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HEADLINE: Study: Salt, sewage foul Westchester groundwater

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Westchester County's groundwater is subject to contamination by enormous amounts of road salt, sewage leaking from septic systems and the strain of concentrated development, according to a new study on the status of the county's aquifer.

The health of the aquifer in the Croton watershed is significant, according to the report, because 60 percent of Westchester's surface water - such as ponds and streams - comes from underground, rather than from rainwater or melted snow. In addition, more than 85,000 residents and many commercial properties draw their drinking water directly from the aquifer.

The \$20,000 report, prepared for the county Planning Department by the Poughkeepsie-based Chazen Companies, will be incorporated into a comprehensive water-management and development plan for the Croton watershed communities. The Planning Department already has developed a tentative plan governing development within the watershed to protect the reservoirs and more than 400 miles of streams from polluted runoff from construction sites, golf courses, and commercial and residential developments, county water master Gina D'Agrosa said. But this study, she said, will provide the basis for protecting the underground aquifer from overuse and pollution.

The report says the situation is complicated by the fact most municipal planning agencies do not have data showing the status of their communities' underground water tables. As a result, it is difficult for communities considering residential or commercial development to consider the effect on the water table.

"Planning boards and other entities do not know how much groundwater is being consumed in their municipalities or know where existing groundwater wells are located," the report says. "If stream flows are to be preserved or wells are to be protected from contaminant threats, records of existing well locations and estimated rates of groundwater consumption are necessary."

There is no readily accessible, computerized geological map of the county's groundwater that local or county officials can use when evaluating development

projects.

"One of the purposes of the report is to identify where there are gaps in data," D'Agrosa said. "The municipalities have some information the county doesn't have, and the county has some information the municipalities don't have. One of the recommendations is to put the information into a standardized format that everyone can use."

For the past five years, D'Agrosa has led a county effort to study more than 400 miles of streams throughout the Croton watershed to determine how development has affected water quality.

"With groundwater, it is hard to get a complete picture since so much of the information is hidden," D'Agrosa said. "With surface water, you can just look. You can see the topography and determine where the water flows and what water is flowing into it."

Russell Urban-Mead, the report's author, said one of the major contaminants of the region's groundwater is salt spread on roadways during the winter. The average two-lane road in Westchester receives 37 tons of salt per mile, he said, and the figure jumps to 75 tons per mile for the Taconic State Parkway and to 298 tons per mile for Interstate 84.

"The salt has to go one of two places," Urban-Mead said. "It either goes into the ground or into the streams. It doesn't evaporate, and if you get areas of concentration, then some wells would be affected."

The report says that residential septic systems leach between 4 million to 7 million gallons of sewage into the groundwater daily, with millions of additional gallons provided by commercial or organizational septic systems.

"Septic systems also discharge bacteria and viruses into aquifers," the report says. "These can impact well-water quality, particularly during dry periods, when little other recharge is entering aquifers."

"Septic systems also discharge caffeine, pharmaceuticals, detergent byproducts and endocrine-disrupting chemicals, such as hormone-treatment or birth-control residues, into aquifers. Groundwater concentrations or health impacts of such releases are not well understood."

Urban-Mead said municipalities need to consider the density of septic systems before approving their use.

"If there are too many in too small an area," he said, "there is only so much that can go into the ground before the quality of the groundwater begins to suffer."

D'Agrosa said the report's recommendations would be available for public comment in the fall.

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Polluting the aquifer

Residential septic systems dump:

- * 6 million to 7 million gallons daily into the aquifer in the winter.
- * 4 million to 5 million gallons daily in the summer. The rest evaporates.
- * 800,000 pounds of nitrates annually.

Usage:

- * 85,000 residents draw 8.5 million gallons of groundwater daily.
- * 80,000 residents use septic systems

Compounds, bacteria found:

- * E. coli bacteria, caffeine, pharmaceuticals, detergent and endocrine disrupters, such as hormone and birth-control medicines. Water softeners, used by residents in areas with hard water, add up to 1,000 pounds of salt to the groundwater.
- * Uranium and other heavy metals are leaching into the watershed from the former Phillips Mine in Yorktown and the former Bayless Quarry and Bedford-Kinkle Quarries near Bedford Village and Route 172.

Source: the Chazen Companies