

TMDL IMPLEMENTATION PLAN FOR SUGAR CREEK

Introduction

Sugar Creek is in the Oconee River Basin. Two stream segments are listed on the §303(d) list for the State of Georgia: Sugar Creek for partially supporting its classification for fishing, and Little Sugar Creek (a tributary of Sugar Creek) for not supporting its classification for fishing. Both stream segments violate the water quality standard for fecal, and Little Sugar Creek also violates the standard for lead. They are the only stream segments being addressed within Morgan County. The U.S. Environmental Protection Agency developed a total maximum daily load estimate (TMDL) for the creek, based on a prediction of a 30-day geometric mean of 503 cfu/100ml and suggested a reduction of 5% in runoff loading and 50% reduction in groundwater/interflow. Sources modeled for reduction in the TMDL were Urban and Agriculture. A recent (October, 1998) revision suggests a reduction of 50% for urban and no reduction for agricultural sources.

The stream is the recipient of discharge from the City of Madison Southside Wastewater Treatment Plant (WTP). Although the TMDL prepared by USEPA assumed that the fecal concentration from this plant to be 200 cfu/100ml at all times, it is known that the plant from time to time has had discharges at higher concentrations, although it has remained within acceptable limits for compliance with permit conditions.

The purpose of this implementation plan is to identify and eliminate sources of fecal coliform in the drainage basin in order to meet the fecal coliform water quality standard. The violation of the lead standard is not addressed.

Overview

The drainage basin of Sugar Creek lies primarily within the boundaries of Morgan County and to a lesser extent within Putnam County. It covers approximately 54,000 acres.

Land use in the basin was determined in the TMDL to be 3% urban, 64% forest, and 33% agricultural. Approximately half of the City of Madison is within the basin and, along with a few outlying subdivisions and the SR 24 and US 278 interchanges with Interstate 20, comprises the residential, commercial, and industrial land uses that make up the "urban" classifications. The remainder of the area is mostly covered with forest and pasture. There are several dairy farms, with concentrated herds of cattle, in the basin.

Madison is generally served by public sewerage, but not all areas within the city are connected. The remainder of the area is served by individual septic tanks.

The TMDL prepared by USEPA suggests that the fecal coliform violation is primarily a dry-weather problem. Possible sources of fecal coliform in the basin include sewer overflows and leaks; malfunctioning septic tanks; illicit direct discharge of residential or commercial wastewater into tributary streams; animal waste from livestock, pets, and wildlife directly

introduced into the streams; and residual coliforms from storm water runoff. Accumulation and wet weather runoff should be reduced, but much less (5%).

Pinpointing individual sources typically requires extensive analysis and monitoring of the stream and its tributaries during both wet and dry weather conditions.

Current Activities

The NRCS is administering a \$300,000 grant under §319 of the Clean Water Act designed to reduce agricultural pollution of Little Sugar Creek and Springfield Creek (a tributary of Little Sugar Creek). The program has been signing up partners for cost-shared BMP implementation since August, 2000, and participation has been good. Approximately half the funds have been obligated.

The Oconee River Resource Conservation and Development office has an ongoing project on Springfield Creek (a tributary of Little Sugar Creek) to develop agricultural BMP's. As part of that study, the University of Georgia has been collecting weekly water quality data. The project has been underway for more than a year and has at least 1½ more years to run. Their work includes, among other things, monitoring to determine the effectiveness of stream buffers on fecal coliform concentrations in runoff.

Other agriculture-related projects are active in the area, including the EQUIP program, implementation of nutrient management plans, and other activities of the NRCS and extension service. There are seven farms known in the Sugar Creek basin actively using BMP's to reduce all forms of pollution from their operations.

The Athens laboratory of USEPA has been testing water quality in Lake Oconee. Details of the study are not yet known, but will be explored in the data gathering phase of plan implementation.

