

TMDL IMPLEMENTATION PLAN FOR CARVER BRANCH

Introduction

Carver Branch is in the Oconee River Basin. The stream segment is listed on the §303(d) list for the State of Georgia for not meeting the water quality standard for fecal coliform to support its designated use of fishing. It is one of eight stream segments being addressed within Athens-Clarke County simultaneously. 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 996 cfu/100ml and suggested a reduction of 85% in both surface runoff and groundwater/interflow. 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.

Overview

The drainage basin of Carver Branch lies wholly within the boundaries of the Unified Government of Athens-Clarke County.

Land use in the basin is primarily residential with a small commercial area. The residential use is low-density single-family except for two mobile home parks.

A sewer line runs across the lower reaches of Carver Branch and along the northern edge of the drainage basin. The remainder is not sewered, and most residences and businesses use on-site septic tanks. There is one private wastewater treatment facility regulated directly by the Georgia EPD. The current Athens-Clarke County water and sewer plan calls for the area to be served by public sewer by 2003.

Possible sources of fecal coliform in the basin include overflows and failures of private wastewater treatment facilities; malfunctioning septic tanks; illicit direct discharge of residential or business wastewater into tributary streams; animal waste (livestock, pets, and wildlife); and storm water runoff.

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 Athens-Clarke County water and sewer plan calls for service for the drainage by 2003. However, recent changes to the land use plan have not been incorporated into the plan. Creation of the "Greenbelt" area in the outer parts of the county may alter plans for extending public sewer.

The history and status of the private wastewater treatment systems in the drainage are not known at this time. The Northeast Georgia office of EPD has committed to serving on the TMDL task

force for implementation of this plan.

Past development regulations in Athens-Clarke County (in place for some time) required detention ponds for large developments. However, these ponds have limited usefulness for water quality, because the ordinance is designed to address water quantity only. These ponds are inspected only during project construction. There is no program for periodic inspection of the ponds except in response to complaints.

Athens-Clarke County adopted a new land development code in December, 2000, that will require additional treatment of storm water runoff for water quantity as well as water quality. The ordinance at present calls for implementation through storm water management manuals to be adopted at a later date. These manuals are under development.

Future Activities

Watershed Team Formation

A Clarke County Watersheds Task Force will be formed to work on fecal coliform reduction in this basin as well as others in the county. Currently, the task force consists of representatives from the departments of Public Works (in charge of the storm water program), Utilities (in charge of sewerage), and Planning (in charge of land use planning and regulation). The Upper Oconee Watershed Network (UOWN), a public interest group interested in water quality in the Oconee River Basin, has volunteered to participate by linking its stream monitoring activities to the TMDL implementation plans. The Athens-Clarke County public health office will be added to the task force, as will the district and county offices of the Natural Resources Conservation Service.

The Northeast Georgia office of EPD has committed to participate in the Carver Branch task force.

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. The Upper Oconee Watershed Network, Georgia Legal Watch/Community Watershed Project, and interested members of the community attended and expressed interest in continuing to participate. Additional groups and individuals will be contacted and invited to participate in the overall county effort and the Carver Branch effort specifically. 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: Accurate delineation of the drainage (first using 7.5 min. topographic data and later from the storm water study under way now); collection of existing stream sample data; collection of reported data on private wastewater systems in the drainage; survey of agricultural practices in the basin; collection of data from the health department on the condition of septic systems in the drainage.

Monitoring

All existing data on fecal coliform concentrations in Carver Branch 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, if carried out by county staff and tested in-house, are estimated to be approximately \$100 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.

The Upper Oconee Watershed Network, and possibly other citizens' groups, sample for fecal coliform as part of their activities. UOWN has indicated a desire to direct their activities specifically toward TMDL-related stream segments. However, the level of training, certification, and oversight of their citizen monitors is unknown. Volunteer fecal coliform sampling will 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 sources in the drainage include illegal discharges, septic tank failures, failures of private septic systems, animal waste from pets, un-managed solid waste receptacles, miscellaneous surface runoff, and agricultural activities near streams.

Pollution Reduction Strategies

Failing or absent on-site septic tank systems will be addressed through the local health department and Board of Health, which are responsible for regulating septic systems. The number of septic tanks in the basin is unknown, as is their rate of failure. Considerable data are available and will be tapped to identify septic tank users and potential areas of concern. 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.

Agriculture in the basin will be evaluated with the help of the NRCS, County Extension Office, Planning Department, and field surveys of the basin. Once sources are identified, task force members will work through specific property owners to implement fecal coliform-reducing best management practices (BMP's).

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, disposal of pet waste, and other non-point source pollution prevention. The Upper Oconee Watershed Network is already very active in this area. Strategies could include a web page, mass mailings, attendance at civic clubs and homeowners' association meetings, stream walk\,s, and stream clean-ups.

