

Private Well Water Safety Measures

How to prepare your well before a hurricane

You can take action to prepare your well for a flood, even as you are making plans to evacuate. **Store adequate bottled water for drinking and cooking because you won't be able to drink, brush teeth or cook with the well water until it is tested and found suitable.** Complete the following during your evacuation planning:

1. Locate the log/well report completed when the well was established and store a copy of it in a safe place that will be accessible if you evacuate.
2. Fill up the pressure tank as much as possible.
3. Turn off the electricity to the well.
4. If you have an aerobic septic system, turn off the electricity for the system. No special preparations are recommended for conventional septic systems.
5. Make sure to set your water to bypass any treatment systems or filters to mitigate the chance of them becoming contaminated.
6. If your wellhead does not have a watertight seal, clean off the well casing, cover with a heavy-duty trash bag and secure with waterproof tape.
7. If you plan to disinfect your well yourself upon your return, have these basic shock chlorination materials available before the flood because these supplies may be difficult or time-consuming to acquire following a flood:
 - Instructions on how to shock chlorinate (pp. 3–6 of this factsheet)
 - Unscented, liquid bleach
 - Clean five-gallon bucket and five gallons of uncontaminated water
 - Garden hose that reaches from an outdoor faucet to the well
 - Protective goggles and gloves
 - Wrench for well access
 - Funnel
 - Hose
 - Sample collection bottles from local water testing laboratory.

How to care for your well after a hurricane

Do not use contaminated water for:

- Drinking
- Cooking
- Making ice
- Bathing in any form
- Washing clothes or dishes

Contaminants could include:

- Animal waste
- Sewage
- Treatment plant wastewater
- Nearby flooded septic system matter

1. Do not turn on the electricity to your pump until flood waters recede.
2. Contact a licensed well driller if you think your well needs to be serviced after the flood. To find a North Carolina certified well driller please visit www.wellcontractors.nc.gov or contact Drew Morgan at 919-707-5882.
3. If extensive flooding has occurred, do not drink the water. Use your water reserves and bottled water until your well water has been tested.
 - Locate a nearby water testing lab to obtain sample collection bottles and instructions. The local health department can test your water for bacterial contamination. If there is not a health department near you, your county Extension agent can put you in touch with laboratories that test water quality.
 - If you live near animal feeding operations, agricultural fields where pesticides are applied or industrial chemical factories, you should contact your local health department for additional testing. Especially if you smell fuel or chemicals in your water.
4. If your well is contaminated with bacteria, alternative options include using bottled water, water boiled for five minutes or water from a source you know isn't contaminated. It is strongly recommended that a licensed well driller be hired to shock chlorinate the well if it has been flooded. A well driller will have access to more effective products and will have equipment and experience that a typical well owner will not have. However, if you attempt to disinfect the well yourself, follow the instructions below.

How to Shock Chlorinate a Water Well

Note: If your well system is damaged, or contaminated with chemicals, disinfection will not work. An indication that your well is damaged can be a decrease in water pressure once turned on. Contact a certified contractor for examination. If you suspect chemical contamination contact your local health department.

PREPARATION PHASE

Tools Needed

- A garden hose long enough to reach from an outdoor water faucet to the well
- Protective goggles/gloves
- Clean five-gallon bucket
- Five gallons of water
- Funnel
- Unscented household liquid bleach less than six months old
 - How to calculate how much bleach you need:
 - The amount of bleach to be used in the disinfection process will depend on the amount of water in the well.
 - To calculate the water volume, subtract the static water level (distance from land surface to the water in the well) from the total depth of the well. If you don't know the static water level, just use the total measurement of the well depth.

Table 1. Amount of unscented liquid chlorine bleach needed for well disinfection.

Depth of Well	DIAMETER OR SIZE OF WELL CASING						
	2 in.	4 in.	6 in.	10 in.	18 in.	20 in.	24 in.
10 ft.	1.6 gallons of water in well 1 ounce Bleach	6.9 gallons of water in well 4 ounces Bleach	11.5 gallons of water in well 9 ounces Bleach	41.0 gallons of water in well 1 quart Bleach	132.5 gallons of water in well ½ gallon + 1 pint Bleach	164 gallons of water in well 3 quarts Bleach	235 gallons of water in well 1 gallon + 1 pint Bleach
50 ft.	8.2 gallons of water in well 5 ounces Bleach	32.7 gallons of water in well 1 quart Bleach	73.5 gallons of water in well ½ gallon Bleach	205 gallons of water in well 1 gallon Bleach	663 gallons of water in well 3 gallons + 1 quart Bleach	820 gallons of water in well 4 gallons Bleach	1175 gallons of water in well 6 gallons Bleach
100 ft	16.3 gallons of water in well 1 pint Bleach	65.4 gallons of water of in well ½ gallon Bleach	147 gallons of water in well 3 quarts Bleach	409 gallons of water in well 2 gallons Bleach	1325 gallons of water in well 6.5 gallons Bleach	1640 gallons of water in well 8 gallons Bleach	2350 gallons of water in well 11.5 gallons Bleach

