

**STATE OF GEORGIA
TIER 2 TMDL Implementation Plan (Revision # 01)**

Segment Name: Sculls Creek

River Basin: Ogeechee River Basin

Date: September 17, 2007

Local Watershed Governments:

Emanuel County, Jenkins County, City of Millen,
Screven Count, City of Rocky Ford, Bulloch County

I. INTRODUCTION

Total Maximum Daily Load (TMDL) Implementation Plans are platforms for evaluating and tracking water quality protection and restoration. These plans have been designed to accommodate continual updates and revisions as new conditions and information warrant. In addition, field verification of watershed characteristics and listing data has been built into the preparation of the plans. The overall goal of the plans is to define a set of actions that will help achieve water quality standards in the state of Georgia.

This implementation plan addresses the general characteristics of the watershed, the sources of pollution, stakeholders and public involvement, and education/outreach activities. In addition, the plan describes regulatory and voluntary practices/control actions (Best Management Practices, or BMPs) to reduce pollutants, milestone schedules to show development of the BMPs (*measurable milestones*), and a monitoring plan to determine BMP effectiveness.

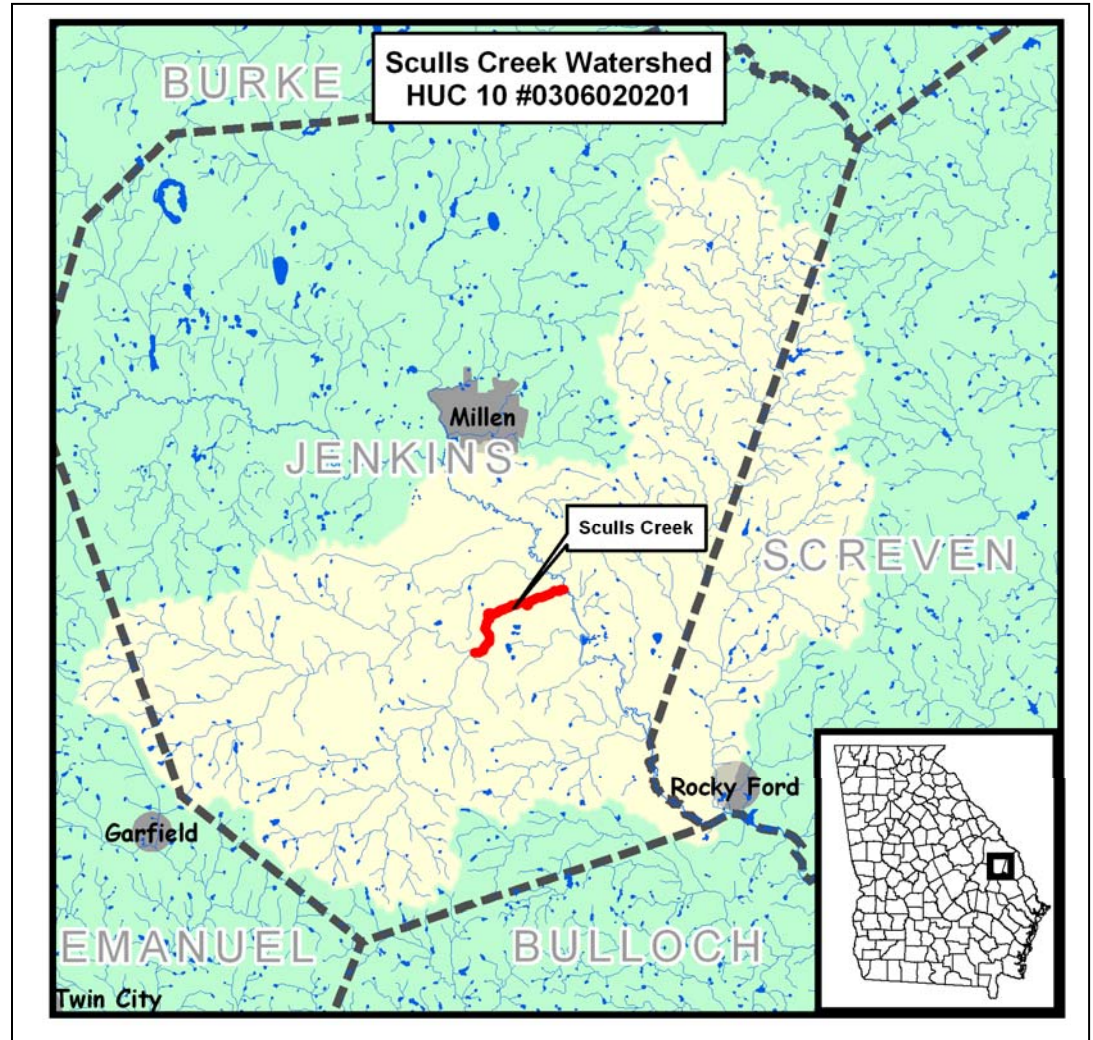


Table 1. IMPAIRED SEGMENTS IN THE HUC 10 WATERSHED

IMPAIRED SEGMENT	IMPAIRED SEGMENT LOCATION	EXTENT (mi/ac)	CRITERIA VIOLATED	EVALUATION
Sculls Creek	Richardson Creek to Ogeechee River near Scarboro	4 miles	Fecal Coliform	NS
*Sculls Creek	Richardson Creek to Ogeechee River near Scarboro	4 miles	Dissolved Oxygen	NS

* Plan to be done by EPD

II. GENERAL INFORMATION ABOUT THE HUC 10 AND THE SPECIFIC SEGMENT WATERSHED

Following is a review of watershed characteristics including its size and location, political jurisdictions, physical features, land uses, and identified potential sources of pollutants that could cause or contribute to violations of water quality standards addressed in this TMDL Implementation Plan. New conditions or changes in information contained in the previous TMDL Implementation Plan should be in **bold** and underlined.

