

**MUNICIPALITY OF  
BOISSEVAIN-MORTON**

**Public Water System Annual Report**

**-2016-**

Prepared by:

Doug Harper, Operator-in-Charge

## **Municipality of Boissevain-Morton**

### **Annual Water System Operation Report – 2016**

The Municipality of Boissevain-Morton strives to provide high quality drinking water in sufficient quantity to meet the needs of the public. It is our goal to meet all the regulatory requirements governing the provision of drinking water in a safe and cost effective manner.

It is our belief that the public has a right to access information related to drinking water they consume. Therefore, the following report has been prepared for the Boissevain-Morton water system.

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

Our raw water consists of 85% surface water from the Boissevain Reservoir, and the other 15% comes from 5 wells 1.5 miles south of the reservoir. It is pumped from the wetwell located at the west end of the reservoir.

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

We treat our water to ensure that safe and pleasing drinking water is supplied to the homes and businesses in Boissevain. Provincial Regulations have set health based drinking water standards for all public water systems. The Municipality of Boissevain-Morton is committed to meeting or exceeding the water quality standards set by the province.

#### **What type of water treatment do we use?**

We treat our water in a lime softening process to remove the hardness and the iron as well as the removal of microbial contaminants such as bacteria and organic materials that are naturally found in surface water. There are 4 rapid gravity filters as well as 2 Granular Activated Carbon (GAC) filters to help polish the treated 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, and that an adequate amount of disinfectant is in the distribution system to ensure the water is safe right to the consumer's tap.

Chlorine gas 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 of any bacteria and to provide disinfectant residual in the 14 km of water piping throughout the Town of Boissevain.

## **Are any other chemicals added to our water? Why?**

Fluoride is added as part of the Provincial Fluoridation Program at levels that help prevent tooth decay. Many studies support the addition of fluoride.

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

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

## **What is the distribution system?**

The water distribution system is the network of underground pipes used to carry the treated water from the water treatment facility to the homes and businesses in Boissevain. We have 10.7km of 6" transite pipe, 0.6 km of 8" transite pipe, and 2.5 km of 6" C900 PVC pipe throughout the Town of Boissevain. The piping is interconnected (looped) to ensure that fresh safe water is continuously supplied. We carry out regular maintenance in the distribution system such as our seasonal flushing program.

## **Is our water tested? What for? When?**

Water tests are performed 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 (bi-weekly) for the presence of Total Coliform and for E. coli bacteria. If these bacteria are present in the water it is an indication that disease causing organisms may also be present.

**Disinfectant Testing:** We test the level of chlorine in the treated water every day and continuously to ensure that the water leaving the water treatment facility has enough chlorine to ensure proper disinfection. Chlorine testing is also done when the bacterial samples are taken from the distribution system.

**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 continuously after each filter and daily as it leaves the Water Treatment Plant.

**Trihalomethane (THM) testing:** Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in the water. Studies have shown a link between high levels of THMs and cancer. The province has set the base standard for THMs of 0.10 mg/L of water. The THM standard is based on an average of four samples per year. Our license requires we test every second year. We did not have to sample in 2015.

**Haloacetic Acids (HAA) testing:** HAAs are a group of disinfection by-product chemicals that are similar to THMs. The HAA standard of 0.08 mg/L is now applied as the standard in all water sources. Our license requires we test for HAAs every second year as we do with THM sampling. We did not have to sample for HAAs in 2015.

### **What are the results of these tests? Can we get copies?**

The following table summarizes all the treated water results for 2015.

Testing Parameter	Standard	Frequency	Test Results
TC & EC*	0.0 mg/L	Bi-Weekly	100% Compliance
Disinfectant (as chlorine free)	WTP >0.5 mg/L	Daily	100% Compliance
	Distribution 0.1 mg/L	Bi-weekly	100% Compliance
Turbidity	0.3 NTU**	Continuously	100% Compliance
THMs	0.1 mg/L (annual average)	Quarterly	0.115 mg/L
HAAs	0.08 mg/L (annual average)	Quarterly	0.064 mg/L
Lead	0.01 mg/L	Annually	0.000155 mg/L
Arsenic	0.01 mg/L	Annually	0.00057 mg/L
Benzene	0.005 mg/L	Annually	<0.00050 mg/L
Fluoride	1.5 mg/L	Annually	0.659 mg/L
Nitrate	10 mg/L	Annually	0.385 mg/L
Tetrachloroethylene	0.03 mg/L	Annually	<0.00050 mg/L
Trichloroethylene	0.005 mg/L		<0.00050 mg/L
Uranium	0.02 mg/L	Annually	0.00015 mg/L

\*Bacterial testing: Total Coliforms (TC); and E.coli (EC)

\*\*Nephelometric Turbidity Units (NTU)

### **How do we plan to meet the Standard Objective for Trihalomethanes (THMs)?**

There was an Engineer's Assessment done in 2016. They recommended that we could possibly look at ion exchange or membrane technologies. Perhaps a UV disinfection system to reduce the amount of chlorine used could be implemented. It was also suggested that the introduction of a pre-oxidant such as hydrogen peroxide would allow for a reduction in the required chlorine dosage, reducing the formation of THMs. We will work with engineers to come up with a suitable solution for this problem.

### **What do we have in place to alert Public Works Staff to water emergencies?**

There is an alarm system in the computer. If there is an alarm, the computer dials the "On Call" cell phone to notify the person on call. We will have an Emergency Response Plan in place in May of 2017. Water plant operators are available at any time to respond to emergencies as they arise.

### **Were there any emergencies, regulatory compliance issues or other operational issues to report in 2016?**

We had no issues to report in 2016.

### **Were there any major expenses incurred in 2016 ?**

We replaced the large sprocket and bearings on the recirculator drive on the clarifier tank. This drive is what mixes the lime and the coagulants to soften and clarify the water. We also had an Engineer's Assessment done in 2016.

### **Who can we call with questions or concerns regarding our drinking water?**

For any questions during regular business hours, call the Municipality of Boissevain-Morton administration office at (204)534-2243. Business hours are 8:30 am to 4:30 pm Monday to Friday. If the administrator cannot answer your questions, he will refer you to the operator in charge.

### **OPERATING LICENCE NUMBER: PWS-08-11501 A**

### **Municipality of Boissevain-Morton Water Treatment Plant Operators:**

- **Doug Harper, Operator in Charge – 26 years of service in Water Treatment Level III operator**
- **Dustin Pugh, 9 years of service in Water Treatment – Level II operator**
- **Bryce Adams, 2 years of service in Water Treatment – Level I operator**
- **Wayne McCallum, 1 year of service in Water Treatment – Level I operator**