ADEM'S MONITORING STRATEGY FOR STREAMS AND RIVERS: USING GENERALIZED DISTURBANCE AND STRESSOR GRADIENTS TO MEET MULTIPLE OBJECTIVES

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ABSTRACT

In 2005, the Alabama Department of Environmental Management (ADEM) revised its monitoring strategy to meet requirements of EPA's *Elements of a State Water Monitoring and Assessment Program* and ADEM's draft 2005 *Listing and Assessment Methodology,* as well as to provide data that could be used to assess overall water quality and to develop biological condition gradients and indicators. The strategy incorporated a watershed-based probabilistic monitoring design and a Generalized Disturbance Gradient (GDG) to classify each watershed by its potential level of disturbance. By monitoring watersheds in proportion to the number of watersheds in each GDG category, the Monitoring Strategy will provide an estimate of overall water quality throughout the basin group. Additionally, sampling the entire gradient of watershed conditions within the basin group will increase ADEM's monitoring capacity by providing data to develop indicators and criteria appropriate for wadeable rivers and streams. This design has also provided ADEM with a tool that can be used to make the most of limited resources.

In a related effort, the ADEM is participating in a US EPA Region 4 project designed to develop, test, and implement a framework for states to calculate and report data quality and performance characteristics of macroinvertebrate bioassessment methods. A critical element of this project is the development of a regional Generalized Stressor Gradient (RGSG) to provide an independent assessment of the degree of impairment at each bioassessment site. Documenting method performance characteristics is essential as states struggle to develop biological indicators that link nutrient enrichment, sedimentation, and habitat degradation to biological community response. It will also allow R4 states to objectively determine how bioassessment data produced by their own and outside agencies should be used in management decisions. Focusing national assessment efforts on the documentation of method performance characteristics may provide EPA with a consistent measure to determine what data should be used to assess water quality, concentrate resources into improving state methods, and help understand why state assessments differ.

KEYWORDS