



2009 CSREES National Water Conference; St. Louis, MO

Drinking Water Assessment at Underserved Farms in Virginia's Coastal Plain

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Abstract:

Homeowners in rural communities, especially those classified as 'underserved' by federal and state education and extension efforts, face a greater risk of drinking water contamination from various sources than the general public. Identification of contaminant sources of drinking water in these communities is sorely needed. This study assessed the chemical and microbiological qualities of well water samples collected from 185 locations covering 22 counties along the Coastal Plain of Virginia. All samples were collected from rural wells or springs where underserved farms and families in the region obtain their drinking water. They were screened for selected biological and chemical indicators. Total coliform, fecal coliform, and *Escherichia coli* were detected in 34, 11, and 6% of the samples, respectively. The microbial contamination would be expected to be high during summer months when recharge is at minimum. Chemical analysis showed that 25% of the total wells surveyed were near the Atlantic Ocean and the Chesapeake Bay; their pH ranged from 4.5 to 8.5 depending on location. Among them approximately 10% had salt-water intrusion, as indicated by higher sodium content than allowed by the United States Environmental Protection Agency (U.S. EPA). Shallow wells in close proximity to agricultural fields would be expected to be high in nitrate and phosphorus; however, most of the values obtained in this study were not considered detrimental to human health based on U.S. EPA's drinking water standards. A survey questionnaire filled out by the homeowners indicated that most concerns were related to aesthetics, such as color and turbidity.

Impact Statement:

Over 90% of the clients served in this study were African-Americans. Water analyses results showed that total coliform, fecal coliform, and *Escherichia coli* were detected in 34, 11, and 6% of the samples, respectively. About 25% of the total wells surveyed were near the Atlantic Ocean and the Chesapeake Bay; among them 10% had salt-water intrusion. We partnered with local community leaders, churches, NRCS Coordinators and Extension agents to locate underserved farmers in the selected counties. Additional support for the project was leveraged from in-house Evans-Allen project funds.

Category: Other Water Resource Topics
Type of Presentation: Poster Presentation