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**RURAL EMERGING CONTAMINANTS: GROUND TRUTHING ONSITE WASTEWATER SYSTEMS TO
PROVIDE BETTER INSIGHT FOR A COUNTYWIDE RISK BASED EVALUATION**

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ABSTRACT: The regulatory oversight of rural onsite wastewater systems (OWS) is performed by local public health officials who review the permitting, installation and approval of these relatively small-scale soil absorption systems. Local policy and regulation development for OWS has historically centered on design parameters that remove conventional contaminants- nutrients, pathogens and viruses. While OWS often contain larger concentrations of certain pharmaceuticals and endocrine disruptors than larger municipal wastewater treatment plants, soil absorption may play a vital role in removing a significant amount of those contaminants. Little is known however about the efficacy of OWS for removing Emerging Contaminants; although recent research at the Colorado School of Mines is beginning to provide some clues. Our proposal is to examine this relationship in more detail by relating research on emerging contaminants to geographic areas of high probable risk from OWS contamination; and then to propose management tools that would help to offset that risk. Over the last several years Boulder County Public Health conducted watershed planning directed at developing OWS management strategies around geographic risk factors. We have developed eight risk factors that can be mapped and can help us prioritize certain geographic areas for focused OWS outreach and management efforts. Our continuance of that effort proposes to identify two areas categorized as high risk, one in the mountains and one on the plains. Each site would undergo a thorough hydrogeologic characterization. Sampling at the sites will include selection of five potential OWS sources and five potential water supplies that may be at risk from the OWS. In addition, transport times will be determined. The data collected will be used to quantify the propensity of emerging contaminants to enter local water-supply wells. The results will then be used to refine the GIS-based assessment of risk level. Implications for regulation and policy development based on the analytical results at high-risk areas can include requirements for advanced levels of treatment, thicker layers of suitable soil, or disallowance of OWS altogether. While it would be ideal to apply revised criteria statewide, local officials can adopt more stringent OWS regulations at the county level.

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