The Ogeechee River Basin is located in mid to southeastern Georgia, encompassing approximately 5,540 square miles. The Ogeechee River Basin is bordered by the Oconee and Altamaha River Basins to the west and the Savannah River Basin to the east. The Ogeechee River originates in Greene County, in central Georgia. In the headwaters, the North and South Forks of the Ogeechee River join to form the Ogeechee River. The River then flows approximately 245 miles southeast toward the Atlantic Ocean. The Canoochee River originates in Emanuel County and flows southeast to join the Ogeechee River near Richmond Hill where it then flows to the Atlantic Ocean. The Ogeechee River Basin contains parts of Piedmont and Coastal Plain physiographic provinces, which extend throughout the southeastern United States.

The Ogeechee River basin is located in mid to southeastern Georgia and is flanked by the Altamaha and Oconee River basins to the west and the Savannah River basin to the east. The headwaters are located in the southeastern edge of the Piedmont Province and the basin continues southeastward to the Atlantic Ocean. In the headwaters, the North and South Fork Ogeechee Rivers join to form the Ogeechee River which runs 245 miles in a southeasterly direction nearly the entire length of the basin. The Ogeechee River basin is located entirely in the State of Georgia and drains approximately 5,540 square miles.

The Ogeechee River basin is further into four subbasins, or Hydrologic Unit Codes (HUCs). Each subbasin, or HUC8, is then divided into HUC10s and HUC 12s. Sculls Creek is located in HUC10 #0306020201 as shown in yellow in the map on page 1. The HUC10 extends into parts of Jenkins County, Screven County and a small portion of Emanuel County, Georgia. The contaminated segment of Sculls Creek is in central Jenkins County and begins at Richardson Creek and extends to meet the Ogeechee River near Scarboro.

The HUC10 covers 123,029.9 acres and includes portions of the cities of Millen and Rocky Ford. The data table below shows the current land use for the portions of Emanuel, Jenkins and Screven Counties that are within the HUC10. Most notably, 93 percent of the land use in the HUC 10 is agriculture and forestry.

Current Land Use in HUC10 # 0306010201			
	Current Land Use	Area	Acres
Screven County	Agriculture/Forestry	986,109,243	22,638.0
	Residential	19,041,919	437.1
	Transportation/Communication/Utilities	48,760,575	1,119.4
	Total:	1,053,911,738	24,194.5
Jenkins County	Agriculture/Forestry	4,094,676,512	94,000.8
	Commercial	2,399,496	55.1
	Public/ Institutional	21,327,581	489.6
	Residential	167,459,054	3,844.3
	Transportation/Communication/Utilities	1,039,447	23.9
	Total:	4,286,902,091	98,413.7
City of Millen	Agriculture/Forestry	766,905	17.6
	Commercial	205,490	4.7
	Public/ Institutional	266,780	6.1
	Residential	837,004	19.2
	Park/Recreational/Conservation	696,452	
	Transportation/Communication/Utilities	963,007	22.1
	Undeveloped/Unused	648,993	14.9
	Total:	4,384,632	100.7
City of Rocky Ford	Agriculture/Forestry	12,814,571	294.2
	Commercial	75,689	1.7
	Residential	544,934	12.5
	Transportation/Communication/Utilities	490,071	11.3
	Public/ Institutional	6,996	0.2
	Undeveloped/Unused	52,716	1.2
	Total:	13,984,978	321.1
Total Land Use for HUC 10 #0306010502:		5,359,183,439	123,029.9
Source: CSRA Regional Development Center, 1994 and 2005			

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The land directly surrounding the stream segment, or the HUC12, is characterized in the table below. The HUC12 covers 43,255 acres and its land is made up by more than 82% forest and row crops.

HUC12 Land Use for Sculls Creek		
	Acres	Percentage
Open Water	216	.5%
Residential	15	0%
High Intensity Commercial, Industrial, Transportation	7	0%
Bare Rock, Sand Clay	16	0%
Quarries, Strip Mines, Gravel Pits	-	0%
Transitional	2,358	5.5%
Forest	20,131	46.5%
Row Crops	15,491	35.8%
Pasture, Hay	1,183	2.7%
Other Grasses (Urban, recreational; e.g. parks, lawns)	10	0%
Woody Wetlands	3,823	8.8%
Emergent Herbaceous Wetlands	6	0%
Total	43,255	100%
Source: TMDL for Fecal Coliform in Ogeechee River Basin		

The current TMDL of the stream segment indicates possible sources of fecal coliform contamination are non-point sources. Non-point sources are diffuse, and generally, but not always, involve accumulation of fecal coliform bacteria on land surfaces that wash off as a result of storm events. Possible non-point sources of contamination include, but are not limited to, wildlife, agriculture, and urban development.

The importance of wildlife as a source of fecal coliform bacteria in streams varies considerably, depending on the animal species present in the subwatersheds. Based on information provided by the Wildlife Resources Division (WRD) of GA DNR, the animals that spend a large portion of their time in or around aquatic habitats are the most important wildlife sources of fecal coliform. Waterfowl, most notably ducks and geese, are considered to potentially be the greatest contributors of fecal coliform. This is because they are typically found on the water surface, often in large numbers, and deposit their feces directly into the water. Other potentially important animals regularly found around aquatic environments include raccoons, beavers, muskrats, and to a lesser extent, river otters and minks. Population estimates of these animal species in Georgia are currently not available.

