

Drought

Private Wells and Natural Disasters

Prepare, Respond, And Recover

Safety Reminders

Drought and extreme heat affect groundwater availability and quality. Aquifers are not easily monitored, which makes it important to understand the natural cycle of groundwater levels in your well. Deeper wells are generally less affected by drought, but they may take longer to recover after one occurs. Shallow wells, especially those close to the surface, are more vulnerable to water shortages. Being proactive and informed will allow for more effective management of your well. To be prepared, understand your well type, know its location, and familiarize yourself with critical well components.



These tips can help you respond effectively and facilitate a smoother recovery.

- Get help from a licensed well contractor (LWC). Contact your local health department, department of environmental quality or natural resources, or a university extension service to obtain a list of contractors in your area.
- Use bottled water or a stored water source to brush teeth, drink, cook, and bathe until you know your water is safe to use. You may need a safe water source for several weeks while your well is undergoing testing and repairs.
- Have your well water tested at a certified water testing laboratory after a drought.
- Turn off the power to your water pump if the water level has dropped and the pump is having trouble pulling water out of the well to avoid damage to the pump.

Drought-prone Areas

Always keep your well maintained; a maintained private well is better able to withstand the stresses of a drought. In some areas, drought may affect a well on an annual basis. In other areas droughts may be rare but can be prolonged and may last months to years. When this happens, water wells may go dry or water levels may drop, causing issues with adequate water supply. Drought can affect water quality by increasing



the concentration of groundwater constituents (chemicals) and changing how groundwater and surface water interact.

If you live in a drought-prone area, take these steps to protect your private well.

- Obtain a copy of your well construction log, if possible.
- Know and document all components of your private well. Take photos of the connections and system components. These photos will be helpful if components need to be replaced or to file insurance claims. Make sure to include:
 - Storage or pressure tanks
 - Pump
 - Treatment system (including any filters)
 - Electrical components
- Know your well's depth and the intake setting of your pump.
- Store all well-related documents in an easily accessible location.
- Store possible contaminant sources away from your well. This may include chemicals, fertilizer, and flammable materials such as paint, gasoline, solvents, or paper.
- Keep the well cap and sanitary seal in good condition.
- Keep extra well caps and sanitary seals on hand in case they are damaged.

Before a Drought

Essential Steps to Take

- Buy and store safe water, such as bottled water, to use for drinking, cooking, and bathing for three days.
- Have contact information for a LWC, your local health department, university extension service, and water testing laboratory.
- Take advantage of available water conservation rebate programs.
- Consider water-saving measures including the following:
 - Rain sensors, drip irrigation, native plants, or dormant lawns.
 - Repair leaking plumbing fixtures or replace them with water-saving plumbing fixtures.
 - Hauled water storage tanks as a temporary or permanent additional supply.
 - Larger or additional pressure tank to store more water.
 - Visit [EPA's Watersense](#) to learn more on how to save water and protect the environment.
- Understand groundwater recharge for your area. Talk to your local health department or LWC to find out more. If your area typically has a long recharge period, you may need to find options to ensure access to safe, quality drinking water.

During a Drought

Follow these water conservation tips and techniques to help prevent your well from going dry.



- Follow local water conservation, watering, and reuse guidelines and ordinances.
- Spread out your water use over the day (e.g., dishwasher, washing machine, shower).
- Only wash full loads in the dishwasher and the washing machine.
- Avoid using the prewash cycle on automatic dishwashers.
- Flush the toilet less often by using the toilet several times for liquid waste.
- Do not use the garbage disposal. Compost vegetable peelings or throw them away.
- Take shorter showers. Use water in the washbowl to shave.
- Monitor your well water level. Be alert to the following warning signs your well is dry:
 - Well pump is cycling on and off frequently or is running for a long time before shutting off.
 - Pressure gauge on the storage tank is fluctuating more often.
 - Sudden drop in water pressure or it takes a long time to build pressure.
 - Frequent water outages and/or surges.
 - Air bubbles come out of your faucets.
 - Water is suddenly cloudy.
 - Water runs out after heavy usage (watering the lawn, dishwasher).
 - Neighbors experience problems with their private wells.
- What **NOT** to do if your well goes dry:
 - Never add water from any unknown or untreated source into your well. Poor quality water, which may also be contaminated, can lead to health issues, but may also damage your well components or contaminate your local aquifer.
 - Never drink untreated surface water, like from creeks, rivers, or lakes.
 - Never purchase or drink water from an unknown source.
- If you haul water, make sure it is potable and comes from a community water supply that provides bulk, treated water.