Future Activities

Watershed Team Formation

A Morgan County Watersheds Task Force will be formed to work on fecal coliform reduction in this. Currently, the task force consists of representatives from the City of Madison WTP facility and the city manager's office; Morgan County Board of Commissioners and the departments of planning, building inspection, and public works; Natural Resources Conservation Service; and the Cooperative Extension Service. The health department and code enforcement departments will probably be added to the task force, as well as staff from Putnam County

In addition to the working task force, a stakeholders' group will be formed of persons with an interest in the watershed. One meeting has been held with stakeholders, which was attended by approximately 50 people. Representatives of several agencies, many farmers, and interested members of the community attended and expressed interest in continuing to participate. The

Community Watershed Project and the Upper Oconee Watershed Network have also expressed interest in the plan. The Putnam County Board of Commissioners and the Middle Georgia RDC were also contacted and committed to participate, although they were unable to attend the first stakeholders' meeting. Additional groups and individuals will be contacted and invited to participate. This group will identify areas of concern, offer input to and feedback on plans, participate in outreach and education, and recruit support from the community.

Public Education

The task force and stakeholders' group will identify or develop materials to use in a public education campaign to inform citizens of the need to reduce sources of waste that might produce fecal coliform and minimize the exposure of storm water to these sources. The campaign will begin immediately and will inform the public of steps they can take to reduce possible sources. The task force will also decide where, when, and how to disseminate this information.

Compiling Additional Information

Among the first steps in implementing this plan will be to compile additional data. Information needed will include, but not be limited to: Collection of existing stream and lake sample data; survey of agricultural practices in the basin; collection of data from the health department on the condition of septic systems in the drainage; collection of data on known sites of failure and problem areas in the sewerage system; and collection of spill and overflow data on the Madison Southside WTP.

Monitoring

All existing data on fecal coliform concentrations in Sugar Creek will be compiled. Additional monitoring may be needed. The task force, with help from the stakeholders' group, will determine the specifics for baseline monitoring (such as selecting the locations, frequency, and conditions of monitoring), seek funding from local, state, and federal sources, and conduct the baseline monitoring as needed (provided that funding can be secured). Sampling costs may exceed \$200 per sample. The purpose of the monitoring will be to identify the sources of fecal coliform in the basin in order to target them for abatement. The task force will consider setting up the BASINS/NPSF water quality model, with the assistance of the Northeast Georgia Regional Development Center, to incorporate and better analyze the monitoring data.

Volunteer fecal coliform sampling may be a part of the monitoring program for this basin. In order to ensure that the data collected is reliable, the program will include cooperative efforts to ensure that data are collected using trained personnel and approved protocols.

The Georgia EPD is scheduled to conduct monitoring of the Oconee Basin in 2004 in support of its 5-year River Basin Management Plan cycle. In addition, the task force may participate in additional monitoring in 2004 - 2005 to determine the effectiveness of implementation plan activities.

Source Identification

After analyzing the monitoring data, the task force will seek to identify and rank potential sources of fecal coliform. It is anticipated that the stakeholders' group will be valuable in this step. Possible human activity-related sources in the drainage include illegal wastewater discharges, septic tank failures, accidental discharges or overflows from the WTP operated by Madison, sewer line breaks or overflows, poorly sited and managed commercial solid waste receptacles, miscellaneous urban surface runoff, and agricultural activities in and near streams.

Pollution Reduction Strategies

Failing or absent on-site septic tank systems will be addressed through the local health department and building inspection departments, which are responsible for regulating septic systems. The number of septic tanks in the basin is unknown, as is their rate of failure. If failing septic tank systems are found, prompt action will be taken to eliminate them. Public education will play a major role in finding and fixing substandard waste water systems. The task force will evaluate the need for and feasibility of adopting a septic tank inspection ordinance. Several sources of funding for these efforts will be pursued, including but not limited to private foundations, CDBG funds, §319 grants, and state assistance programs.

Agriculture in the basin will be evaluated with the help of the NRCS, RC&D, County Extension Office, and the Soil and Water Conservation District. Once sources are identified, task force members will work through specific property owners to implement fecal coliform-reducing best management practices (BMP's). There are several effective federal/state funding programs for encouraging BMP's for agriculture, including the EQUIP program, §319, and others administered through agencies on the task force and stakeholders' group.

