

Bearskin Lake First Nation (Band No. 207)

Date of Visit: March 2, 2001

By Marcel Lavigne (OCWA)

Site Address: Bearskin Lake, ON P0V 1E0

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Tribal Council Affiliation: Windigo First Nations Council

Operator: Robert Mickenack

Location: The Bearskin Lake First Nation community is located approximately 375 km northeast of Red Lake and is accessible by air

Population: 476 people in the community (November 2000 – INAC)

No. of Units: 139 houses in the community (CAIS)

1.0 Description of the Community Water Supply

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

- 123 people use piped water
- 353 people have holding tanks with trucked water

- 36 houses are serviced by a communal water system and;
- 103 houses are serviced by individual water holding tanks with trucked water.

2.0 Description of the Community Sewage Facilities

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

- 86 people use piped sewage
- 390 people have individual sewage holding tanks

- 25 houses are serviced by a communal sewage treatment system; and
- 114 houses are serviced by individual sewage holding tanks, which are pumped regularly.

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 data
Chemical	0	No lab data
Physical	0	No lab data
Overall Ranking for Water Source	0	No lab data
B. Design		
Biological	0	No lab data
Chemical	6	High aluminum, manganese
Physical	6	High hardness
Risk to Public Health	1	No boil water advisory
Condition of Laboratory Equipment	0	Not inspected
Overall Ranking for Design	5	
C. Operations		
Reservoir Cleanliness	0	Not inspected
Emergency Plan	0	Unknown
Overall Ranking for Operations	10	Chemicals not properly stored, service disruptions, no backup operator, no turbidity monitoring, panel needs repair
D. Reporting		
Ranking for Laboratories and Testing	10	No bacteriological testing
Ranking for Boil Water Advisories	1	No boil water advisory
Overall Ranking for Reporting	6	

SECTION Water	SECTION RANKING Water	RISK Water
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

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	No data
B. Design		
Quality of Treated Effluent	4	
Ranking of Design of Sewage Plant	2	Backup power is available
Ranking of Concerns and Hazards within the Plant	1	
Condition of Laboratory Equipment	0	
Overall Ranking for Design	1	
C. Operations		
Ranking for Emergency Plan	0	
Overall Ranking for Operations	5	Service disruptions in last two years, cell liner is torn
D. Reporting		
Overall Ranking for Reporting	7	Irregular sampling
E. Operators		
Overall Ranking for Operators	4	Some training
F. Statistical Data		
Overall Ranking for Individual Septic Tanks	0	
Overall Ranking for the Systems	7	Medium Risk

5.0 Communal Water Treatment Supply (36 houses)

5.1 Water Source

The water source for the Bearskin Lake community is Bearskin Lake.

5.2 Design

The treatment plant, which was built in 1992, consists of a dual media package filtration plant with aluminum sulphate added for coagulation. The rated design capacity of the package plant is 38 L/s. There are two clear wells located at the water treatment plant, each with a capacity of 122 m³ or a total of 244 m³.

The following table summarizes the exceedances for three treated water samples available from Health Canada in Sioux Lookout:

Sample Date	Sample Received	Location	Exceedances	Result	GCDWQ Limit	Notes
Nov. 29, 2000	Nov. 30, 2000	Nursing Station	Aluminum	0.60 mg/L	0.10 mg/L (OG)	
			Hardness	394 mg/L	80 to 100 mg/L (OG)	
May 16, 2001	May 19, 2001	Water plant	Manganese	4.98 mg/L	0.05 mg/L (AO)	
			Aluminum	0.263	0.10 mg/L (OG)	
			Turbidity	0.8 NTU	1 NTU	
May 16, 2001	May 19, 2001	Nursing Station	Hardness	250 mg/L	80 to 100 mg/L (OG)	The sample passed all GCDWQ requirements.

AO = aesthetic objective, OG = operational guideline

There are no diesel-operated pumps for fire protection but there is a diesel-operated generator to supply backup power for the plant that is tested approximately every two months. There is adequate safety equipment on-site. There is a concern over the storage of the sodium hypochlorite and dry aluminum sulphate in bags in the same area. The chlorine residual test reagent was out of date. There are adequate designated office/filing and workshop areas within the plant.

5.3 Operation

Sodium hypochlorite is used for disinfection. The disinfection equipment is functional and the disinfectant is replenished every two weeks.

There is no on-line chlorine residual analyzer and it is unclear as to how often the operator checks the chlorine residual. The operator was not on site during the visit. Chlorine residual data to only November 2000 was available on-site. Site visit was March 2, 2001. There is a colilert unit and incubator available. It is unclear as to whether the operator uses it.

Operating and maintenance manuals for water treatment plant and as-built drawings are available on-site.

There have been service disruptions in the last year but the reasons are not specified.

The control panel for the process tank is not working properly and has to be run on manual. The heating furnace for the water plant is not operational and needs repair. There is some material on the clear well that needs to be cleaned.

There is no annual hydrant flushing or maintenance or main valve operating and maintenance program in place. Two fire hydrants are broken. There are no emergency spare parts readily available on-site. There is a contact listing of technicians/trades people available and their average response time is four days.

5.4 Reporting

Regular bacteriological tests are not conducted. There have been no reported disease or health related outbreaks in the last two years or any boil water advisories. Turbidity of the water is not recorded and the last records are from November 2000. These records indicate exceedances in turbidity readings.

A chemical analysis of the treated water is conducted on an annual basis.

No bacteriological results were available from Health Canada.

