



## **TMDL** | Total Maximum Daily Loads *a citizen's guide to achieving water quality*



# Restoring Illinois Water Quality With TMDLs

Illinois is rich in surface-water resources. It sits amid the mighty Mississippi, Wabash, and Ohio Rivers and along 63 miles of Lake Michigan shoreline. Some 87,000 miles of rivers and streams meander through the state, and more than 3,000 inland lakes, covering about 250,000 acres, dot its landscape.

Over the years, the quality of some Illinois lakes, rivers, and streams has been impaired by pollutants from a variety of sources. However, since the signing of the federal Clean Water Act (CWA) in 1972, water quality has improved greatly, primarily through regulation of point source discharges. Although great strides have been made in restoring our state waters, there are still degraded lakes, streams, and rivers that need attention. Restoring their quality is crucial in maintaining a healthy environment and ensuring the sustainability of these waters for all to use and enjoy.



PHOTO BY ILLINOIS EPA

The development of "Total Maximum Daily Loads," commonly known as TMDLs, for pollutants is a method that can be used to improve water quality. The process of creating and implementing TMDLs provides an opportunity for all interested parties to help restore the quality of local water bodies.

## What Is a TMDL?

The establishment of a Total Maximum Daily Load sets the pollutant reduction goal necessary to improve impaired waters. It determines the load, or quantity, of any given pollutant that can be allowed in a particular water body. A TMDL must consider all potential sources of pollutants, whether point or nonpoint. It also takes into ac-

## WATER'S MANY USES

Every river, stream, and lake has the potential for a variety of uses, including drinking water, aquatic life, swimming, boating, and fish consumption. The Illinois Pollution Control Board assigns every water body one or more designated uses, which in turn determine the water quality standards that apply.

By monitoring the physical, chemical, and biological aspects of Illinois' water bodies, the Illinois Environmental Protection Agency (Illinois EPA) determines whether the water quality of a particular lake, river, or stream is supporting its designated uses. The water body is classified in one of four categories according to the Illinois EPA's findings:

- **Full support**—the water body is fully supporting all of its designated uses
- **Full/threatened support**—the water body is supporting its designated uses, but there is evidence of declining water quality
- **Partial support**—the water body is supporting some but not all of its designated uses
- **Nonsupport**—the water body is supporting none of its designated uses

A water body can accumulate only a certain amount of pollutants and still be able to support its designated uses. A river, stream, or lake is considered to be "impaired" if it is classified as partial support or nonsupport.



PHOTO BY ILLINOIS EPA

count a margin of safety, which reflects scientific uncertainty, as well as the effects of seasonal variation.

### Why Develop TMDLs?

Section 303(d) of the federal Clean Water Act requires states to identify waters that do not meet applicable water quality standards or do not fully support their designated uses. States are required to submit a prioritized list of impaired waters, known as the 303(d) List, to the U.S. Environmental Protection Agency for review and approval. The CWA also requires that a TMDL be developed for each pollutant of an impaired water body. Illinois EPA is responsible for carrying out the mandates of the Clean Water Act for the state of Illinois.

### The TMDL Process

Developing TMDLs in a watershed begins with the collection of vast amounts of data on factors including water quality, point source discharge, precipitation, soils, geology, topography, and land use (construction, agriculture, mining, etc.) within that specific watershed. All impaired water-body segments within the watershed are identified, along with the potential pollutants causing the impairments.

Next, Illinois EPA determines the tools necessary to develop the TMDL. In most cases, computer models are used to calculate pollutant loads. The appro-

appropriate model or models are selected based on the pollutants of concern, the amount of data available, and the type of water body. Once the model is selected, the data collected for the watershed are entered, and the model is calibrated and verified so that the computed values match those of known field data. The model can then be used to develop different scenarios, by first determining the amount of specific pollutants

each source contributes, then calculating the amount each pollutant needs to be reduced, and finally specifying how the reduced pollutant load would be allocated among the different sources.

After the reduced pollutant loads have been determined, an implementation plan is developed for the watershed spelling out the actions necessary to achieve the goals. The plan

specifies limits for point source discharges and recommends best management practices (BMPs) for non-point sources. It also estimates associated costs and lays out a schedule for implementation. Commitment to the implementation plan by the citizens who live and work in the watershed is essential to success in reducing the pollutant loads and improving water quality.

## USING A WATERSHED APPROACH

A *watershed* is all of the area above and below the surface of the landscape that drains into bodies of water (lakes, rivers, streams, wetlands) and groundwater. Activities in a watershed directly affect the quality of water resources and their designated uses. Understanding what makes up a watershed and its components is the first step to improving water quality and other natural resources.

Many water quality and ecosystem problems can best be solved at the watershed level rather than at the level of an individual water body or pollutant source. Watershed management can help with the use, protection, and restoration of natural resources, while allowing for sustainable economic growth and development.

Pollutants enter a water body from different sources at differ-



PHOTO COURTESY OF SANGAMON COUNTY SWCD

ent times. *Point source pollution* comes by way of a direct, identifiable source, such as a pipe, ditch, or tank. *Nonpoint source pollution* accumulates through many diffuse sources when rainfall and snowmelt move over and through the ground, picking up pollutants. Because the methods used to control point and nonpoint sources of pollution differ, the sources of any pollutants that are degrading

water quality must be identified. By examining all potential sources of pollutants along with all land uses, steps can be taken to reduce or eliminate pollutant loads. This is best done using a watershed approach.

TMDLs are just one of many activities and tools used during the process of watershed planning. A complete watershed plan includes recommendations for best management practices to be implemented, the associated costs, an implementation schedule, and an outline of the needed institutional arrangements for implementation. The best planning takes place when residents of a watershed assume leadership of the process, with Illinois EPA and other natural resource agencies providing technical assistance.



## Public Participation

The Illinois EPA is committed to keeping local citizens informed when TMDLs are being developed in their watershed. Public meetings are held to present watershed data as well as to explain the approaches and methods that will be used to develop the TMDLs. The meetings also offer a forum for citizens to share their opinions and concerns, for providing additional information that may be helpful in developing the TMDLs, and for building partnerships with other interested parties.

After the draft TMDL implementation plan is completed, a public hearing is held to present the results. Again, citizens have the opportunity to share their opinions and ask questions concerning the plan.



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PHOTO COURTESY OF USDA NRCS

## Improved Water Quality

The goal of TMDLs is better water quality for Illinois. Improving our lakes, rivers, and streams has a positive impact on the quality and quantity of the fish and animals that depend on these waters for habitat, food, breeding, and survival. This in turn contributes to balanced, healthy ecosystems.

Beyond the ecological benefits, cleaner water increases opportunities for fishing, boating, and other recreational activities and improves the overall appearance of lakes, rivers, and streams. A cleaner source of drinking water can mean lower treatment costs, which may reduce

water expenses for local citizens and businesses.

Protecting and restoring the quality of Illinois waters is ultimately the responsibility of everyone. The success of a TMDL implementation plan typically depends on the cooperation of those who live and work in the watershed. Citizens can take ownership of their local water bodies by adopting suggested BMPs and encouraging others to do the same. By integrating sound science with public support, TMDLs can be a valuable tool for improving and protecting our precious water resources.



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For more information about Illinois' TMDL program, visit our website at:

[www.epa.state.il.us/water/tmdl](http://www.epa.state.il.us/water/tmdl)