



REVISED TOTAL COLIFORM RULE (RTCR) START-UP PROCEDURES AND CERTIFICATION FORM FOR SEASONAL PUBLIC WATER SYSTEMS

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF MUNICIPAL FACILITIES
SFN 60775 (1-2016)

SUMMARY OF SEASONAL STARTUP REQUIREMENTS

Under the Revised Total Coliform Rule (RTCR) seasonal public water systems (PWSs) must conduct state-approved start-up procedures at the beginning of each seasonal operating period. The RTCR helps ensure that drinking water is safe before it is served to the public. To comply your system must do three things:

1. Before opening: Follow the checklist in this document as you prepare to open your PWS.
2. Before or within 14 days after opening: Take a bacteriological water sample and get results.
3. Within 14 days after opening: Certify that you followed the approved procedures by signing and sending in this document. Attach the water sample result/s.

WHAT ARE SEASONAL SYSTEMS?

A seasonal system is a non-community PWS that is not operated year-round and starts up and shuts down at the beginning and end of each operating season (e.g., campgrounds, youth camps, state parks, some restaurants, inns, and motels).

ASSISTANCE IS AVAILABLE FREE OF CHARGE

Help with the RTCR seasonal start-up procedure is available free of charge by contacting the Midwest Assistance Program (MAP). MAP is a non-profit organization offering training and technical assistance to rural communities and tribes on drinking water and wastewater issues. Please contact Technical Assistance Provider Brian Day at 701.214.8315 or b.day@map-inc.org if assistance is needed.

START-UP PROCEDURES (FOLLOW AND COMPLETE THE CHECKLIST BELOW)

Well Information:

Is the well protected from damage?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are all of the openings in the well cap, exposed casing, and conduit plugged or closed?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is the well vent screened, if one is present?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are the exposed casing and well cap intact?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is the well cap firmly affixed on top of the well casing?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Has the well been shocked/super chlorinated? (see well disinfection fact sheet)	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is the well subject to flooding? Note: A wellhead should not terminate in a pit/vault to prevent contamination from flooding.	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If wellhead is in pit, has it been cleaned out and dried?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is a raw water tap present and functioning?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Distribution System/Piping Information/Flushing

Have water pipes been shocked/super chlorinated?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have water mains, service lines and plumbing been flushed for at least 5 minutes and is the water clear?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No

If you continuously chlorinate, is there at least 0.1 to 0.5 ppm (mg/L) of free chlorine at all service points in the distribution system?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have valves been exercised (opened and closed) and proven not to leak?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Pressure Tanks and Integrity Check (After System is Filled with Water)

Pressure tanks are functioning and not water logged?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Are the proper kick-on and kick-off pressures set?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Has the tank been shocked/super chlorinated?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Area	Pump ON (PSI)	Pump OFF (PSI)	Start (PSI)	End (PSI)	Loss (PSI)

Pump House or Treatment Building Information

Is the building or room locked?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are the walls, door, and roof intact to prevent rodents, snakes, and birds from entering and is the inside clean (no rodent droppings, leaves, pine cones)?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is a raw water tap present and functioning?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Continuous Chlorination Information

Is the chlorine pump functioning properly?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is the pump injecting the proper dosage of chlorine?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
What is the target chlorine residual (mg/L) in the distribution system?	mg/L		
Is there an operation and maintenance manual on site?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Do you have a chlorine test kit to measure chlorine residual values?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are you using fresh (not expired) reagents for your test kit?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Other Treatment (e.g., Water Softener, Reverse Osmosis, Filters, etc.)

