2022 Public Water System Operation Report

Spruce Dr. Water Treatment Plant

The Town of Niverville strives to provide the highest quality drinking water in sufficient quantity to meet the needs of the residents. It is our goal to provide this water in a safe, cost-effective manner while remaining in compliance with all regulatory requirements governing the provision of potable water.
It is our belief that the public has a right to access information related to the potable water they consume. To that end the following report has been prepared for the Town of Niverville public water system.

Where do we get our water from?

The raw water is currently obtained from two supply wells located one mile west of New Bothwell. The wells draw ground water from secured aquifers in the fractured limestone. Both wells were installed in 2017 and are both 200 mm in diameter. The first well has a total depth of 91.4m with a 300 mm welded black steel casing installed to a depth of 27.1 m. The second well has a total depth of 96.6 m with a 300 mm welded black steel casing installed to a depth of 27.4 m. The wells were tested by Friesen Drillers Ltd. to each have an estimated discharge rate of 500 Imperial Gallons Per Minute (IGPM). The raw water from these two wells travel 10.5 km back to the water treatment plant via a 350 mm High-density polyethylene (HDPE) pipeline.

Why do we treat our water?

We treat our water to ensure that safe and aesthetically pleasing potable water is supplied to our community. The Town of Niverville is committed to meeting and/or exceeding the water quality standards set by the province.

What is our treatment process?

Raw water is pumped from the fractured limestone aquifer to the water treatment plant. The raw water is then dosed with an anti-scalant upstream of the dual train reverse-osmosis (RO) skid. On-skid piping and controls allow up to 30% of the raw water to bypass the RO and be blended back into the permeate stream. This gives the finished water a desired hardness level and minimizes the need for stabilization chemicals. Following filtration, permeate water is dosed with sodium hydroxide (caustic soda) to adjust the pH level of the finished water to around 7.5. It is also dosed with aqua mag blended phosphate which is a corrosion inhibitor to limit

corrosion of various metal piping. Finally, it is dosed with sodium hypochlorite (chlorine) for disinfection. The treated water is then stored in three, below grade reservoirs with a combined capacity of 3,500 m3. This size of storage allows the chlorine proper contact time with the water (minimum 20 minutes) to confirm proper disinfection has taken place.
In the unlikely event of a failure of both RO trains, an emergency bypass allows operators to sidestep the filtering process entirely. In this case, a spare chlorine feed station would be set up and the starting and stopping of the raw water pumps would be completed manually. It is expected that operators would notify the local Drinking Water Officer of their intentions to bypass treatment prior to exercising this option.

Why and how do we disinfect our water?

The final step in the treatment of safe water is disinfection. Disinfection is the selective destruction or inactivation of disease-causing organisms in water. The *Drinking Water Safety Act* and supporting regulations require that potable water be in contact with chlorine for a minimum of 20 minutes before it enters the distribution system. The Town uses sodium hypochlorite (chlorine) to disinfect our water. The provincial standards mandate that the Town maintains a minimum residual chlorine level of 0.5 mg/L leaving the water plant.

What is our water plant classification and who is certified?

The facility classification and operator certification fall under The Environmental Acts Water and Wastewater Facility Operators Regulations. Currently, the water treatment plant, and the water distribution system are classified as a Class 2 facility. The Town of Niverville has the following operators available.

<u>Water Treatment</u>
Class II – 2 Certified Operators
Class I – 1 Certified Operator

<u>Water Distribution</u>
Class II – 2 Certified Operators
Class I – 1 Certified Operator

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 & businesses within our community. We have both PVC (C-900) and High-density polyethylene (HDPE) piping through parts of the Town. 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 and fire hydrant testing in cooperation with the Town of Niverville Volunteer Fire Department.

Who do we serve water to?

The water distribution system is comprised of 1,404 service connections. All (100%) of the homes and businesses connected to the distribution system are metered.

Classification	**Size**	**Number**
Residential (Single / Multi)	5/8", 3/4"	1370
Commercial / Institutional	1", 1.5", 2", 3"	34
Total		1404

What are the water rates?

The water rates for the Town of Niverville have not changed since July 2018. The current rate for 1,000 gallons of water is $11.18. Customers will pay the applicable minimum charge set below which includes the water allowance as listed.

