ENVIRONMENTAL Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-DWGB-7-10 2012

Seasonal Water System Operation and Maintenance

This fact sheet provides an overview of actions recommended to improve operations for seasonal public water systems. Such systems are defined as those serving a population of at least 25 people, for at least 60 days of the year, but not year-round. Examples include water systems serving campgrounds, youth camps and seasonal restaurants and hotels.

I. PRE-SEASON START UP

Check records from the previous season and address any activities that were left incomplete. Steps taken now can go a long way in preventing water quality issues later. These should include:

a) Inspection: Walk the entire water system from source to the end of distribution using this checklist.

INSPECTION CHECKLIST	√	Corrective Actions
Wellhead area: note any potential contamination sources such as fuel storage, chemicals, pesticides, paints, ponded water, other.		
Well cap or cover: check cap integrity, bolts complete and tight, vent screen, and any signs of damage.		
Well house/Pump house: check for leaks, lighting, heating, loose wires, operational sump pumps, signs of flooding or rodent intrusion, vent screens, and other items specific to your pump house.		
Storage tank: check for pitting or other corrosion, vent screen (atmospheric tanks), overall integrity.		
Distribution system: exercise valve boxes, blow-offs, hydrants and check for leaks.		

b) Pressurize System

√ Reconnect all the plumbing and pressurize the system. Completely flush the distribution system to eliminate sediment or stagnant water in the system in preparation for disinfection (next step).

√ If the system is without a meter, attach a pressure gauge to check for system leaks and make any necessary repairs. *Note that DES rules require all newly constructed campgrounds to have source meters installed.*

√ Visually check the distribution lines for leaks after pressurizing the system.

c) Disinfect and flush
Follow the instructions in DES fact sheet WD-DWGB-4-3, "Disinfecting Public Water Systems" (http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-4-3.pdf). Be careful to use the proper dosage and allow adequate holding time for the disinfection process to be effective. Inexpensive kits for measuring chlorine residual are available at your local hardware store. **Do not** flush the chlorinated water directly into a stream or pond; it is illegal to do so and it will kill aquatic life. Bacteria samples should not be taken until all chlorine has been flushed out of the system. The chlorine residual must be measured along with the bacteria sample and reported on the bacteria sampling form.

d) Conduct a cross-connection survey
√ Ensure that all potable water hose bibs are equipped with hose bib vacuum breakers.
√ Review waste dump stations as follows:

Campgrounds having waste dump stations at any location **must ensure that the water line servicing the dump station is properly protected from a cross connection** that would cause contaminated water to backflow to the potable water line. This type of cross connection is classified as "high hazard" and must be protected by installation of a testable reduced pressure zone (RPZ) backflow device. DES considers acceptable devices as those listed as "Approved Backflow Prevention Assemblies" published by the Foundation for Cross Connection Control and Hydraulic Research, University of Southern California. The approximate price range for reduced pressure zone back flow devices, depending on the diameter of the piping, is from $200 to $500. Wherever these devices are installed it is important to plumb them for winter removal or otherwise protect them from freezing.

One serious cross connection to be aware of is the use of **reverse flush valves** (e.g., Hydro-Flush, Flush King, RV Dual Flush). These devices contain a valve mechanism incorporated into a PVC connector which allows fresh water under pressure to be connected to the wastewater holding tank for flushing and cleaning. These valves currently **do not** include proper backflow protection and as such present a high risk to the drinking water supply.

If a campground allows the use of reverse flush valves, the campground **must** install a testable reduced pressure zone backflow device on the potable water supply line *anywhere these devices may be used.*

e) Conduct Water Quality Sampling
Water quality monitoring for seasonal water systems includes sampling for bacteria, nitrate and nitrite. Bacteria samples are required for each quarter that the system is open, nitrate samples are required once a year, and nitrite samples are required once every three years. The sampling schedule for your water system can be found on the DES OneStop data website at http://www2.des.state.nh.us/DESOnestop/BasicSearch.aspx

II. IN-SEASON OPERATION AND MAINTENANCE
a) Routine inspection of wellhead protection area
A weekly inspection should be conducted in the wellhead protection area to ensure that visitors have not left potential contamination sources in this area. Potential sources include fuel storage, chemicals, pesticides, paints, trash or debris. "Drinking Water Protection Area" signs are available from DES for posting in the wellhead area.

b) Yard Hydrants/Frost Free Yard Hydrants—Best Management Practices
Any yard hydrant with below-grade drains (or stop and waste valves) on your distribution system potentially creates a cross-connection. The 2009 International (or Uniform) Plumbing Code does not allow stop and waste valves on potable water system distribution piping.

Due to this cross connection potential, it is critical to use best management practices in the area around these fixtures or eliminate them from the system. Best management practices include (a) never use these fixtures as potable water fixtures; (b) ensure they have been installed correctly in well-drained soil with a gravel infiltration bed beneath; (c) ensure there is **no** standing water around these fixtures; and (d) know if you have a high groundwater table that could intercept the gravel infiltration bed and, if so, disconnect the fixture from the water system.

c) Water quality sampling
Keep a calendar marked with sample dates and post the calendar in a place that you and your assistants visit daily or routinely. Sample according to schedule and keep records of results in the office.

d) Routine maintenance and operation
All routine maintenance should be outlined in a manual kept in the office and maintenance activities should be logged in as completed.

All personnel should be aware that a power outage can cause backflow problems in the distribution system. This is because the source pump will be off while users may potentially continue to turn on faucets; this causes a negative pressure in the distribution system. The same negative pressure effect can occur if too many users are hooked up to a pipe that is not properly sized. Negative pressure in the distribution system means that water in the soil can get sucked into the pipe introducing bacteria contamination.

Up-to-date Record Drawings and Operation Manuals should be available to staff responsible for the water system. Record Drawings should include an accurate sketch of the distribution system with locations of valves and blow offs.

An Emergency Response Plan should be in place listing phone numbers of emergency contacts including your water system operator and repair contractors.

III. POST-SEASON SHUT DOWN
- √ Drain the distribution system entirely and perform necessary maintenance and improvements.
- √ All exposed pumps and meters should be removed and stored to avoid freezing.
- √ Reduced pressure zone (RPZ) backflow devices should be removed for winter and the pipe ends securely capped. Freezing can damage these devices.
- √ All openings on the system should be capped or screened to prevent contamination.

For More Information
For additional information, please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.nh.gov or visit www.des.nh.gov, click on “A to Z List” and choose “Drinking Water and Groundwater Bureau.” All of the bureau’s fact sheets can be found under “Publications.”

Note: This fact sheet is accurate as of March 2012. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.