

SYSTEM START UP

Many recreational water systems are seasonal. They are opened for use in the spring, and closed during the fall. Check seasonal water systems for winter damage prior to going back in service. Visually check for any obvious damage (figures 48 and 49).



Figure 48—Spring box with erosion damage.



Figure 49—Erosion around vent.

Perform annual maintenance on all pumps and components as recommended in the operation and maintenance manuals.

Clean water storage tanks and check for damage to floats, valves, screens, and wires (figure 50). Repair any winter damage. **Water tanks are confined spaces** (figure 51). Do not enter a tank or confined space unless you have received proper training and have the proper equipment. Use procedures specified in the Confined Space Job Hazard Analysis if you must enter the tank. Use a qualified contractor to perform confined space work if you do not have the training.



Figure 50—Open tanks and check for damage.



Figure 51—Tanks are confined spaces.

Disinfect the water storage tank and distribution system before opening it for use. To disinfect a water storage tank or spring box and distribution system:

- Close all winter drain valves and reinstall any hydrants that were removed for the winter.
- Shock-chlorinate tanks or spring boxes with 50 milligrams per liter (mg/L) chlorine, unless your State has other requirements (figure 52). Table 2 shows 5.25 percent chlorine needed attain 50 mg/L for various sized tanks. See chapter 11 on how to calculate other chlorine quantities.
- Turn on well pump, or close spring overflow, so pipes and storage tank begin filling with water.
- Add chlorine as needed to keep 50 mg/L chlorine in the tank or spring box.
- When the smaller storage tanks are full of chlorinated water, check chlorine residual, and add enough chlorine to have a residual of 50 mg/L for 24 hours.



Figure 52—Shock-chlorinate seasonal systems. (Non-NSF bleach can be used for shocking the system as long as it is not scented and the water is not for human consumption.)

To disinfect the distribution system:

- Working down the distribution system from the tank, open each hydrant until water flows and there is a strong chlorine smell. Then close the hydrant (figure 53).
- Open all faucets in the buildings until there is a strong chlorine smell. Close the faucets. Repeat for the winter drain valves.

Table 2—Amount of 5.25 percent chlorine needed for tank sizes.

Tank Size, Gal	5.25% chlorine, 50 mg/L		5.25% chlorine, 2 mg/L	
	US	SI	US	SI
500 gallons	½ gallon	1.8 L	2½ ounces	70 ml
750 gallons	¾ gallon	2.8 L	3¾ ounces	105 ml
1,000 gallons	1 gallon	3.8 L	5 ounces	145 ml
2,500 gallons	2½ gallons	9.5 L	1½ cups	360 ml
5,000 gallons	4¾ gallons	18 L	3 cups	720 ml
10,000 gallons	9½ gallons	36 L	6 cups	1.4 L
15,000 gallons	14¼ gallons	48 L	0.6 gallons	2.2 L
20,000 gallons	19 gallons	72 L	1⅞ gallons	3.0 L



Figure 53—Open each hydrant until chlorine is detected.

- Inspect all hydrants, faucets, and valves for leaks while chlorinating the system.
- Test the water at the farthest point in the line until a 50 mg/L residual is achieved (figure 54). Not all test kits will read 50 mg/L. Use bottled water to dilute the sample if necessary to read the residual with your test kit.
- Let the water sit in the distribution system for 24 hours.
- Test the residual at the end of 24 hours. If it is below 25 mg/L, repeat the process.
- Drain the tank and distribution system and flush with clean water until chlorine residual is less than 1 mg/L. Do not let the chlorinated water enter a live stream or lake.



Figure 54—Test water for free chlorine.

****Care must be taken when flushing the chlorine from the lines and tank. Chlorine at this level will interfere with septic tank function, and can injure or kill fish. The water may be discharged onto the ground, or dechlorinated with vitamin C before discharge to septic tanks or near water bodies. A permit may be needed to discharge into a stream.**

- Take a preseason special bacteriological test before placing the water system in service. If the test results come back negative, open the system for public use. A special water sample does not count toward monthly testing requirements. *A routine sample must be taken for every month or partial month the system is open.*
- Inform your State primacy agency that a public water system is open.

If the water storage tank is very large (figure 55), or the available flow rate is very small:



Figure 55—Large tank.

- To disinfect a large tank, spray the tank walls with a 200 mg/L chlorine solution.** Allow the tank to stand unused for 30 minutes.

****The operators doing the spraying should wear a self-contained breathing apparatus. Chlorine fumes from the spray are hazardous. Employees must be trained and certified before wearing a self-contained breathing apparatus.**

- Add enough water to the tank to obtain a 50 mg/L residual (table 2). Disinfect the distribution system by opening each hydrant, faucet, and valve until a strong chlorine odor is detected, then close the tap.
- Allow the chlorinated water to stand in the distribution system for 24 hours.
- Fill the tank with clean water and maintain a 3 mg/L chlorine residual for 3 to 6 hours.
- Take a *special* bacteriological test before placing the water system in service. If the test results come back negative, open the system for public use. *A special water sample does not count toward monthly testing requirements. A routine sample must be taken for every month or partial month the system is open.*
- Inform your State primacy agency and the supervisor's office that a public water system is open. Inform the supervisor's office that a nonpublic water system is open. Enter this data into the water sampling module.