

**Revised TMDL Implementation Plan
HUC 0307010101 - Walnut Creek
April, 2003**

HUC 0307010101 is located in Jackson and Hall counties. The stream drainage includes portions of the cities of Gainesville, Braselton, Pendergrass, Talmo, and Jefferson.

The stream segment of concern in this TMDL implementation plan includes Walnut Creek from Caney Fork in Hall County to the Middle Oconee River in Jackson County. The primary jurisdictions that drain to the segments of concern are Jackson County and Hall County and the City of Jefferson. Other, smaller cities contribute to the drainage.

The pollutant of concern in all cases is fecal coliform. The streams are listed as “partially supporting” their designated uses for fishing.

The streams were listed on the Georgia 303(d) list of impaired water bodies after sampling events in 1999. A Total Maximum Daily Load was proposed by EPA for Walnut Creek and other stream segments in June, 2001, that recommends a reduction in the fecal coliform loading on the stream of 74%. Although other stream segments in that TMDL were included in the later (February, 2002, TMDL for the Oconee River, Walnut Creek was not.

Land use in the watershed is primarily forest and pasture, but the area is undergoing increasing subdivision development. The rapidly growing area in and around Gainesville, Georgia, lies in the upper part of the basin.

Input from stakeholders indicated the following information about the watershed:

- It is not known what percentage of cattle operations have animals fenced out of the streams. This is part of the EQIP program and the development of Nutrient Management Plans (NMP). The basin is rapidly developing for residential and commercial land uses, and it is expected that most existing farms will be phased out within the ten-year time horizon of this plan.
- If the basin follows the general pattern of development on the periphery of the Atlanta metropolitan area, production farms may give way in some cases to “hobby farms” and small horse operations. These generally do not receive attention from, and do not seek out the assistance of, the agricultural support agencies. They are not susceptible to matching grant programs or the NMP program because they are not operated for profit, so there is no payback of investment in fencing, feeding facilities, etc. These operations may pose problems for water quality in the future.
- Poultry farms usually have stack houses, NMP’s, utilize advice on land application rates of chicken manure, and setbacks and buffers on streams. About

80% of farms comply with these BMP's, and education is continuing. Regulation of chicken litter distribution is expected soon.

- The Jackson County Water and Sewerage Authority is just beginning to extend sewer lines in the unincorporated county. The basin of Walnut Creek has sewerage, so failed sewer lines are not likely sources of fecal contamination from unincorporated Jackson County. The City of Jefferson has an active sewer leak detection program.
- There are no local ordinances regulating the management of household pets or kennel waste.

Implementation

There are several actions either in place or planned by the communities. Besides the agricultural initiatives mentioned above, local governments are in the midst of changing their management of storm water runoff.

Jackson County is in the process of developing a watershed assessment in support of a wastewater treatment permit application. The recommendations of that study are not available, but are expected to include increased attention to stormwater, illicit connections, septic tanks, and other potential sources of fecal coliform.

A table showing the status of many BMP's that have a positive effect on fecal coliform pollution is shown below.

Jackson County is investigating opening a Keep Georgia Beautiful office, which will take a lead role in educating schools, civic groups, and the general public on water-quality related issues. The program sponsors an Adopt-a-Stream program.

It was the consensus of stakeholders that the specific sources of fecal coliform must be identified before action is required. Likely sources of fecal coliform identified were failed or absent septic tanks, leaking sewer lines, agricultural runoff, agricultural pollution from cattle with direct access to streams, pet and kennel discharges, "hobby farms" keeping large animals in direct contact with the streams, and miscellaneous runoff from storm water from urbanized areas. The stakeholders recommended that the extent of the contribution from specific sources be identified before "remedial" action is advised.

The plan therefore identifies the following steps for load reduction:

- Continued implementation of recent and proposed ordinance adoptions and revisions.
- Detailed sampling of the streams to localize the sources of pollutant, beginning with a general survey and following on with more and more localized and detailed sampling until specific sources can be identified.

