A newsletter of the Virginia Household Water Quality Program and Virginia Master Well Owner Network

Well Informed

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Inside this Issue:

Managing Your Well in Times of Drought

It's that time of year again….time to mow the lawn, tend the garden, maybe even head to the beach! In addition to the pleasant parts of summer, though, often comes warm, dry weather, and increased risk of drought. According to the May 2013 drought status report, most of Virginia is in good shape at this time, hydrologically speaking, although a few groundwater watches have been issued in South Central Virginia (Fig. 1, below). Groundwater levels fluctuate naturally, tending to be highest in March and April, and declining during summer months to their lowest levels in late summer or early fall. Groundwater recharge is limited during the summer, as trees and plants use more water to grow. Groundwater can also be affected over time due to increased development, which results in new impermeable surfaces (concrete, asphalt and roofs), which prevent precipitation from making its way back to the groundwater supply deep underground.

Drought can be especially stressful for those 1.7 million Virginians who rely on private water supplies. Groundwater fluctuations are most pronounced in more shallow, often bored, water table wells, which we tend to see east of I-95 in Virginia, in the Coastal Plain.

Directly determining the water level in your well requires a water level meter, and is best done by a professional. However, the United States Geological Survey (USGS) monitors water levels at various locations across the state, so you can use information from nearby stations to estimate your water level. Additional information is available from Virginia Department of Environmental Quality. Contacting local well drillers, who are aware of conditions and areas of trouble nearby can be helpful.

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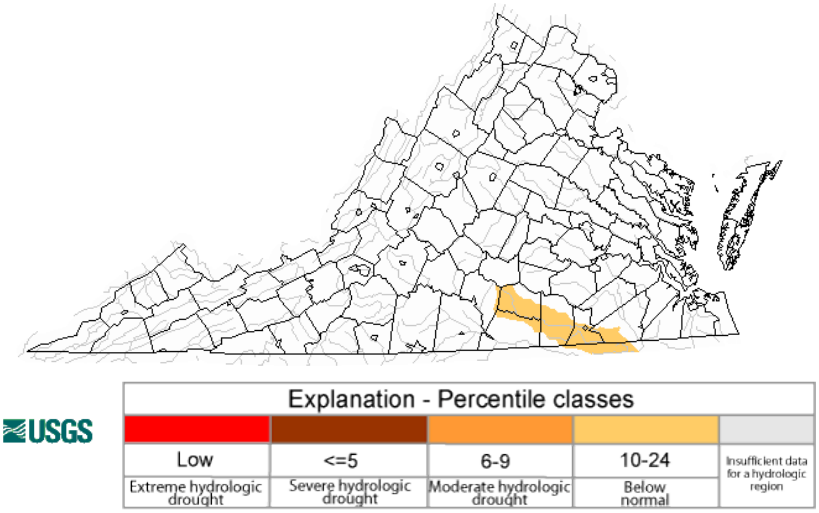

Figure 1. USGS monitors groundwater levels across the state for drought.

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What's in Your WATER?

Elizabeth Ward and Erin Ling

Sulfate and Hydrogen Sulfide in Water

What are hydrogen sulfide and sulfate? There are areas of Virginia where the mineral sulfate is naturally present in groundwater. Sulfate and the associated gas hydrogen sulfide, can cause aesthetic or nuisance problems like foul odors (sulfur or rotten egg smell), unpleasant taste, and staining of laundry. Hydrogen sulfide naturally occurs in shale, sandstone, and near coal or oil fields. Sulfur reducing bacteria also produce hydrogen sulfide gas. Though they pose no known health risks, sulfur-reducing bacteria live in oxygen-deficient environments such as deep wells, plumbing systems, and water softeners. These bacteria usually flourish in hot water heaters and pipes. The presence of low levels of hydrogen sulfide in household water is not a health hazard, but hydrogen sulfide can make water more corrosive, which can result in leaching of metals present in the plumbing system, such as lead or copper.

What problems are associated with sulfate and hydrogen sulfide in my water? The U.S. Environmental Protection Agency (EPA) has set a secondary, or recommended, drinking water standard for sulfate in public water systems of 250 mg/L.. Higher levels may be associated with stomach upset, especially to people or animals who are not accustomed to the water. Hydrogen sulfide does not have a regulatory level because it is easily detected by human sense of smell at low levels.

What about testing and treatment? The offensive odor and other nuisance problems associated with sulfates and hydrogen sulfide may make water treatment desirable. The treatment method selected depends on many factors including the level of sulfate in the water and the amount of iron and manganese in the water. When a hydrogen sulfide odor occurs in treated water (softened or filtered) and no hydrogen sulfide is detected in the non-treated water, it usually indicates the presence of some form of sulfate-reducing bacteria in the system. Water softeners provide an environment for these bacteria to grow, and the bacteria may produce a black slime inside water softeners. If you have modest sulfate, but no rotten egg smell, installing a water softening system may create additional problems, especially if the system is not meticulously maintained. If you have a rotten egg smell associated with the hot water only, your hot water tank may be fouled with sulfur reducing bacteria, or the tank's magnesium corrosion control rod may be causing the sulfur to react in the heated environment. Ask a plumber to check the corrosion control rod in the hot water heater; switching to an aluminum rod may fix the problem. Be aware that the warranty for the water heater may be affected by this change!