After a Drought

Step 1: Inspect and Repair

If you shut off the pump during the drought due to a dry well, you need to test your system to ensure there is sufficient quantity and quality of water. Use the following checklist to evaluate the condition of your system.

- Check the electrical wires and connectors that supply power to your private well. Damaged electrical wires are dangerous; never touch damaged electrical wires under any circumstances. Contact a qualified electrician to repair these components.
- Check the well cap, seals, and vents (vents should be unplugged). Replace any that may be missing or damaged.
- Check the plastic PVC casing, liner, and any aboveground piping used to bring water to your home.
- Inspect well houses and equipment (such as chlorinators, water treatment equipment, and electronic controls).
- Inspect indoor piping, storage and pressure tanks, and overflow pipes.



- Look for any gaps around the outside of the well casing. The grout may have been damaged, or the casing may have large cracks.
- Remove any debris entering uncovered wells or storage tanks.

These next steps will help to determine the quantity of available well water.

- Open any closed shut-off valves, including any shut-off valve before or after the pressure tank.
- Turn the power back on to the pump. The pump should start pumping water into your water system and the pressure in the pressure tank should start to increase as it fills.
- If the pump will not start, turn off the electricity and contact a LWC to evaluate your system.

Step 2: Clean and Flush Well

Use the following checklist to clean and flush your well before testing your water to determine if disinfection is needed.

- Check that power to the well pump is off at the breaker box.
- Temporarily cap the well if the well cap or casing are damaged. Use a sanitary seal or wrap a sheet of 6-millimeter plastic tightly around the wellhead and secure tightly with two zip ties. Contact a LWC for permanent repairs.
- Remove debris around the outside of the wellhead.
- Turn off the water going to the rest of the system if there is a shut-off valve and faucet before or after the pressure tank.
- Turn the pump on if there are no issues.
- If the pump will not start, turn off the electricity and contact a licensed well contractor.
- Flush the well by running the pump until the water runs clear. Use an outside faucet and a hose to direct the water away from the septic system, public sewer, nearby surface water, or animal habitats. Pumping times vary, depending on the groundwater recharge to the well, several flushes may be necessary.
- If the water does not run clear after several hours, contact a licensed well contractor and continue using bottled or stored water. Do not pump water from another source into your well: doing so may damage your pump and contaminate the aquifer.
- Disconnect or bypass household water filters or softeners if there is not a shut-off valve before or after the pressure tank. This will prevent those treatment systems from contamination.
- Check the water pressure using an outside faucet with one of the methods listed below. If the pressure is low, it may be recovered when the pump is turned on or there may be a pipe that burst. Contact a LWC if either issue occurs.
 - Turn on a faucet. If you hear air escaping from the faucet with water intermittently spurting out, you may have lost pressure.
 - Check your pressure gauge to see if your system is holding pressure. If you are losing pressure, your pump may come on when you are not using water.



Step 3: Test your Well Water

You should test your well water for coliform bacteria, *E. coli* bacteria, and nitrate before use to make sure it is safe. Contact your local health department to ask about other contaminants of concern in your area. Getting your water tested will reveal if you need to disinfect your water system.

- Get a water sample kit. Recovery teams may be distributing water-sampling kits. If not, call your local health department, a certified water testing laboratory, or university extension service.
- Follow the instructions on the sampling kit to avoid accidental cross-contamination and inaccurate results. Return the sample to the lab as soon as.
- Consult with the manufacturer or a licensed water treatment installer if the filter or softener has been exposed to contaminated water.
- Drink, cook, and bathe with bottled water or a stored water source until the results from the lab confirm that water is safe to use, and all necessary repairs are completed.
- Retest the water to confirm the results are below [EPA's maximum contaminant levels \(MCLs\)](#). Contact your local health department for the best timeframe to retest.

Step 4: Disinfect your Well

If your water is contaminated or repairs were performed, you may need to have the well professionally disinfected, especially if ammonia is present. Retest the water before use and be sure parameters are below [EPA's maximum contaminant levels \(MCLs\)](#).

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Private Wells and Natural Disasters: Prepare, Respond, and Recover is a series of factsheets intended to be a tool for environmental public health professionals who specialize in private wells, and as a resource for private well owners, developed in collaboration with members from the NEHA's Private Water and Decentralized Wastewater Program Committee and the Private Water Network.

Additional tools and resources are available at neha.org/water-quality

References

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