



Arkansas Water Primer Series: Total Maximum Daily Loads (TMDLs)

Introduction

The Arkansas Department of Environmental Quality's (ADEQ) Water Quality Planning Branch is responsible for monitoring water quality, developing water quality standards and allocating groundwater and wasteloads. The agency's oversight also includes ensuring Section 303(d) – the Total Maximum Daily Load (TMDL) program of the Clean Water Act (CWA) – is enforced.

Section 303(d) of the Clean Water Act

Total Maximum Daily Load (TMDL) is a term used to describe the amount of a pollutant that a stream or lake can receive and still meet water quality standards. TMDLs play a role in helping the state meet federal clean water standards. The development of TMDLs is a critical issue for environmental compliance because it has the potential to create increased standards for existing facilities and can lead to new regulatory requirements for nonpoint sources that have not previously been regulated. They differ from other pollution management efforts in that TMDLs require loads from all pollution sources within an impaired watershed be allocated among the users. Other efforts focus on loads from a few identifiable sources.

TMDLs identify sources of pollution and potential reductions needed to attain standards. Point sources, such as municipal or industrial discharges, and nonpoint sources, such as runoff from urban or agricultural lands, are considered in calculating TMDLs. In addition, TMDLs must account for seasonal variation and include a margin of safety.

Arkansas' Impaired Waterbody List

An impaired waterbody is any water that is not meeting the water quality standards that have been established for that water after technology-based discharge limits on point sources are implemented. Section 303(d) requires each state to maintain a list of impaired waterbodies and revise the list in even numbered years.

ADEQ is responsible for conducting a Biennial Assessment of the Condition of Waters of the State using criteria developed by the U.S. Environmental Protection Agency (EPA). ADEQ maintains hundreds of water sampling sites across the state. In addition, ADEQ enlists the assistance of other state agencies and organizations, such as watershed groups, to collect water quality data to aid in its evaluations. Data from the assessment is used to compile the Water Quality Impaired Waterbodies List – commonly called the 303(d) List – which must be approved by EPA. Arkansas' 303(d) Lists can be found on ADEQ's web site at http://www.adeq.state.ar.us/water/reports_data.htm.

EPA suggests placing impaired waterbodies within one of five categories when compiling a 303(d) List. Category 5(a) is defined as a waterbody that is "truly impaired." Such waterbodies must have a TMDL developed or other corrective action must be taken. Between 2004 and 2006, the number of 5(a) stream segments in Arkansas decreased from 60 to 35.

Source: Arkansas Department of Environmental Quality

Establishing TMDLs

In essence, a TMDL is a planning document. The "allowable budget" is determined by scientific

study of a stream to determine the amount of pollutants that can be assimilated without causing the stream to exceed water quality standards set to protect its designated uses. Once the capacity is determined, sources of the pollutants are considered. All sources, both point and nonpoint, are accounted for, and the pollutants are allocated or budgeted among the sources in a manner which will describe the total limit that can be discharged into the waterbody without causing the stream standard or budget to be exceeded. ADEQ is responsible for conducting TMDL studies that examine the source(s) and the extent of the water quality impairment and providing the appropriate information necessary for achieving surface water quality standards.

The next steps in the TMDL process are developing an action plan outlining affordable, efficient and effective alternatives to restore water quality, and implementing the plan. During all phases of TMDL planning and implementation ADEQ involves stakeholders by coordinating public meetings and encouraging comments and input.

Load allocations are determined through the review of monitoring data and watershed modeling. A watershed is the area of land that drains or seeps into a marsh, stream, river, lake or groundwater. The starting point of a river, the landscapes it flows through and the point where the river ultimately ends all make up a watershed.

Watersheds are complex systems whose features are constantly changing. Climate, geology, topography, hydrology, soils, land use and other factors influence watersheds and the streams that flow through them.

Each TMDL Arkansas submits to EPA must contain the following components:

- Problem Statement – describes the pollutant causing the impairment and the designated uses that are impaired
- Desired Future Condition – defines measurements that will ensure recovery of the impaired waterbody and how the objectives will be met
- Source Analysis – identifies the amount, timing and point of origin of pollutants
- Load Allocations – identifies the parties responsible for taking specified actions to alleviate the impairments
- Implementation Plan – describes the actions that will be undertaken to alleviate the impairments

- Linkage Analysis – describes how the actions to be taken will result in achievement of the relevant standards
- Monitoring/Re-Evaluation – describes the monitoring strategy that will be used to develop more refined information for performance evaluation and consideration of TMDL revisions for phased TMDLs and
- Margin of Safety – describes how the required margin of safety was incorporated into the TMDL.

