Facility - Class I

13.0 Recommendations

- Obtain required safety equipment.
- Construct a designated chemical storage area.
- Consider constructing office/filing/workshop areas.
- Consider installing an on-line chlorine residual analyzer. This could save operators time in sampling everyday.
- Train and implement operators testing of turbidity.
- Repair containment area drains.
- Obtain as-built drawings and operating and maintenance manuals.
- Repair or replace pressure tanks on the Village water supply system.
- Implement an annual valve maintenance program.
- Implement a Training Program that can lead to certification of the operator.
- Implement a Training Program for water truck haulers.
- Develop a contingency plan for water supply systems, including the individual water holding tanks.
- Establish a protocol for taking water samples at the water treatment plants, including raw water samples.
- Establish a procedure for cleaning and disinfecting individual water holding tanks.
- Review water-sampling protocols for individual water holding tanks.
- Investigate the water intake location for the Village water system with reference to the sewage outfall.
- Village water supply system needs a Professional Engineer to review the facility.
- Repair leaks in the Village sewage collection system.
- Consider spare pumps for emergencies on site.
- Consider installing backup power for pumping station pumps to reduce bypasses.
- Develop a contingency plan for sewage treatment system
- Investigate and implement plan to reduce pumping station by-passes and backups
- Repair control panel at pumping station.

14.0 Overall Community Risk Assessment

Lakeview Water Category – Medium Risk

- **Medium Risk because of the flowing:**
  - Water intake close to sewage outfall;

Village Water Category – High Risk

- **High Risk because of the following:**
  - No separate chemical storage;
  - Repair pressure tanks;
  - Needs professional assistance to evaluate the Village system that was built in 1969;
  - Village water intakes located near the Village sewage outfall.

Lakeview Sewage Category – Medium Risk

- **Medium Risk because of the following**
  - Sewage by-passing;
  - Effluent discharges very close to water intake.

Village Sewage Category – High Risk

- **High Risk because of the following:**
  - Sewage bypassing at pumping stations and flooded basement;
  - Repair control panels.

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