

Well Water Safety and Disinfection Guidance

Issue of Concern

Flooding, construction activities, electrical outage, high water demand resulting in low or negative water pressure, unscreened vents, and a variety of other factors can allow environmental contaminants to be drawn into a water system and result in presence of total and fecal coliform bacteria.

Owners of individual wells need to be aware of precautionary measures and how to disinfect and have their well water tested by a certified laboratory after their water system loses pressure or is inundated by floodwater.

Public water systems have operators that monitor water systems for factors that could result in contamination of the drinking water and are often equipped with backup generators to assure adequate water pressure is maintained during power outages. When total or fecal coliform are detected during required routine water testing, the water system operators notify users that they should take precautionary measures, as described in the next section of this information sheet, until the system has been disinfected and tested to assure it is free from bacterial contamination.

Homeowners with individual wells also need to be aware of these measures and have a basic understanding of how to disinfect their wells and test the water for total and fecal coliform bacteria.

Precautionary Measures

One or more of the following precautionary measures are recommended by Environmental Health to assure unsafe water is not consumed prior to disinfection of a well:

- Use only bottled water for drinking and cooking;
- Boil tap water for one full minute;
- Add fresh, unscented liquid household bleach to tap water at a rate of 8 drops or $\frac{1}{4}$ teaspoon per gallon of clear water or 16 drops or $\frac{1}{2}$ teaspoon



per gallon of water if it is cloudy; the treated water should be mixed thoroughly and allowed to stand for 30 minutes before using; a chlorine-like taste and odor will result from this process;

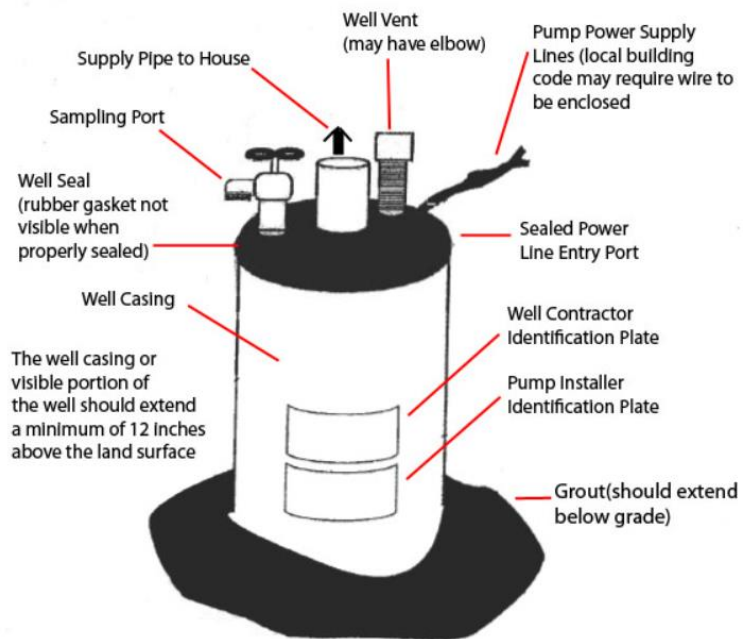
- Use purification tablets, following the manufacturer’s instructions indicated on the packaging.

Well Disinfection

To disinfect a well, chlorine is added at the water source and then allowed to flow throughout the distribution system. After enough time has passed to allow the chlorine to kill all bacteria in the system, the system is purged of chlorinated water and tested.

The disinfection procedure is handled by the system operator of community water systems. Homeowners with individual wells may either contact a commercial well drilling service or use the following procedure:

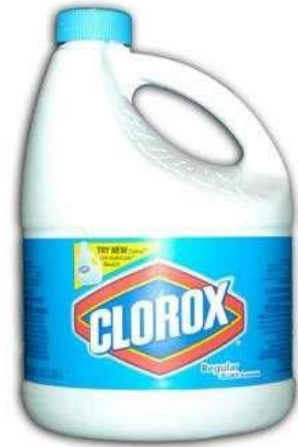
1. Notify all users of the water system that you plan to disinfect the well and that they should not use the water until you have notified them that the disinfection process is complete;
2. Pour ½ gallons of un-scented, liquid household chlorine bleach into the well casing through an access plug or through the well’s vent;
3. Turn the pump on and off several times to mix (“surge”) the solution in the well;



If possible, circulate chlorine-containing water from the well directly back into the well through a clean hose for 3-4 hours to provide an even mixture of the chlorine solution and to wash down the casing and drop pipe;