Deer Population per Mile²	
County	2001-2005 Optimum population (number/mi²)
Emanuel	35
Jenkins	35
Screven	35
Source: TMDL Ogeechee Creek	

White-tailed deer have a significant presence throughout the Ogeechee River Basin. The 2001 deer census for Emanuel, Jenkins, and Screven Counties are presented in the table.

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Fecal coliform from urban areas can be attributed to multiple sources, including: domestic animals, leaks and overflows from sanitary sewer systems, illicit discharges, leaking septic systems, runoff from improper disposal of waste materials, and leachate from both operational and closed landfills. Urban runoff can contain high concentrations of fecal coliform from domestic animals and urban wildlife. Fecal coliform enter streams by direct washoff from the land surface, or the runoff may be diverted to a storm water collection system and discharged through a discrete outlet structure. For large, medium, and small urban areas (populations greater than 50,000), the storm water outlets are regulated under MS4 permits. For smaller urban areas, the storm water discharge outlets currently remain unregulated. In addition to urban animal sources of fecal coliform, there may be illicit connections to the storm sewer system.

A portion of the fecal coliform in the Ogeechee River Basin may be attributed to failure of septic systems and illicit discharges of raw sewage. The table presents the number of septic systems in each county of in the Sculls Creek Watershed existing in 1990, based on U.S. 1990 Census Data, and the number existing in 2002, based on the Georgia Department of Human Resources, Division of Public Health data. In addition, an estimate of the number of septic systems installed and repaired during the twelve-year period from 1990 to 2002 is given.

Since 1990, Georgia has seen a substantial increase in the number of septic systems in most of its counties. This is generally a reflection of population increases outpacing the expansion of sewage collection systems during this period. The figure to the right compares the number of septic tanks existing in 1990 to those existing in 2002, as well as the number of repairs between 1990 and 2002.

Septic Tanks, 1990-2002				
County	Existing Septic Systems (1990)	Existing Septic Systems (2002)	No. of Septic Systems Installed (1990 to 2002)	No. of Septic Systems Repaired (1990 to 2002)
Emanuel	4672	7129	2457	75
Jenkins	1026	1801	775	17
Screven	6005	7383	1378	29

Landfills Located within Emanuel, Jenkins, and Screven Counties				
Name	County	Permit No.	Type	Status
Emanuel County - US 80	Emanuel		Not Applicable	Inactive
Garfield	Emanuel	053-003D	Dry Trash Landfill	Closed
Twin City	Emanuel		Not Applicable	Inactive
Jenkins County - CR 54 Phase 2 MSWL & C&D Site	Jenkins	082-005D	Sanitary Landfill	Active
Jenkins County - CR 54 SL	Jenkins	082-004D	Sanitary Landfill	Ceased accepting waste
Screven County - Rocky Ford Road	Screven	124-003D	Sanitary Landfill	Closed

Leachate from landfills may contain fecal coliform bacteria that may at some point discharge into surface waters. Sanitary (or municipal) landfills are the most likely to serve as a source of fecal coliform bacteria. These types of landfills receive household wastes, animal manure, offal, hatchery and poultry processing plant wastes, dead animals, and other types of wastes. Older sanitary landfills were not lined and most have been closed. Those that remain active and have not been lined operate as construction/demolition landfills. Currently active sanitary landfills are lined and have leachate collection systems. All landfills, excluding inert landfills, are now required to install environmental monitoring systems for groundwater

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and methane sampling. There are 101 known landfills in the Ogeechee River Basin. Of these, 10 are active landfills, and 91 are inactive or closed. As shown in the table above, several of the older, inactive landfills were never permitted.

Beyond non-point source, it is important to mention other significant activities relevant to water quality planning and management present in the HUC10. Within the HUC10, some activities that may influence the contamination of Sculls Creek are Water Pollution Control Facilities (WPCFs), National Pollution Discharge Elimination System (NPDES), and Confined livestock and Confined Animal Feeding Operations (CAFOs).

In general, industrial and municipal wastewater treatment facilities have NPDES permits with effluent limits. These permit limits are either based on federal and state effluent guidelines (technology-based limits) or on water quality standards (water quality-based limits).

Municipal and industrial wastewater treatment facilities' discharges may contribute fecal coliform to receiving waters. There are sixteen NPDES permitted discharges with flows greater than 0.1MGD identified in the Ogeechee River Basin that discharge treated municipal wastewater, but there are none that effect Sculls Creek.

Another possible source of fecal coliform contamination is from Confined Livestock and Confined Animal Feeding Operations (CAFOs). CAFOs are characterized by high animal densities which results in large quantities of fecal material being contained in a limited area. Processed agricultural manure from confined hog, dairy cattle, and select poultry operations is generally collected in lagoons. It is then applied to pastureland and cropland as a fertilizer during the growing season, at rates that often vary monthly.

In 1990, the State of Georgia began registering CAFOs. Many of the CAFOs were issued land application or NPDES permits for treatment of wastewaters generated from their operations. The type of permit issued depends on the operation size (i.e., number of animal units). The table below presents information on the CAFOs located in or near the HUC 10 that are registered or have land application permits.

Name	City	County	Animal Type	Total No. of Animals	Permit No.
J.B. Gay & Son Inc.	Garfield	Jenkins	Swine	1100	GAU700000
Roberts Dairy	Millen	Jenkins	Dairy		GAU700000

Fecal coliform bacteria contributions from deer to water bodies are generally considered less significant than that of waterfowl, raccoons, and beavers. This is because a greater portion of their time is spent in terrestrial habitats. This also holds true for other terrestrial mammals such as squirrels and rabbits, and terrestrial birds (GA WRD, 2002). However, feces deposited on the land surface can result in the introduction of fecal coliform to streams during runoff events. It should be noted that between storm events, considerable decomposition of the fecal matter might occur, resulting in a decrease in the associated fecal coliform numbers. This is especially true in the warm, humid environments typical of the southeast.