- Implementation of BMP’s specific to the identified sources, including septic tank maintenance, Nutrient Management Plan implementation on the remaining agricultural operations, and a storm water management ordinance.
- The development of a storm water utility to fund BMP’s for existing and future development is being discussed by several communities, but not adopted as part of the plan at this time.
- Ongoing educational efforts will proceed under the auspices of Jackson County, Hall County, the NRCS, Agricultural Extension, and the cities. These will include identifying and contacting “hobby farm” owners and educating them about stream buffers and limiting access; continued promotion of agricultural BMP’s; distribution of brochures on septic tank maintenance; continuous activities of the Keep Jackson County Beautiful and Adopt-a-Stream programs involving citizens and the community.
- The effectiveness of the implementation plan should be evaluated after five years by incorporating the implementation activities that have taken place, updated land use information, and additional monitoring data into the BASINS model with which the TMDL was prepared.

Local Government Activities in the Upper Oconee Watershed

Codes: **E** = active/enforced **P** = planned **C** = considered **R** = rejected

	Jackson Co.	Hall Co.		Braselton	Jefferson	Pendergrass
<i>Ordinance/Activity</i>						
Stormwater Ordinance	E/ P	E		E	P	
Stormwater Utility	C					
Illicit Discharge Ordinance	C	P		E		
Stream Buffer Ordinance	E	E		E	E	E
Active Sewer Leak Detection				E	E	
Septic Tank Maintenance	C					
Local Soil E & S Control	E	E		E	E	E
Impervious Surface Limits	E	E		C	E	
EQUIP program for Ag	E	E				

Other Agriculture Programs	E				
Watershed Assessment Study	E			E	E
SWAP Study	E				
Wildlife Habitat Incentive Program	E				
Nutrient Man. Program	E				
Greenspace Program	E			E	E
Stormwater Master Plan	C				
Watershed Protection Plan	P				E E
Wetland Protection Ordinance					
Fecal Source Identification				E	
River Corridor Protection				E	

NOTES:

Jackson County:

- Stormwater ordinance hopefully by end of 2003
- Stormwater utility and Illicit discharge ordinance will be considered over next few years
- Not sure about specifics of sewer leak detection in municipalities
- Ag programs are volunteer/incentive
- Watershed assessments and SWAP are studies (no enforcement/implementation)
- Working on Stormwater master plan for entire county over next couple of years

Hall County:

- Impervious surface limits in North Oconee watershed only
- As property converts from Ag to residential, 50' buffers and 1.2 units/acre required
- Dry weather bacteria sampling currently being performed

Talmo, Pendergrass:

- Stormwater ordinance could be considered in future if needed

Jefferson:

- Stormwater ordinance within next couple of months (perhaps by May, 2003)

- Stormwater utility and illicit discharge ordinances have not been introduced to council]
- No septic tank ordinance has been considered
- Use video camera to do sewer leak detection

Braselton:

- Doing bacteria source identification on tributaries to the Mulberry River
- Currently updating BMP's and Development requirements

**STATE OF GEORGIA
REVISED TMDL
IMPLEMENTATION PLAN
WATERSHED APPROACH
Oconee River Basin**

Local Watershed Governments

Northeast Georgia RDC
Jackson County
Hall County
Cities of Pendergrass, Talmo, Jefferson, Braselton

TMDL Implementation Plans are platforms for establishing a course of actions to restore the quality of impaired water bodies in a watershed. They are intended as a continuing process that may be revised as new conditions and information warrant. Procedures will be developed to track and evaluate the implementation of the management practices and activities identified in the plans. Once restored, appropriate management practices and activities will be continued to maintain the water bodies. **With input from appropriate stakeholder groups, a TMDL Implementation Plan has been developed for a cluster of impaired streams and the corresponding pollutants.** The impaired streams are located in the same sub-basin identified by a HUC10 code (Figure 1).

This Implementation Plan addresses an action plan, education/outreach activities, stakeholders, pollutant sources, and potential funding sources affecting the sub-basin. In addition, the Plan describes (a) regulatory and voluntary practices/control actions (*management measures*) to reduce target pollutants, (b) milestone schedules to show the development of the management measures (*measurable milestones*), (c) a monitoring plan to determine the efficiency of the management measures and measurable milestones, and (d) criteria to determine whether substantial progress is being made towards reducing pollutants in impaired waterbodies. The overall goal of the Plan is to define a set of actions that will help achieve water quality standards in the state of Georgia. Following this section is information regarding individual segments.

