WATER QUALITY ASSESSMENT OF STREAMS IN THE TRAIL CREEK WATERSHED

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The Trail Creek watershed covers about 33 km^2 in the Upper Oconee River Basin located in Athens, Georgia. The watershed is comprised of an East Fork and a West Fork tributary, which converge to form a branch that extends to the North Oconee River. The upper reaches of East and West Forks are in forest and agriculture landuse. The lower reaches are located in a mixed residential and industrial zone. Stream segments within the Trail Creek watershed are listed impaired due to high levels of fecal coliform concentrations exceeding the Georgia Standard. While fecal coliform abundance is a standard metric for determining human health risks, Geldreich (1970) showed that fecal abundance does not necessarily correlate with the presence of pathogens. Nor does it identify pollution sources, which are needed to mitigate health risks. A microbial source tracking analysis will also be performed to identify the sources of fecal contamination using human, ruminant and dog genetic markers. Three grab sampling sites are selected in the upper watershed on the East and West forks and three others in the lower watershed. All sites are monitored during baseflow conditions and two sites during storms where discharge is estimated using the rating curve approach. The samples are analyzed for fecal coliform, E. Coli and Enterococci. Water quality parameters including temperature, specific conductance, dissolved oxygen, pH, and turbidity are recorded at all sites. Additional velocity measurements during various conditions are needed to estimate a more accurate rating curve equation. Turbidity seems to be the strongest indicator of bacterial contamination. Finally, further sampling and monitoring should provide an understanding of the bacteria dynamics based on seasonal change and spatial variation within the watershed. Preliminary results will be discussed.

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