Agricultural livestock are a potential source of fecal coliform to streams in the Ogeechee River Basin. The animals grazing on pastureland deposit their feces onto land surfaces, where it can be transported during storm events to nearby streams. Animal access to pastureland varies monthly, resulting in varying fecal coliform loading rates throughout the year. Beef cattle spend all of their time in pastures, while dairy cattle and hogs are periodically confined. In addition, agricultural livestock will often have direct access to streams that pass through their pastures, and can thus impact water quality in a more direct manner (USDA, 2002).

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The table below provides the estimated number of beef cattle, dairy cattle, goats, horse, swine, sheep, and chickens by category reported by county. These data were provided in the TMDL and are based on 2003 data from Natural Resources Conservation Service (NRCS).

County	Livestock								
	Beef Cattle	Dairy Cattle	Goats	Horses	Hogs	Sheep	Chickens-Layers	Chickens-Broilers Sold	Chickens-Breeders
Emanuel	12,400	-	2,00	480	600	-	-	-	-
Jenkins	4,574	2,300	300	25	1000	-	-	50,000	-
Screven	8,000	200	2,000	300	600	100	-	-	-
Source: Natural Resources Conservation Service, 2003									

III. CAUSES AND SOURCES OF SEGMENT IMPAIRMENT(S) LISTED IN TMDLs

Table 2 provides information contained in the current TMDL for the impaired water body. This includes the name and location of the impaired segment, the water quality criteria violated, and the wasteload and load allocations determined in the TMDL. Potential sources described in the TMDL may include domestic treatment facilities (M), industrial treatment facilities (I), urban runoff and sources (UR), and other nonpoint or unknown (NP) sources. By definition, “wasteload allocations” (WLA) are established for municipal and industrial treatment facilities and storm water discharges in permitted areas (WLA_{sw}), while “load allocations” (LA) are established for nonpoint sources. **Wasteload allocations are assigned by EPD during the NPDES permitting process. They are not part of EPD’s TMDL implementation planning process, which deals solely with non-point sources of pollutants.**

Table 2. WASTE LOAD AND LOAD ALLOCATIONS AND TMDLS FOR THE IMPAIRED SEGMENT

STREAM SEGMENT NAME	LOCATION	CRITERIA VIOLATED	WLA	WLA_{sw}	LA	TMDL
Sculls Creek	Richardson Creek to Ogeechee River near Scarboro	Fecal Coliform	Must meet WQS	Must meet WQS	1.81E+13 (counts/30 days)	2.01+13 (counts/30 days)

Table 3 also contains information presented in the TMDLs that this plan is designed to address. This includes the criteria responsible for the impairment(s), the specific water quality standard(s) violated, potential sources/causes of impairment, and the needed reduction in source loads estimated in the TMDL.

Table 3. SOURCES OF IMPAIRMENT INDICATED IN THE TMDLs

CRITERIA VIOLATED : __FC__	WQ STANDARD	SOURCES OF IMPAIRMENT	NEEDED % REDUCTION (FROM THE TMDL)
Fecal Coliform	1,000 per 100 ml (geometric mean Nov-April) 200 per 100ml (geometric mean May-Oct)	Non-point Sources	40%

IV. IDENTIFICATION AND RANKING OF POTENTIAL SOURCES OF IMPAIRMENT

This section identifies and describes, in order of importance, the extent and relative contributions from sources of pollutants listed in Table 2 and identified through this TMDL implementation planning process. This description includes information presented in the current TMDL or TMDL implementation plan and/or collected during the TMDL implementation planning process that either verifies or alters estimates of contributions from the sources listed in the TMDL and repeated in Table 2.

Identification and ranking of potential sources or causes of impairment were performed through a visual survey of the watershed and involvement of the stakeholder group. The visual survey was conducted on February 6, 2007 and covered Sculls Creek HUC12.¹ Images of the existing stream channel and land use conditions were recorded and specific locations of potential sources of pollution were mapped using GPS technology.

Limited information was gathered during a visual survey. The contaminated stream segment of Sculls Creek is only accessible from the East Old Savannah Rd Bridge. Pictures in Appendix C confirm that the land surround the creek is categorized as forestry. The remainder of the HUC12 did not show any uncharacteristic land use.

¹ All observations were based on the current conditions observed by CSRA Regional Development Center Staff at the time of the visual field survey.

Table 4 ranks potential sources of water quality impairments in order of importance as determined through this TMDL implementation planning process. A “rating scale” of 0.5 to 5 has been developed for this activity. “Rating A” is an estimate of the geographic extent of each potential nonpoint source as a percentage of the contributing watershed area, percent of stream miles affected, or number of acres. “Rating B” is an estimate of the relative contribution from each major source of the pollutant causing the impairment. The overall relative “Impact Ratings” for each source is calculated by multiplying Rating A by Rating B.

The following table provides guidance for rating the estimated extent (Rating A) and portion of the contribution (Rating B) from each potential source and cause.

Rating A: Estimated Geographic Extent of the Source or Cause in the Contributing Watershed	Rating B: Estimated Portion of Contribution from the Source to the Pollutant Load Causing the Impairment	Rating
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	0.5
Scattered or low (approximately 5-20%)	Scattered or low (approximately 5-20%)	1
Medium (approximately 20-50%)	Medium (approximately 20-50%)	3
Widespread or high (approximately 50% or more)	Widespread or high (approximately 50% or more)	5
Unknown	Unknown	UNK

Comments on the source of information used to determine the extent or contribution are entered in the applicable columns in Table 4. Appropriate management actions (i.e. watershed assessments, increased water quality monitoring, etc.) are suggested where available information is deemed inadequate to estimate the extent and relative contribution of significant potential sources.

