Proper well maintenance helps ensure a good water supply

Being a private well owner carries a number of responsibilities. Unlike those using public water systems, private well owners cannot depend upon the government to monitor the quality of their drinking water.

Private well owners should conduct their own water sampling and understand what can be done to help protect their water source.

Protecting the Wellhead

The "wellhead" is part of the well where it meets the ground surface and is capped. Well owners should be familiar with the wellhead location and should monitor the condition of the wellhead and its surroundings. Soil removes many contaminants as water moves into the ground. This filtering function is why ground water typically has good quality; however, as a well is drilled, it cuts through all the filtering layers and provides a quick path for contaminants to travel to ground water if the well is not properly constructed and maintained.

Easy steps to protect the wellhead:

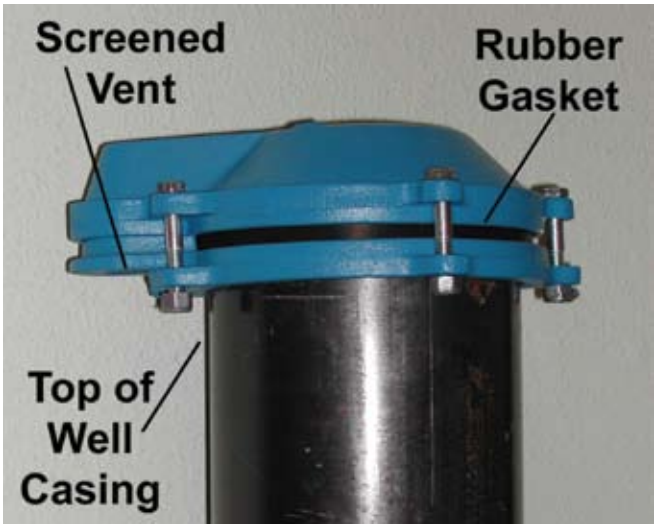
- Ensure your well has a sanitary well cap (see diagram at right) with a rubber gasket and a screen over the vent to keep insects and rodents out of the well. If your well is not equipped with a sanitary well cap, contact a certified well driller about installing one.
- Ensure the casing (outer wall of the well) extends at least a foot above the ground. If not, check with a certified well driller or plumber about adding a short extension.
- Ensure the ground surface is sloped so water flows away from the top of the well and does not pond near the well.
- Install backflow prevention valves on outdoor faucets. These simple, one-way valves can be found at hardware stores and help prevent water from siphoning back and carrying contaminates into the water system when the faucet is turned off.

Keeping a "Well File"

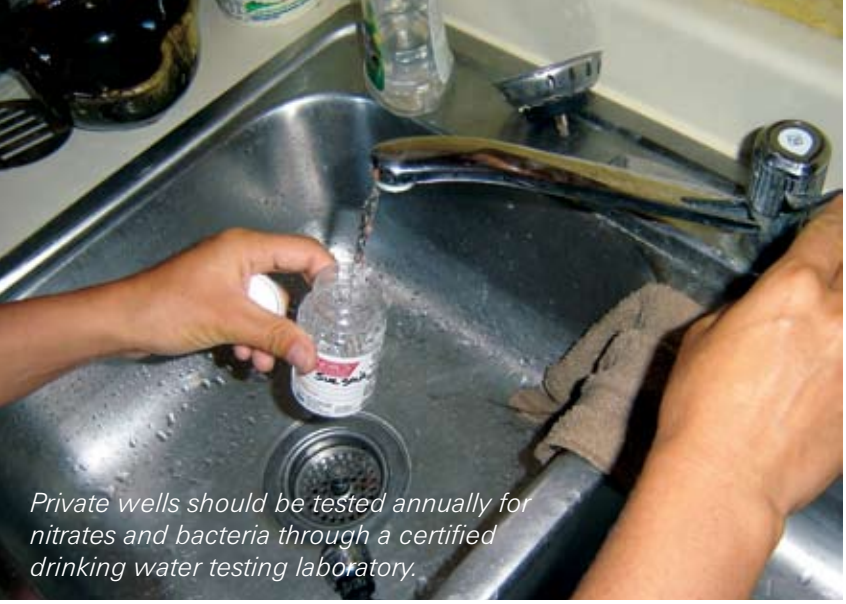
Keeping a "Well File" and a "Septic File" with all information related to a water system is an important part of protecting water resources. Good records make scheduling water system maintenance easier and can help with isolating potential causes if a change in water quality occurs.

Well files should include:

- Construction information including the driller, total depth, depth to water, and other information available such as gallons per minute the well



A sanitary well cap is a critical component of a properly maintained well system.



