CSREES Southern Regional Water Quality Program
Applying knowledge to improve water quality

The University of Georgia
1785

Total Maximum Daily Loads in Georgia

What is a Total Maximum Daily Load (TMDL)?

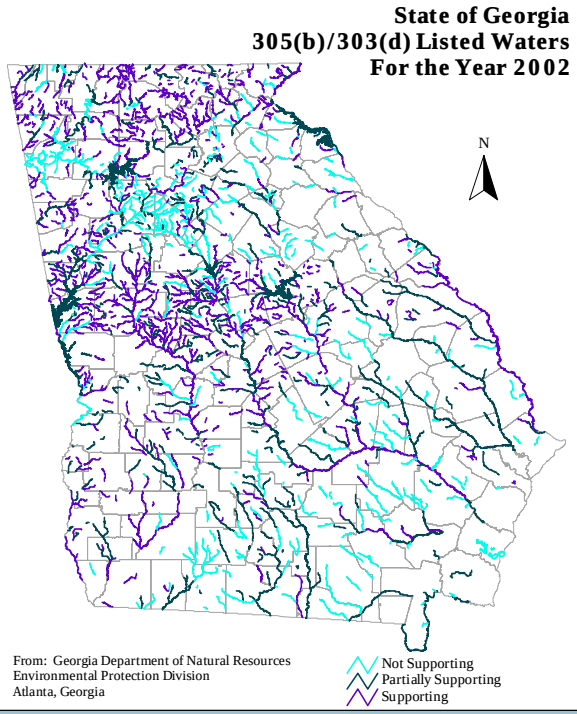
A TMDL is a calculation* of the maximum amount of a pollutant that a water body can receive and still meet water quality standards. The calculation includes an allocation of that amount to the sources of pollution. A TMDL adds up all of the allowable loads of a single pollutant from all point and nonpoint sources (within a watershed that contribute pollution. The calculation includes a margin of safety to ensure the water will meet its uses, and must account for seasonal variation in water quality. A TMDL is also a process that can be used to help clean waters and provide a means to study our streams.

*Will be discussed later

Why might a stream or river need a TMDL?

Section 303(d) of the Clean Water Act requires that all states list waters not meeting water quality standards. The Georgia Environmental Protection Division (EPD) sets water quality standards and is responsible for listing waters that do not meet these standards in the State of Georgia. If a water body does ***not support*** **or** ***partially support*** its designated use (drinking, recreation, fishing, wild/scenic rivers, or coastal fishing) by violating water quality standards, it is considered "impaired" and is a candidate for a TMDL study. In 2002, Georgia had at least 800 streams and rivers that were not fully supporting their designated uses. Each impaired water body has the potential to have several TMDLs conducted, depending on the number of water quality standards violated.

The figure to the right shows impaired and supporting segments of streams and rivers that have been identified for the year 2002.



What are Point and Nonpoint Sources?

- Point source (PS) pollution comes from a single point or location such as wastewater treatment plants, industries, and livestock operations.
- Nonpoint source (NPS) pollution is any pollution that does not come from a point source. Nonpoint sources are much harder to pinpoint. Runoff from urban areas (parking lots, yards, roads, etc), construction sites, and agricultural fields are considered to be nonpoint sources.

What do partially supporting and not supporting designated use mean?

- A water body is placed on the **partially supporting** list if: 1) the chemical data (dissolved oxygen, pH, temperature) indicated a water quality standard was exceeded in more than 10% of the samples collected for a given location or 2) if a fish consumption guideline was in place for the water body.
- A water body is placed on the **not supporting** list if: 1) chemical data indicated a water quality standard was not met in greater than 25% of the samples collected for a given location, 2) if a fish consumption ban was in place or 3) if tests indicated toxicity at low flow in a municipal or industrial discharge.

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TMDLs have been conducted in all of Georgia's major river basins. By the end of 2002, over 850 TMDL's had been approved by the Georgia Environmental Protection Division and the U.S. Environmental Protection Agency. Most of the TMDL's conducted in Georgia over the past six years have focused on fecal coliform bacteria (pathogens), with fish consumption guidelines, metals, sediments, and dissolved oxygen (DO) rounding out the top of the list.

