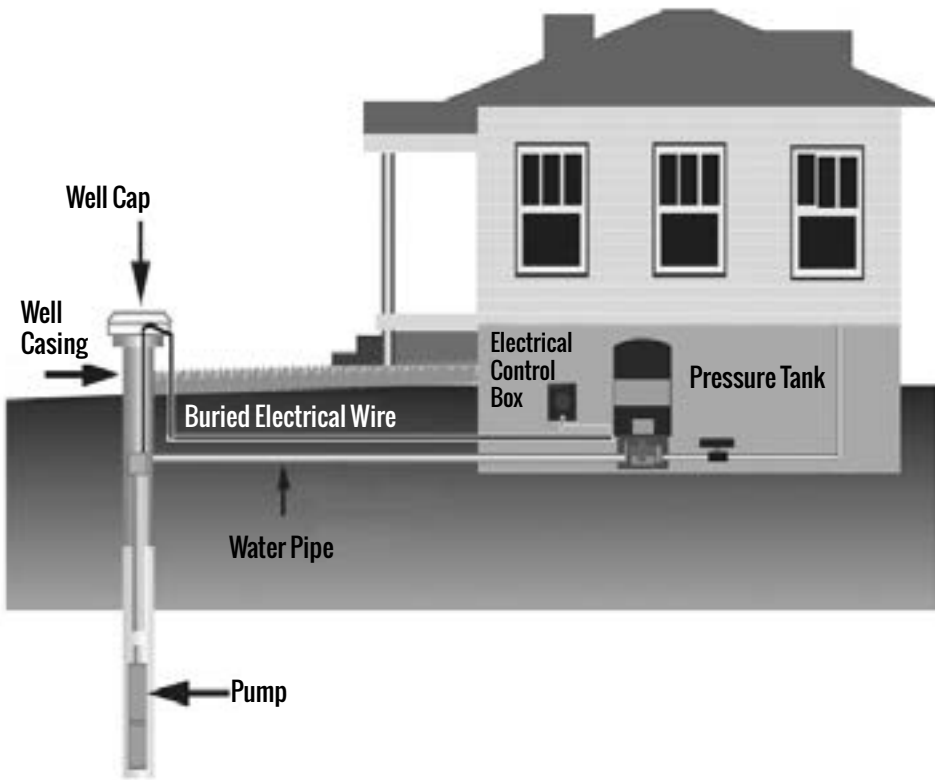




Flood recovery

Restoring and Testing Your Private Well After a Flood

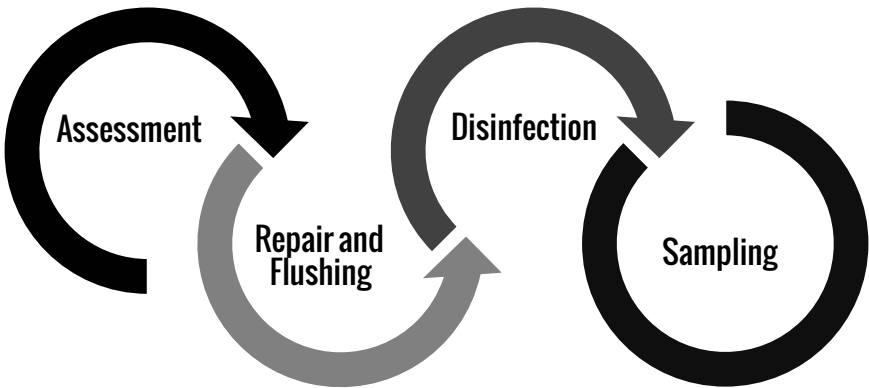


After flooding, water from private wells may not be safe to drink. Private well owners should take steps to restore their private water supply.

When a private water well has been flooded, the water in it may be contaminated with **waterborne pathogens** (germs) that can cause serious illness in humans and pets. If you believe that your well has been contaminated, **stop using your well water for drinking and cooking purposes**. Check with your local health department about other acceptable sources of water.

If you believe your well may be contaminated by gasoline, heating oil or other chemicals, do not use your well and immediately contact your local health department or the Department of Environmental Conservation (DEC) Spill Hotline at (800) 457-7362.

This booklet provides guidance on how to address possible contamination. There are four action steps needed to get a flooded well back into service safely:



Assessment

A flood will leave warning signs that a water well may be unsafe. Floodwater carries large pieces of debris that can dislodge parts of the well and distort or crack the well casing. Floodwater may also deposit mud or sediment in the well. If you see any of these conditions you should have a professional repair the system. Below are things that a well owner can look for; any one of these signs may indicate that a well is contaminated and the water may be unsafe. If you suspect the well has been affected by floodwater, stop using it until it is checked.