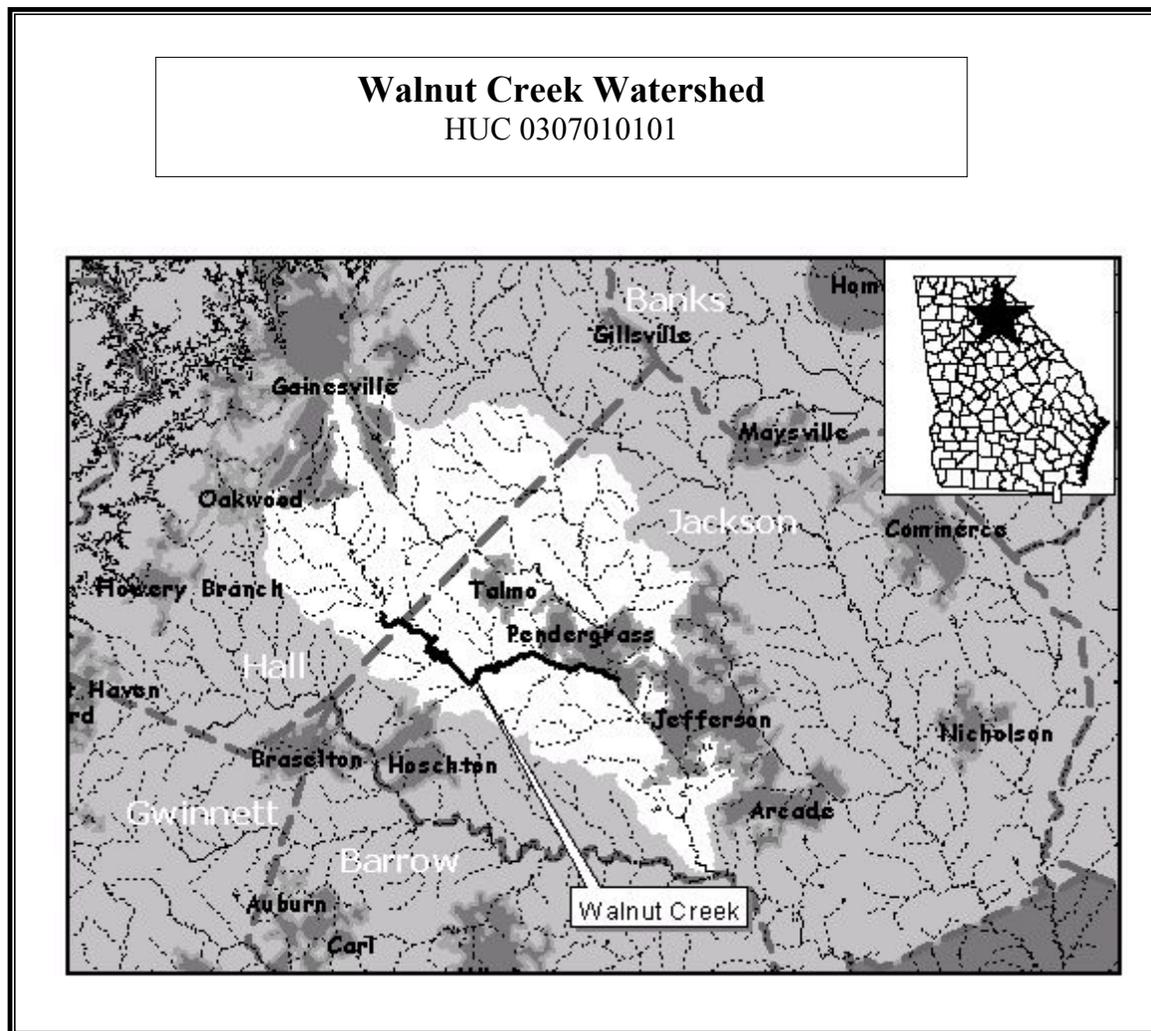


FIGURE 1

Impaired Waterbody*	Impaired Stream Location	Impairment
1. Walnut Creek	Caney Fork to Middle Oconee River	Fecal Coliform

*These Waterbody Numbers are referenced throughout the Implementation Plan.

