

# Inspecting and Maintaining Your Private Water Supply

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*To protect your private water supply and maintain its quality, it is your responsibility to monitor potential negative impacts and prevent problems before they happen. Sometimes this is difficult to do when situations on or near your property occur that are beyond your control. However, there are things you can do to ensure your activities are not impacting your water supply.*

## What needs inspected and maintained? How often?

### Wells:

- Keep the area around the wellhead clear of debris and make sure you have easy access.
- Designate a 100-foot protection area around the well where polluting activities are removed (animals, vehicles, chemicals, etc.) (Figure 1).
- Limit the use of fertilizers, pesticides and other chemicals around the well.
- Check the wellhead annually for damage (casing, well cap and wiring).
- Have the well professionally inspected every 10 years by a water well driller or hydrogeologist.
- Repair or replace damaged parts. Replace the standard well cap with a sanitary cap.
- Keep maintenance and repair records.
- Obtain and keep on file a copy of your well completion report from your well driller.

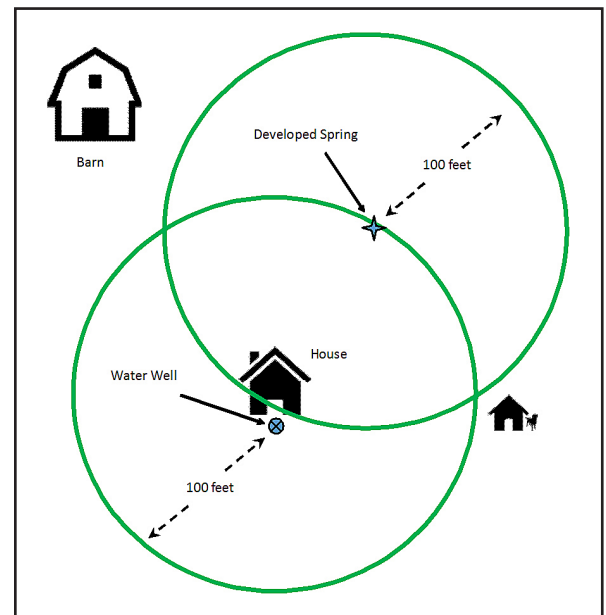


Figure 1. Recommended 100-foot zone of protection for private water supplies. (Source: G. Plaucher)

### Springs:

- Keep the area around the spring clear of debris and make sure you have easy access.
- Designate a 100-foot protection area around the spring where polluting activities are removed (animals, vehicles, chemicals, etc.) (Figure 1).
- Inspect the spring box annually to ensure it is sealed to prevent insects, animals and surface water from entering.

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- Fence livestock and wildlife out of the spring catchment area.
- Disinfect the spring following initial construction and in the spring box if it becomes unsealed and the spring is contaminated.

#### Cisterns:

- Make sure the cistern is properly constructed and large enough to meet your household demands. Minimum storage capacity of 5,000 gallons is recommended.
- Inspect the cistern annually to ensure that filters and water treatment equipment are working properly (Figure 2).
- Rainwater can be highly corrosive to plumbing systems. Make sure the water is treated before it enters your plumbing system (Figure 2).

#### Water supply, including wells, springs and cisterns:

- Treat water properly before it enters your drinking water supply (cisterns).
- Test drinking water annually for coliform bacteria.
- Test drinking water every three years for pH, total dissolved solids and other contaminants based on land use activities within sight of your home.
- Water should be tested through your county health department, the West Virginia state health department or an independent, state-certified laboratory.
- Compare your test results with West Virginia's drinking water standards at: <http://www.dep.wv.gov/WWE/Programs/wqs/Pages/default.aspx>.

### What impacts my private water supply?

Improperly constructed and poorly protected wells, springs and cisterns provide routes for contaminants to enter a private water supply. Poor wastewater management and unmaintained septic systems are common in rural areas and can be a source of high bacterial contamination. Antiquated plumbing systems (lead pipes) and inefficient water treatment systems can cause other health problems.

There are numerous additional factors both on and off your property that can cause problems with your private water supply. They are listed in Table 1 along with the water pollutants they produce.

### How far away can activities affect my water supply? How close is too close?

It depends on the geology underground; however, generally if you can see activities from your home they may be of concern. Any activity that causes temporary or permanent soil disturbance or alterations in water flow and absorption has the potential to impact surface and groundwater.