For more information on this topic, read our Extension publication here.

Featured VAMWON Volunteer: Elizabeth Ward

Elizabeth Ward has been a VAMWON volunteer since 2010, and a wonderful, knowledgeable advocate for our programs, groundwater protection, and education about private water supplies and related topics. She lives in Prince William County, Virginia. She holds an MBA from the University of Pittsburgh and an MS ChE from Polytechnic Institute of NYU, worked as a chemical engineer for both the US EPA in DC, and at DuPont before becoming a banker, then a consultant with Washington Advisors. Elizabeth will be a regular contributor to our *Well Informed Newsletter*, and also blogs here: http://greenrisks.blogspot.com/. Thanks to Elizabeth for her continued hard work!

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The WellCheck Initiative—An Exciting New Partnership

With a grant received from Virginia Tech College of Agriculture and Life Sciences Integrated Grants Program, we are working with the Virginia Water Well Association to develop the *WellCheck* program. As part of our VAHWQP education for homeowners, in addition to routine water testing, we recommend regular well inspections every 3-5 years by a licensed well driller. A well is a mechanical system, just like a car or heat pump, that needs a regular check–up and servicing, and most homeowners are not able to do more than a cursory surface-level assessment. The wells of people who participate in our drinking water clinics are an average of 24 years old, which means they were constructed prior to the Virginia water well regulations, which went into effect in 1992. Preventive inspections and maintenance can keep your well functioning for years to come, with fewer inconvenient malfunctions! Well inspections can also identify problems that may threaten the quality and safety of your well water.

The WellCheck program will consist of standard well inspection checklists (available in several tiers, or levels) that local well drillers can use to provide information to homeowners, as well as marketing materials and online resources. Inspections will involve examining the casing and well cap, grout, pump function and yield, and surrounding area for potential sources of contamination. After a pilot phase in late 2013, we will have a list of participating well drillers available on our website who can offer this valuable service at a reasonable price across the state. These inspections will also be useful to homebuyers considering purchasing a home with a well, as most home inspections include only a minimal assessment of a well. Stay tuned for more info!

Did you know? 1 in 10 homes has a leak that wastes more than 90 gallons per day! Find a leak, fix a leak! Visit here for more info!

Visit here for fun, educational water activities for kids!

Welcome New Virginia Master Well Owner Network Agents!

Botetourt
Kate Lawrence

Charles City and New Kent County
John Allison

Franklin County
Cynthia Martel

Frederick County
Mark Sutphin

Hanover
Jim Schroering

Lunenburg
Lindy Tucker

Nottoway
Haley McCann

Powhatan and Goochland
Rachel Grosse

Pulaski
Scott McElfresh

Rappahannock
Kenner Love

Spotsylvania
John Howe

Virginia Master Well Owner Network
Education for Protection of Virginia Private Home Water Supplies

Access all VAMWON members here:

http://www.wellwater.bse.vt.edu/contact_mwo_table.php

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Conserving household water is a great way to help prevent problems approaching and during likely times of drought. Changes in water use habits can have a great impact, and are often easy to implement, including turning water off while brushing teeth, washing dishes, or shaving; only running dishwashers and washing machines when full; fixing leaks, and limiting washing cars and watering lawns. If your well quits producing water, there are several possible reasons besides lack of water. These include a malfunctioning or worn-out submersible pump or pressure tank. Iron bacteria or sediment could clog the pump and affect its function as well. A well driller can help assess and remedy these types of problems. Alternatively, under persistent dry weather conditions, the water level in the borehole could drop below the level of the submersible pump, causing a loss of water. This may be temporary, if water levels return ~~after a time~~. If this is the case, initiating emergency water conservation measures may address the problem. If the water level drops permanently, a driller may be able to lower the pump, or may need to drill deeper to reach sufficient water. Note that deepening a well can result in different water quality depending the geology. For more information on wells and water quality, visit www.wellwater.bse.vt.edu.

This article was adapted from Penn State's Water Facts #7 Managing Your Well During a Drought. By Bryan Swistock and Bill Sharpe.

Upcoming Events	Details	Contact
Master Well Owner Network Training Workshops	**AGENT: Richmond—Aug 23** **VOL and AGENT: Painter—Aug 24** **AGENT: Culpeper—Oct 25** **VOLUNTEER: Charlottesville—Oct 26**	Erin Ling (wellwater@vt.edu) 540-231-9058 Visit www.wellwater.bse.vt.edu to complete an application today!
VAHWQP Drinking water clinics	**New Kent and Charles City** **Lunenburg and Charlotte** **Halifax and Mecklenburg** **Nottoway** **Pittsylvania** **Franklin** **Loudoun** **Caroline** **Rockingham**	Visit http://www.wellwater.bse.vt.edu/events.php for more details.

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Virginia Master Well Owner Network
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