Table 4. EVALUATION OF POTENTIAL SOURCES OF STREAM SEGMENT IMPAIRMENT

CRITERION 1: Fecal Coliform.

POTENTIAL SOURCES	ESTIMATED EXTENT OF CONTRIBUTION		ESTIMATED PORTION OF CONTRIBUTION		IMPACT RATING (A X B)
	Comments	Rating (A)	Comments	Rating (B)	
Agriculture	Medium	3	Unable to estimate portions	UNK	UNK
Forestry	Medium	3	Unable to estimate portions	UNK	UNK

V. STAKEHOLDERS

Public involvement through the stakeholder process is a vital component of TMDL implementation planning. Stakeholders with local knowledge can provide valuable information regarding their communities, impaired waters, potential sources of impairments, and BMPs that might be employed to improve water quality. This section describes outreach activities engaging local stakeholders in the TMDL implementation plan preparation process, including the number of attendees, meeting dates, and major findings, and recommendations.

A total of two stakeholder group meetings were held for the development of the Sculls Creek TMDL Implementation Plan. The first meeting was held on January 11, 2007 and five stakeholders were in attendance. The second stakeholder meeting was held on June 29, 2007 and there were two attendees. During the first stakeholder meeting, general background information on the TMDL process was provided and an open discussion of potential sources of pollution was held.

During the second stakeholder meeting, a watershed characterization was conducted using the images collected during the field survey and locations of potential sources of pollution according to the stakeholders. Ranking impairment sources was found to be difficult without additional monitoring data, but with the limited resources available the stakeholders ranked the impairments in the following order: agriculture and forestry. Because of the limited data available, consensus regarding the estimated portion of contribution for each potential sources could not be reached.

Stakeholders were given an additional opportunity to comment on the TMDL Implementation planning process when they were asked to view the draft Implementation plan via the RDC website. Stakeholders were given a two week period to make comments and suggest changes to the Implementation plans before final drafts were submitted to EPD.

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Following is a list of advisory committee or watershed group members who participated in this TMDL implementation planning process.

Table 5. STAKEHOLDER ADVISORY GROUP MEMBERS

Last Name	Organization	Address	City	State	Zip	Phone	Email
Donnie Brannen	Georgia Forestry Commission, Jenkins Co, Dist 10	3786 Highway 17 S	Millen	GA	30442	478-982-5786	jenkinsunit@gfc.state.ga.us
Maggie Cartwright	City of Keysville	PO Box 159	Keysville	GA	30816	706-547-3007/3008	
Carol Cates	Jenkins County Board of Commission	PO Box 797	Millen	GA	30442	478-982-2563	
Theron Hill Cates	NRCS Millen Services Center	837 College Ave.	Millen	GA	30442	478-982-4281	theron.cates@ga.usda.gov
James Dixon	Burke County Board of Commissioners	PO Box 89	Waynesboro	GA	30830	706-554-2324	
Pam Drake	Jenkins County Health Department	PO Box 627	Millen	GA	30442	(478) 982-2811	pwdrake@gdph.state.ga.us
William Duffie	UGA Cooperative Extension Office	PO Box 300	Waynesboro	GA	30830-0300	706-554-2119	wduffie@uga.edu
Al Frazier	EPD (East Central District Office0	1885-A Tobacco Rd.	Augusta	GA	30906	706-792-7744	
George Glenn	Georgia Forestry Commission, Burke Co. Dist. 3	PO Box 1463	Waynesboro	GA	30830	706-554-2310	burkeunit@gfc.state.ga.us
Judy Gordon	Sierra Club (Savannah River Group)	PO Box 3434	Augusta	GA	30914	706-650-8314	jpgordon77@comcast.net
James Henry	Jenkins County Board of Commission	PO Box 797	Millen	GA	30442	478-982-2563	
Amos Bernard Jones	NRCS Waynesboro Service Center	715 W 6th St.	Waynesboro	GA	30830	706-554-5183	Amos.Jones@ga.usda.gov
James A. Knight	City of Millen	PO Box 929	Millen	GA	30442	478-982-6100	
Hazel Langrall	CSRA Land Trust	PO Box 148	Augusta	GA	30903	706-312-5263	hazel@csrlt.org
Ed Meadows	CSRA NRCS	960 Honey Ridge Rd.	Millen	GA	30442	706-551-6362	ema1129@aol.com
Wade B. Parker	UGA Cooperative Extension Office	434 East Barney Ave.	Millen	GA	30442	478-982-4408	wparker@uga.edu
William (Bill) Owens	Burke Co. Planning Commission	PO Box 89	Waynesboro	GA	30830	706-554-2324	

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Joe Riley	CSRA Resource Conservation and Development	3456 D. Peach Orchard Rd.	Augusta	GA	30906	706-798-7967	
Albert K. Rocker	City of Millen	PO Box 929	Millen	GA	30442	478-982-6100	
Frank M. Rumph	Burke County Health Dept.	PO Box 238	Waynesboro	GA	30830	(706) 554-3456	fmrumph@gdph.state.ga.us
Eunice Seigler	City of Keysville	PO Box 159	Keysville	GA	30816	706-547-3007/3008	
Merv Waldrop	Burke County Board of Commissioners	PO Box 89	Waynesboro	GA	30830	706-554-2324	

Major stakeholders in attendance of the stakeholder meetings are listed in Appendix A.

