News Release

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U.S. Geological Survey

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Many Virginia Wells Contain "Young and Susceptible" Water

A new study by the U.S. Geological Survey (USGS) found that west of Interstate 95, most of Virginia's regional aquifers that serve as public water supplies contain relatively young water, less than 50 years old. This is significant because young ground water is more susceptible to contamination by sources near the land surface. Ground water is an important source of drinking water for a growing number of Virginians.

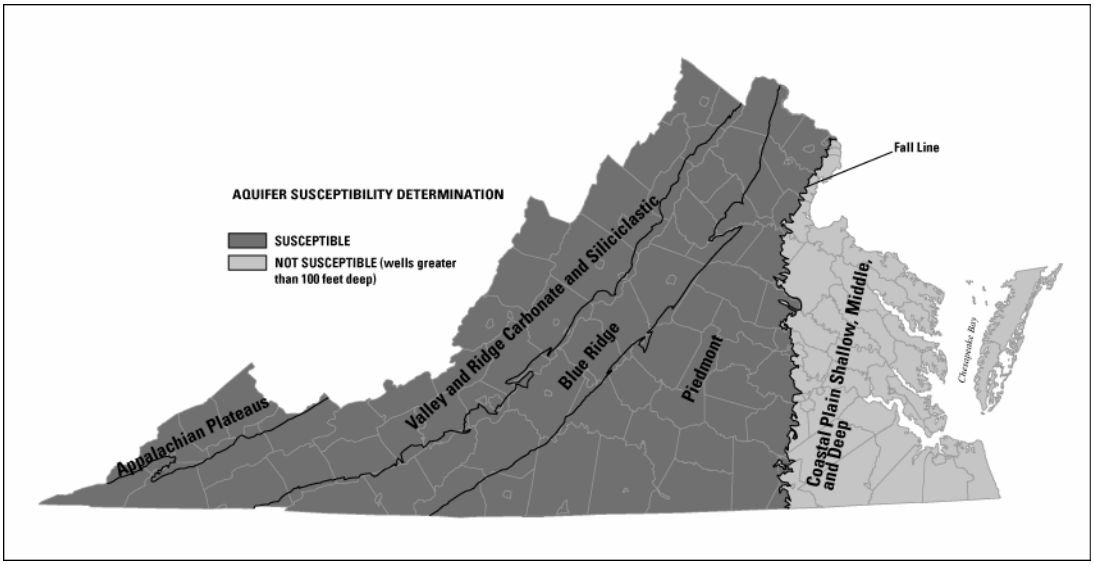
USGS did the study in cooperation with the Virginia Department of Health (VDH) Office of Drinking Water, in support of Virginia's Source Water Assessment Program, a program required of every state by the Safe Drinking Water Act Amendments of 1996.

USGS scientists collected and analyzed water from 165 wells and 6 springs across Virginia, most of which are public water supplies. They determined ground-water ages using an innovative technique that can measure extremely low levels of compounds in water—primarily chlorofluorocarbons (CFCs), sulfur hexafluoride (SF_6), and tritium. CFCs (or Freons) were used as refrigerants, aerosol propellants, and cleaning agents; SF_6 is a gas used to prevent arcing in high-voltage electrical switches; tritium is a radioactive isotope of hydrogen that was released into the atmosphere by thermonuclear weapons testing. These compounds, most of which have been introduced since 1950, dissolve in precipitation and are carried to ground water when precipitation percolates down through the soil.

Wells and springs sampled west of the Fall Line (which follows I-95) and wells less than 100 feet deep in the Coastal Plain of Virginia contained at least a portion of young water and thus are considered susceptible to contamination (see map).

David Nelms, principal USGS scientist on the study, credited the success of the study to the novel ground-water-age-dating method designed by USGS researchers, as well as the support USGS received from VDH. “This technique lets us measure very low levels of these tracer compounds, so that we can date the age of young ground water more precisely than ever before,” says Nelms. “We were surprised by the results, which indicate that we need to rethink basic concepts about Virginia’s regional aquifers, especially the fractured rock and karst terrains west of the Fall Line. We need to understand and protect our ground-water resources all over Virginia.”

Read the complete report in USGS Water-Resources Investigations Report 03-4278 *Aquifer Susceptibility in Virginia, 1998-2000* by David L. Nelms and others, available from the USGS Branch of Information Services (1-888-ASK-USGS) and online at http://pubs.water.usgs.gov/wri034278 .



The USGS serves the nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect the quality of life."

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