



2008 USDA-CSREES National Water Conference
Sparks, NV

Examining Optical Brighteners as an MST screening tool

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Abstract Text:

Coastal recreation and tourism is a multi-million dollar industry at the Jersey Shore. Increased development and continual impact to surface waters threatens the health, quality of life, and economic livelihood of this region. Bacterial pathogen pollution, in particular, often leads to beach closings and reduced recreational opportunities, as well as presenting a health concern for both residents and visiting tourists. Although agencies conduct regular monitoring, the isolation of human bacterial pathogens remains a problem for both analysis and remediation of this pollution type.

These concerns led to the founding of the New Jersey Microbial Source Tracking Working Group, which is composed of governmental administrators and scientists, university researchers, extension educators, environmental agencies, water authorities and watershed organizations. Several new detection methods for identifying specific bacteria are being investigated such as MAR and qPCR, which are complex, quick, accurate and relatively expensive. Optical Brighteners have been identified as an inexpensive, simple method of human-specific microbial source tracking with the potential for success. Optical brightener traps were deployed at known bacterial contamination sites, including some where MAR analysis was taking place. The results of this preliminary study concluded that the trap design used was prone to vandalism and sedimentation. Continued research is being conducted comparing optical brightener traps and Fluorometric optical brightener analysis to determine if this technology can be implemented as a screening tool by non-profit and volunteer groups.

Impact Statement:

This research is working towards establishing optical brightener use as a screening tool in water quality investigations. If effective, this stage can be completed by volunteer groups to identify problem areas, which can then be addressed with more advanced methods.