Public education and outreach will be an important part of the strategy. Informing residents and businesses about the fecal coliform violation is a necessary step to recruiting their support and changing individual behaviors. Outreach will include information about on-site septic systems, agricultural BMP, disposal of pet waste, and other non-point source pollution prevention tactics. Strategies could include a web page, mass mailings, attendance at civic clubs and homeowners' association meetings, stream walk's, and stream clean-ups. Agricultural education is far ahead of education of the urban and suburban populations, and will be continued through the Soil and Water District, NRCS, RC&D, and Extension Service.

Phase I Implementation

Funding options will be explored by the task force. The Clean Water Act §319 funds, state revolving loan fund, Georgia Environmental Facilities (GEFA) grants and loans, Community Development Block Grants, and local funds are sources to explore. Human resources may be available through the county and city staffs, farmers' groups, and other citizen volunteers, and they will be explored.

Once funding is established, the task force members will pursue measures to reduce the contributions of the sources identified.

Monitoring Progress

After implementation of the strategies has continued for a reasonable length of time, monitoring will be repeated to determine the extent of improvement. The purpose will be to have Sugar Creek removed from the §303(d) list for fecal coliform if monitoring shows compliance with the standard.

Subsequent Phases

If the second round of monitoring shows that the stream remains in violation of the fecal coliform standard, then the previous steps will be repeated until acceptable water quality is attained.

Reporting

The task force will write an annual report on progress on the TMDL implementation plan and will prepare a final report showing that water quality compliance has been achieved.

Ongoing Maintenance, Monitoring, and Follow-up

The task force will develop a strategy for maintaining the water quality standard in the future. It will also devise a method of monitoring to assure that standards are indeed maintained.

This plan may be modified according to experience and circumstances.

STATE OF GEORGIA

TMDL IMPLEMENTATION PLAN FOR: Sugar Creek (Fecal coliform)
(STREAM)

RIVER BASIN: Oconee

(PARAMETER)

PLAN DATE:

03/26/01

Prepared by: Joseph Tichy Northeast Georgia Regional Development Center Address: 305 Research Drive City: Athens State: Georgia Zip: 30605 e-mail: jtichy@negrdc.org Date Submitted to EPD: _____		Or Prepared By: _____ Address: _____ City: _____ State: _____ Zip: _____ e-mail: _____ Date Submitted to EPD: _____					
General Information Obtain this information from the TMDL document or other information. When completed, this document will be a self-contained report independent of the TMDL document.		Significant Stakeholders Identify local governments, agricultural organizations or significant land holders, commercial forestry organizations, businesses and industries, and local organizations including environmental groups with a major interest in this water body.					
TMDL ID (to be entered by EPD)	OCO0000012	Name/Organization	Morgan County Board of Commissioners				
Water body name	Sugar Creek	Address					
HUC basin name	Upper Oconee	City	Madison	State	GA	Zip	30650-0168
HUC numbers	030701011004 030701011002 030701011003	Phone	706-342-0725			e-mail	
Primary county	Morgan	Name/Organization	See accompanying lists.				
Secondary county	Putnam	Address					
Primary RDC	Northeast Georgia	City		State		Zip	
Secondary RDC	N/A	Phone				e-mail	
Water body location		Name/Organization					
		Address					
Miles or area impacted	16 miles	City		State	GA	Zip	
Parameter addressed in plan	Fecal coliform	Phone				e-mail	
Water use classification	Fishing	Name/Organization					
Degree of impairment	Partially supporting use X	Address					
	Not supporting use X	City		State	GA	Zip	
Date TMDL approved by EPA		Phone				e-mail	
Impairment due to	Point sources <input type="checkbox"/>	Name/Organization					

	Nonpoint sources	<input checked="" type="checkbox"/>	Address				
	Both	<input type="checkbox"/>	City		State	GA	Zip
Point source-Form A; Nonpoint source-Form B; Both-Form A+B+C			Phone				e-mail

If more, add to comments on last page.

