

TOTAL MAXIMUM DAILY LOAD (TMDL) DEVELOPMENT

For LEAD in

Phinizy Ditch

(HUC 03060106)

Richmond County, Savannah River Basin, Georgia



APPROVAL PAGE

for LEAD in

Phinizy Ditch, GA

Georgia's final 1998 303(d) list identified Phinizy Ditch, Augusta, GA as not supporting its designated use, with the pollutant of concern being lead. This total maximum daily load (TMDL) is being established pursuant to the 1998 Georgia 303(d) list and the Consent Decree in the Georgia TMDL Lawsuit.

Since impairment in this segment by lead has been ruled out by recent sampling data, the TMDL does not assign responsibility for load reduction. If a point source discharge is placed within this segment, the permit limit for lead would be equal to the TMDL calculation given below:

Pollutant	TMDL (kg/day)	MOS
Lead	0.008	Implicit

APPROVED BY:

Robert F. McGhee, Director

Water Management Division

Date

EPA-Region 4

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Introduction

Section 303(d) of the Clean Water Act

(CWA) as Amended by the Water Quality Act of 1987, Public Law 100-4, and the United States Environmental Protection Agency's (USEPA/EPA) Water Quality Planning and Management Regulations [Title 40 of the Code of Federal Regulation (40 CFR), Part 130] require each State to identify those waters within its boundaries not meeting water quality standards applicable to the waters' designated uses. Total maximum daily loads (TMDLs) for all pollutants violating or causing violation of applicable water quality standards are established for each identified water. Such loads are established at levels necessary to implement the applicable water quality standards with consideration given to seasonal variations and margins of safety. The TMDL process establishes the allowable loadings of pollutants or other quantifiable parameters for a water body, based on the relationship between pollution sources and in-stream water quality conditions, so that states can establish water-quality based controls to reduce pollution from both point and nonpoint sources and restore and maintain the quality of their water resources (USEPA, 1991).

Problem Definition

Georgia's final 1998 Section 303(d) list identified Phinizy Ditch, a tributary to Butler Creek, which eventually flows into the Savannah River as not supporting its designated use as a fishing water, with the pollutant of concern being lead.

The TMDL is being established pursuant to EPA commitments in the October 1997 Consent Decree in the Georgia TMDL lawsuit. These conditions include a requirement that TMDLs be proposed by August 30, 1999, for each water on the 1998 303(d) list that is impacted by a National Pollutant Discharge Elimination System (NPDES) permitted point source or point sources, and is located in the Savannah/Ogeechee Basins. The Augusta Wastewater Treatment Plant outfall at one time discharged to Phinizy Ditch (the permit did not include a limit for lead) and has since been relocated to Butler Creek. Butler Creek is impaired by lead according to Georgia's 1998 303(d) list. Current data collected by GAEPD show no

indication of lead in Phinizy Ditch.

Target Identification

The target level for the development of this lead TMDL is the numeric criterion established in Georgia's Rules and Regulations for Water Quality Control, Chapter 391-3-6, Revised July 6, 1999. Georgia Regulations establish the freshwater criteria for lead expressed in terms of the dissolved fraction in the water column. Criteria were promulgated such that instream concentrations should not exceed the acute criterion indicated under 1-day, 10-year minimum flow (1Q10) or higher stream flow conditions and should not exceed the chronic criterion under 7-day, 10-year minimum flow (7Q10) conditions. The numeric criterion for lead in freshwater, assuming a hardness of less than 50 mg/l, is 1.2 ug/l.

Background

The segment that is presumed to be impaired is located directly downstream of the City of Augusta, Georgia. Phinizy Ditch is on the State of Georgia's 1998 §303 (d) list for violating the total lead standard for the State of Georgia. Current sampling data indicates that lead is no longer found in Phinizy Ditch. The original listing of lead in Phinizy Ditch could have resulted from use of "non-clean" sampling techniques or the re-located Augusta-Richmond County Commission Wastewater Treatment Plant (NPDES GA0020087), which could potentially have lead in the effluent. The Augusta-Richmond County Commission Wastewater Treatment Plant does not have a permit limit for lead, and a review of the permit does not indicate whether the facility has ever monitored for lead.

