



# Town of Boissevain

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## **Town of Boissevain Annual Water System Report – 2009**

The Town of Boissevain provides drinking water with sufficient quantity to the public. It is our goal to meet all the regulatory requirements in a safe and effective manner.

### **Where do we get our water from?**

We pump water from the Boissevain Reservoir and from 5 wells into the Boissevain Water Treatment. The water supply is made up of 2/3 surface water and 1/3 well water.

### **Why do we treat our water?**

We treat our water in a Lime softening process to remove the hardness and the iron. We are committed to provide soft and good quality water to our community. We have gravity filtration as well as Granular Activated Carbon filters to help polish the treated water. This process is designed to clarify the water and to remove microbial contaminants, such as bacteria, and organic materials that are found in surface water.

### **Why and how do we disinfect our water?**

The final step in the treatment of our water is disinfection. The Drinking water safety act requires that the water is disinfected before it leaves the water treatment facility. Chlorination is our main disinfection treatment for our water supply to kill bacteria and viruses that are commonly found in surface water. An adequate amount of chlorine is added to the water before it enters the storage reservoir to ensure an effective kill and to provide disinfectant residual in the entire water system of the Town of Boissevain.

### **How much water storage do we have?**

A reservoir underneath the water treatment plant has a capacity of 814,150Litres. The reservoir is designed so that the water is always moving so it never gets stale.

**Trihalomethane (THM) testing:** Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in the water. The province has set the base standard for THMs of 100 micrograms per litre of water. The THM standard is based on an average of four samples per year. This year we did not have to test for THM, our license requires only every second year.

### 1) Disinfection Monitoring and Reporting

#### Water testing, for What and When?

Water tests are taken daily at the water treatment plant to ensure the water is safe and to monitor how well the treatment plant is performing. We also test the distribution system at various times and locations and have all results submitted to the Provincial Office of Drinking Water for review.

**Bacterial testing:** We test the raw water (untreated water), the treated water (leaving the reservoir) and the water in the distribution system (within the Town of Boissevain) every two weeks (biweekly) for the presence of Total Coliform and for E. coli bacteria.

**Disinfection testing:** We test the level of chlorine in the treated water every day to ensure the chlorine levels meet the standards. Chlorine testing is also done when the bacterial samples are taken.

**Turbidity testing:** Turbidity is a measurement of the clarity of the water. We use turbidity to see how well our treatment system is working. Turbidity is tested daily as the raw water enters the system and after each filter and as it leaves the Water Treatment Plant.

	Regulatory Requirement	PWS Performance
A) Free chlorine residual entering distribution system	$\geq 0.5$ mg/L	100 %
B) Free chlorine residual in the distribution system	$\geq 0.1$ mg/L	100 %
C) Frequency of testing	Daily for A	100 %
	Bi-weekly for B	100 %
D) Report submissions	Monthly	100 %

**Comments:**

The Boissevain PWS has met the regulatory requirements for 2009.  
 The Boissevain PWS will be installing and operating equipment capable of continuously monitoring the free chlorine residual in the water entering the distribution system.

## 2) Bacteriological Monitoring and Reporting

	Regulatory Requirement	PWS Performance
A) Number of raw/incoming water samples	26	100 %
B) Number of treated water samples	26	100 %
C) Number of distribution water samples	26	100 %
D) Frequency of testing	Bi-weekly	100 %
E) Total Coliform present in samples	0 TC per 100ml	99 %
F) E-Coli present in samples	0 EC per 100ml	100 %
<b>Comments:</b> The Town of Boissevain Water System did not meet our regulatory requirements for 2009. One water sample reported positive for Total Coliform on Aug.18, 2009. A corrective action report was not filed for this event.		

## 3) Physical Monitoring and Reporting

Turbidity Standards	Regulatory Requirements	PWS Performance
A) Chemically assisted, rapid gravity filtration process	$\leq 0.3$ NTU in at least 95% of the samples taken per month	8 %
	Not to exceed 0.3 NTU for more than 12 continuous hours where continuous measurements are taken	100 %
	not to exceed 1.0 NTU at any time	93 %
B) Frequency of testing	Daily	100 %
C) Report submissions	Monthly	100%
<b>Comments:</b> The Town of Boissevain Water System is not meeting the turbidity requirements. The operators have been trying to optimize the clarification/softening process to reduce the elevated turbidity levels.		

