

Spruce Dr. Water Treatment Plant

2016 Potable Water System Operation Report

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 drinking water.

It is our belief that the public has a right to access information related to the drinking water they consume. To that end the following report has been prepared for the Town of Niverville potable water system.

Where do we get our water from?

The raw water is currently obtained from two supply wells located just south of the water treatment plant. The wells draw water from fractured limestone aquifers that do not have the designation of being groundwater under the direct influence of surface water (GUDI).

Both wells were installed in 2002 and are 127 mm in diameter. They each have a total depth of 60.9 m, with a PVC casing installed to a depth of 27.7 m. raw water from these wells are conveyed to the WTP via 150 mm PVC pipeline.

There are two additional raw water wells located near the WTP. Well #3 was installed in 2006, is 127 mm in diameter and 79.2 m deep. It is currently not mechanized, nor is it connected to the raw water pipeline. Well #4 was also installed in 2006, is 127 mm in diameter and 94.5 m deep. A pump test was performed on Well #4 in May 2011 and indicated the well would be suitable in providing additional raw water capacity for the 2011 treatment upgrades. It was discovered during commissioning of the new treatment equipment however, that the raw water was excessively turbid. As such, Well #4 is no longer being used and is locked out.

Due to spikes in consumption during the summer months; we are currently in the process of making some changes to the current well field to provide the Town a short term solution until a new well field is developed.

As previously stated, we found the water in well #4, excessively turbid, thus we will be removing the pump from well #4, and sealing off the well. The Town hired Friesen Drillers to do a pumping test in well #3 and found that pumping at 66 GPM we could keep the turbidity at an acceptable level. The pump that we remove from well #4 will be installed in well #3. The Town will connect this well and blend the raw water from wells #1-3 before entering the filtering system. The work to put Well #3 online will be completed in spring 2017.

With all three wells running, we will get a raw water flow of 11 L/s.

This is again, only a temporary solution to keep up with the spikes in consumption. The Town is currently partnered with Manitoba Water Services Board and have hired Friesen Drillers to research a 6 miles radius around the town to find a suitable sustainable long term raw water supply.

Why do we treat our water?

We treat our water to ensure that safe and aesthetically pleasing drinking water is supplied to our residents. The Town of Niverville is committed to meeting and/or exceeding the water quality standards (0.5mg/L of free chlorine) which is 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 RO, water is dosed with sodium hydroxide (caustic soda) which adjusts the pH level of the finished water, and sodium hypochlorite (chlorine) for disinfection. The treated water is then stored in two, below grade reservoirs with a combined capacity of 1,700 m³ prior to entering the distribution system. In the unlikely event of a failure of both RO trains, an emergency bypass allows operators to sidestep the treatment 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 water is disinfected before it leaves the water treatment facility and that an adequate amount of disinfectant is in the distribution system (water piping network) to ensure the water is safe right to the consumer's tap.

We use sodium hypochlorite (chlorine) to disinfect our water. We maintain a level of residual chlorine between 0.5 – 1.0 mg/L. The provincial standards mandate that we maintain a residual chlorine level of 0.5 mg/L leaving the water plant

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 within our Community. We have both PVC (C-900) and High density polyethylene (HDPE) piping through parts of the Town. The piping in one of our developments is interconnected (looped) to ensure that fresh safe water is continuously supplied. Our other development currently has one line running to it, with plans to add a second feeder line to it to loop the system. 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.

Is our water tested? What for? When?

Water samples are taken every 2 weeks from the raw water (well water), the reservoir in the plant, as well as, from a resident's home. These samples are sent to a lab for analysis to ensure that there are no coliforms, no e-coli, and that the free chlorine level from the reservoir is above the 0.5mg/L as well as a minimum free chlorine level of 0.1mg/L standard in the distribution system set by the province.

Disinfectant testing: We test the level of chlorine in the treated water every day to ensure that we are meeting the provincial standard of 0.5mg/L. This will ensure proper disinfection. We also test chlorine levels at various residents' homes within the distribution system to ensure there is still available chlorine. The by-weekly chlorine testing results done at water plant as well as the homes is attached to this document.

The Town also tests for free ammonia once a week from anywhere within the distribution system. Free ammonia testing is done to insure that the water has reached breakpoint chlorination and the Town is disinfecting with free chlorine instead of mono-chloramines.

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 SCADA system. This 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 something is not working properly an alarm will go off. Once this happens, our Auto Dialer will automatically call through a list of pre-set Operators until the alarm is acknowledged and accepted. The Operator can then login to the SCADA system through our phone and determines the cause of the alarm. We have complete control of the filtering system from the SCADA system and can make changes to the system on our phones. With this, we can minimize down time.

Were there any emergencies, regulatory compliance issues or other operational issues to report for 2016?

We had one occasion where our staff had forgotten to do the weekly Free Ammonia testing. We also had one day where our free chlorine dropped below 0.50mg/L. This was on May 14, 2016. That week our reservoir was critically low and so we were by-passing the RO treatment process. The free chlorine levels that week fluctuated from 0.44 mg/L to 2.08 mg/L.

Were there any major expenses incurred in 2016?

1. The Town received a grant from the Federal Government to help fund new water mains and fire hydrants along 5th Ave south, and Main Street. The Town also installed a water main on 6th Ave S. to loop Cobblestone Court, and Errington Way. Another line was installed along Crown Valley, from Claremont Drive, to Krahn Road, and from Krahn Road to St. Andrew's Way. The approval from CP Rail to push the water line under the tracks didn't come before the contractor had completed the rest of the work, thus the connection under the railway will be completed in the spring of 2017.

With the water line run along Crown Valley to the south entrance of St. Andrews way, it gives the developer of the Highlands the opportunity to connect to his existing infrastructure thus creating a loop which would provide enough flow for fire protection.

Another part of the project included upgrades in the water treatment plant. This included a bigger standalone generator, a new fire suppression pump, and upgrading the existing electrical/plumbing inside the plant. These upgrades will allow the water plant to provide an increase of flow for fighting fires from 60L/s to 120L/s.

Total project costs will be approx. \$2,000,000

2. To date the Town has spent \$50,000 on well cleaning, testing, and parts to provide a short term plan to increase water production during the consumption spikes in summer.
3. The Town has spent \$60,000 to date on researching a new raw water supply.

Future system expansion or expenses expected?

The Town continues to work with Manitoba Water Services Board to find a suitable raw water supply. Preliminary estimates for total project costs are around \$3.9M

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

Any and all calls regarding water (emergency or not), please call the Town of Niverville directory (204)-388-4600 ext.111 and leave a message. Someone will listen to the message within a reasonable amount of time and respond accordingly.

How can you find out about this report?

This report, as well as our water analysis and the bi-weekly testing results are available on the Town website www.wheretheyoubelong.ca. Paper copies are available upon request at the Town Office. The Town will also post on our Facebook page that this report is available. If you wish to leave an email (non-emergency) please send it to ryan@wheretheyoubelong.ca