

# System Reopening and Maintaining Water Quality

## GUIDANCE FOR NONCOMMUNITY PUBLIC WATER SYSTEMS DURING AND AFTER COVID-19

Due to the COVID-19 pandemic, many noncommunity public water supplies are experiencing unforeseen periods of little to no water usage due to shutdowns or a reduction in business. Water quality problems can arise as water remains stagnant in water storage, treatment equipment, and distribution piping. Examples of these problems include:

- Warming of cold water and cooling of hot water to within ideal growth range for bacteria including opportunistic pathogens such as *Legionella*;
- Sediment accumulation in pipes, leading to mechanical issues and bacteria growth;
- Loss of disinfectant residual and formation of disinfection byproducts for systems that disinfect;
- Increased lead and copper levels due to corrosion of pipes and fittings; and
- Growth of bacteria in water treatment equipment such as softeners and filters.

Noncommunity public water systems that reopen after completely depressurizing their distribution system(s) should follow the Minnesota Department of Health (MDH) Start-up Procedure for Seasonal Water Systems referenced at the end of this document.

## Reopening and Maintenance Plan

You should follow a plan to maintain safe and sanitary water quality during partial shutdowns and/or before the first full day of operation. The plan should include these steps:

- An **inspection** of the system prior to reopening to identify any issues that can be corrected while the demand for water is low;
- An **integrity check** to ensure there are no leaks in the system;
- **Flushing** stagnant water to maintain water quality;
- **Disinfection** of the well and water system in situations of prolonged shutdown or where the system has experienced a loss of pressure; and
- **Testing** the water after all other steps are complete. Testing for total coliform bacteria prior to your MDH sanitarian resuming sampling is recommended.

Each of these steps is described in more detail below.

*Additional considerations:* When performing an inspection, disinfection, or flushing, make sure to wear appropriate personal protective equipment (PPE) for the hazard (including chemical, physical, and bacteriological hazards). Also keep in mind that plumbing and well repair work require hiring properly licensed professionals.

## System Inspection

Look for any damage or evidence of contamination that may have occurred during the slowdown or shutdown period. Key items to inspect and verify are listed below.

Wellhead(s):

- Well cap or sanitary seal is in good repair and forms a tight seal;
- No flooding within 50 feet of the well. Contact your sanitarian if flooding has occurred.

Water treatment equipment:

- Treatment components are clean and in good condition with no indication of leakage;
- All disposable water filters are replaced after long periods of no water use.

Non-pressurized storage tanks:

- Storage tank is covered and in good condition (e.g., no cracks, holes, or dents in tank).

Distribution and plumbing systems:

- Dead end piping longer than two times the pipe diameter has been identified and/or removed;
- Inoperable treatment units have been removed; and
- All water heaters are operating at the appropriate temperature. They may need to be drained and refilled after long periods of not being used (see manufacturer's instructions).

You can also consider using the Start-up Procedure Checklist referenced at the end of this document as a comprehensive guide for inspecting your system.

## Integrity Check

Conduct an integrity check to detect any leaks within the distribution system(s). **Please note that a functional pressure gauge is required to perform this step.**

1. Once the system is at full operating pressure, turn off all taps and the power supply to the well and/or distribution system pump.
2. Read the system's pressure gauge and record the initial system pressure.
3. After one hour, read the pressure gauge again and record the system pressure. Pressure loss over this hour may indicate leaks.

Some system leakage is expected. However, locating and repairing leaks is strongly recommended. Make sure that repaired or replaced distribution system components are properly disinfected.

## Flushing

Flushing is essential maintenance; it removes contaminants and debris from the system. Run flushed water to the ground surface rather than into a sewage treatment system when possible

to avoid overloading the system. If applicable, monitor the water level in any non-pressurized storage tanks so they do not run dry.

Consider that water quality can deteriorate in less than a week of low water use. An ongoing flushing program is recommended to maintain water quality if water use is limited.

