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FECAL COLIFORM TMDL IMPLEMENTATION PLAN AND THE USE OF MICROBIAL SOURCE TRACKING - A NEW JERSEY CASE STUDY

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Abstract:

Watershed restoration plans have emerged as an approach to Total Maximum Daily Load (TMDL) implementation in the State of New Jersey. These plans outline the course of action necessary to restore impaired waters and to protect and maintain unimpaired waters. The Upper Cohansey River Watershed Restoration Plan is being developed to identify strategies that will reduce fecal coliform loading to this freshwater system by 66% as well address elevated phosphorus levels. The Rutgers Cooperative Extension (RCE) Water Resources Program conducted watershed-wide physical and visual assessments, collected more than 300 water quality samples and developed a Soil Water Assessment Tool (SWAT) model that was used to analyze best management practice (BMP) placement. In addition, the Water Resources Program collaborated with the Rutgers University Biotech Center to utilize microbial source tracking (MST) techniques to identify sources of pathogens across the 31-square mile watershed. The MST technique that was used was quantitative polymerase chain reaction (qPCR). The qPCR analysis targets DNA from Bacteroides and enabled the project team to determine the source of pathogens as human-related, bovine-related, or unidentified source. Monitoring results as well as restrictions in funding, regulations, and feedback from the agricultural community will be discussed as part of the overall process of meeting water quality requirements while recognizing economic, environmental, and social demands.

Impact Statement:

This project is in the process of producing a watershed restoration plan. That will propose mitigation strategies and structural Best Management Practices (BMPs) that should reduce the loading rate of fecal coliform into the watershed working towards the goal set forth by the TMDL of a 66% reduction. The BMPs will also reduce the loading of phosphorus from the watershed but it is only an additional benefit with no set reduction goal. The BMPs and strategies were decided upon after the sources of fecal coliform sources were revealed from the sampling program set for this project. The Water Resources Program developed a working relationship with the Cumberland-Salem Conservation District. This partnership has allowed better insight and contact with the community. The program was able to meet more of the local stakeholders and local organizations such as the Farm Advisory committee. The program is suggesting some strategies for agricultural land uses. Some of these strategies came from talking to the local farmers, finding out what they were capable of doing and how the program could fit it in to the plan. Using new technology and developing strong partnerships with local organizations allowed the program to carefully select strategies that would address the contaminants in the watershed while being sensitive to the economic and social needs of the community within the watershed.

Category: Watershed Assessment and Restoration

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