Athens-Clarke County falls under the Phase II storm water regulations, and is currently undertaking a storm water study, conducted by the consulting firm of Arcadis, Geraghty, and Miller, in order to comply with the requirements of the general permit by 2003. Originally conceived as primarily a water quantity study, the scope of work has been amended to address water quality issues as well. Additional outcomes of this planning effort will be detailed drainage basin mapping at the 2-foot and 1-foot contour level, GIS mapping of all storm sewer lines of eight inches or greater, and the identification of specific problem areas.

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 are available through local water quality citizens' groups and will be explored, as well as the many services of the University of Georgia.

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

Monitoring Progress

Once 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 Carver

Branch removed from the §303(d) list if monitoring shows compliance with the fecal coliform 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: Carver Branch
(STREAM)

RIVER BASIN: Oconee
(PARAMETER) PLAN DATE: 03/27/01

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)	OCO0000004	Name/Organization	Unified Government of Athens-Clarke County				
Water body name	Carver Branch	Address	P.O. Box 1868				
HUC basin name	Upper Oconee	City	Athens	State	GA	Zip	30603-1868
HUC number	030701010505	Phone	706-613-3470		e-mail		
Primary county	Clarke	Name/Organization					
Secondary county	N/A	Address					
Primary RDC	Northeast Georgia	City		State		Zip	
Secondary RDC	N/A	Phone			e-mail		
Water body location		Name/Organization	Georgia Legal Watch/Community Watershed Project				
		Address	264 North Jackson Street				
Miles or area impacted	.68 mi.	City	Athens	State	GA	Zip	30601
Parameter addressed in plan	Fecal coliform	Phone	706-546-9008		e-mail	glw@georgialegalwatch.org	
Water use classification	Fishing	Name/Organization	Upper Oconee Watershed Network				
Degree of impairment	Partially supporting use <input type="checkbox"/>	Address	P.O. Box 531				
	Not supporting use <input checked="" type="checkbox"/>	City	Athens	State	GA	Zip	30603
Date TMDL approved by EPA		Phone			e-mail	upperoconee@yahoo.com	
Impairment due to	Point sources <input type="checkbox"/>	Name/Organization	Natural Resource Conservation Service				
	Nonpoint sources <input checked="" type="checkbox"/>	Address					
	Both <input type="checkbox"/>	City		State		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
996 cfu/100ml	150 cfu/100ml	846 cfu/100ml (40%)

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	Pet and wildlife waste from runoff; dumpsters; miscellaneous urban.	85%
Urban Impervious	As above; failed or poorly designed septic systems.	85%
	Wildlife waste runoff	85%

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
Clarke County Health Dept.	Septic Tank Permitting	Requires permitting of septic tanks, soil testing, installation code.	Unknown	Ongoing
Athens-Clarke County Planning Dept.	Land Development Ordinance	Require some storm water facilities on larger developments – driven by quantity, not quality.	Unknown	Ongoing
EPD	NPDES Permitting and regulation	EPD field office regulates private WTP facility.	Unknown	Ongoing

Existing voluntary actions

RESPONSIBLE ORGANIZATION OR ENTITY	NAME OF ACTION	DESCRIPTION	ENACTED OR PROJECTED DATE (mm/yy)	STATUS
Community Watershed Project	Education & Research	Brochures, stream walks, Annual “River Rendezvous”; press articles	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
Athens-Clarke County; CWP; other citizens' groups	Monitoring	Monitoring regime TBA to identify specific sources	08/01	Under discussion
Athens-Clarke County	Storm Water Ordinance/System Design	Incorporate water quality into design and operation of storm water facilities; incorporate storm water quality control into development ordinances	2003	Under study for general NPDES storm water permitting
Athens-Clarke County/Clarke County 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
ACC, Health Dept., other TF members	Illicit connections	Identify any illicit connections of fecal sources to drainage system	2002 +	Under consideration

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					
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		
Evaluate additional management controls needed			X		
Monitor and evaluate results				X	X
Reassess TMDL allocations					X
Provide periodic status reports on implementation of remedial activities		X	X	X	X

and review/modify implementation plan					
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 ___ 4 ___
- Number of management controls and activities proposed in five-year work program ___ 4 ___
- 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 pla to be
- Other _____ _____
- Other _____ _____

VI. MONITORING PLAN:

Monitoring data that placed stream on 303(d) list will be provided if requested.

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
USGS	Mar – Nov, 1999	PH, FC	General water quality monitoring	Completed
Athens-Clarke Co. (Utilities Dept.)	1994 – 1995	FC, Temp, pH, DO	Monitor in response to spills	Completed
Athens-Clarke Co. (Utilities & Public Works Depts.)	Continual	Uncertain	Various	Ongoing
Upper Oconee Watershed Network	Unknown	Unknown	General survey of water quality; uncertified samplers, did not necessarily use standard methods.	Ongoing

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	All	River basin planning	Planned
Upper Oconee Watershed Network	2001 – 2005	FC, other	Support for TMDL implementation	Under consideration
Athens-Clarke County (Utilities & Public Works Depts.)	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