EPA either approves a state's actions or intervenes if a state is not following the TMDL process. States have latitude to determine their own priorities for developing and implementing TMDLs. That flexibility provides states an opportunity for incorporating rotating basin or other watershed approaches into the TMDL process.

Benefits of TMDL Monitoring

Water that is assigned a TMDL is monitored often. Monitoring helps reveal the actual amounts of pollution from point sources and nonpoint sources that enter the water. The information helps environmental and regulatory agencies supply money for voluntary pollution prevention. Monitoring also reveals the effectiveness of the voluntary efforts, which can lead to increased funding or mandatory regulation, as necessary.

Incentives for Meeting Allocation Goals

Once a TMDL is determined, the following programs help industrial, agricultural and municipal participants meet their output goals:

- Cost-share programs for reducing or removing fertilizers
- Low-cost loans for activities that prevent pollution
- Grants for storm water activities
- Grants for restoration activities
- Programs for improving mines
- Updated limits for National Pollutant Discharge Elimination System (NPDES) permits
- Best Management Practices and
- Technical and educational assistance.

TMDL Litigation

Although the TMDL program has been part of CWA since 1972, very few TMDL programs have been implemented in any of the nation's states, including Arkansas. The development of TMDLs is resource intensive. Most states have lacked the funds and manpower to do TMDL analyses, which involve complex assessments of point and nonpoint sources of pollution to quantify the environmental effects for particular discharge sources.

If states do not submit impaired waterbody lists or TMDLs, or if submissions are deemed inadequate by EPA, the federal agency is required to establish lists and TMDLs in lieu of the states. However, EPA has been reluctant to intervene and has also lacked resources to establish lists and TMDLs for the states. Beginning in the 1980s, citizens and environmental groups around the country began suing EPA for not enforcing the TMDL program. These groups view the implementation of Section 303(d) as important to achieving the overall goals and objectives of CWA. The groups also view litigation as the only vehicle for pressuring EPA and states to address nonpoint and other sources of pollution, which, they believe, are responsible for many of the existing water quality impairments nationwide. Environmental groups have filed lawsuits in 38 states, including Arkansas, in the last few years.

Of the suits tried or settled, 22 have resulted in court orders and consent decrees mandating EPA to establish TMDLs. In 1999, five Arkansas environmental groups – the Sierra Club, Federation of Fly Fishers, Crooked Creek Coalition, Arkansas Fly Fishers and Save Our Streams – filed a lawsuit in Federal Court against EPA. In *Sierra Club, et al. v. Browner*,

et al., the plaintiffs alleged, among other claims, that EPA failed to establish Arkansas' TMDLs in a timely manner. Under the terms of a settlement decree EPA agreed to fund a number of TMDL studies in the state.

ADEQ was given responsibility for conducting studies. ADEQ data indicates that 135 TMDLs have been completed on Arkansas' impaired waterbodies as of October 2007. The state has until 2010 to complete TMDLs on the rest of Arkansas' impaired waterbodies.

Categories of Litigation

TMDL litigation falls into five general categories, according to EPA:

- Situations in which a state has failed to perform any Section 303(d) activities
- Situations in which a state has engaged in some but insufficient activities to implement Section 303(d)
- Challenges to EPA's listing of impaired waters, TMDL approval decisions or EPA's promulgation of TMDLs
- Situations in which plaintiffs are using TMDL requirements to achieve other CWA objectives, such as forcing improved water quality monitoring programs and
- Challenges to the substance or content of TMDLs.

Additional Resource

Fact Sheet 109 (FSPPC109) – *Glossary of Water-Related Terms* – contains a comprehensive list of terms used in the Arkansas Water Primer Fact Sheet Series.

The University of Arkansas Division of Agriculture's Public Policy Center provides timely, credible, unbiased research, analyses and education on current and emerging public issues.

The Arkansas Water Primer Fact Sheet Series was funded by a grant from the U.S. Department of Agriculture with additional financial assistance from the University of Arkansas Division of Agriculture. Original research for the Series was provided by Janie Hipp, LL.M., and adapted by Tom Riley, associate professor and director of the University of Arkansas Division of Agriculture's Public Policy Center, and Lorrie Barr, program associate, University of Arkansas Division of Agriculture's Public Policy Center.