VI. MANAGEMENT MEASURES AND ACTIVITIES

Table 6A identifies significant BMPs that either have been or may be implemented in the future to address sources of impairment. The BMPs are in Column 1, organization responsible for implementation in Column 2, description of the measure(s) in Column 3, and sources of funding or other resources in Column 4. Column 5 contains one of the following status codes: (A) installed and active; (AE) active and will be enhanced or expanded; (R) required by law, regulation or permit conditions; (P) currently proposed, but not required; (NR) new recommendation; or (NE) enhanced existing recommendation. Column 6 shows the approximate date when the measure has or will be implemented. Column 7 contains an “extent” rating for the BMP or the percentage of individual sources to which the BMP has or will be applied (see the following table). Column 8 is an estimated BMP “effectiveness” rating that may be either provided by local experts or derived from technical guidance information. The following table provides guidance for rating the estimated management measure “extent” and “effectiveness” of each significant potential source.

BMP Extent (Percentage of Sources to Which the BMP Has or Will Be Applied)	BMP Effectiveness (Percent Removal of Pollutant by the BMP)	Rating
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	.5
Scattered or low (approximately 5-20%)	Low to medium (approximately 5-25%)	1
Medium (approximately 20-50%)	Medium to High (approximately 25-75%)	3
Widespread or high (approximately 50% or more)	High (approximately 75% or more)	5
Unknown	Unknown	UNK

Table 6A. MANAGEMENT MEASURES AND ACTIVITIES

GENERAL AND SPECIFIC MEASURES APPLICABLE TO CRITERION 1: Fecal Coliform

BEST MANAGEMENT PRACTICE (1)	RESPONSIBILITY (2)	DESCRIPTION (3)	SOURCES OF FUNDING & RESOURCES (4)	STATUS CODE (5)	TARGET DATE (6)	EXTENT RATING (7)	EFFECT. RATING (8)
Federal Clean Water Act Section 404	EPA (situations involving forestry are normally referred to the GFC to determine compliance with this regulation)	Requires normal ongoing agricultural and silvicultural practice to adhere to BMPs and 15 baseline provisions for road construction and maintenance in and across waters of the US including lakes, rivers, perennial and intermittent streams, wetlands, sloughs in order to qualify for the exemption from the permitting process.		R	Ongoing	UNK	>75% when properly applied with to forestry road construction and maintenance
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		A	Ongoing	UNK	

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<p>Georgia's Best Management Practices</p>	<p>Georgia Forestry Commission (matters involving enforcement are generally referred to GA EPD)</p>	<p>destruction of stream habitats. GFC program to inform landowners, foresters, timber buyers, loggers site preparation and reforestation contractors and others involved with silvicultural operations about commonsense, economical effective practices to minimize nonpoint source and thermal pollution. GFC encourages and monitors compliance and conducts a complaint resolution program.</p>		<p>A</p>	<p>Ongoing</p>	<p>UNK</p>	<p>>75% when properly applied to site preparation and harvesting activities.</p>
<p>Georgia Forestry Commission Monthly BMP Assurance Examination</p>	<p>Georgia Forestry Commission (matters involving enforcement are generally referred to GA EPD)</p>	<p>In an effort to document "reasonable assurance" that water quality will be proactively protected during regular ongoing silvicultural operations, the GCF will offer a monthly BMP assurance examination of active sites. All active of ongoing sites will be identified either through monthly air patrol flights, courthouse records, riding the roads, notification or by landowners. Sites located within watersheds of specific biota (sediment) impaired streams will be given a higher priority to identify and conduct examinations.</p>	<p>Federal and State</p>	<p>A</p>	<p>Ongoing</p>	<p>UNK</p>	
<p>Memo to the Field: Application of BMPs to mechanical silvicultural site preparation activities for the establishment of pine plantations in the Southeast (Silviculture)</p>	<p>EPA/ US Army Corps of Engineers - (cases normally referred to GFC to make initial determination)</p>	<p>Identifies certain bottomland hardwood wetlands that should be subject to permitting if converting to pine plantations.</p>	<p>State</p>	<p>A</p>	<p>Ongoing</p>	<p>UNK</p>	
<p>Federal Farm Bill (Swampbuster, Ag)</p>	<p>US Department of Agriculture Natural Resource Conservation Service</p>	<p>Prohibits landowners participating in federal price support programs from converting forested wetlands to agriculture</p>	<p>Federal</p>	<p>A</p>	<p>Ongoing</p>	<p>UNK</p>	
<p>Partners for Fish and Wildlife</p>	<p>US Fish and Wildlife Services</p>	<p>This is a proactive, voluntary program that works with private landowners to restore fish and wildlife habitats on their land. The projects have several different focuses, but for the purpose of water quality the projects focus on stream and riparian restoration and restoration of rare species habitat.</p>	<p>Federal variable cost share</p>	<p>P</p>	<p>Ongoing</p>	<p>UNK</p>	