Treatment components are clean and in good condition with no indication of leakage?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is there an operation and maintenance manual on site?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If applicable, how often are filters replaced?	time/s per		
Any safety issues identified, (e.g., loose or exposed wiring)?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Name/s of the chemical and treatment used?			
If applicable, the chemical dose?	per		
All chemical containers are clean, labeled, and properly stored?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
All chemicals are National Sanitation Foundation (NSF) certified and within expiration dates?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Storage Tank/Reservoir/Cistern Information

Has tank been cleaned out (free of sediment and debris)?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Has the tank been shocked/super chlorinated?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Inspection frequency?	times per		
Is the access hatch locked?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is a vent present (a vent cannot serve as an overflow)?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is the vent screened with a #16 or finer, non-corrodible screen?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is an overflow present (an overflow cannot serve as a vent)?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is the structure intact (no cracks, holes, openings, adequate coatings)?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is the float/water level controller functioning properly?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No

DID YOU DO THE FOLLOWING?

Did the system conduct a full system inspection? Date?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Conduct an integrity check (pressurize the system and look for leaks and pressure drops)? Date?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did the system flush the distribution system? Date?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did the system follow the department start-up checklist? Note: The system should use the department checklist unless a written system specific checklist has been developed.	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have all operators been trained in the proper operation and maintenance of the water system?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Was the system disinfected prior to serving water to customers? Date?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did the system correct all problems found during the system inspection and integrity check? If not, explain in the comments section above.	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did the system collect a bacteriological sample from the distribution system prior to serving water to the public? Date?	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No

CERTIFICATION OF COMPLETION AND WATER SYSTEM INFORMATION

Public Water System (PWS) Name:	PWS Number: (ex: ND1234567)
Operator Name:	Date Water System Opens/Opened to the Public:
Operator Signature	Date Signed

Within 14 days of opening to the public this entire document, along with bacteriological sampling result/s, must be submitted to the Division of Municipal Facilities by facsimile at: 701.328.5200, email at: jseerup@nd.gov or jwalsh@nd.gov, or by mail at: North Dakota Department of Health, Division of Municipal Facilities, 918 E. Divide Ave., 3rd Floor, Bismarck, ND 58501-1947

A water well can become contaminated during construction or repair. Flooding also can contaminate a well. Contamination may be bacterial, chemical, or both.

Proper well construction is critical to the safety of drinking water. If your well is not properly sealed and protected, it can become contaminated at any time.

For bacterial contamination where no chemical contamination is suspected, the simplest and most effective way to destroy harmful bacteria in a well and plumbing is disinfection with a chlorine solution. Before disinfecting, the well should first be pumped to remove as much contaminated water as possible. After pumping, the well can be treated with a chlorine solution. The effectiveness of disinfection depends on the concentration of disinfectant, the time it is allowed to remain in the water, well construction and overall water quality. Follow the procedure below to ensure effective disinfection.

If chemical contamination is suspected, contact your local public health unit or the North Dakota Department of Health for sampling and testing advice. This would apply, for example, if your well water has an uncharacteristic and strong chemical taste and/or odor. If you suspect a problem with a specific chemical, analysis can be targeted toward that chemical. Do not drink the water until it is determined to be biologically and chemically safe.

