Evaluating at-home E-Coli testing solutions to improve water quality testing in Eastern North Carolina
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With the second-largest well-water reliant population in the US, well water quality in North Carolina is a pressing health issue. Minimal federal regulations mean that private well owners are solely responsible for testing their wells for contaminants. The EPA recommends testing for E. Coli annually, as exposure is correlated with acute gastrointestinal distress. While at-home tests for E. Coli are available on the market, minimal performance data is reported. Utilizing a primary decision matrix, commercially available E. Coli tests were assessed based on cost, past user experience, ease of use, and several other factors. The three highest performing tests were then selected for further testing using wastewater samples from OWASA. Utilizing membrane filtration in triplicate as “true value” for the samples, specificity and sensitivity of the tests were assessed. User experience was used to assign a score for clarity of results and educational value; cost was also considered, and the resulting scores from the matrix were compared to identify the most suitable test. The selected test(s) will be included in a testing kit that will be shared with predominantly well-water reliant school districts. The kits will address public health concerns and potentially be incorporated into curriculum about environmental health.