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Farm Bill 2002	United States Department of Agriculture / National Resources Conservation Services	Enhances long-term quality of our environment and conservation of our natural resources. This bill provides several opportunities for receiving grants to improve water quality.	Federal Cost-Share and Incentive Programs.	A	Ongoing	UNK	Varies with BMP applied.
Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services	Voluntary program that provides technical and cost share assistance for protection of ground and surface water, erosion control, air quality, wildlife habitat, and plant health.	Federal 50% cost share with possible additional incentive payments	P	Ongoing	UNK	Varies with BMP applied.
Special Forestry/Wildlife Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services	Special funds allocated out of the EQIP program that will address forest road erosion/water quality, plant health, and wildlife habitat. This program has a separate ranking for rewarding money from the regular EQIP program.	Federal 50% cost share with possible additional incentive payments	A	Ongoing	UNK	Varies with BMP applied.
Wildlife Habitat Incentives Program (WHIP)	Natural Resources Conservation Services	Provides technical and cost share assistance for the creation of high quality wildlife habitat. Habitats of special concern include riparian areas and endangered and threatened species habitat.	Federal 75% of cost of the installation of practice provided	P	Ongoing	UNK	Varies with BMP applied.
Wetlands Reserve Program (WRP)	Natural Resources Conservation Services	Provides technical and financial assistance to landowners to enhance degraded wetlands degraded by farming or draining. There are three options with WRP to receive funds that have differing time agreements and easements resulting in different cost share. In all programs participants control access to the land, may lease or use land for hunting, fishing, and other passive recreational activities. Compatible uses are allowed as long as they do not degrade the wetland.	Federal Cost Share 1. Permanent Easement :Pays appraised value of land (\$2,000/ acre cap) and 100% of costs of restoration. 2. 30-Year Easement : Pays 75% of appraised value of land and 75% of restoration costs. 3. Restoration Cost Share Agreement: Pays 75% of restoration costs, no easement on the property.	P	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.
Conservation Security Program (CSP)	Natural Resources Conservation Services	This is the first program that rewards farmers and ranchers for high levels of environmental stewardship. Producers on cropland, orchards, vineyards, pasture and range may apply for CSP regardless of size, type of operation, or crops produced. Land in other cost share programs is not eligible. CSP will first be offered in watersheds with greatest potential for improving water quality, soil quality and grazing land condition. In 2005, the four watersheds of focus will be the Ichawaynochaway, Kinchagoonee-Muckalee, Middle	Federal Cost Share There are three tiers of involvement, which result in differing expectations and cost share opportunities.	A	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.

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		Flint, and Upper Ochlockonee. An enhancement example is to install a riparian buffer.					
Conservation Reserve Program (CRP)	Natural Resources Conservation Services / USDA Farm Services Agency	Provides technical assistance, rental payments and cost share funding to address specific natural resource concerns including: protection of ground and surface waters, soil erosion and wildlife habitat. Eligible practices include tree planting, grassed waterways, wildlife habitat buffers, and shallow water area for wildlife and filter strips.	Federal Annual rental payment for land taken out of production and 50% cost share for practice installation.	P	Ongoing	UNK	Varies with BMP applied.
GA Growth Planning Act (OCGA 12-2-8)	GA DNR, Department of Community Affairs, and local units of government.	Authorized GA DNR to develop minimum planning standards and procedures that local jurisdictions could adopt and enforce pertaining to the protection of river corridors, mountaintops, water supply, watersheds/reservoirs, groundwater recharge areas, and wetlands. Silvicultural activities may be exempted from permitting requirements provided the activity complies with BMPs.	State	A	Ongoing	UNK	
Water Bank Act	United States Department of Agriculture / Natural Resources Conservation Services	To preserve, restore and improve wetlands of the Nation and thereby to conserve surface waters to preserve and improve habitat for migratory waterfowl and other wildlife resources to retire lands not in agricultural production to enhance the natural beauty of the landscape and to promote comprehensive and total water management planning. 10-year contracts with landowners to preserve wetlands and retire adjoining agricultural lands.	Federal Annual payments may be made to participating owners, and the costs of conservation measures may be shared. Total annual payments to owners were limited to \$10 million in any year.	A	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.
Georgia Rules and Regulations for Water Quality Control Chapter 391-3-6-.20 & .21	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.	Outlines the Swine and non-swine Feeding Operation Permit Requirements for Concentrated Animal Feeding Operations (CAFOs) with more than 300 animal units. CAFOs of more than 300 but equal to or less than 1000 animal units receive a land application system (LAS) permit. Larger CAFOs with more than 1000 but less than 3000 must obtain an NPDES permit from EPD.		A	Ongoing	UNK	Assume no discharge and >75% removal.
National Pollutant Discharge Elimination	Environmental Protection Agency and Georgia Environmental Protection Division	Permitting program created under the Clean Water Act to protect and improve water quality by regulating Concentrated Animal Feeding	Federal and State	A	Ongoing	UNK	Assume no discharge and >75% removal.

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System (NPDES) Permit Regulations for CAFOS (40 CFR Part 122 & 412)		Operations (CAFOs) and providing minimum permit requirements for CAFOs of more than 1000 animal units.					
Chapter 40-13-8 Animal Manure Handlers Rules of Georgia Department of Agriculture Animal Industry Division	Georgia Department of Agriculture	This requires that persons engaged in removing animal manure from livestock/poultry production areas, transporting animal manure on public roadways, or depositing animal manure to a premise other than its point of origin obtain a permit and follow rules to control animal disease, and outlines regulations for transportation, equipment and storage.	State	A	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.
Conservation of Private Grazing Land Program	United States Department of Agriculture / Natural Resources Conservation Services	This technical assistance will offer opportunities for: better grazing land management; projects for improving water quality include: protecting soil from erosive wind and water; conserving water; providing habitat for wildlife; sustaining forage and grazing plants.	Federal (Farm Bill 2002) This is not a Cost-Share Program.	P	Ongoing	UNK	Varies with BMP applied.
Section 319(h) Non-point Source Implementation Grant	Georgia Environmental Protection Division	Funds distributed through a competitive process to public agencies, regional development centers, State colleges and universities, and State agencies. Eligible projects include TMDL or Watershed Management Plan Implementation, BMP Demonstrations, and Information and Education.	Federal and State Cost Share Program. Recipient must provide 40% match.	A	Ongoing	UNK	Effectiveness will vary with the specific application and must be individually determined.