Meter Size	Water Included 1000 of Ratio	Gallons	Customer Service Charge	Water Commodity Charge	Water Total Quarterly Minimum
5/8 inch	1	3,000	$7.37	$33.54	$40.91
3/4 inch	2	6,000	$7.37	$67.08	$74.45
1 inch	4	12,000	$7.37	$134.16	$141.53
1 1/2 inch	10	30,000	$7.37	$335.40	$342.77
2 inch	25	75,000	$7.37	$838.50	$845.87
3 inch	45	135,000	$7.37	$1,509.30	$1,516.67

Water Quality Standards

The Town's Operating license identifies that our public water system shall operate in a manner that achieves or exceed the quality/treatment standards specified in the table below.

Parameter	**Quality Standard**
Total Coliform	Less than one total coliform bacteria detectable per 100 mL in all treated and distribution water
E. Coli	Less than one E. Coli bacteria detectable per 100 mL in all treated and distribution water
Chlorine Residual	A free chlorine residual of at least 0.5 mg/L in water entering the distribution system following a minimum contact time of 20 minutes.

	A free chlorine residual of at least 0.1 mg/L always at any point in the water distribution system
Arsenic	Less than or equal to 0.01 mg/L
Benzene	Less than or equal to 0.005 mg/L
Ethylbenzene	Less than or equal to 0.14 mg/L
Fluoride	Less than or equal to 1.5 mg/L
Lead	Less than or equal to 0.005 mg/L
Manganese	Less than or equal to 0.12 mg/L
Nitrate	Less than or equal to 45 mg/L measured as nitrate (10 mg/L measured as nitrogen)
Nitrite	Less than or equal to 3 mg/L measured as nitrite (1 mg/L measured as nitrogen)
Trichloroethylene	Less than or equal to 0.005 mg/L
Tetrachloroethylene	Less than or equal to 0.01 mg/L
Toluene	Less than or equal to 0.06 mg/L
Total Xylenes	Less than or equal to 0.09 mg/L
Uranium	Less than or equal to 0.02 mg/L

The parameters for total coliform and E. Coli are tested every two weeks. These bi-weekly results can be found on our website at https://www.whereyoubelong.ca/wp-content/uploads/2022/03/2022-Bi-Weekly-Samples.pdf. The other parameters from our licence that require testing were completed on February 23, 2021. These parameters only need to be tested for every three years. The full water analysis can be found on our website at https://www.whereyoubelong.ca/wp-content/uploads/2021/03/2021-Water-Analysis.pdf. Below is a summary of the testing results for each parameter listed on our licence.

Parameter	**Unit**	**Guide Limit #1**	**Guide Limit #2**	**Spruce Drive - Raw Water**	**Spruce Drive - Treated Water**
Arsenic (As)	mg/L		0.01	0.00378	0.00162
Benzene	mg/L		0.005	<0.00050	
Ethylbenzene	mg/L	0.0016	0.14	<0.00050	
Fluoride (F)	mg/L		1.5	0.883	0.196
Lead (Pb)	mg/L		0.005	0.000371	<0.000050
Manganese (Mn)	mg/L	0.02	0.12	0.00626	0.00112
Nitrate (as N)	mg/L		10	<0.0050	0.0066
Nitrite (as N)	mg/L		1	<0.0010	<0.0010
Trichloroethylene	mg/L		0.005	<0.00050	
Tetrachloroethylene	mg/L		0.01	<0.00050	
Toluene	mg/L	0.024	0.06	<0.00050	
Total Xylenes	mg/L	0.02	0.09	<0.00064	
Uranium	mg/L		0.02	0.000249	0.000039

Is our water tested? What for? When?

The Town's operating license identifies that our public water system shall ensure monitoring is completed as set out from the specified table below.