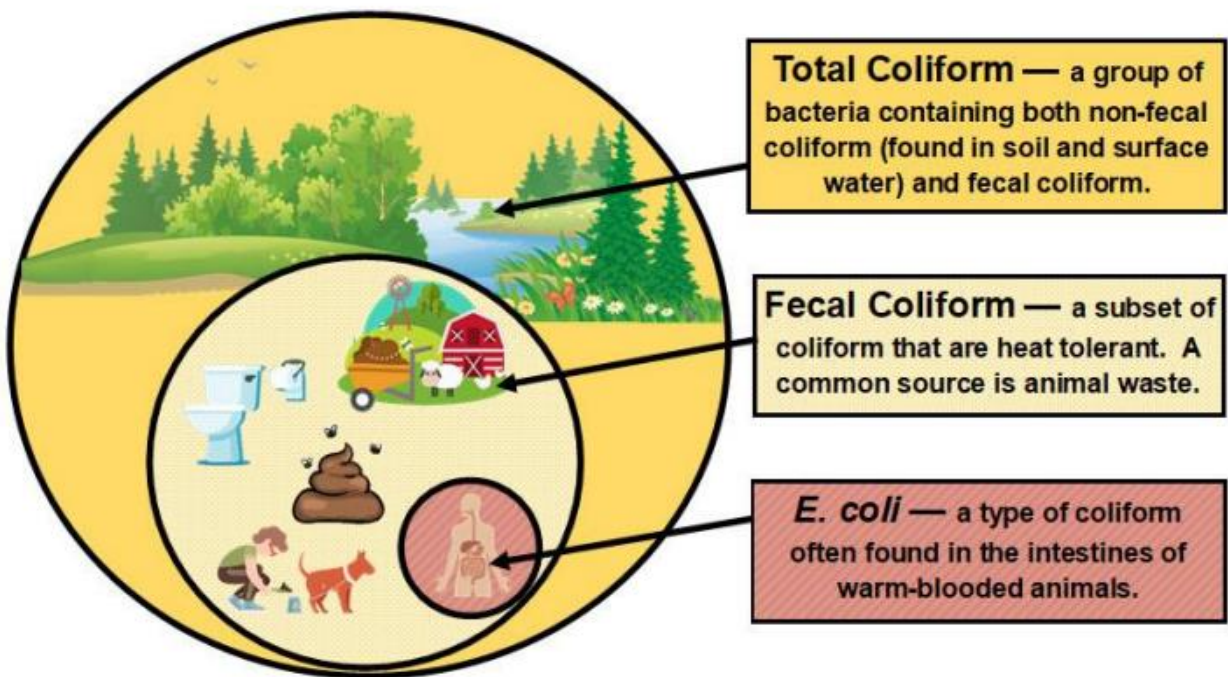
4. Turn on pump and operate the well until you can detect an odor of chlorine from running water at a tap near the well;
5. Open and run each individual cold water tap throughout the system until you can detect an odor of chlorine or there is a positive chlorine test; then close the tap;

6. Turn the pump off and allow water system to stand for 12 hours or overnight;
7. Flush the well through outdoor taps, away from trees, lawns, and gardens until each tap produces no odor; flush residual chlorine from indoor taps;
8. Use swimming pool chlorine test and follow kit test instructions to be sure NO chlorine remains in the water;
9. Sample the water to test it for coliform bacteria as described in the following section; if the test results show **presence** of coliform, contact a state licensed well drilling or pump installation service provider; if the test shows **absence** of coliform bacteria, a follow-up sample should be taken at least 5 days after the initial test to confirm that the water is safe to drink.



Coliform Sampling

Coliform testing is used to indicate whether bacterial contaminants have made their way into the well water. Coliform bacteria are used as an indicator of bacterial water contamination because they have been shown to be effective in doing so and are simple and inexpensive to analyze in a laboratory. Laboratories will typically provide results for **Total** Coliform and either **Fecal** Coliform or **E. coli**. Here is a diagram that shows what these results report:



It is important that well water be sampled correctly to get accurate results. Special care must be taken to assure that bacteria are not introduced into the sample when it is taken.

- Only sterile bottles obtained from the laboratory that will be analyzing the water can be used; do not pre-rinse the bottle;
- Check that the well is tightly sealed to prevent the entrance of any surface contamination, either solid or liquid, to the water supply; vents should be screened, opening downward and above flooding; if the well is not sealed, take measures to have it sealed properly but allow for chlorine to be added to well now and in the future;
- Collect the sample from an outlet tap as close to the well as possible; the valve stem of the hose bib should not be leaking and the should not be rusty or corroded; if a faucet is chosen inside the house the aeration screen, if present, needs to be removed from the end of the faucet;
- The water should be turned on and allowed to run full strength for 5 minutes; then adjust the water flow so that the sample bottle can be filled without splashing, but not so slow that the water curls back over the outlet of the hose bib;
- Remove the bottle's lid, fill the bottle to the line on the bottle's neck, and recap the bottle without touching the inside of the lid or bottle; Don't over or under fill the bottle or the sample might have to be rejected by the laboratory;
- Complete the laboratory's water report;
- Transport water samples immediately to the laboratory or refrigerate and submit to the laboratory less than 24 hours from the time the sample was taken.

Laboratory Information

The two closest state certified laboratories available for Tuolumne County residents are the following:

- **Aqua Lab**
18843 Fir Drive
Twain Harte, CA 95382
(209) 586-3400
- **49er Water Lab**
245 New York Ranch Road
Jackson, CA 95642
(209) 418-3175



Due to the current flood emergency, sample bottles from Aqua Lab will be available to the public March 14-21, 2023 at the Community Development Department 8:00 a.m. to 3:00 p.m. Monday through Thursday.