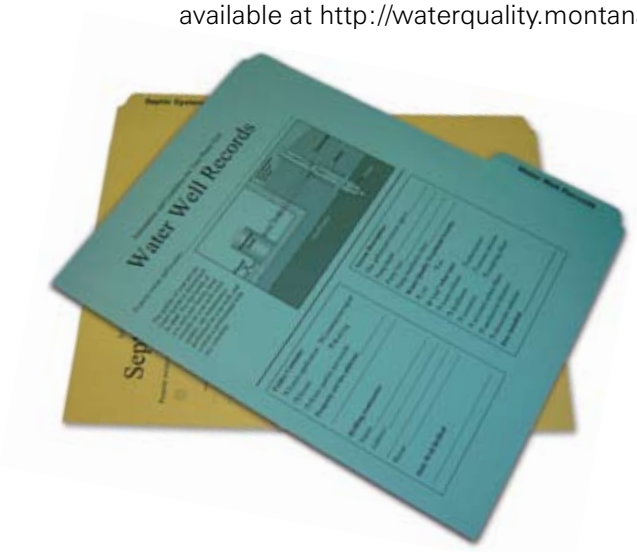
Private wells should be tested annually for nitrates and bacteria through a certified drinking water testing laboratory.

can produce and the geology the well is drilled through.

- Maintenance records including what was done, when, and who did the work. Include any information about required maintenance for water treatment systems and septic pumping.
- Water quality test results including laboratory reports, information provided for result interpretation, and date and cost of testing.

Well Water Quality Testing

Regular sampling of well water is essential to monitor the quality of a water supply and detect any changes. Test for nitrates and bacteria every year. It is also a good idea to do a thorough test initially and consider repeating this more comprehensive test every five years. Check with a local health department or county extension educator for a list of certified drinking water testing laboratories. Most laboratories will mail out sampling bottles and instructions for water sampling. More information on water testing is available at http://waterquality.montana.edu/.



Keeping well and septic files is an important part of monitoring and maintaining the integrity of a private water system.

Potential Contaminant Storage

A drawing of a property depicting a well and surroundings is helpful. Include the septic tank and drainfield, home, garage, any animal pens, streams, ditches, and the slope of the ground surface.

Draw rings around a well at 50, 100, and 250 feet. These rings represent zones where different potential contaminants should not be located or stored. Consider what is upslope from a well and what could runoff with rains or snow melts.

Less than 50 feet – Any sewer line should be outside this zone.

Less than 100 feet – Septic tanks, leach fields, livestock yards, fuel tanks, pesticides, and fertilizer storage should be outside this zone.

Less than 250 feet – Manure storage piles should be outside this zone.

These separation distances are minimums; ask your county planning department about septic system regulations.

Septic System Maintenance

Septic systems are designed to break down and discharge household wastewater so it does not impact surface or ground water. Neglecting to have a septic system pumped on the recommended schedule, excessive household chemical use, or sending excessive water to a septic tank at one time can shorten the life of a septic leach field.

A failed leach field will lead to the expense of new leach field construction and potential contamination of ground water and/or surface water, and it can also cause a mess! For more information on septic system function and maintenance, see http://waterquality.montana.edu/.

Sealing Old Wells

Improperly sealed abandoned wells pose a large threat to water quality. Property with a long history of inhabitation is more likely to have abandoned wells. Looking in small structures and sheds, inquiring with neighbors, or checking with the county planning department are a few ways to search out possible abandoned wells. Abandoned wells should be sealed by a professional well driller to ensure they will not allow contamination of the ground water.

Fifteen percent of all Americans and more people in rural Western states depend upon private wells, which are typically safe and reliable water sources. Private well owners play an important role in ensuring the continued integrity of the valuable ground water resources.

WATER QUALITY PARAMETERS

For Human and Livestock Consumption

No one is responsible for testing your private water well except you!
The following three components are not regulated, but the U.S. Environmental Protection Agency (EPA) does provide guidelines for maximum levels, above which taste, odor, or clarity may be affected. These guidelines are called National Secondary Drinking Water Standards.

Total Dissolved Solid (TDS) – 1,500 parts per million (ppm) or less
The EPA has recommended that domestic public water supplies not contain more than 500 ppm TDS.

Sulfate – 750 ppm or less
The EPA recommends 250 ppm or less for public water supplies.

Sodium –
The EPA recommends a maximum sodium level of 20 ppm for people on low sodium diets or who have high blood pressure or heart trouble. Quality drinking water may contain up to 115 ppm sodium.

The following two components are regulated by EPA maximum contaminant levels (MCLs) through National Primary Drinking Water Standards because of potential health hazards.

Nitrate – 10 ppm or less

Total coliform bacteria (includes fecal coliform and E. coli)
Total coliform bacteria (TCB) is an indicator of potentially harmful bacteria, and EPA has an MCL goal of 0 detections. The actual MCL is more complicated and is based on maintaining very few detections over a large sample group. TCB should not be detected in drinking water.

Typical water use amounts
1 acre of hay = 3.3 acre feet
1 acre of corn = 2.7 acre feet
1 acre of barley = 2.0 acre feet
1 acre of sugar beets = 2.7 acre feet
1 average person = 158 gallons/day
1 200-pound pig = 4 gallons/day
1 1,000-pound beef cow = 10 gallons/day
1 laying hen = 0.5 gallon/day
1 200-pound ewe = 2 gallons/day

Suitability for livestock use
TDS – 1,000 ppm or less
Sulfate – 500 ppm or less
Nitrate – 10 ppm or less
Sodium – 500 ppm or less

REFERENCE: http://www.epa.gov/safewater/mcl.html

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