Numeric Targets and Sources - Model Development

The steady-state model provides predictions for only a single set of environmental conditions. For permitting purposes, steady-state models are applied for "critical" environmental conditions that represent extremely low assimilative capacity. For discharges to riverine systems, critical environmental conditions correspond to drought upstream flows. The assumption behind steady-state modeling is that permit limits

that protect water quality during critical conditions will be protective for the large majority of environmental conditions that occur.

Critical Condition Determination

The most critical condition for this segment of the Phinizy Ditch will be used to determine the TMDL. Lead will be considered a conservative substance in the TMDL calculation. The influence on the instream lead concentration will be river flow. For the Phinizy Ditch segment, the critical flow will be the 7Q10 flow of 2.8 cubic feet per second.

Total Maximum Daily Load (TMDL)

The TMDL is the total amount of pollutant that can be assimilated by the receiving water body while achieving water quality standards. Since there is no known permitted point sources of lead and the cause of the lead impairment is not identified for this waterbody, this TMDL will be expressed as a loading capacity.

If in the future, a point or nonpoint source load of lead is introduced in the system, the total of the WLA (wasteload allocations for point source loadings) and LA (load allocation for nonpoint source loadings) shall not exceed this loading capacity.

Margin of Safety

The margin of safety (MOS) is part of the TMDL development process. There are two basic methods for incorporating the MOS (USEPA, 1991a):

- Implicitly incorporating the MOS using conservative model assumptions to develop allocations, or
- Explicitly specifying a portion of the total TMDL as the MOS; using the remainder for allocations.

The MOS is incorporated implicitly into this modeling process by selecting the 7Q10 critical low flow.

TMDL Calculation

The TMDL calculation will utilize the conservation of mass principle, where the load can be calculated by using the following relationship:

$$\text{Concentration} = \text{Load} / \text{Flow}$$

Rearranging this equation the maximum load can be calculated as follows:

$$\text{Load} = \text{Concentration (Water Quality Standard)} * \text{Flow}$$

Table 1 TMDL Calculation

Pollutant	TMDL (kg/day)	MOS
Lead	0.008	Implicit

Seasonal Variation

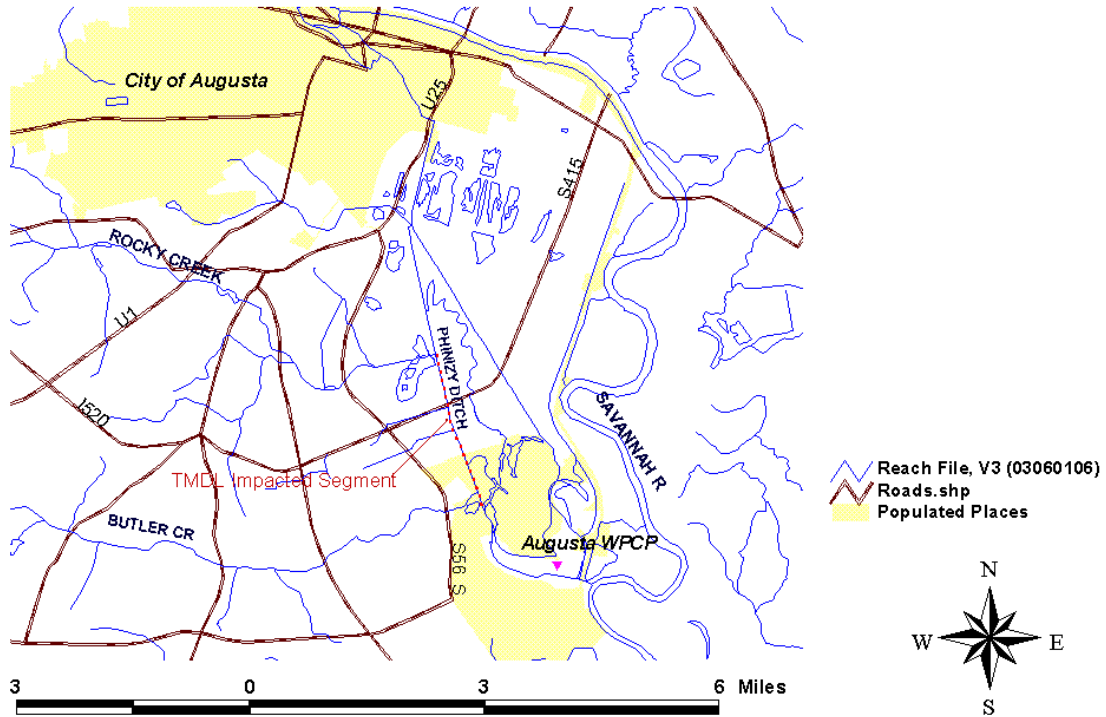
The low flow condition represents the most critical design condition and will provide year round protection.