POLLUTANT:	SOURCE:	EFFECT:	WHAT CAN I DO?	
			At Home: Community, School	At Work: Business, Government
<input type="checkbox"/> Dissolved Oxygen (DO)	<input type="checkbox"/> Industrial	<input type="checkbox"/> Habitat		
<input checked="" type="checkbox"/> Fecal Coliform (FC)	<input type="checkbox"/> Urban	<input checked="" type="checkbox"/> Recreation		
<input type="checkbox"/> Sediment	<input checked="" type="checkbox"/> Agriculture	<input type="checkbox"/> Drinking Water		
<input type="checkbox"/> Metals	<input type="checkbox"/> Forestry	<input type="checkbox"/> Aesthetics		
<input type="checkbox"/> Fish Consumption Guidelines (FCG)	<input checked="" type="checkbox"/> Residential	<input checked="" type="checkbox"/> Other (Please List)		
<input type="checkbox"/> Other (Please List)	<input type="checkbox"/> Other (Please List)	Fishing		

INFORMATION/EDUCATION/OUTREACH ACTIVITIES

An education/outreach component will be used to enhance public understanding of and participation in implementing the TMDL Implementation Plan. List of all previous and planned information/education/outreach activities.

Entity	Description	Impacted Waterbodies*	Target Audience	Anticipated Dates (MM/YY)
Natural Resource Conservation Service (NRCS)	Provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment	1	Private land owners	Continuous
GA Waterwise Council	The Water Sourcebook	1	Grades K-12	Ongoing
NEGRDC	Distributing ACCG/DCA Water Resources Toolkit CD-ROM	1	Public, local governments	Ongoing
Keep Jackson County Beautiful	New agency is planned. Will carry out water quality education program in civic groups, schools, and for the public.	2	Public, educators, farm and civic groups.	2003 and ongoing

STAKEHOLDERS

EPD encourages public involvement and the active participation of stakeholders in the process of improving water quality. Stakeholders can provide valuable information and data regarding their community and the impaired water bodies and can provide insight and/or implement management measures.

List of local governments, agricultural organizations or significant landholders, commercial forestry organizations, businesses and industries, and local organizations including environmental groups and individuals with a major interest in this watershed.

Name/Organization	Address	City	State	Zip	Phone	E-Mail
Robert Amos / Georgia Soil & Water Conserv. Comm.	P.O. Box 8024	Athens	GA	30603	(706)542-9233	
Doris Beck / Hall County Cooperative Extension Ser	734 E. Crescent Dr	Gainesville	GA	30501	(770)535-8293	
Earl Brantley / Natural Resources Conservation Service	Fed. Bldg., 355 E. Hancock Av	Athens	GA	30601	(706)546-2039	
David Clabo / City of Jefferson	147 Athens Street	Jefferson	GA	30549	(706)367-5121	
Al Crace / Jackson County Board of Commissioners	67 Athens Street	Jefferson	GA	30549	(706)367-6314	
Terry Hanzak / Georgia Soil & Water Conserv. Comm.	P.O. Box 8024	Athens	GA	30603	(706)542-9233	
Drew Marczak / Plum Creek Timber Company	P.O. Box 1069	Watkinsville	GA	30677	(706)769-4737	
Julie Owens / Georgia Environmental Protection Div	Ste 101, 4220 International Pkwy	Atlanta	GA	30354	(404)675-1651	
Jose Pagan / Natural Resources Conservation Service	P.O. Box 8, N. Midland Ave	Monroe	GA	30655	(770)267-8363	
Dana Poole / Georgia River Network	1090 South Milledge Ave	Athens	GA	30605	(770)531-6800	
Rob Rivers / Hall County Public Works & Utilities	P.O. Box 1435	Gainesville	GA	30503		
Melanie Ruhlman / Upper Oconee Watershed Network	P.O. Box 531	Athens	GA	30603	(706)367-8985	
Dan Schultz / Jackson County Planning & Development	67 Athens Street	Jefferson	GA	30549	(706)367-6345	
Mark Shirley / Jackson County Cooperative Ext Ser	67 Athens Street	Jefferson	GA	30549	(706)693-2494	
Monk Tolbert / City of Pendergrass	P.O. Box 95	Pendergrass	GA	30567	(706)367-1741	
Jerry Waddell / Jackson County Water & Sewer Authority	P.O. Box 869	Jefferson	GA	30549	(706)769-3990	
Dan Wallace / Natural Resources Conservation Service	1291 Greensboro Highway	Watkinsville	GA	30677	(706)367-8985	
Billy Ray White, Jr / Jackson Co. Planning & Develop.	67 Athens Street	Jefferson	GA	30549	(770)535-6865	

WATER BODIES/STREAMS COVERED IN THIS PLAN:

These impaired streams are located in the same sub-basin identified by a HUC10 code. Most of the information contained in this section comes from the 303(d) list and has been completed by employees of the EPD Water Protection Branch. Data that placed stream on 303(d) list will be provided upon request.

