

Pikangikum First Nation (Band No. 208)

Date of Visit: April 3, 2001

Cam McIvor (OCWA)

Site Address: Pikangikum, ON P0V 1L0

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Tribal Council Affiliation: Independent First Nations Alliance

Operators: Robert Quill, J.J. Suggashie, Allen Peters, Russel Peters

Location: The Pikangikum First Nation community is located approximately 85 km northwest of Red Lake

Population: 1762 people in the community (November 2000 – INAC)

No. of Units: 387 houses in the community (CAIS)

1.0 Description of the Community Water Supply

Based on the CAIS report, and information supplied to OCWA, water to the houses in the Pikangikum community is treated as follows:

- 196 people use individual holding tanks with trucked water
- 1,566 people have no services

- 43 houses are serviced by individual water holding tanks with trucked water; and
- 344 houses have no services.

The CAIS information does not identify a communal water supply system.

2.0 Description of the Community Sewage Facilities

Based on the CAIS report, sewage from the houses in Pikangikum community is treated as follows:

- 196 people use septic tanks with trucked haulage
- 1566 people have no services

- 43 houses are serviced by septic tanks with truck haulage; and
- 344 houses have no services.

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	
Chemical	0	
Physical	0	
Overall Ranking for Water Source	0	No lab data available
B. Design		
Biological	8	Exceedances recorded
Chemical	9	THMs, turbidity, aluminum exceedances
Physical	6	Alkalinity, hardness, pH, color, total organic carbon exceedances
Risk to Public Health	10	Boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	8	
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	8	No chlorine residual analyzer, service disruption, no turbidity monitoring
D. Reporting		
Ranking for Laboratories and Testing	8	Weekly by operator but not properly recorded
Ranking for Boil Water Advisories	8	Plant shut down because of basement flooding

SECTION Water	SECTION RANKING Water	RISK Water
Overall Ranking for Reporting	8	
E. Operators		
Overall Ranking for Operators	2	Trained and confident
F. Statistical Data		
Overall Ranking for Individual Wells	0	No data
Overall Ranking for the System	8	High Risk

*The above ranking is for the permanent plant in this community, which has been shut down, and service replaced by a temporary Zenon plant.

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	0	
Ranking of Design of Sewage Plant	0	
Ranking of Concerns and Hazards within the Plant	0	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	0	
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	0	
D. Reporting		
Overall Ranking for Reporting	0	
E. Operators		
Overall Ranking for Operators	0	
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	0	Operators were not available for OCWA inspection; information is limited.

5.0 Communal Water Treatment Plant

5.1 Water Source

The communal water system uses surface water source from Pikangikum Lake.

5.2 Design

The community is serviced with a water treatment plant constructed in 1995. The plant has a two-train, full treatment process plant.

The following is a summary of chemical exceedances available from Health Canada in Sioux Lookout:

Sample Date	Sample Received	Location	Exceedances	Result	GCDWQ Limit	Notes
Jul. 18, 2000	Jul. 20, 2000	Water Plant Sample	Total Organic Carbon	5.5 mg/L	5.0 mg/L (AO)	
			Turbidity	1.1 NTU	1 NTU (MAC)	
			Aluminum	0.32 mg/L	0.1 mg/L (OG)	
			Hardness	27.1 mg/L	80 to 100 mg/L (OG)	
Oct. 25, 2000	Oct. 30, 2000	Nursing Station	Colour	31 TCU	15 TCU (AO)	The sample appeared yellow
			Total Organic Carbon	16.2 mg/L	5.0 mg/L (AO)	
			Turbidity	1.5 NTU	1 NTU (MAC)	
			Iron	0.37 mg/L	0.30 mg/L (AO)	
			THM	0.713 mg/L	0.1 mg/L (MAC)	
			Aluminum	0.19 mg/L	0.10 mg/L (OG)	

AO = aesthetic objective, OG = operational guideline, MAC = maximum acceptable concentration

The existing water treatment plant was contaminated in October 2000, when a low lift pump was left on and the basement flooded. The temporary Zenon supplied plant, using reverse osmosis for treatment, is strictly for drinking water and was brought onto site when the original water treatment plant was contaminated.

Sample Date	Sample Received	Location	Exceedances	Result	GCDWQ Limit
Jan. 10, 2001	Jan. 12, 2001	RO Unit Sample	Alkalinity	< 2 mg/L	30 – 500 mg/L (OG)
			pH	5.58	6.5 – 8.5 (OG)
			Hardness	< 1	80 to 100 mg/L (OG)

AO = aesthetic objective, OG = operational guideline

The raw water pumps from the original plant are now pumping chlorinated, but non-potable water into the water distribution system as a temporary measure for washing and other household uses.

5.3 Operations

Since October of 2000, the Pikangikum water treatment plant has been shut down waiting for repair funding from INAC. OCWA was informed that INAC has just approved funding in March of 2001 and according to Health Canada, the boil water advisory was removed on September 30, 2001 because construction of the new plant was complete and the commissioning process was underway.

The Zenon plant produces about 5.0 liters/minute of potable water. The water from this unit is strictly used for drinking. The operators produce 200 jugs of water per day with each jug holding 20 litres. This takes about 12 hours to produce the 200 jugs of water. The community consumes around 100 of these jugs per day. The work is labor intensive but the operators are meticulous in their cleanliness. Both jugs and caps are rinsed in chlorine. The potable water is stored in a 900-litre storage tank before it is poured into the jugs.

In a letter dated January 21, 2002 from Health Canada, it was noted that a number of stand-pipes located around the community are no longer operational. This is inconvenient for residents and in many cases people resort to collecting untreated water directly from the lake.

