

**CAN GROUND WATER SAMPLING STRATEGIES BE IMPROVED BY
INCORPORATING FUZZY LOGIC IN A GIS?**

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Abstract

Contamination of ground water has become a major concern in recent years. Since testing of water quality of all domestic and irrigation wells within large watersheds is not economically feasible, one frequently used monitoring strategy is to develop maps of the vulnerable areas of ground water, and then prioritize those wells located in these vulnerable areas for testing contaminants. In this study, a vulnerability map was generated in a GIS using fuzzy logic. It incorporated selected parameters from the model widely used to generate ground water vulnerability called DRASTIC. Once the preliminary fuzzy logic-based vulnerability map was developed, land use and detailed soil information were incorporated in the models to further fine-tune the vulnerability map. This study was conducted in the Woodruff County of Mississippi Delta region of Arkansas. Water quality data for 55 wells were used to validate the vulnerability map.