Well pump

Most private wells have the pump located inside the well casing and submerged, so well owners will probably not be able to inspect the pump. If the pump or well casing needs repair, contact a qualified professional, registered well driller, or pump contractor to evaluate and service it. Do not turn on your well pump until the well has been assessed and repaired as needed. Contact your local health department for help in locating registered well contractors. A list of DEC registered well contractors can also be found at: www.dec.ny.gov/cfm/xtapps/WaterWell/index.cfm?view=mainwiz

Six steps to assess your well

Step	What to look for	When to call a pro
1. Turn off power to the well.		
2. Check whether the well was flooded.	Check for signs of flooding. If you did not see the area during the flood, debris and mud and water or mud stains may indicate that the well was flooded.	If you don't have safe access to the well.
3. See if the ground surface around the well is broken or unstable.	Check for erosion that may lead to unsafe conditions or a pathway for surface water and contaminants to get in the well. Check whether flood water entered the well.	If you need to regrade land around the well or repair/replace the well or casing.
4. Inspect electrical components and wires.	Look for exposed/damaged wiring or electrical components. Check whether water entered any electrical components. Do not touch electrical wires. If electrical connections or controls located outside the well casing remain submerged, do not turn on the pump.	If any water or damage is seen, or if it is suspected that any part of the electrical system has been submerged, call an electrician or well professional.
5. Check the well casing.	A bent/cracked well casing may allow water, sediment and debris to enter the well and increase the risk of contamination.	If the well casing needs to be repaired or replaced.
6. Check the well cap and seal.	See if the cap and seal are securely fastened to the well casing. Sediment and debris may enter the well through a loose well cap and contaminate it.	If sediment and debris have entered the well, call a professional before restarting the well.

Repair and flushing

How to clean your well

Take the following steps before using the well again. Be sure the electricity is off until you complete your check of the well. Never step in water around a well unless you are sure the power is off.

Wait until the well has been restored by proper flushing and disinfection before you drink or wash with well water.

Four steps to flush your well

1. **Clean.** Remove any visible mud, sediment, and other debris from the well casing, cap, and other accessible components. If there is excessive mud or sediment in the well, get professional help to remove the pump before cleaning or repairing.
2. **Regrade.** If the ground around the well is sloped down towards it, re-grade it so surface water flows away from the well casing. Surface water may contain contaminants that can get into the well if water flows down along the well casing.
3. **Start pump.** After the pump has been inspected and repaired, or replaced if necessary, turn it on. If it does not start or pump water, get assistance from a registered well driller or pump contractor.
4. **Flush.** Pump the water until it runs clear to get rid of any floodwater in the well. Use a hose connected to an outside faucet so the flushed water flows to a nearby drainageway rather than into your septic system or public sewer (after flooding, both septic and public sewers may be overwhelmed and unable to hold more wastewater). Depending on the size and depth of the well and extent of contamination, pumping times will vary; it may take thirty minutes, or it could take several hours or days until the water runs clear.

Disinfection

How to kill the germs

Disinfect (sanitize) your water to kill germs before using the water for any household purposes. Changes in the water's appearance, taste, or odor may indicate possible contamination. Even if your well is working, you should use other sources of water for drinking, food preparation, and brushing teeth until your well test results show the water is safe to drink. Check with local health department personnel about other acceptable sources of water.

A concentrated bleach solution needs to be circulated through the well and house plumbing to assure proper disinfection of the well and plumbing before use of the well water. Below is a step by step method to sanitize a well before restoring it to full use. If your well is a "point well", or if the well pump is a jet pump, it is recommended that you hire a water well contractor to disinfect your well.



Electricity near water can be dangerous. Before you do anything to the well:

Turn off the pump circuit breaker.

Examine for chafed wire insulation or missing wire nuts and repair, as necessary.

Wear rubber soled shoes or boots, preferably waterproof.

12 steps to disinfect your well

1. **Attach a hose to the outdoor faucet** that is closest to the well or pressure tank. The hose needs to be long enough to reach the well. Run water through the hose until it is clear.
2. **Mix 2 quarts of regular, unscented household beach with 10 gallons of water** in a large bucket in the area of the well casing. **Do not use "splashless", scented, or gel variety bleach.**
3. **Turn off the electric power to the well pump** (the switch is probably located at the circuit breaker box or near the pressure tank). Carefully remove the well cap (and well seal if there is one). Set aside.
4. **Turn the electric power to the well pump back on.** Place the other end of the hose into the casing. Turn the faucet with hose on.

