USDA-CSREES 2007 National Water Quality Conference

Evaluation of the Strengths and Weaknesses of Water Quality Monitoring Techniques

Traditional water quality monitoring approaches have generally relied on discreet grab samples analyzed for a standard set of water quality parameters. In many systems, however, monthly, bi-weekly, or even weekly grab samples may be inadequate to capture the natural or anthropogenic variability in pollutant concentrations. This can lead to an underestimation of pollutant loads and a greater focus on steady point source loading when intermittent or infrequent nonpoint source loads are important but not characterized by grab samples. In addition, it is questionable whether these traditional monitoring approaches are adequate for evaluating changes in water quality that result from the implementation of agricultural best management practices. As part of the national Conservation Effects Assessment Program, our team is working to compare traditional monitoring efforts with alternative methods. This presentation will focus on evaluating the strengths and weaknesses of both traditional and alternative monitoring approaches. We will discuss our efforts to establish high frequency, continuous water quality monitoring in the Little Bear River of Northern Utah, which we have paired with periodic and storm event sampling using automated ISCO samplers. We will also discuss other alternative methods that we have explored such as macroinvertebrate sampling in the context of monitoring and evaluating pollutant loading.

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