Grassy Narrows First Nation (Band No. 149)

Date of Visit: March 16, 2001
By Peter Fox (OCWA) and Jody Knibbs (Bimose)
Site Address: Grassy Narrows ON P0X 1B0
Phone No.: 807-925-2201 **Fax No.:** 807-925-2649
Tribal Council Affiliation: Bimose Tribal Council
Operator: Larry Keewatin
Location: The Grassy Narrows First Nation community is located on the English River 80 km northeast of Kenora. Access is via Highway 671 (Jones Road)
Population: 712 people in the community (November 2000 - INAC)
No. of Units: 168 housing units (CAIS)

1.0 Description of Community Water Supply

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

- 521 people use piped water
- 13 people use holding tanks with trucked water
- 144 people use individual wells
- 34 people have no service

- 123 houses are serviced by a communal water system;
- 3 houses are serviced by individual water holding tanks with trucked water;
- 34 houses are serviced by individual wells; and
- 8 houses have no service.

2.0 Description of Community Sewage Facilities

Based on information supplied to OCWA, sewage from the houses within the Grassy Narrows community is treated as follows:

- 542 people use piped sewage
- 144 people use septic tanks
- 26 people have no service

- 128 homes are serviced by a communal sewage system;
- 34 houses are serviced by septic tanks; and
- 6 houses have no service.

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
Chemical	0	No lab
Physical	0	No lab
Overall Ranking for Water Source	0	No lab
B. Design		
Biological	3	5 exceedances out of 129 (4%)
Chemical	10	THMs, turbidity
Physical	6	Low hardness, alkalinity; color, dissolved organic carbon exceedance
Risk to Public Health	10	THMs, turbidity exceedance, boil water advisory
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	2	No main valve maintenance
D. Reporting		
Ranking for Laboratories and Testing	2	Monthly by Health Canada
Ranking for Boil Water Advisories	10	No flushing of distribution system caused boil water advisory

SECTION Water	SECTION RANKING Water	RISK Water
Overall Ranking for Reporting	6	
E. Operators		
Overall Ranking for Operators	2	Not certified but trained and confident
F. Statistical Data		
Overall Ranking for Individual Wells	0	
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	5	BOD, SS exceeded in effluent
Ranking of Design of Sewage Plant	5	
Ranking of Concerns and Hazards within the Plant	7	No safety equipment
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	6	
C. Operations		
Ranking for Emergency Plan	0	Unknown
Overall Ranking for Operations	8	No operations manuals or as-built drawings. Service disruptions, no backup power, sludge full
D. Reporting		
Overall Ranking for Reporting	7	Inadequate sampling
E. Operators		
Overall Ranking for Operators	4	Some training and confidence
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	No data
Overall Ranking for the Systems	8	High Risk

5.0 Communal Water Treatment Supply (123 houses)

5.1 Water Source

Water is drawn from an intake into Grassy Narrows Lake.

5.2 Design

The community is serviced with a water treatment plant constructed in 1993. A low lift pumping station pumps water to the water treatment units. The water treatment process consists of chemically assisted pressure filters. Water is pre and post chlorinated.

Potable water is pumped via high lift pumps to an elevated water standpipe where the water is circulated to prevent freezing. Additional chlorination facilities are available at the tower site.

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

Date	Location	Exceedances	Result	GCDWQ Limit
May 27, 1998	Water Treatment Plant	Alkalinity	27 mg/L	30 to 500 mg/L (OG)
		Turbidity	1.3 NTU	1.0 NTU
		Dissolved Organic Carbon	6.0 mg/L	5.0 mg/L (AO)
		Hardness	28.8 mg/L	80 to 100 mg/L (OG)
Nov. 4, 1999	Child Care Centre	Alkalinity	29 mg/L	30 to 500 mg/L (OG)
		Colour	19 TCU	15 TCU
		Dissolved Organic Carbon	7.0 mg/L	5.0 mg/L (AO)
		THM	0.113 mg/L	0.10 mg/L
		Hardness	28.9 mg/L	80 to 100 mg/L (OG)

AO = aesthetic objective, OG = operational guideline

The water distribution system is gravity fed from the elevated standpipe. The high lift pumps are running continuously. The operator believes there is a break in the distribution system causing this. Repair crews had been notified to come and fix the problem.

An eyewash station is available on-site and no safety hazards or safety concerns were observed with the facilities. Adequate laboratory, office/filing area and workshop, with some tools for maintenance, are available. Ventilation is adequate.

The water treatment plant does not have backup power, but the water distribution system has an elevated standpipe that will supply water to the distribution system by gravity during power failures. During prolonged power failures, the elevated water standpipe could run dry. At the time of visit there were no spare parts available on-site. As-built drawings and operations and maintenance manuals are available on-site.

5.3 Operations

Supplies of 12% sodium hypochlorite used for disinfection are kept off-site. Turbidity is meeting the CGDWQ. The filters are backwashed twice per day. Both sodium hypochlorite and Stern PAC are properly stored with acceptable shelf life.

There are on-line chlorine residual and turbidity meters, but they are not operating. Operator uses hand held devices for monitoring turbidity and chlorine residual five days a week. The Operator has no backup so sampling does not occur on every day of operation.

Local technician and tradesmen are available within 2 hours; also there is an individual with plumbing experience on the band payroll. The Control systems can be reset by phone by the Millennium Control Company.

The operator has a flushing program for the water distribution system, which he carries out every six months, but has no annual main valve operation/maintenance or fire hydrant maintenance program.