12 steps to disinfect continued

5. **Pour 10 gallons of the water and bleach mixture down the open well casing while the water is running through the hose.** Continue running the water through the hose placed inside the well casing.
6. **Run the water at each indoor and outdoor faucet until a chlorine odor is present,** and then shut off each faucet (except the faucet with the hose).
7. **Continue running water through the hose and down inside the well casing to recirculate the chlorine solution.** Use the hose to also wash down the inside of the well casing.
8. **After one hour of recirculating the water, remove the hose from the well.** Fill a bucket with 10 gallons of water. Shut off the faucet that the hose is connected to and make sure all the other faucets are still shut off to assure the pump is stopped. Remove the hose from the well.
9. **Mix two more quarts of bleach in 10 gallons of water.** Use about half a gallon of the mixture to rinse and disinfect the well cap (and seal if there is one). Turn off the electric power to the well pump. Pour the remaining mixture into the well. Replace the well cap (and seal).
10. **Allow the well to stand idle for at least 8 hours, preferably 12 to 24 hours.** Avoid using the water during this time. The electric power to the pump still needs to be off.
11. **Turn the electric power to the well back on after it has been idle for 8 to 24 hours.**
12. **Purge the well and plumbing of the chlorinated water.** Connect a hose to an outside faucet and place the other end of the hose away from grass and shrubbery. Open the faucet and run the water until the chlorine odor disappears. Open all the other indoor and outdoor faucets until the chlorine odor disappears.

Sampling: How to test your well

Now that the well and house plumbing have been disinfected, the next step is sampling.

After the chlorine has been flushed out of the water system (the water should not smell of chlorine), test the water (as outlined below) to confirm that it is free from contamination. If chlorine odors persist, you may have to repeat flushing or wait several days before testing. Until testing shows that the water is free of contamination, you should use bottled water or check with local health department personnel about other acceptable sources of water.

Pre-Sampling Checklist

Before sampling the well water, be sure the following have been done:

- The area around the well has been drained of floodwaters and cleaned up.
- The well is in good condition, operable, and any needed repairs have been completed.
- The well has been flushed of any floodwater that may have entered it, and the attached plumbing has been properly disinfected.
- The well has been disinfected and the pipes have been flushed to remove chlorinated water.

9 steps to test your well

1. **Obtain a sterile “BacT” bottle from a NY State certified lab.**
(www.wadsworth.org/labcert/elap/comm.html or contact your local health department www.health.ny.gov/nysdoh/water/doh_pub_contacts_map.htm)
2. **Do not open the bottle until you are ready to fill it, and close it immediately once it is filled with sample water.** Do not rinse the contents from the bottle. Do not touch the inside of the bottle or bottle cap with your fingers (if you do, STOP and get another bottle).
3. **Remove the anti-splash screen from the kitchen faucet cold water tap.**
4. **Disinfect the faucet tip by dipping it in a capful of bleach, or by “flaming” the faucet tip with a lighter or match for 10 seconds (be sure to remove rubber faucet seals first).**
5. **Let the cold water run for 4 - 5 minutes.**
6. **Fill the sterile bottle to the 100 ml line and cap it tightly. REMEMBER... do not touch the inside of the bottle or lid.**
7. **Fill out the sample label and form provided by the lab.** Remember to add contact and address information.
8. **Put the filled bottle in your refrigerator.**
9. **Return the bottle to your chosen laboratory. Make sure to keep the sample chilled on the way to the laboratory.**

Next steps to protect your well

Here are some improvements you can make to protect your well from future damage:

Retest Your Well: You should consider retesting the well water after several weeks. If flooding and groundwater contamination is extensive, your well may be at risk of recontamination for some time.

Drill a New Well: If frequent flooding of your well occurs, consider drilling a new well where it is not subject to seasonal flooding. Make sure your well is constructed in such a manner that seasonal floodwater cannot enter the well. Contact a registered well driller for advice (see website on page 3).

Grading: The ground surface immediately surrounding a well casing and, if possible, the property in general, should be graded to direct surface water away from the well. If erosion around the well has been a problem, consider protecting the area with plants or shrubs, or take other erosion control measures.

Extend the Well Casing: Casing can be extended to a height above the expected or experienced level of the floodwater to keep floodwaters out. In flood-prone areas, it is recommended that the well casing be extended at least 1 – 2 feet above the highest recorded flood level. A registered well driller should perform this work.

Upgrade the Well Cap: Install a well cap that will prevent water, insects, and rodents from getting in. A registered well driller should perform this work.

More information

Contact your local health department or district office.

www.health.ny.gov/EnvironmentalContacts

Other Related Publications

Carbon Monoxide: Know the Hazards
Carbon Monoxide: The Silent Killer
Don't Be Left in the Dark
Drinking Water and Food Guidance
After a Flood
Flood Cleanup and Home Repair
Flooding Quick Reference Guide
How to Use an N95 Mask

Checklist and Resources for Repairing
Your Flooded Home
How to Avoid Getting Sick and Injured
after a Flood
Mold and Your Home: What You Need to
Know
What Homeowners Need to Know about
Fuel Oil Spills and Flooding



Department
of Health

www.health.ny.gov/FloodHelp