Allocation of Responsibility and Recommendations

Since impairment in this segment by lead has been ruled out by recent sampling data, the TMDL does not assign responsibility for load reduction. If a point source discharge is placed within this segment, the permit limit for lead would be equal to the TMDL calculation given in Table 1.

Appendix A - Site Map

Phinizy Ditch TMDL Site Location Map



Appendix B – Units Conversion Table

From	To	Multiply by:
Million Gallons per Day (MGD)	Cubic Meters per Second (cms)	0.04381
Cubic Feet per Second (cfs)	Cubic Meters per Second (cms)	0.02832
Pounds (lbs)	Kilograms (Kg)	0.4536
Tons (Short)	Kilograms (Kg)	907.1848
Tons (Long)	Kilograms (Kg)	1016.00

Administrative Record

1. Rules and Regulations for Water Quality Control, Chapter 391-3-6-.03, Water Use Classifications and Water Quality Standards
2. STORET Water Quality Data
3. Georgia Environmental Protection Division Stream Monitoring Data
4. On Disk: Excel Spreadsheet to calculate TMDL
5. File Location m:\apps32\tmdl\phinizy

Response to Public Comment on Proposed TMDL

COMMENT

How is it known whether the City of Augusta discharges lead? Why not require lead monitoring in the permit instead of requiring nothing for the proposed TMDL ?

Mr. Eric E. Huber, EarthJustice Legal Defense Fund, 400 Magazine Street, Suite 401, New Orleans, Louisiana 70130-2453, December 7, 1999

RESPONSE

The City of Augusta's discharge has been moved from Phinizy Ditch to Butler Creek near the confluence with the Savannah River. As part of the permit renewal process, permittees are required to scan for priority pollutants- including lead.

COMMENT

It is unclear if the hardness used to calculate the chronic concentrations is representative of the receiving waters during low flow conditions.

Mr. Michael E. Wilder, Water Resources Workgroup Chair, and Mr. James R. Baker, Chair, Georgia Industry Environmental Coalition, 112 Town Park Drive, Kennesaw, Georgia 30144, December 14, 1999

RESPONSE

Analyzing the data from STORET, a correlation between hardness values and flow could not be established for the Savannah River basin. A default value of 50 mg/l as CaCO₃ was, therefore, used in the TMDL.

COMMENT

The issue of acute vs. chronic criteria needs to be better explained in the statement of the criterion and TMDL.

Mr. Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 22, 1999

RESPONSE

This TMDL has been developed to protect against the chronic criteria during low flow. Because there is no longer a discharger in this segment the calculation will be used to determine the maximum load of lead the segment could receive during critical low flow.

COMMENT

Appendix A is not included in the TMDL. Is there any lead data for sediments?

Mr. Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 22, 1999

RESPONSE

The recently collected GAEPD data has been included in the Administrative Record for this TMDL.

COMMENT

On page 2, it is stated that the permit does not include lead limits or monitoring. This must be considered.

Mr. Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 22, 1999

RESPONSE

The City of Augusta's discharge has been moved from Phinizy Ditch to Butler Creek near the confluence with the Savannah River. As part of the permit renewal process, permittees are required to scan for priority pollutants- including lead.

References:

Better Assessment Science Integrating Point and Nonpoint Sources, BASINS, Version 2, User's Manual. EPA-823-B-98-006

Rules and Regulations for Water Quality Control, Chapter 391-3-6-.03, Water Use Classifications and Water Quality Standards, July 1999.

Sierra Club v. EPA & Hankinson USDC-ND-GA Atlanta Div. #1: 94-CV-2501-MHS

USEPA. Guidance for Water Quality-based Decisions: The TMDL Process. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA/440/4-91-001, April 1991.