According to West Virginia code (Chapter 22, Articles 6 and 6A), in the case of oil and gas wells, vertical wells cannot be drilled within 200 feet of a private water well or spring used for human or domestic animal

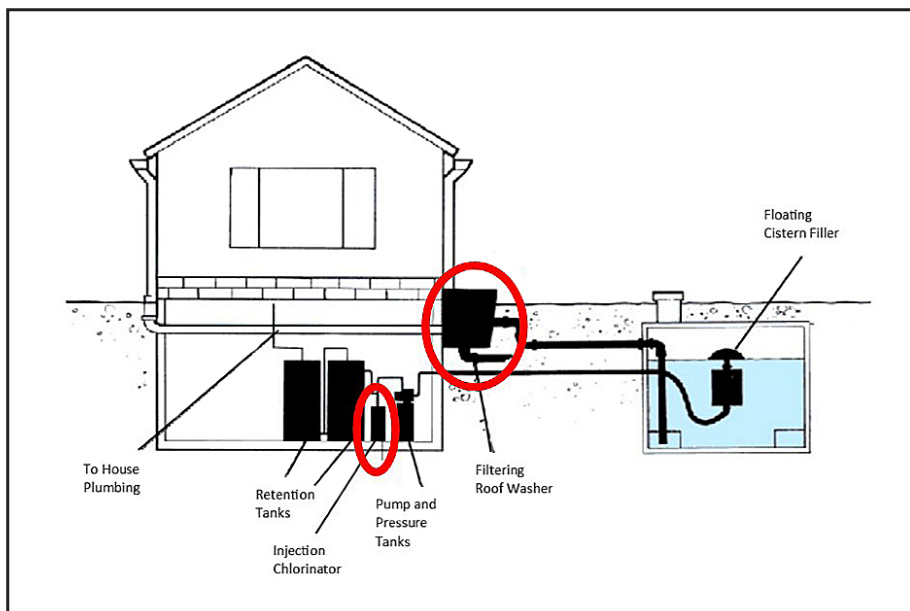


Figure 2. Proper filtration and treatment of water through a cistern is indicated within the red circles. (Used with permission from the Water Filtration Company, Marietta, OH)

consumption. Horizontal wells cannot be drilled within 250 feet of the same.

However, if your drinking water supply is within 1,000 feet of a proposed vertical well or 1,500 feet of a proposed horizontal well, you may want to have your water tested.

Prior to drilling, exploration companies are required to notify you of your right to have your water sampled and tested if you are in the previously mentioned ranges and then to conduct the sampling and testing at your request.

### What are the common water quality problems with private water supplies in West Virginia?

- Improper well, spring or cistern construction.
- Poor wellhead or spring protection and maintenance.
- Naturally occurring problems common in West Virginia:
  - Corrosive water, low pH and soft water (causes blue stains, metallic taste).
  - Hard water (caused by calcium and magnesium which can cause white residue, dingy laundry).
  - Iron (reddish stains, metallic taste).
  - Manganese (black stains, metallic taste).
  - Hydrogen sulfide gas (rotten egg odor).

**Table 1. Factors affecting water quality in private water supplies.**

<i>Land Use Impact</i>	<i>Element</i>
Houses	Bacteria, nitrate, sediment, yard chemicals
Agriculture	Bacteria, nitrate, pesticides
Landfills	Fecal coliform, total suspended solids, cyanide, metals, organics
Roads	Chloride, sodium
Industry	Volatile organics, petroleum
Mining	Metals (especially iron, manganese and aluminum), pH
Oil and gas drilling	Barium, chloride, total dissolved solids, methane

- Methane (odorless, colorless and flammable, may cause spurting faucets or effervescent water).

- Bacteria, such as coliform and E. coli from surface water, insects, animals or septic systems.
- Manmade organic materials from dumps, industrial sites or landfills.
- Sediment.
- Lead from older copper and lead pipe plumbing systems, most common in plumbing installed prior to 1991.

### How do I know if I have a problem?

You may experience changes in your water, such as color, taste or smell. However, not all contaminants can be detected through our senses. If you are concerned, have your water

tested at a certified laboratory. It is recommended you have your water tested annually for bacteria and once every three years for pH, total dissolved solids and other possible contaminants relative to your area.

### What if I find out I have a problem?

This will depend on the severity of the problem. If the problem is minor, it may be corrected through maintenance and inspection, pollution control or treatment. If the problem is major, a new water source might need to be developed.

Explore all your options before taking action. Your county health department can help you with this. Once you determine the best solution to the problem, take action as soon possible. Unsafe water should not be consumed.

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## Resources

Individual Water Supplies, Wells, Cisterns and Springs: West Virginia Department of Health and Human Resources, Public Health Sanitation Division: <http://www.wvdhhr.org/phs/water/index.asp>

Penn State Institutes of Energy and Environment and Penn State Extension Drinking Water Interpretation Tool: <http://www.psiee.psu.edu/water/dwit.asp>

• Penn State University Cooperative  
• Extension Spring Development  
• and Protection: <http://extension.psu.edu/natural-resources/water/drinking-water/cisterns-and-springs/spring-development-and-protection>  
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• West Virginia Source Water  
• Assessment (SWAP) and  
• Wellhead Protection Programs  
• (WHP): <http://www.wvdhhr.org/oehs/eed/swap/>  
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• Wellhead Protection Program  
• (WHPP): <http://www.wvdhhr.org/oehs/eed/swap/whppknowledge.asp>  
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• Water Testing-Water Quality  
• Laboratories Certified in West  
• Virginia: <http://www.wvdhhr.org/labservices/shared/docs/EnvMicro/waterqualitylabs.pdf>  
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