Constance Lake First Nation (Band No. 182)

Date of Visit: March 15, 2001
By Peter Doig (OCWA)
Site Address: Calstock, ON P0L 1B0
Phone No.: 705-463-4511 **Fax No.:** 705-463-2222
Tribal Council Affiliation: Matawa First Nations Management Inc.
Operators: Fred Solomon, Joe Mattinas, and Theodore Solomon
Location: The Constance Lake First Nation community is located approximately 30 km west of Hearst on Hwy. 11
Population: 767 people in the community (November 2000 – INAC)
No. of Units: 205 houses in the community (CAIS)

1.0 Description of the Community Water Supply

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

- 767 people use piped water
- 205 houses are serviced by a communal water system.

2.0 Description of the Community Sewage Facilities

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

- 745 people use piped sewage
- 22 people were not identified in CAIS

- 199 houses are serviced by a communal sewage system; and
- 6 houses were not identified in CAIS.

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	4	7 total coliform and E.Coli exceedances
Chemical	10	THMs, phenol exceedances
Physical	6	Hardness, dissolved organic carbon
Risk to Public Health	10	THMs, phenol, eight boil water advisories
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	10	
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	6	Chlorine residual analyzer not working, no operation and maintenance manuals, re-occurring power failures
D. Reporting		
Ranking for Laboratories and Testing	1	Monthly by Health Canada
Ranking for Boil Water Advisories	10	Eight boil water advisories

SECTION Water	SECTION RANKING Water	RISK Water
Overall Ranking for Reporting	6	
E. Operators		
Overall Ranking for Operators	7	Two operators with no training and no confidence. one operator with training and confidence.
F. Statistical Data		
Overall Ranking for Individual Wells	1	No exceedances
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	
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	0	
Overall Ranking for Operators	0	
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	0	Sewage system was not assessed due to adverse weather

5.0 Communal Water Treatment Supply (205 houses)

5.1 Water Source

The surface water source is Constance Lake, just west of the community.

5.2 Design

The community is serviced by a water treatment plant constructed in 1980. The plant is a pressure filter system with chlorination. An on-site reservoir stores treated water before it is sent to the distribution system. The capacity of the reservoir is unknown. The plant is currently exceeding its design capacity.

The following table summarizes the treated water data available from Health Canada, which does not meet GCDWQ:

Date	Location	Exceedances	Result	GCDWQ limit
Apr. 27, 1999	Treated	Dissolved Organic Carbon	15 mg/L	5.0 mg/L (AO)
		Hardness	160 mg/L	80 to 100 mg/L (OG)
		Phenol	0.008 mg/L	0.005 mg/L (HL)
		Manganese	0.295mg/L	0.05 mg/L (AO)
May 24, 2001	Treated	Dissolved Organic Carbon	5.7 mg/L	5.0 mg/L (AO)
		Hardness	122 mg/L	80 to 100 mg/L (OG)
		Phenol	0.005 mg/L	0.005 mg/L (HL)
		THM	0.15 mg/L	0.1 mg/L (HL)

AO = aesthetic objective, OG = operational guideline, HL = health limit

There is plenty of ventilation for the system. The system does not have a backup generator for power failures at the water treatment plant, but a pump is available for fire protection. There is no confined space entry safety equipment on site, and at the time of the OCWA inspection, no safety hazards were observed. There is adequate space for a laboratory, office and maintenance workshop.

5.3 Operations

The disinfection equipment is functional and is disinfected with chlorine. Stern Pac and aluminum hydroxychloride are the two other chemicals used in the process. The system is not well stocked with disinfectant. The residuals on the system are checked three times a week, but the chlorine residual analyzer that is available does not work. There is no colilert unit available for use by the operator.

The operator does sampling on the system and they transport the samples off site for testing. The operation and maintenance manuals, and as-built drawings are not available on site. There have been 10 to 12 service disruptions in the past two years caused by power failure. An annual hydrant-flushing program is in place, but no maintenance program. There are no emergency spare parts available, and the operator has noted that electrical help is difficult to get on site. There is a re-occurring problem with water shortage due to power failures.

5.4 Reporting

Regular tests are being performed on the water distribution system. Health Canada performs monthly biological tests and the results are stored at the water treatment plant. There have been no health related outbreaks in the past two years, but Health Canada has issued eight boil water advisories during that time. The turbidity of the treated water is within limits and is tested daily.

Period	Frequency	Regularity	Exceedances
Oct. 21/99 to Oct. 23/01	4 – 7 times/month from different locations	▪ 0 months missing in 1999 ▪ 6 months missing in 2000 ▪ 4 months missing in 2001	▪ 2 exceedances at the pumphouse on 99/10/21 (total coliform and E.Coli) and on 99/12/08 (E.Coli). ▪ 4 exceedances on 99/10/21 (total coliform and E.Coli) and 1 exceedance on 99/12/08 (E.Coli) in the distribution system

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5.5 Operators

There are three operators for the water supply system. Fred Solomon is the senior operator and Joe Mattinas and Theodore Solomon are recent additions. [redacted]

6.0 Deficiencies in the Communal Water Supply

1. The plant is currently exceeding its design capacity.
2. Phenol and THMs have exceeded the GCDWQ health limit.
3. The system does not have a backup generator for power failures, but a pump is available for fire protection.
4. There is no confined space entry safety equipment on site, but at the time of the OCWA inspection no safety hazards were observed.
5. The system is not well stocked with disinfectant.
6. The residuals on the system are checked three times a week but the chlorine residual analyzer available does not work.
7. There is no colilert unit available for use by the operator.
8. The operation and maintenance manuals and as-built drawings are not available on site.
9. There have been several service disruptions in the past two years - up to 12 power failures leaving the system without power.
10. An annual hydrant-flushing program is in place but no maintenance program.

11. There are no emergency spare parts available, and the operator has noted that electrical help is difficult to get on site.

12. There is a re-occurring problem with water shortage due to power failures.

13. There have been eight boil water advisories issued by Health Canada within the last two years.

7.0 Communal Sewage Treatment Facilities (199 houses)

The Constance Lake community communal sewage system is a collection system with lagoon treatment. The OCWA inspector obtained no information at the time of visit due to bad weather (the entire system was buried under the snow).

8.0 Deficiencies in the Communal Sewage Treatment Facilities

1. The Constance Lake community is a collection system with lagoon treatment. The OCWA inspector obtained no information at the time of visit due to bad weather (the entire system was buried under the snow).

9.0 Recommendations

- Investigate previous water boil advisories to ensure the source of contamination has been properly addressed.
- Investigate reasons for phenol and THMs exceeding the GCDWQ health limits.
- Implement a training program that can lead to operator certification.
- Keep disinfectants well stocked.
- Obtain operation and maintenance manuals and as-built drawings.
- Conduct chemical analyses on the treated water.
- Implement a regular sampling program.
- Provide backup power generation for the system to prevent loss of service during power failures.
- Repair the online chlorine residual analyzer.
- Purchase spare parts.
- Investigate and resolve the exceedance in design capacity of the water treatment plant.
- Purchase required safety equipment.

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 II
Sewage Treatment Facility -	Class N/A (no information due to adverse weather conditions)

11.0 Overall Community Risk Assessment

Water Category – High Risk

- **High Risk because of the following:**
  - Frequent boil water advisories.
  - Service disruptions, up to 12 in past two years due to power failures
  - Re-occurring problem with water shortages
  - THMs and phenol exceedances

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.