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January 27, 2017

Why Well Testing and Groundwater Quality Matter
Well Owner Information #5

Unlike municipalities and other larger drinking water providers, which are required to test their water supplies regularly, private well owners are solely responsible for ensuring the safety of their drinking water. The last newsletter covered well contamination and included hotlinks to expert information resources to manage and monitor your groundwater well. The two links of greatest interest were When to Test Your Well and How Well Do You Know Your Water Well?

Based on the interest in these topics, this issue covers the critical relationship between well testing and protecting the quality of your groundwater.

If your property had an existing well when you bought it, did you receive a copy of the water quality tests performed when it was drilled? Availability of water quality tests may depend on when the well was drilled. These tests provide a baseline of your well's water quality. Historical information on the well depth and water produced in gallons per minute when it was drilled, plus any tests run in later years, allow you to compare data with your well's actual water level today. If you have no previous test records or no recent test results, test your drinking water immediately, and then on a regular basis going forward.

The Colorado Dept. of Public Health & Environment (CDPHE) recommends annual tests for coliform bacteria, nitrates, total dissolved solids, and pH level. Other chemical tests are also available, but are more expensive and recommended for possible problems specific to your well. CDPHE's page on Drinking water: Private wells has links to helpful resources for private well owners, including laboratory services water testing information. Many serious problems (bacteria, heavy metals, nitrates, radon, and many chemicals) can only be found by laboratory testing of water.

For new wells, the Environmental Protection Agency (EPA) recommends testing for pesticides, organic chemicals, and heavy metals before using it. It also suggests more frequent testing if you suspect a problem, and provides a chart on its website to help you identify problems.

The Water Systems Council's website has an extensive set of free, downloadable wellcare® Info Sheets on topics from basic well information and maintaining your well to potential groundwater contaminants. To keep track of your well water and water quality, the National Ground Water Association (NGWA) offers a free well owner app, also has an Annual Well Checkup web page that covers what's involved and steps to maintain your well.

Tri-County Health Dept. also offers an excellent Is Your Well Well? brochure on annual well testing, in addition to a water issues web page with extensive links to a variety of water information resources.

Understanding groundwater quality in the Denver Basin aquifer system – the sole source of water for most single household rural domestic wells in our area – is an essential aspect of regular well testing. The U.S. Geological Survey's National Water-Quality Assessment (NAWQA) Program, established two decades ago, "has served as a primary source of nationally consistent information on the quality of the Nation's streams and groundwater, on ways in which water quality changes over time, and on the natural features and human activities affecting the quality of streams and groundwater."

The very informative NAWQA Program's Circular 1357 provides the detailed findings of studies on the Denver Basin aquifer system that underlies some 7,000 square miles in eastern Colorado. Denver's population has more than doubled in the last 40 years, primarily in areas that rely heavily on Denver Basin groundwater.

Key findings of importance to rural well owners include:

- Use of Denver Basin aquifers to support land development has caused water levels to decline in some parts of the aquifer system.
- Irrigation of agricultural and urban lands, in many areas, has adversely affected the quality of shallow groundwater in some parts of the system.
- Deeper groundwater used for drinking water, once considered isolated from overlying land use, is increasingly vulnerable to contamination from human activities and oxidation of geologic materials.

Ongoing development of land and water resources along the Front Range may eventually adversely impact groundwater quality in domestic wells. Storage and disposal practices for treated water effluents must consider potential impacts to water quality in domestic wells. According to the NAWQA findings, "Domestic wells typically are shallower than public-supply wells and, therefore, pump water that is nearer to sources of manmade contaminants, such as fertilizers and pesticides, applied at the land surface. Domestic wells commonly are in rural areas, so they are more likely than public-supply wells to be vulnerable to contamination from agricultural chemicals."

Well water quality testing ***does*** matter because *we can't see, smell or taste most contaminants*. It is the only way to ensure the water is safe for your family and animals to drink. Baseline well water quality data, plus regular well test data, will be important in monitoring potential changes to the quality and quantity of your domestic well water over time.