Instead of writing lengthy reports for each stream and all of its water quality violations, the State of Georgia has adopted a basin-wide reporting approach. Each report focuses on one water quality standard and addresses TMDL's for each stream in the basin violating that particular water quality standard.

Establishing TMDL's

The State of Georgia is responsible for developing a schedule for establishing TMDLs and for prioritizing water bodies identified as impaired .

Ideally, a TMDL should be set for a water body within 8 to 13 years of being listed. The schedule takes into account the number of impaired segments; length of river miles, lakes, and other water bodies needing TMDLs; proximity of impaired segments to each other; number and complexity of the TMDL; availability of models and monitoring data; and significance of environmental threat the impairment poses. Another portion o f the schedule is the prioritization of the impaired water bodies. Water bodies with severe pollution and water bodies that are often in direct contact (recreation, drinking water) with humans are given higher priority than those with less severe pollution

How are TMDL's Calculated?

TMDL = WLA + LA + MOS

(WLA - waste load allocation, LA - load allocation, MOS - margin of safety)

WLA = daily load of pollutants permitted as point source discharges
LA = amount of pollution that nonpoint sources can discharge
MOS = margin of safety

What information is needed to set a TMDL?

- Maps of watersheds and sub-watersheds
- Impaired streams, rivers, and lakes
- Data from water quality monitoring stations
- Meteorological information
- Land use within the watershed
- Flow rates for all streams
- Data from permitted point sources
- Topography of the watershed
- Watershed characteristics (septic tanks, roads, agricultural operations)

How are WLA, LA and MOS determined?

WLA's are determined by summing "direct" and "upstream" contributions. Direct contributions are point source loads that directly discharge into the impaired segment. Upstream contributions are point source loads on an upstream segment that are transported to the impaired stream segment. Upstream segments can be the same channel or tributaries.

LA's are calculated using computer models that predict loads from nonpoint sources based on land use, existing water quality, weather data, flow, topography, soils data, etc.

MOS's can be determined by specifying a portion of the TMDL as the MOS.

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How does a TMDL help meet applicable water standards?

TMDL Implementation Plans

The TMDL helps meet applicable water standards through implementation plans. The goal of an implementation plan is to recommend management practices for point and nonpoint source pollution producers to help meet the suggested TMDL for the river or stream in question. Since TMDL's are developed based on water quality standards, it follows that meeting a TMDL for a water body will meet water quality standards and should expedite a stream or river's removal from Georgia's List of Impaired Waters.

The preparation of implementation plans is a two step process: *Initial Implementation Plans* included in the TMDL's are succeeded by the preparation of more comprehensive *Revised TMDL Implementation Plans.* The initial generic plans include a list of potential management practices, the BMP implementation demonstration projects, and schedules for the preparation of revised implementation plans. Revised Implementation plans may be prepared by the Georgia Environmental Protection Division or regional planning organizations with the participation and support of local governments and stakeholder groups.

Initial TMDL Implementation Plans

The initial implementation plan is developed by either the EPD or an EPD contractor (normally a local RDC). The initial plan includes:

- Management strategies (best management practices) for controlling nonpoint sources of pollution as they are the primary cause of pollutant loading in most cases. Point source allocations are addressed through effluent limitations in NPDES permits
- Recommendations for best management practices
- Distribution of public information
- A schedule for preparation of revised implementation plans

Revised TMDL Implementation Plans

A revised implementation plan supercedes the initial implementation plan. The revised implementation plan is developed by either the EPD or an EPD contractor with input from local officials and stakeholders. The following tasks are involved in converting initial plans into revised plans.

- Characterize watersheds (land use, weather info, population, etc)
- Identify stakeholders
- Verify the present water quality problem (through local monitoring)
- Identify probable sources of pollutants
- Identify potential regulatory or voluntary actions to control pollutants
- Determine measurable milestones of progress
- Develop a monitoring plan
- Complete and submit the revised implementation plan to EPD for approval

How is a river or stream removed from Georgia's List of Impaired Waters?