- Prior to flushing, remove all faucet strainers/aerators to prevent sediment from clogging them, and to increase flow rate;
- Flush all wells and watermains for a minimum of 30 minutes. Open a sufficient number of taps to get enough flow to remove sediment in the common pipes;
- Flushing the distribution system should start at taps closest to the well or storage tank and end at taps furthest from the well or storage tank to ensure that clean water is used during flushing;
- Flush both hot and cold water lines. Flush all of the cold water lines before flushing any of the hot water. Consider draining and replacing water in water heaters, pressure tanks, and other storage vessels with fresh water;
- Flush each plumbing fixture for a minimum of five minutes and water runs clear and reaches a stable temperature;
- Fire protection systems and safety devices such as eye washes should be flushed and maintained in accordance with the manufacturer's recommendations; and
- Ensure any chlorine or other chemical feeds are stable after flushing.

## Disinfection and Water Testing

Water system disinfection is strongly encouraged by MDH. For guidance on disinfection of wells and water systems, refer to:

- [Well Disinfection](https://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/disinfection.pdf)  
(<https://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/disinfection.pdf>)

For guidance on disinfection of storage tanks, refer to:

- [Cleaning and Disinfecting Non-pressurized Storage Tanks](https://www.health.state.mn.us/communities/environment/water/docs/ncom/stortankdisinfect.pdf)  
(<https://www.health.state.mn.us/communities/environment/water/docs/ncom/stortankdisinfect.pdf>)

Chemicals used for shock disinfection must either be listed to ANSI/NSF-60 Standard or EPA Registered for disinfection under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Contact MDH or the chemical supplier if you are unsure if the chemical is safe to use.

Public water systems should sample their drinking water for total coliform bacteria prior to resuming full operation after a long shutdown. A list of certified laboratories can be found at:

- [Environmental Laboratory Accreditation Program](http://www.health.state.mn.us/labsearch)  
(<http://www.health.state.mn.us/labsearch>)

## More Resources

If you have questions, contact your regional MDH Noncommunity Water Supply Sanitarian:

- [Noncommunity PWS Field Staff and Districts Map](https://www.health.state.mn.us/communities/environment/water/docs/ncstaffmap2020.pdf)  
(<https://www.health.state.mn.us/communities/environment/water/docs/ncstaffmap2020.pdf>)

Seasonal Start Up Procedure and Start Up Procedure Checklist:

- [Start-up Procedure for Seasonal Public Water Systems](https://www.health.state.mn.us/communities/environment/water/docs/ncom/startup.pdf)  
(<https://www.health.state.mn.us/communities/environment/water/docs/ncom/startup.pdf>)
- [Start-up Procedure Checklist](https://www.health.state.mn.us/communities/environment/water/docs/ncom/checklist.pdf)  
(<https://www.health.state.mn.us/communities/environment/water/docs/ncom/checklist.pdf>)

For more guidance on flushing various sizes of building water systems, as well as other concerns for systems reopening after little to no water use, consult the links below:

- [CDC Guidance for Building Water Systems: Ensure the safety of your building water system and devices after a prolonged shutdown](https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html)  
(<https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html>)
- [Building Water Quality and Coronavirus](https://esprinstitute.org/wp-content/uploads/2020/04/FINAL_Coronavirus-Building-Flushing-Guidance-20200403-rev-1.pdf) ([https://esprinstitute.org/wp-content/uploads/2020/04/FINAL\\_Coronavirus-Building-Flushing-Guidance-20200403-rev-1.pdf](https://esprinstitute.org/wp-content/uploads/2020/04/FINAL_Coronavirus-Building-Flushing-Guidance-20200403-rev-1.pdf))
- [Improving Water Quality in Schools and Childcare Facilities During COVID-19](https://www.healthandenvironment.org/webinars/96535)  
(<https://www.healthandenvironment.org/webinars/96535>)

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*To obtain this information in a different format, call: 651-201-4700.*