FORM B

SUMMARY OF ALLOCATION MODEL RESULTS FROM TMDL DOCUMENT (existing load, target TMDL, and needed reduction)

EXISTING LOAD	TARGET TMDL	NEEDED REDUCTION
503 cfu/100ml	150 cfu/100ml	347 cfu/100ml (85%)

I. IDENTIFY **NONPOINT SOURCE** CATEGORIES AND SUBCATEGORIES OR INDIVIDUAL SOURCES WHICH MUST BE CONTROLLED TO IMPLEMENT LOAD ALLOCATIONS:

List major nonpoint sources contributing to impairment including those identified in TMDL document.

SOURCE	DESCRIPTION OF CONTRIBUTION TO IMPAIRMENT	RECOMMENDED LOAD REDUCTION (FROM TMDL)
Urban Pervious Load Allocation	Pet and wildlife waste from runoff; dumpsters; miscellaneous urban.	5%
Urban Impervious Load Allocation	As above; failed or poorly designed septic systems.	5%
Forest Pervious Load Allocation	Wildlife waste runoff, hunting and off-roading camps	0%
Agriculture Pervious Load Allocation	Livestock waste in runoff and in stream	5%
Urban Pervious GW outflow	Septic systems, sewer leakage, illicit connections	50%
Forest Pervious GW outflow		0%
Agricultural GW outflow	Direct discharge to streams, infiltration, residual from runoff	50%

II. DESCRIBE ANY REGULATORY OR VOLUNTARY ACTIONS INCLUDING MANAGEMENT MEASURES OR OTHER CONTROLS BY GOVERNMENTS OR INDIVIDUALS THAT SPECIFICALLY APPLY TO THE POLLUTANT AND THE WATERBODY FOR WHICH THE TMDL WAS WRITTEN, THAT WILL BE ACCOMPLISHED THROUGH RELIABLE AND EFFECTIVE DELIVERY MECHANISMS, AND THAT WILL HELP ACHIEVE THE LOAD ALLOCATIONS IN THE TMDL:

See the attachment for more instructions.

Existing or required regulatory actions

RESPONSIBLE GOVERNMENT, ORGANIZATION OR ENTITY	NAME OF REGULATION/ORDINANCE	DESCRIPTION	ENACTED OR PROJECTED DATE (mm/yy)	STATUS
Morgan County Health Dept.	Septic Tank Permitting; regulates septic tank pumping	Requires permitting of septic tanks, soil testing, installation code. Prevents dumping septic pump-out in streams.	Unknown	Ongoing
Morgan County, City of Greensboro, Putnam County	Land Development Ordinances	No requirements for storm water detention	Unknown	Ongoing
EPD	NPDES Permitting and regulation	Regulates Madison WTP	Unknown	Ongoing
Morgan County & Madison Planning & Building Insp. Depts.	Soil Erosion & Sediment Control Ordinance	Provides 25' buffer on streams	Unknown	Ongoing

Existing voluntary actions

RESPONSIBLE ORGANIZATION OR ENTITY	NAME OF ACTION	DESCRIPTION	ENACTED OR PROJECTED DATE (mm/yy)	STATUS
Agricultural practitioners	Cattle & chicken BMP's	Stream fencing, nutrient management, heavy use area improvements, treatment ponds for concentrated feeding ops, etc.		Not known for this basin
NRCS	Scn 319 grant	Promoting BMP's mentioned above; cost sharing program for volunteer farms	08/2000	About 1/2 of contracts allocated, still implementing
NRCS, Extension Serv, S&WCD, Oconee RC&D	Multiple programs	Promoting programs on nutrient management, herd management, treatment lagoons, lagoon pumping, etc.	Ongoing	Ongoing

Additional recommended regulatory or other measures which should be implemented to reduce the loads of the TMDL parameter

