
Kitchenuhmaykoosib Inninuwig First Nation (Band No. 209)

Date of Visit: March 21-22, 2001

By Marcel Lavigne (OCWA)

Site Address: Big Trout Lake, Ontario, P0V 1G0

Phone No.: 807-537-2263 **Fax No.:** 807-537-2574

Tribal Council Affiliation: Independent First Nations Alliance

Operators: Gordon Albani, Derick Cromartuy and Darren Cromartuy

Location: The Kitchenuhmaykoosib Inninuwig community is located on the North Shore of Big Trout Lake and approximately 440 km northeast of the Town of Sioux Lookout

Population: 856 people in the community (November 2000 – INAC)

No. of Units: 254 housing units (CAIS)

1.0 Description of the Community Water Supply

Based on the CAIS report, water to the houses in the Kitchenuhmaykoosib Inninuwig community is treated as follows:

- 283 people use a communal water system
- 522 people use holding tanks with trucked water
- 10 people use individual wells
- 41 people have no services

- 84 houses are serviced by a communal water system;
- 155 houses are serviced by individual water holding tanks with trucked water;
- 3 houses are serviced by individual wells; and
- 12 houses have no services.

2.0 Description of the Community Sewage Facilities

Based on the CAIS report, and information supplied to OCWA, sewage from the houses in the Kitchenuhmaykoosib Inninuwig community is treated as follows:

- The teacher's residence is serviced by a communal system
- 735 are serviced by septic tanks
- 121 people have no services

- The teacher's residence is serviced by a communal system;
- 218 houses are serviced by septic tanks; and
- 36 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	No lab results
Chemical	0	No lab results
Physical	0	No lab results
Overall Ranking for Water Source	0	
B. Design		
Biological	8	3 unsatisfactory out of 8 available samples
Chemical	10	Mercury, PCB
Physical	6	Hardness, total organic carbon
Risk to Public Health	8	PCB, mercury, boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	8	
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	10	No plan
Overall Ranking for Operations	10	No chlorine residual analyzer, no turbidity monitoring
D. Reporting		
Ranking for Laboratories and Testing	6	Monthly by CHR if he has time
Ranking for Boil Water Advisories	4	Sewage leak near intake
Overall Ranking for Reporting	5	

SECTION Water	SECTION RANKING Water	RISK Water
E. Operators		
Overall Ranking for Operators	8	1 operator with training and confidence, 2 operators with no training and no confidence
F. Statistical Data		
Overall Ranking for Individual Wells	0	No data
Overall Ranking for the System	8	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.

SECTION Sewage	SECTION RANKING Sewage	RISK Sewage
A. Effluent Receiver		
Overall Ranking for Effluent Receiver	0	
B. Design		
Quality of Treated Effluent	0	No data
Ranking of Design of Sewage Plant	0	
Ranking of Concerns and Hazards within the Plant	7	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	7	No safety equipment or backup power
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	10	Sewage bypasses at pump station due to malfunctioning pump, insufficient spare parts
D. Reporting		
Overall Ranking for Reporting	8	Sewage backups
E. Operators		
Overall Ranking for Operators	6	2 out of 3 operators have no training and confidence
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	10	High Risk

5.0 Communal Water Supply (84 houses)

5.1 Water Source

The communal surface water source is from Big Trout Lake.

5.2 Design

The pumping station constructed in 1986 has only disinfection with no filtration. A 100 m³ reservoir is located at the pump house.

One treated water sample was available from Health Canada in Sioux Lookout:

Sample Date	Sample Received	Location	Exceedances	Result	GCDWQ limit
Jan. 31, 2001	Feb. 2, 2001	Nursing Station	Total Organic Carbon	5.4 mg/L	5.0 mg/L (AO)
			Hardness	74 mg/L	80 to 100 mg/L (OG)

AO = aesthetic objective, OG = operational guideline

There is a backup power generator for fire protection and the water treatment plant. There is no safety equipment at the plant. Operator needs storage space for equipment.

5.3 Operation

Sodium hypochloride (Javex) (6%) from the local store is used for disinfection. There is no on-line chlorine residual analyzer. The chlorine feed line is leaking badly. The last time chlorine residual was checked was January 1, 2001.

There are operation and maintenance manuals for plant equipment and as-built drawings on site. Emergency spare parts are available only for some high lift equipment. There are contact listings of technicians/trades people. The response time for such personnel is four days. There are adequate laboratory, offices and workshop areas. The operators need spare parts and proper tools.

5.4 Reporting

Health Canada conducts chlorine residual analyses once per month on the water at the pumping station. The results are kept in the community health representative (CHR) office and nursing station.

Health Canada has issued a boil water advisory on July 26, 2001 because a sewage leak was noticed near the community water intake. Tests also revealed there was no free available chlorine in the system. The boil water advisory was removed on September 30, 2001 because the sewage leak has been stopped and the operators have been instructed to increase chlorine levels.