5.5 Operators

s.19(1)

Robert Mickenack operates the water and sewage treatment facilities. [REDACTED]

For backup, the Band sends Mr. Harold Tremble, a maintenance mechanic, and if Mr. Tremble is not available, the Band sends someone else. Mr. Tremble and other potential backup personnel [REDACTED]

6.0 Deficiencies in the Communal Water Supply

1. There is no diesel operated pump for fire protection.
2. Liquid sodium hypochlorite and alum are not properly stored.
3. Chlorine residual data is not properly filed and it is uncertain as to the frequency of chlorine residual sampling.
4. There is insufficient reagent available for aluminum residual testing.
5. A colilert unit is available but does not appear to be used.
6. There have been service disruptions in the past year, but the reasons were unspecified.
7. There is no annual hydrant flushing or maintenance program. Two fire hydrants are broken.
8. There are no emergency spare parts available on-site.
9. Operator indicated that there are technicians/trades people available for an average response time of four days.

10. Bacteriological tests are not conducted on a regular basis.
11. Turbidity does not appear to be tested regularly and exceedances in turbidity have been recorded.
12. High aluminum residual in treated water.
13. The operator was not present for the site visit and the plant did not appear to work properly. The operator and backup operator both need training.
14. The heating furnace for the water plant is not operational and needs to be repaired.
15. The control panel for the process tank is not working properly and has to be run on manual.
15. The clear well is covered by some material that needs to be cleaned.

7.0 Communal Sewage Treatment Facilities (25 houses)

7.1 Effluent Receiver

The lagoons are discharged once per year in the spring to Severn Lake.

7.2 Design

The sewage treatment facility for this community is a lagoon system constructed in 1992. The gravity sewage collection system flows to a sewage pumping station that pumps sewage to the lagoon.

There is a backup diesel generator for the pumps in case of hydropower loss and it is tested every two months. There is adequate safety equipment on site and no safety hazards or concerns were noted. There are no lab, office/filing or workshop areas available on-site.

The following table summarizes the exceedances in effluent samples available from Health Canada

Date	Location	Exceedances	Result	Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments
May 16, 2001	Lagoon #2	BOD	25 mg/L	20 mg/L
		Total Suspended Solids	75 mg/L	25 mg/L
		Total Phosphorus	1.64 mg/L	1.0 mg/L, only applies to the Great Lake basin area

The result above shows relatively good treatment in the lagoon. The high suspended solids may be a result of wave/wind action or a non-representative sample.

In two Health Canada letters dated July 15 and October 23, 2001, it was noted during inspection of the lagoon that the liner in cell #1, near the unloading area for the sewage trucks was torn. Health Canada recommended that this tear should be repaired immediately to prevent raw sewage effluent from leaking into the ground, and an appropriate unloading dock should be constructed for the sewage trucks.

7.3 Operation

There are operating and maintenance manuals for the sewage treatment facility and as-built drawings available on-site.

No re-occurring operational problems are recorded. The sewage pumping station wet wells are cleaned on an annual basis. There are no emergency spare parts readily available. There is a contact listing of technicians/trades people available and their average response time is four days.

There has been raw sewage bypassing from the pumping station. There is no excessive weed growth in the lagoons and the berms appear to be in good condition.

7.4 Reporting

Regular sample analyses of the lagoon effluent from the lagoons are not conducted. No odor complaints have been recorded.

There has been one improper discharge within the last 2 years, caused by a frozen outlet at the pumping station. This caused a backup but did not flood any basements.

7.5 Operators

s.19(1)

Robert Mickenack operates the water and sewage treatment facilities. [REDACTED]

[REDACTED]

[REDACTED]

For backup, the Band sends Mr. Harold Tremble, a maintenance mechanic, and if Mr. Tremble is not available, the Band sends someone else. Mr. Tremble and other potential backup personnel [REDACTED]

[REDACTED]

8.0 Deficiencies in the Communal Sewage Treatment Facilities

1. Emergency spare parts are not available.
2. The operator indicated that technicians/trades people are available with a response time of four days.
3. Raw sewage bypasses have been experienced from the pumping station.
4. Regular effluent tests on the lagoon discharge are not conducted.
5. A frozen outlet in the last two years caused a backup and an improper discharge.
6. Liner in the lagoon cell #1 is torn and requires repair.

9.0 Recommendations

- Review chemical storage.
- Purchase spare parts.
- Implement regular bacteriological analysis testing using a colilert unit or sending samples to the laboratory.
- Install on-line chlorine residual analyzer and on-line turbidity analyzer with alarms.
- Investigate high aluminum residual in treated water.
- Repair furnace that heats the water plant.
- Repair control panel for process tank at the water facility.
- 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 the water supply system, including the individual water holding tanks.
- Establish a protocol for taking water samples at the water treatment plant, including raw water samples.
- Establish a procedure for cleaning and disinfecting individual water holding tanks.
- Establish a protocol for sampling of individual water holding tanks.
- Implement a regular testing program of the lagoon discharge.
- Purchase spare pumps for emergency backup.
- Implement a sewage holding tank inspection program to inspect all holding tanks in the community for proper operations and meeting the required standards.
- An appropriate unloading dock should be constructed for the sewage trucks to prevent further damage to the liner.
- Repair of the lagoon liner.

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 I

11.0 Overall Community Risk Assessment

Water Category – High Risk

- **High Risk because of the following:**
 - Inadequate microbiological and turbidity sampling;
 - Turbidity test exceedances;
 - Repairs are required on heating furnace and control panel; and
 - Chlorine residual in treated water not monitored.

Sewage Category – Medium Risk

- **Medium Risk because of the following:**
 - Implement regular lagoon effluent discharge testing;
 - Raw sewage bypasses have been experienced; and
 - Lagoon liner is torn.

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