ENTITY/ORGANIZATION RESPONSIBLE	NAME OF PROPOSED REGULATION/ORDINANCE/ OTHER	DESCRIPTION	ENACTED OR PROJECTED DATE (mm/yy)	STATUS
Morgan County, City of Madison, County Health Department	Monitoring	Monitoring regime TBA to identify specific sources	2001	Under discussion
Morgan County, City of Madison	Storm Water Ordinances	Incorporate water quality into design and operation of storm water facilities; incorporate storm water quality control into development ordinances	2003	Under Discussion
Morgan County, City of Madison, Health Dept.	Septic Tank Inspection ordinance	Provision to require septic tank inspection either at regular intervals or on sale of property.	2002	To be considered by TF
City of Madison, Health Dept., other TF members	Illicit connections	Identify any illicit connections of fecal sources to drainage system	2002 +	Under consideration
Agricultural practitioners/NRCS/Soil & Water Conservation/RC&D	Installation and use of BMP's	Encourage use of agricultural BMP's on case by case basis. BMP's include fencing, watering alternatives, heavy use area improvements, nutrient management, treatment lagoon management, etc.	2001 +	Ongoing
City of Madison	Leak detection & repair program	Systematic inspection of sewer lines on a regular basis to detect leaks and effect repairs	2001 & ongoing	To be considered by TF

III. SCHEDULE FOR IMPLEMENTING MANAGEMENT MEASURES OR OTHER CONTROL ACTIONS:

These must be implemented as expeditiously as practicable within five years of when the implementation plan is accepted by EPA.

IMPLEMENTATION ACTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Form stakeholders group	X				
Organize implementation work with stakeholders and local officials to identify remedial measures and potential funding sources	X	X			
Identify sources of TMDL parameter	X	X			
Develop management programs to control runoff including					

identification and implementation of BMPs (Phase I):	Agriculture		X	X	X	X
	Forestry					
	Urban		X	X	X	X
	Mining					
Organize and implement education and outreach programs		X	X	X	X	X
Detect and eliminate illicit discharges			X	X	X	
Evaluate additional management controls needed			X	X		
Monitor and evaluate results					X	X
Reassess TMDL allocations						X
Provide periodic status reports on implementation of remedial activities and review/modify implementation plan			X	X	X	X
If needed, begin process for Phase II (next 5 years) and subsequent phases						X

IV. PROJECTED ATTAINMENT DATE AND BASIS FOR THAT PROJECTION:

The projected attainment date is 10 years from acceptance of the implementation plan by EPA.

V. MEASURABLE MILESTONES:

- Number of management controls and activities already implemented _____6_____
- Number of management controls and activities proposed in five-year work program _____6_____
- Number of management controls and activities actually implemented in five-year work period _____ (to be completed after 5 years)
- Stream sampled to identify areas of concern developed See monitoring plan to be developed
- Other _____ _____
- Other _____ _____

VI. MONITORING PLAN:

The monitoring plan will be determined in first phase of implementation.

Describe previous or current sampling activities or other surveys to detect sources or to measure effectiveness of management measures or other controls.

ORGANIZATION	TIME FRAME	PARAMETERS	PURPOSE	STATUS
Ga. Power	Jan - Dec, 1996	Alk, hardness, turb, Ca, Mg, P, NO2+NO3, NH3, TSS, O-P, BOD, Cu, Hg, Ni, Pb, HS2, As, Se, Ma, Fe, Chloor a, COD, FC, TC	General water quality monitoring	Completed
USGS	Jan, 1996	FC	General water quality monitoring	Completed

Describe any planned or proposed sampling activities or other surveys. (Scheduled EPD sampling can be found in the Basin Planning document.)

ORGANIZATION	TIME FRAME	PARAMETERS	PURPOSE	STATUS
EPD	2004	TBD	River basin planning	Planned
Morgan County, City of Madison, County Health (Task Force)	2001 – 2005	FC	Support for TMDL implementation	TBD pending ability to secure funding from local, state, federal sources

VII. CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEING MADE:

- % concentration or load change (monitoring program)
- Categorical change in classification of the stream (delisting the stream is the goal)
- Regulatory controls or activities installed (ordinances, laws)
- Best management practices installed (agricultural, forestry, urban)

COMMENTS