## 4) Disinfection By-products Monitoring and Reporting

	Regulatory Requirement	PWS Performance
A) Trihalomethane sampling requirements	4 times per year	n/a
B) Total Trihalomethane Standard	0.10 mg/L	n/a
Bromodichloromethane sampling requirements	4 times per year	n/a
Bromodichloromethane Standard	0.016 mg/L	n/a
<b>Comments:</b> As per table 2 of our operating licence PWS-08-115 we only to sample for Trihalomethanes every second year. Sampling was done in 2008 so were not required to sample in 2009. Quarterly sampling will be taken again in 2010. Manitoba water utilities are no longer required to meet the 0.016 mg/L BDCM standard and it will be removed from our Operating licence when it is renewed.		

BDCM continues to be a component of Total THM's and their concentrations will be monitored accordingly. As such, utilities must continue to make every effort to reduce the Total THM concentrations (including BCDM) to as low as possible.

	Regulatory Requirement	PWS Performance
Haloacetic Acids (HAA)	TBA	n/a
2009 ODW Chemical Analysis	-	n/a
Comments: Haloacetic acids (HAA's) are also chlorine disinfection by-products found in drinking water. In 2008, Health Canada established a guideline of 0.08 mg/L for HAA's. This guideline will be adopted as a standard in Manitoba in the near future. Utilities will be notified when to start monitoring. The ODW has included HAA analysis in the yearly water chemistry testing to compile background data.		

### 5) Water Chemistry Analyses

The Office of Drinking Water submitted water samples from the Town of Boissevain Water System for chemical analysis on August 31, 2009. **The treated water met all the GCDWQ maximum acceptable concentrations (MAC) for health based parameters except for the following parameters:**

Parameter	GCDWQ MAC	PWS Results
Trihalomethanes	0.10 mg/L	0.154mg/L

### Water Quality Standards Summary By ALS Laboratory.

Sample identification	# 1- Raw	# 2 - T'd	# 4 - Dist	Max. Acceptable Concentration	UNITS
Date Sampled	Aug. 31/09	Aug. 31/09	Aug. 31/09		
Benzene	< 0.00050		-	5	µg/L
Dissolved Fluoride F	0.37	1.01	-	1.5	mg/L
Nitrate and Nitrite N	0.238	0.312	-	10	mg/L

### Total Metals Analysis

Antimony	SB	<0.00020	<0.00020	-	0.006	mg/L
Arsenic	As	0.00327	0.00081	-	0.010	mg/L
Barium	Ba	0.0435	0.0104	-	1.0	mg/L
Boron	B	0.360	0.357	-	5	mg/L
Cadmium	Cd	< 0.000010	< 0.000010	-	0.005	mg/L
Chromium	Cr	< 0.0010	0.0026	-	0.05	mg/L
Lead	Pb	0.000117	0.00143	-	0.01	mg/L
Selenium	Se	< 0.0010	<0.0010	-	0.01	mg/L
Uranium	U	0.00233	0.00012	-	0.02	mg/L

**Volatile Organic Compounds**

1, 1-Dichloroethene	< 0.1	-	-	14	µg/L
Methylene Chloride	< 6	-	-	50	µg/L
Tetrachloroethene	< 0.50	-	-	30	µg/L
Trichloroethene	< 0.50	-	-	5	µg/L

**Major expenses incurred in 2009?**

The Water Towers had to be decommissioned as one water tower split. Variable Speed Drives were installed on the Distribution pumps and a new jockey pump was installed in the water plant. The towers were abandoned and the pumps are used for pressure. A Variable Speed Drive is being considered for the fire pump.

An Engineering Assessment is being done in response to our elevated THM levels and to comply with provincial requirements we will have to make some changes to the Water Plant.

**Town of Boissevain Water plant operators:**

**Barry Chinner, 36 years service in Water Treatment**

**Glenn Kentner, 27 years service in Water Treatment**

**Doug Harper, 19 years service in Water Treatment**

**Dustin Pugh, 2 years service as operator in training**