5.4 Reporting

There are regular bacteriological tests conducted on the water supply. Results of the tests are for operational purposes only and a record of them is not kept.

There have been no disease or health related outbreaks in the last two years. Health Canada has issued a boil water advisory since October of 2000 but the boil water advisory was removed on September 30, 2001. No further boil water advisories have been issued since the temporary plant was put into operation.

The turbidity of the treated water is not being tested but it was stated the Zenon system produces exceptionally clean water. Chemical analyses of the system is conducted by Health Canada who keeps copies of the analyses.

The following colilert results were available from Health Canada:

Date	Result
Feb. 6, 2001	4 satisfactory samples 1 unsatisfactory sample
Feb. 28, 2001	1 satisfactory sample 4 unsatisfactory sample
Mar. 12, 21, and 29, 2001	Test results showed 80% of the samples were positive for coliform bacteria

The following chlorine residual data were available from Health Canada:

Date	Result
Feb. 6, 2001	3 samples with 0 chlorine residual 2 samples with minimal chlorine residual
Feb. 28, 2001	4 samples showed no FAC residuals
Mar. 12, 21 and 29, 2001	Test results showed no chlorine residual from the water plant

At a site visit on January 17-18, 2002, Health Canada noted that accurate record of chlorine residual and colilert data are being kept.

5.5 Operators

The water treatment plant is operated by Allen Peters and Russell Peters. Both have had some training from the Zenon representative when the temporary system was installed. The operators are familiar and comfortable with the calibration and daily operations of the temporary plant.

In a letter dated January 21, 2002, Health Canada notes that the operators have been in training and have recently completed the provincial Operator in Training Exam.

6.0 Deficiencies in the Communal Water Supply

1. The community is presently been on a boil water advisory since October 2000. The community is receiving their drinking water from a Zenon temporary plant, but the rest of the communal system has chlorinated but non-potable water. The main issue with the community is when will the original plant be repaired.
2. There is no safety equipment at the water treatment plant.
3. There is no on-line chlorine residual analyzer on site and the chlorine residuals in the treated water are not being checked.
4. There is a colilert unit at the facility and the operator is testing for bacteriological samples weekly but he does not keep a record of the tests. The samples are not sent offsite to an analytical lab.
5. There are six hydrants on the system, but none are regularly maintained.
6. A chemical analysis of the treated water is conducted once per year.
7. Exceedances in total organic carbon, turbidity, aluminum and THMs are recorded for the existing plant.
8. The operators have not been testing the turbidity on the treated water.
9. Stand-pipes are not operational.

7.0 Communal Sewage Treatment Facilities

7.1 Effluent Receiver

The effluent receiver is discharged into a four-cell lagoon.

7.2 Design

The communal sewage treatment facility is a collection system with one pumping station pumping sewage to a four-cell lagoon. The communal system serves the nursing station, the school, and the teacherage. There is no other information on this system.

7.3 Operations

The OCWA inspector did not get to meet any of the sewage treatment plant operators. There is no other information on this system.

On a letter dated September 24, 2001 from Health Canada, there were concerns that raw sewage was surfacing around the hotel in Pikangikum which is not part of the communal sewage collection system. Investigation revealed that sewage effluent was overflowing from the holding tank and was moving along the surface of the ground towards the lake. The Environmental Health Office encourages that establishments such as hotels, restaurants, water treatment plant, Band Office and Police Station be connected to the community sewage system.

7.4 Reporting

The OCWA inspector did not get to meet any of the sewage treatment plant operators. There is no other information on this system.

7.5 Operators

Robert Quill and J.J. Suggashie operate the sewage treatment plant. The OCWA inspector did not get to meet any of the sewage treatment plant operators. No information is available for these operators.

8.0 Deficiencies in the Communal Sewage Treatment Facilities

1. OCWA did not meet with the operators so no information was available to OCWA.
2. Sewage effluent was overflowing from the holding tank and moving towards the lake.

9.0 Recommendations

- All efforts should be concentrated on removing the boil water advisory on the community.
- Repair existing water treatment plant.
- Investigate reasons for chemical exceedances in existing plant.
- Repair stand-pipes to provide a more convenient treated water supply to everyone in the community.
- Provide adequate tools and workspace for maintenance.
- Implement a training program that can lead to certification of the operators.
- Establish and implement a protocol for taking water samples at the water treatment plants, including raw water samples.
- Review safety equipment that is available on site or at the Band Office.
- Consider installation of an on-line chlorine analyzer. This could save operators time in sampling every day.
- Operators need to implement a general maintenance program at the facilities.
- Develop a comprehensive contingency plan to address operational problems, breakdowns, vacations and sickness, main breaks and boil water advisories.
- Obtain as-built drawings and operation and maintenance manuals.
- Improve record keeping.
- Implement a training program for water truck haulers.
- Develop a contingency plan for the individual water supply systems.
- Establish sampling responsibilities for the individual water holding tanks.
- Establish and implement a procedure for cleaning and disinfecting individual water holding tanks. At a minimum, tanks with boil water advisories to be cleaned and disinfected.

- Implement a sewage septic tank inspection program to inspect all septic tanks in the community for proper operations and meeting the required standards.
- Connect hotels, restaurants, the water treatment plant, Band Office and Police Station to the community sewage system.

10.0 Plant Classification

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:

Water Treatment Facility - Class I
Sewage Treatment Facility - Class I

11.0 Overall Community Risk Assessment

Water Category for Permanent Plant– High Risk

- **High Risk because of the following:**
 - Boil water advisory since Oct. 2000 removed on Sept. 2001
 - Operator does not keep records of bacteriological tests
 - Water treatment plant not operational.

Sewage Category – Unknown

- **Unknown because of the following:**
 - OCWA did not meet with the operators so no information was available

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