5.4 Reporting

Operator of the water treatment plant takes chlorine residuals and turbidity readings five days per week. Health Canada also takes regular bacteriological tests that are conducted once per month and submitted to a Thunder Bay laboratory. Sample results are kept at the plant and the Administration Office. Chemical analyses are conducted but at an unknown frequency. There have been high THM levels recorded. The operator keeps good records and the log book is well maintained.

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

Period	Frequency	Regularity	Exceedances
Oct. 20/99 to Sept. 06/2001	3 - 22 times/month from different locations	▪ 1 month missing in 1999 ▪ 3 months missing in 2000 ▪ 0 months missing in 2001	▪ A total of 5 exceedances in the distribution system out of 129 samples. 1 noted on 2000/04/06 and 4 on 2000/06/27. ▪ 3 total coliform ▪ 1 total coliform

Boil water advisories have been previously issued on the water holding tanks within the community. There has been one boil water advisory issued on the distribution system recently. This was caused when the distribution system was not flushed as per schedule.

5.5 Operators **s.19(1)**

Larry Keewatin operates both the sewage and water treatment plants. [redacted] The operator states there are no other individuals in the community to back him up when he is on vacation or sick.

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6.0 Deficiencies in the Communal Water Supply

1. The high lift pumps are running continuously and the operator believes there is a break in the distribution system. Repair crews had been notified to come and fix the problem.

2. On-line chlorine residual and turbidity meters are available but not operating. Operator uses hand held devices for monitoring turbidity and chlorine residual five days a week.

3. The operator has no backup so sampling does not occur on every day of operation.

4. Chemical analysis show exceedances in THMs and turbidity.

5. The water treatment plant does not have an emergency power backup.

6. Spare parts are not available on-site

7. On the water distribution system the operator has a semi-annual flushing program for the water distribution system, but no annual main valve operation/maintenance and fire hydrant maintenance program.

8. A boil water advisory was issued in the past due to not flushing of the distribution system on a regular basis.

7.0 Communal Sewage Treatment Facilities (128 houses)

7.1 Effluent Receiver

No information is available.

7.2 Design

The communal sewage collection system has four lift stations. These pump to a rotating biological contactor (RBC) sewage treatment plant that discharges to polishing ponds with continuous discharge. Effluent is disinfected with sodium hypochlorite. The facility was constructed in 1993.
The facility does not have backup power. There was a three-day power outage since this system was constructed, but OCWA was not informed whether the pumping station wet wells are sufficiently large enough to avoid overflow.

The ventilation is adequate and explosion proof lighting and fixtures are in place in the RBC room. There is some safety equipment, tripod, etc. for confined space entry but no trained second person or self-contained breathing apparatus (SCBA). Overall, there were no other safety hazards or concerns with the facility.

7.3 Operation

There is an adequate laboratory area and designated office/filing area. There is minimal area for a workshop, but this is available at the water treatment plant, as long as no cross contamination occurs. The aerated sludge digester/storage pit is full, and only seven to eight loads per year are hauled from this part of the treatment process. The effluent is cloudy and likely would not meet BOD or SS criteria for a secondary treatment plant.

There are no operations and maintenance manuals or as-built drawings on-site. Lift stations are cleaned out in the spring and fall, and the on-site hour meters are read on a daily basis. We were not informed whether there is a regular pump and RBC maintenance program. There are not spare parts on site.

7.4 Reporting

The facility engineer, R.J. Burnside comes on site once or twice per year and does testing. There are no records of the sample analyses on site.

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7.5 Operators

Larry Keewatin operates both the sewage and water treatment plants. [redacted]

No samples analysis test results were available from Health Canada.

[redacted] The operator states there are no other individuals in the community to back him up when he is on vacation or sick.

8.0 Deficiencies of the Communal Sewage Treatment Facilities

1. There is no standby power and there had been a three-day power outage in the past.
2. There is some safety equipment, tripod, etc for confined space entry but no trained second person or self contained breathing apparatus.
3. The aerated sludge digester/storage pit is full and only 7-8 loads once per year are hauled from this part of the treatment process. This is likely affecting the process.
4. The effluent results are not available at the plant.

9.0 Recommendations

- Implement a training program that can lead to operation certification.
- Implement a regular program for main valve and hydrant testing and maintenance.
- Implement a regular water sampling program.
- Address THMs and turbidity levels in excess of GCDWQ.
- Retain and train backup operator.
- Develop and implement a comprehensive contingency plan to address operational problems, breakdowns, vacations and illnesses, main breaks and boil water advisories.
- Implement routine flushing of distribution system.
- Implement a training program for water truck haulers.
- Establish sampling responsibilities for the individual 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.
- Review use of responsibilities for water holding tanks.
- Review and implement a regular waste sludge hauling program.
- Increase frequency of the sewage effluent's monitoring program.

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- Consider a backup generator for the sewage treatment plant/lift stations to keep the facilities in service during prolonged power failures.
- Implement a sewage septic tank inspection program.

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 II

11.0 Overall Community Risk Assessment

Water Category – High Risk

- **High Risk because of the following:**
  - On-line chlorine residual and turbidity meters not operating
  - Presence of high THMs; and
  - Boil water advisories.

Sewage Category – High Risk

- **High Risk because of the following:**
  - Need to increase sampling of effluent;
  - Sludge digester/storage pit is full and affecting operations of plant; and
  - No standby power.

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.