



## Fact Sheet: Implementing Total Maximum Daily Loads -- Understanding and Fostering Successful Results

### Purpose

Over the last decade, state governments throughout the US have developed Total Maximum Daily Loads (TMDLs) for impaired waterbodies. These TMDLs identify the amount of a pollutant that a waterbody can receive and still comply with water quality standards. EPA has now approved TMDLs for thousands of stream segments and water bodies throughout the country; however, there have been only limited efforts to assess the extent to which TMDLs are being implemented. This study, completed by Kent State University (KSU) with funding from EPA grant #AW-83339301-0, assessed the implementation of TMDLs in Ohio and West Virginia.

#### Questions of focus in the study:

- To what extent are TMDLs being implemented in Ohio and West Virginia?
- What factors facilitate progress in implementation?
- What steps can facilitate further progress in implementation?

### Methods

To address the questions above, the research team reviewed 63 EPA-approved TMDL reports for impaired waters in Ohio and West Virginia. The TMDLs contained in these reports were approved by the EPA between 1998 and September 2006, and they address a total of 174 specific report-pollutant combinations. The researchers focused on identifying pollutants and their sources, and on collecting information that could be used to assess TMDL implementation progress. The information contained in these reports was analyzed in combination with information from other sources to assess implementation progress.

The researchers also reviewed publicly available documents relevant to TMDL implementation in Ohio and West Virginia, surveyed state staff members involved in developing TMDLs, and interviewed knowledgeable state officials regarding implementation progress of non-point source as well as point source pollution control actions in watersheds addressed by the TMDLs. The researchers also reviewed major National Pollutant Discharge Elimination System (NPDES) permits limiting wastewater discharges in these watersheds. These reviews were undertaken to determine if recommendations from approved TMDLs have been incorporated into NPDES permits. Consequently, the study relied on written information and the knowledge and perceptions of state environmental officials and did not conduct any new environmental sampling and analysis.

### Results and Conclusion

The study measured implementation progress through four stages of program activity as a conceptual framework for evaluation. The first stage of program activity relates to planning and management, and the study found that these kinds of activities have been implemented in over one-half of the watersheds of focus within the TMDL reports studied. For example, at least one state official was knowledgeable regarding TMDL implementation activities in 71% of the watersheds studied, and at least one project was underway in 65% of these watersheds. 57% of the watersheds had at least one local or regional group working to implement TMDL-recommended actions.

The second stage focuses on the implementation of controls on pollutants released to TMDL limited waters. Knowledgeable state officials knew or believed that pollutant loading reductions had occurred in 46% of the watersheds of focus within the TMDL reports studied. The study also found that more stringent NPDES effluent limits were implemented most of the time when effluent reductions were clearly targeted by TMDLs.

The state officials interviewed also identified progress in the third stage, which focuses on identifying incremental improvements in water quality that fall short of full water quality standards attainment. More specifically, these officials identified improvements in water or sediment quality in 19% of the watersheds

studied. At the fourth stage – full recovery -- the study found two cases of full waterbody restoration, and these two cases constituted 3% of the watersheds studied (see Figure 1).

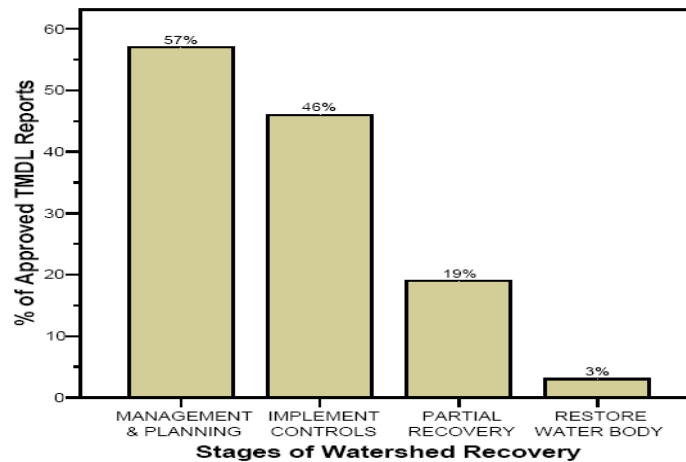


Figure 1. Implementation Progress in Ohio and West Virginia.

The research team concluded that both states have made progress in implementing recommendations called for in TMDLs, and suggested that steps can be taken to accelerate progress and foster TMDL implementation. Some of these steps are identified below. The study also identified potential driving factors for TMDL implementation progress in Ohio and West Virginia. The driving factors relating to pollutant load reductions and general progress in TMDL implementation that were identified are also listed below.

Factors that are useful predictors of whether state officials believe pollutant load reductions are occurring as a result of implementation activities include:

- 1) A group taking responsibility for TMDL implementation
- 2) The existence of a state grant to support a watershed coordinator
- 3) Approval or endorsement of a watershed plan (for non-point source load reductions only)
- 4) Time (as months from TMDL approval increase, the likelihood of perceived pollutant loading reductions also increases); and
- 5) The population density in the TMDL area (higher densities appear to make perceived pollutant loading reductions *less likely*)

Steps that state administrative officials and water quality stakeholders can take to help accelerate progress in implementing TMDLs include:

- 1) Engage local and regional groups in TMDL development
- 2) Provide funding to implement projects to reduce pollutant loads and improve water quality
- 3) Engage state officials in implementation processes
- 4) Create standardized formats for TMDL implementation recommendations and procedures for incorporating TMDL recommendations into implementation efforts
- 5) Develop indicators of implementation progress and track progress against them
- 6) Educate and engage key audiences in TMDL implementation and its tracking and management

**For more information:**

*Implementing Total Maximum Daily Loads: Understanding and Fostering Successful Results* (December 2008) is available at [http://www.kent.edu/cpapp/upload/TMDL\\_Report-DecemberFINALnew-cover-4.pdf](http://www.kent.edu/cpapp/upload/TMDL_Report-DecemberFINALnew-cover-4.pdf) and at <http://www.epa.gov/owow/tmdl/results>

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