Waterbody Name #1	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Walnut Creek	Caney Fork to Middle Oconee River	14	Fishing	Partially Supporting
Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)	
Jackson	Hall County	Georgia Mountains	Nonpoint	
Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Fecal Coliform	1,000 per 100 ml (geometric mean Nov-April) 200 per 100 ml (geometric mean May-Oct)	74%		January 2002

POLLUTANT SOURCES

It is important to recognize the potential source(s) causing water quality impairment. Each source must be controlled to comply with target TMDL/Load Allocations for each pollutant. Included is a description of how the sources contribute to the impairment and the waterbody that is impaired.

List of major nonpoint source categories and sub-categories or individual sources (Urban Runoff, Agriculture, Forestry, Municipal Sewage Treatment Plant)

Pollutant	Sources of Pollutants	Description of Contribution To Impairment	Impacted Waterbodies*
Fecal coliform	Residential/Comercial areas	Failure of inadequately maintained septic tanks/systems cause runoff from pooled sewage; infiltration of untreated material through soils or erosion channels.	1
Fecal coliform	Agriculture	Unrestricted access of cattle to streams	1
Fecal coliform	Urban areas	Pet kennels and unrestricted deposition by pets onto surfaces, especially impervious surfaces	1
Fecal coliform	Suburban and transitional areas	“Hobby farms” and horse farms with unrestricted animal access to streams	1
Fecal coliform	Agriculture	Incorrect handling and storage of chicken manure; Over-application of manure during pasture fertilization	1

MANAGEMENT MEASURES, MEASURABLE MILESTONES AND SCHEDULE

(i.e. Local codes and ordinances, Erosion and Sedimentation Control, Storm Water Management, Local water resource monitoring)

The following table lists management measures that have been or will be implemented to achieve water quality standards and the load reductions established in the TMDL. The management measures, including regulatory or voluntary actions or other controls by governments or individuals, specifically apply to the pollutant and the waterbody for which the TMDL was written. A description is provided of how these management measures are/will be accomplished through reliable and effective delivery mechanisms, and how these management measures are/will help achieve the target TMDL. Included is the source of the pollutant, anticipated/past effectiveness of the management measure (very effective, somewhat effective, not effective), the current status (i.e. enforced, in-progress, planning), and measurable milestones and schedule. Milestones are used to measure progress in attaining water quality standards and to determine whether management measures are being implemented.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
NRCS and Ag Extension BMPs	NRCS, USDA	Education about, and cost-shared implementation of agricultural BMPs to minimize introduction of fecal material to streams	Ongoing	In progress	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal coliform	Agriculture	1	Very effective

Measurable Milestones	Schedule		Comments
	Start	End	
Measure percent of animals in watershed restricted from direct access and under a nutrient management plan	2003	2007	Goal of 80% of agricultural enterprises will have BMP's in place to reduce animal contact with streams and excess litter distribution, by 2007.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
NPDES Phase II MS4 Municipal Stormwater Permit	Hall County/Gainesville	Requires jurisdiction to have a comprehensive stormwater program that includes public education and participation, illicit discharge detection and elimination, construction site runoff control, post construction runoff control, pollution prevention, permitting and reporting, and program implementation plans.	2003	In progress, planned	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal coliform	various	1	Very effective

Measurable Milestones	Schedule		Comments
	Start	End	

Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Georgia Water Quality Control Act (OCGA 12-5-20)	GA DNR EPD	Makes it unlawful to discharge excessive pollutants (sediments, nutrients, pesticides, animal waste, etc.) into waters of the State in amounts harmful to public health, safety, or welfare, or to animals, birds, or aquatic life or the physical destruction of stream habitats	1964	Enforced	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal coliform	All	1	