**NC DPH recommendation.

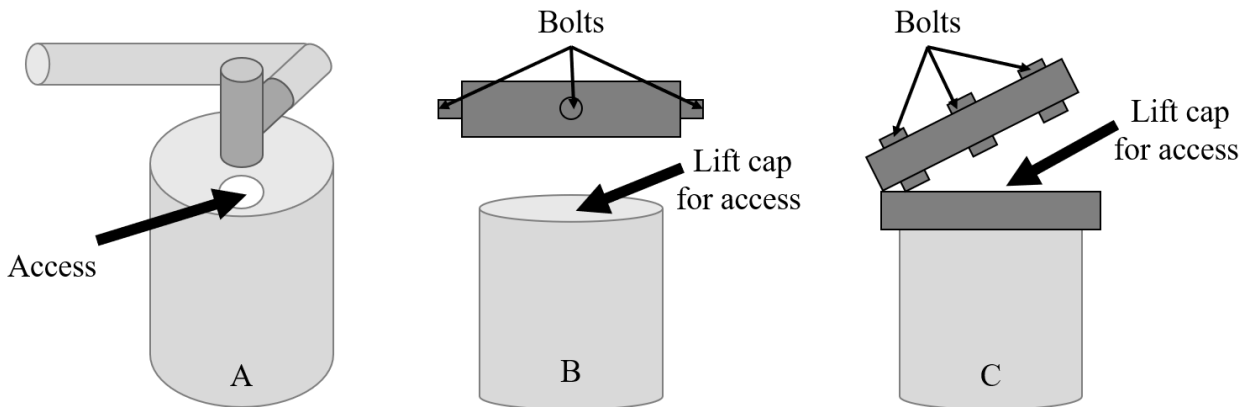
CHLORINATION PHASE

STEP 1 Power Off:

- Turn off electrical power to the pump by turning off the circuit breaker.
- Disconnect water softeners or household water filters by switching to bypass mode or the “out of service” position. Read and have the manufacturer’s instructions easily available on how to bypass water softeners and household water filters.

STEP 2 Open the Well:

- Remove all debris near the well. Check the well for damage. Remember, if your well is damaged, this process will not work.
- For a well seal (Figure A), remove the threaded well plug for access; for a well cap (Figure B) or sanitary cap (Figure C), remove the bolts from the cap and lift for access.
- If your well system does not look like the options below, call a contractor for further assistance.



MIXING DIRECTIONS

- Fill the five-gallon bucket about three-fourths full of bottled water.
- Look back at Table 1 to determine how much bleach is needed.
- Add bleach to the bucket of water.
- Using the funnel, pour the bleach solution into the thread well plug or well casing.

* Be careful not to splash/spill the solution

STEP 4 Recirculate the Chlorinated Water:

- Turn on the circuit breaker to the pump.
- Connect the garden hose to an outdoor faucet.
- Next, place the funnel into your well's access point and put the garden hose into the funnel.
- Turn the water on and let it run for 30 minutes to circulate the bleach within the well.

STEP 5 Running Chlorine Solution Through Faucets:

- Run the chlorinated water throughout the plumbing system. Start inside the house and work your way out by turning on each tap one at a time until you smell bleach.
- Repeat this step for both hot and cold taps, toilet and shower/bath taps and outside faucets.
- Leave the chlorinated water in the plumbing for a minimum of eight hours or overnight.

STEP 6 Flush the Chlorinated Water:

- Flush your well 3-4 times to ensure there is no chlorine or disinfecting byproducts remaining in your well.
- Run the water through an outside garden hose until you no longer smell chlorine.
- Keep the running water away from your septic system, landscaping and bodies of water.
- Once the chlorine smell is gone from the well, turn on each fixture inside the house one at a time until the chlorine smell is no longer present.

STEP 7 Disinfect Water and Reconnecting Treatments:

- Disinfect home water softener or household filters according to the manufacturer's instructions and then reconnect those devices.

DO NOT DRINK THE WATER UNTIL IT HAS BEEN TESTED. THE WATER SAMPLE IS NOW READY TO BE SENT TO A LAB.

IMPORTANT: Before using the water for drinking, cooking, making ice or preparing food, have the water tested by a state-certified laboratory. If disinfection attempts fail, the well may need to be cleaned before it is disinfected again. Contact a contractor or local health department for help.

This procedure is based on well disinfection protocols from the Florida Department of Health, Minnesota Department of Health, Virginia Tech Cooperation Extension, Texas A&M Agrilife Extension, and Texas Commission on Environmental Quality.