Procedure for Disinfecting a Well

1. Before you start, you need to know (a) the diameter of your well casing pipe, (b) the depth to water in your well, and (c) the total depth of your well. This information should be noted on your well driller's log if it is available. If not, measure the diameter of the well casing pipe, the depth to the top of the water in your well and the total depth of your well. Subtract the depth to the top of the water from the total depth of your well to get the length of the water column in your well. Once you know the length of the water column in the well and the casing pipe diameter, use the table provided in this fact sheet to determine how much chlorine you need for every 10 feet of water in your well. Measure enough disinfectant for every 10 feet of water in your well and add it to 5 gallons of water in a bucket. You can find chlorine at most grocery stores in the form of laundry bleach (with no artificial scents), sold under such trade names as Hilex, Clorox and Purex. Sixty-five percent calcium hypochlorite powder or tablets are available from water treatment or swimming pool companies (see table on back).
2. Pour the chlorine and water mixture into the well casing pipe. If you are repairing or constructing a well, chlorine should be added just before you install the pumping equipment.
3. Bacteria are destroyed when they come into contact with chlorine. Agitate the water in the well to ensure thorough mixing. To do this, turn on your outside faucet. Using a hose, rinse down the inside of the well casing until you can smell the chlorine in the water coming out of the hose. If you have a deep well with a high water level, you may need to add chlorine through a hose inserted down the well casing pipe. You may also drop calcium hypochlorite tablets down the well casing pipe to ensure proper mixing.
4. The tanks, pipes and fixtures in your water system should be disinfected at the same time as the well. Open all faucets and let the water run until chlorine can be smelled at each faucet. Turn off all faucets.
5. Allow the chlorine solution to remain in the well and piping system for 12 to 24 hours. Before drinking the water or using the well, pump the well and run all faucets until you can no longer smell chlorine. To prevent hydraulic overload, do not discharge large volumes of chlorinated water to your septic system. In addition, do not discharge the water onto delicate plants or lawns, as chlorine will kill vegetation.
6. When time does not permit well disinfection by this procedure, you can superchlorinate the well by using four times the amount of chlorine listed on the table. Allow the chlorine solution to remain in the well and piping system for at least two hours. Pump the well and run all faucets to remove any trace of chlorine. For assistance in disinfecting your well, call a certified well driller, your local public health unit or the North Dakota Department of Health.

Over

Procedure for Laboratory Testing

After flushing your drinking water system to remove all chlorine, a water sample should be submitted to a laboratory for bacteriological analysis. Special sample containers for this test are available from the laboratory. If the test shows that harmful bacteria are still present in the water, chlorination should be repeated. Do not drink the water until you get a satisfactory test result showing the water is free from harmful bacteria.

Certified Bacteriological Laboratories

Astro-Chem Lab, Inc.
Williston, ND
701.572.7355

Grand Forks Environmental Laboratory
Grand Forks, ND
701.746.2595

Fargo Cass Public Health
Fargo, ND
701.476.4089

Division of Laboratory Services
North Dakota Department of Health
Bismarck, ND
701.328.6272

First District Health Unit
Minot, ND
701.852.1376

Minnesota Valley Testing Laboratories
Bismarck, ND
701.258.9720 / 800.279.6885

Southwestern District Health Unit
Dickinson, ND
701.483.0171 / 800.697.3145

Blue Prairie Labs
Watford City, ND
701.500.2360

Charges for services will vary. Check with the laboratory to ensure it can perform the tests you need.

QUANTITY OF DISINFECTANT REQUIRED (provides a concentration of about 100 milligrams per liter or 100 parts per million)				
Diameter of Well Pipe (inches)	Gallons/10 ft. of Pipe Inside	Disinfectant for every 10 feet of water in your well		
		6% Sodium Hypochlorite*	65% Calcium Hypochlorite** Tablets	Powder
2	1.63	2 1/2 teaspoons	1/4	1/2 teaspoon
3	3.67	2 Tablespoons	1/2	3/4 teaspoon
4	6.52	1/4 cup	1	1 1/4 teaspoons
5	10.20	1/3 cup	1 1/4	2 teaspoons
6	14.68	1/2 cup	1 3/4	1 Tablespoon
8	26.11	1 cup	3 1/4	1 1/2 Tablespoons
10	40.80	1 1/4 cup	5	2 Tablespoons
12	58.75	2 cups	8	3 Tablespoons
18	132.20	4 cups	16	1/2 cup
24	235.02	1/2 gallon	30	1 cup
36	528.80	1 gallon	65	2 cups
48	940.09	2 gallons	116	3 1/2 cups

* Sodium hypochlorite or laundry bleach can be purchased at most grocery stores.

** 65% calcium hypochlorite powder and tablets are available from water treatment or swimming pool companies.

For additional information, please contact Bob Markhouse at rmarkhou@nd.gov or 701.328.6623.