Measurable Milestones	Schedule		Comments
	Start	End	

EPD acts on complaints from affected parties	Ongoing	Ongoing	Detailed geographic coverage of tributaries and reaches of concern to identify specific sources
Detailed sampling of streams and tributaries	2003	2004	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Enhanced development ordinance	Jackson County, Cities of Talmo, Pendergrass, Jefferson, Braselton	Enhanced erosion & sedimentation control implementation; new & improved ordinances based on watershed assessment.	Present/Ongoing	Planned and Considered	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal coliform	Urban runoff	1	Very effective

Measurable Milestones	Schedule		Comments
	Start	End	
New development will be required to meet higher standards	Previous	Ongoing	

Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Stormwater Ordinance	Jackson County, City of Jefferson	Limits on impervious surfaces, require detention of 2-yr return interval storm.	End of 2003	Planned	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal coliform	Urban runoff	1	Very effective

Measurable Milestones	Schedule		Comments
	Start	End	
New development will be regulated	End of 2003	Ongoing	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Sewer line leak detection	City of Jefferson	Use video camera to survey breaks in existing sewerlines so they can be repaired	Ongoing	Active	

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal coliform	Urban	1	Very effective

Measurable Milestones	Schedule		Comments
	Start	End	
Detected leaks will be repaired	Previous	Ongoing	

POTENTIAL FUNDING SOURCES The identification and discussion of dedicated funding is important in determining the economic feasibility of the above-mentioned management measures.

Funding Source	Responsible Authority	Status	Anticipated Funding Amount	Impacted Waterbodies*
Section 319(h) of the Clean Water Act	EPD/State of Georgia	Must Apply	N/A	1
Environmental Quality Incentive Program	NRCS	Must Apply	N/A	1
Conservation Reserve Program	NRCS (Farm Service Agency)	Must Apply	N/A	1
Watershed Surveys and Planning	NRCS	Must Apply	N/A	1
Conservation Technical Assistance	NRCS	Must Apply	N/A	1
Conservation Buffer Initiative	NRCS	Must Apply	N/A	1
Section 604(b) and/or 106 of the Clean Water Act	EPD via RDC	Must Apply	N/A	1

MONITORING PLAN

The purpose of this monitoring plan is to determine the effectiveness of the target TMDL and the management measures being implemented to meet water quality standards. List of previous, current or planned/proposed sampling activities or other surveys. (Monitoring data that placed stream on 303(d) list will be provided if requested.)

Name Of Regulation / Ordinance Or Management Measure	Organization	Impacted Waterbodies*	Pollutants	Purpose/Description	Time Frame		Status (Previous, Current, Proposed)
					Start	End	
TMDL Evaluation	EPD	1	Fecal coliform	Monitoring data for Georgia 305(b)/303(d) List	1999	1999	Previous
TMDL Monitoring	EPD	1	Fecal coliform	Monitoring data for Georgia 305(b)/303(d) List	2004	2004	Proposed
Source identification	Jackson County, NEGRDC	1	Fecal coliform	Systematic surveys to identify sources of contamination	2003	2005	Proposed

CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEING MADE

The following set of criteria will be used to determine whether any substantial progress is being made towards reducing pollutants in impaired waterbodies and attaining water quality standards. Discussion on each criteria is recorded in the space provided. Additional relevant criteria are presented in comments.

Percent of concentration or load change (monitoring program) _____
The fecal coliform load on the impaired water bodies should be decreased by 74% in Walnut Creek. Incorporation of updated land use data, features of the implementation plan put in place, and further monitoring should be incorporated into the TMDL model to determine if the goal is met. Analysis should take place in 2007 (five years) and subsequently every five years to monitor effectiveness.

If monitoring results show that it is unlikely that the TMDL will be adequate to meet water quality standards, revision of the TMDL may be necessary.

Categorical change in classification of the stream (delisting the stream is the goal) _____

- Regulatory controls or activities installed (ordinances, laws) _____
Implementation of changes in stormwater and development ordinances and regulations will affect 100% of new development in Hall County, Jackson County, and the cities of Jefferson, Talmo, Braselton, and Pendergrass.

- Best management practices installed (agricultural, forestry, urban) _____
Existing agricultural BMP's, plus additional installed BMPs, in combination with the replacement of >90% of existing agriculture with residential and commercial development, is expected to result in 80% of active agricultural enterprises using recommended BMP's by 2007.

COMMENTS

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**Environmental Protection Division of the Department of Natural Resources,
State of Georgia.**