If it is determined, through scheduled monitoring, that a water body is meeting applicable standards when the next list of impaired waters is developed (every two years), the State may remove the water body from the list at that time. Data used to delist a water body must be obtained and evaluated in accordance with a quality assurance plan approved by EPD for this purpose.

From: Recommended Framework for EPA Approval Decisions on 2002 State Section 303(d) List Submissions

Public Involvement

How can you get involved in the development of TMDL Implementation Plans?

The public is provided an opportunity to participate in the development of Revised TMDL Implementation Plans and to comment on them before they are finalized. To see if a TMDL implementation plan is open for comment in your area, contact your local regional development center (RDC) or go to the Georgia EPD website (www.ganet.org/dnr/environ/) and click on "Event Calendar".

Contacts and More Information

Contacts

Your County Extension Agent

http://extension.caes.uga.edu

Georgia EPD
TMDL Section
(404) 675-1675

Your local Regional Development Center

Atlanta Regional Commission - www.atlantaregional.com
Coastal Georgia RDC - www.coastalgeorgiardc.org
Central Savannah River Area RDC - www.csrardc.org
Coosa Valley RDC - www.cvrdc.org
Georgia Mountain RDC - www.gmrdc.org
Middle Georgia RDC - www.mgrdc.org
Heart of Georgia Altamaha RDC - www.hogardc.org
North Georgia RDC - www.ngrdc.org
Northeast Georgia RDC - www.negrdc.org
South Georgia RDC - www.sgrdc.com
Chattahoochee-Flint RDC - www.cfrdc.org
McIntosh Trail RDC - www.mtrdc.org
Lower Chattahoochee RDC - www.lowerchattahoocheerdc.org
Middle Flint RDC - www.middleflintrdc.org
Southeast Georgia RDC - www.segardc.org
Southwest Georgia RDC - www.swgrdc.org

Georgia Environmental Protection Division, Water Protection Branch, TMDL Technical Guidance
http://www.ganet.org/dnr/environ/techguide_files/techguide.htm#wpb

U.S. Environmental Protection Agency Office of Wetlands, Oceans and Watersheds TMDL Site
http://www.epa.gov/owow/tmdl/intro.html

U.S. Environmental Protection Agency TMDL Fact Sheet for Georgia
http://oaspub.epa.gov/waters/national_rept.control

The Southern Region Water Quality Regional Coordination Project promotes regional collaboration, enhances delivery of successful programs and encourages multi-state efforts to protect and restore water resources. Effective approaches for watershed management, pollution prevention, and youth education are identified and shared among states. Ultimately, the project improves public access to the research, extension, and education resources available through the Land Grant University System in the Southern Region and nationwide. The project is funded by the USDA Cooperative State Research, Education, and Extension Service.

Bulletin 1242-2/January 2004
The University of Georgia and Fort Valley State University, the U.S. Department of Agriculture and counties of the state cooperating. The Cooperative Extension Service, The University of Georgia, College of Agricultural and Environmental Sciences offers educational programs, assistance and materials to all people without regard to race, color, national origin, age, sex or disability. An Equal Opportunity Employer/Affirmative Action Organization Committed to a Diverse Work Force. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, The University of Georgia College of Agricultural and Environmental Sciences and the U.S. Department of Agriculture cooperating. Gale A. Buchanan, Dean and Director.

This bulletin was authored by Dr. Mark Risse and Hillary Smith Tanner of the University of Georgia Biological and Agricultural Engineering Department. Special thanks go out to the following individuals for providing input and review of this publication: James E. Hairston, Alabama Cooperative Extension System; Calvin B. Sawyer, Clemson University; Elizabeth Booth, Georgia EPD; Vince Williams, Georgia EPD; Ted Mikalsen, Georgia EPD; Gary Hawkins, University of Georgia.