Water Quality Monitoring	
Parameter	**Monitoring Requirement**
Bacteriological (total coliform and E. coli)	Biweekly sampling program with each set of samples consisting of one raw, one treated, and a minimum of one distribution sample. Consecutive sample sets to be separated by at least 12 days
Free Chlorine (treated water)	One sample per day of water entering the distribution system following at least 20 minutes of contact time
Free Chlorine (distribution system)	At the same times and location(s) as bacteriological distribution system sampling
Total Chlorine (treated water)	One sample per day of water entering the distribution system following at least 20 minutes of contact time
Total Chlorine (distribution system)	At the same times and location(s) as bacteriological distribution system sampling
Free Ammonia (treated water)	One sample per week of water entering the distribution system
General Chemistry (parameter list provided by Office of Drinking Water)	One raw and one treated water sample once every three years
Total Metals (distribution system)	One sample taken at the same time(s) as General Chemistry sampling at a mid-point in the distribution system
Lead	As per the instructions of the drinking water officer
Manganese	Monitoring included in the General Chemical and Total Metals analysis
Other Parameters	As per the instructions of the drinking water officer

What do we have in place to alert Operations Staff to water emergencies?

All certified operators are given a smart phone. In the water plant, our filtration system is run on a Supervisory Control and Data Acquisition (SCADA) system which can be accessed via smart phones. The SCADA system allows operators to log in remotely to the water plant to see a real-time display of everything going on in the water plant. Operators can check on the status of pumps, valves, sensors, flows, and chemical dosing. The SCADA system has set numbers for different aspects of the treatment process that need to be met. If one of these numbers is off, or somethings is not working properly an alarm will go off. Once this happens, Bell MTS Security is notified and will start to call through a list of pre-set Operators until the alarm is acknowledged and accepted. The Operator can then log on to the SCADA system through either their phone or the PC at the water plant to determine the cause of the alarm. By having control of the SCADA system remotely we can minimize down time.

Were there any emergencies, regulatory compliance issues or other operational issues to report for 2022?

On the days of January 2, March 20, March 27, and September 5, daily chlorine testing was not completed due to staff scheduling.

Were there any drinking water safety orders issued?

In the reporting period, no Drinking Water Safety Orders were issued to the Town of Niverville's Spruce Drive water treatment plant.

Were there any boil water advisories?

A boil water advisory was issued on September 12, 2022, to the residents of 4 – 64 Prairie Crossings Court. This was issued by the Office of Drinking Water, due to a loss of pressure in the distribution line. The advisory was rescinded on September 14, 2022, after two sets of negative bacteriological samples were taken from the affected area.

Were there any warnings issued, fines, or charges laid?

Two warnings were issued by the Office of Drinking Water on January 2, and September 5th, for the recurring non-compliance issue of monitoring disinfection residuals. As per our licence, one sample per day of water entering the distribution system needs to be tested for free and total chlorine.

On December 23 we had an inspection done by our Drinking Water Officer. This was an informal inspection as the drinking water officer was new to Niverville's water system. After touring the water treatment plant, the September warning was issued for the re-occurring problem of daily chloring testing not being completed.

Were there any major expenses incurred in 2022?

1. The Town of Niverville has partnered with the Manitoba Water Service Board on the construction of a new water treatment plant building and reservoir. The project consists of adding a new-dual-train 40 L/sec membrane filtration system and 30 L/sec iron biofiltration system. This is to be housed within a water treatment plant building on top of a new 1,800 m3 reservoir. The project was designed and engineered by Associated Engineering. Penn-Co Construction is the general contractor. Construction is expected to be completed in the Spring of 2023.

   Total Estimated Cost – 8 million

Future system expansion or expenses expected?

1. The Town of Niverville will be partnering with the Manitoba Water Service Board to add a 3rd supply well to build redundancy into the raw water supply for the Town of Niverville Treatment Plant.

   Estimated Cost - Unknown

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

All calls regarding water (emergency or not), please call the Town of Niverville directory (204)-388-4600 ext.1111 and leave a message. Staff will listen to the message within a reasonable amount of time and respond accordingly.

How can you find out about this report?

This report will be available on or before March 31 of each year. The Town will also post the link to this report on our Facebook page once it is available. The link for this report is https://www.whereyoubelong.ca/wp-content/uploads/2022/03/Annual-Potable-Water-Report-2022.pdf. Paper copies are available upon request at the Town Office.
If you wish to leave an email (non-emergency) please send it to ryan@whereyoubelong.ca