The following colilert results were available from Health Canada:

Date	Result
August 5, 2001	5 satisfactory samples 3 unsatisfactory samples

The nurse in the community reported that there is a lot of diarrhea sickness in the community and she suspects the water. According to the operator, she also states that there are high mercury and PCB levels. The turbidity of the treated water is not recorded.

5.5 Operations

There are three operators available to operate the Kitchenuhmaykoosib Inninuwig community water and sewage treatment plants. Gordon Albani has received some training from the contractor who installed the system in 1986.

Gordon Albani is familiar with calibrating and maintaining the equipment a

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Training is needed in the operation and calibration of the monitoring systems, sewage pump repair, as well as lab analysis and electrical troubleshooting.

6.0 Deficiencies in the Communal Water Supply

1. The water system has had poor bacteriological results and a boil water advisory
2. Regular bacteriological tests are not available regularly.
3. Safety equipment is needed.
4. There is no written contingency plan available.
5. Operator indicated that there are technicians/trades people available with a response time of four days for mechanical breakdowns at the plant.
6. Record keeping needs improvement.
7. The operator is not certified and has had no training since 1986. The operator should get more training.
8. Operator needs storage space.
9. Chlorine feed line is leaking badly.
10. The fire pump starts when the truck hauler draws water.
11. The community nurse is concerned with the large amount of illnesses in the community, which may be caused by the water supply system.

7.0 Communal Sewage Treatment Facilities (Teacher's Residence)

7.1 Effluent Receiver

The effluent is discharged once a year into Big Trout Lake.

7.2 Design

The community is serviced with a communal system built in 1986. The sewage collection system with one pumping station, pumps sewage to the lagoon. The pump is frequently not operational creating overflows at the pumping station.

There is no separate sewage laboratory and office. These tasks are performed at the water treatment plant. All maintenance for the sewage system is done at the band garage. There are insufficient spare parts on site.

The following table summarizes effluent samples available from Health Canada:

Date	Location	Exceedances	Result	Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments
Oct. 5, 1998	Lagoon	Total Suspended Solids	39 mg/L	25 mg/L
Aug. 2, 2001	Lagoon	Biochemical Oxygen Demand	48 mg/L	20 mg/L
		Total Phosphorus	1.12 mg/L	1.0 mg/L
		Total Suspended Solids	80 mg/L	25 mg/L

7.3 Operation

There are no chemicals used during processing of sewage effluent. S.E.G. Engineering from Winnipeg does lab analysis annually before discharge. Other unscheduled discharges occur throughout the year due to malfunctions in the pumping station - when the pump burns out. The operator has to pump the lift station down manually on a daily basis because the automatic pump doesn't work. The lift station entrance is too small for operator to enter. There is no backup power. There is no safety equipment on site.

7.4 Reporting

S.E.G. Engineering from Winnipeg tests the effluent regularly for biological oxygen demand, (BOD) suspended solids (SS), and total phosphorous (TP) during the annual discharge from the lagoon. Improper discharges have occurred when the sewage pump burned out and the sewage overflowed. There has been no basement floodings recorded.

7.5 Operators

There are three operators available to operate the Kitchenuhmaykoosib Inninuwig community water and sewage treatment plants. Gordon Albani has received some training from the contractor who installed the system in 1986.

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Training is needed in the operation and calibration of the monitoring systems, sewage pump repair, as well as lab analysis and electrical troubleshooting.

8.0 Deficiencies in the Community Sewage Treatment Facilities

1. The system was built in 1986 and has no buildings available for laboratory analyses, maintenance, or office work.
2. Pump has frequently burned out, creating overflows at the pumping station.
3. The lift station entrance is too small for the operator to fit through.

9.0 Recommendations

- Improve record keeping.
- Purchase spare chlorine feed pump as backup.
- Implement a training program that can lead to certification of the operator.
- Establish and implement a protocol for taking water samples at the water treatment plants, including raw water samples.
- Increase frequency of sampling.
- Review and purchase required safety equipment.
- Install an on-line chlorine analyzer. This could save operators time in sampling every day.
- Operator needs to implement a general maintenance program at the facilities.
- Repair chlorine lines.
- Investigate fire pump problems.
- Consider construction of storage space.
- Purchase spare parts.
- 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 advisory to be cleaned and disinfected.
- Investigate and construct larger access to lift station.
- Investigate sewage pump tripping out due to overload, causing bypassing.
- Investigate continuous diarrhea in the community and possibility the sickness may be linked to water system.
- Address the safety concerns.
- Repair pump in the lift station to work on automatic.
- Further retention of the wastewater in cell #2 is strongly recommended. However, the cell must be discharged this fall to ensure adequate winter storage capacity.

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 – High Risk

- **High Risk because of the following:**
 - Equipment is malfunctioning;
 - Large amount of illnesses in the community, may be caused by water system
 - Poor record keeping
 - Chlorine feed line leaking badly

Sewage Category – High Risk

- **High Risk because of the following:**
 - Pump frequently burns out and overflows
 - Large amount of illnesses in the community

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.