GIS Risk Assessment of Groundwater Arsenic Contamination

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Abstract: Background: Arsenic naturally occurs in groundwater around the world. Long term exposure to arsenic in drinking water poses a serious health threat. Skin lesions and cancer, heart and lung problem, neurologic damage, and internal cancers can result from chronic low-dose exposure. In Clark County, high arsenic levels have been discovered, but the areas at risk for contamination have not been well defined. This project was initiated to predict arsenic levels across Clark County to provide Public Health programs, well owners and home buyers with accurate information about potential well contamination.

Methods: Well water testing results for arsenic have been compiled from a variety of existing sources and are being analyzed using GIS. A geostatistical model will be created using arsenic testing data and correlated geographic data. Groundwater arsenic levels will be predicted across the County using kriging. Areas at highest risk will be prioritized for increased monitoring and intervention based on the size and vulnerability of the population at risk.

Results: Data collection, geocoding and analysis are under way. Geostatistical models are being developed to accurately predict groundwater arsenic concentrations. Preliminary results show that rural areas of northern and southeastern Clark County are at elevated risk for arsenic contamination. Specific areas are being identified that have high risk for unhealthy levels of arsenic. A map of the predicted groundwater arsenic levels will be created to inform environmental health programs and the public.

Conclusions: Conclusions, including identification of risk areas and follow-up actions are pending completion of this project.