Work Sheet for Table 6B is designed to evaluate the capacity of existing, proposed, or pending BMPs to achieve nonpoint source load reductions specified in the TMDL as well as other BMPs that might be implemented to further reduce pollutant loadings from significant sources. This approach is intended to provide a usable local guide to adopt BMPs for achieving water quality goals, establishing priorities for grant or loan programs, and identifying priorities for local watershed assessments and protection plans.

Columns 1 and 2 contain significant potential sources and their corresponding impact ratings (from Table 3). Column 3 lists significant BMPs applicable to each significant source (from Table 6A). Column 4 is a very brief “evaluation summary”, developed in conjunction with local stakeholders, of whether existing or proposed BMPs will achieve load reductions identified in the TMDL. Column 5 contains a summary of additional information needed to further determine significant sources and their relative contributions, and could contain recommendations for water quality monitoring, watershed assessments, or additional data acquisition. If current or proposed management measures are judged inadequate to achieve the load reductions for significant sources identified in the TMDL, additional management measures that could effectively reduce pollutant loads should be listed in “Additional Information / Measures Needed” (Column 5) and included as new enhanced existing recommendations (NE) or new recommendations (NR) under “Status Code (5)” in Table 6B and under “Milestones” (Table 9).

**Work Sheet for Table 6B. EVALUATION OF GENERAL AND SPECIFIC MANAGEMENT MEASURES AND ACTIVITIES
APPLICABLE TO EACH CRITERION**

APPLICABLE TO CRITERION 1: Fecal Coliform.

SIGNIFICANT POTENTIAL SOURCES (1) (From Table 3)	IMPACT RATING (2) (From Table 3)	APPLICABLE BMPs (3) (From Table 6A)	EVALUATION SUMMARY (4)	ADDITIONAL INFORMATION / MEASURES NEEDED (5)
Non-point Sources	UNK	Georgia’s Best Management Practices		Additional monitoring. Education for hunters, farmers, foresters, citizens, and other interested parties.
		Section 319(h) Non-point Source Implementation Grant		
		Environmental Quality Incentives Program (EQIP)		

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Table 6B identifies new enhancements to existing measures (NE) or new recommended measures (NR) that could improve or supplement current or proposed management measures listed in Table 6A, where current and required measures have been judged inadequate for achieving the load reductions from significant sources identified in the TMDL. After further evaluation generated in the Work Sheet for Table 6B, the additional management measures proposed in Table 6B have been determined more effective in reducing pollutant loads from the most likely sources of impairment. The BMPs are listed in Column 1, organization responsible for implementation in Column 2, description of the measure(s) in Column 3, and sources of funding or other resources in Column 4. Column 5 contains one of the following status codes: (NE) enhanced existing measure or (NR) new recommended measure. Column 6 shows the approximate date when the measure has or will be implemented. Column 7 contains an “extent” rating for the BMP or the percentage of individual sources to which the BMP could be applied (see the following table). Column 8 is an estimated BMP “effectiveness” rating that may be either provided by local experts or derived from technical guidance information. The following table provides guidance for rating the estimated management measure “extent” and “effectiveness” of each significant potential source.

BMP Extent (Percentage of Sources to Which the BMP Has or Will Be Applied)	BMP Effectiveness (Percent Removal of Pollutant by the BMP)	Rating
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	.5
Scattered or low (approximately 5-20%)	Low to medium (approximately 5-25%)	1
Medium (approximately 20-50%)	Medium to High (approximately 25-75%)	3
Widespread or high (approximately 50% or more)	High (approximately 75% or more)	5
Unknown	Unknown	UNK

**Table 6B. RECOMMENDED ADDITIONAL MANAGEMENT MEASURES AND ACTIVITIES TO ACHIEVE LOAD REDUCTIONS
(COMPILED FROM TABLE 6A AND COLUMN 5 IN WORK SHEET FOR TABLE 6B)**

APPLICABLE TO CRITERION 1: Fecal Coliform

BEST MANAGEMENT PRACTICE (1)	RESPONSIBILITY (2)	DESCRIPTION (3)	SOURCES OF FUNDING & RESOURCES (4)	STATUS CODE (5)	TARGE T DATE (6)	EXTENT RATING (7)	EFFECT. RATING (8)
Outreach and Education	State, RDC, local, NRCS, County Extension Service	Develop program to educate hunters and property owners to discourage the placement (illegal dumping) of animal (both wild game and domestic) carcasses in or near bodies of water, specifically streams on the 305(b)/303(d) list.	State, Federal, local NR	NR	Ongoing	UNK	UNK

VII. MONITORING PLAN

Water quality monitoring serves several purposes, including obtaining data to determine sources of pollution, supporting management decisions, describing baseline conditions, and evaluating the effects of management measures on water quality. This section describes parameters to be monitored, status, whether monitoring is required for watershed assessments or storm water permits, and the intended purpose. Submittal of a Sampling and Quality Assurance Plan (SQAP) for EPD approval is mandatory if monitoring data is to be used in support of listing decisions.

Water quality data used to evaluate the criteria violated are less than five years old? Yes [] No [].

Table 7. MONITORING PLAN

PARAMETER (S) TO BE MONITORED	RESPONSIBLE ENTITY	STATUS (CURRENT, PROPOSED, OR RECOMMENDED)	TIME FRAME		PURPOSE (If for listing assessment, date of SQAP submission)
			START	END	
Fecal Coliform	EPD, USGS	Current	Every 5 years		Ongoing monitoring of impaired stream segment in order to update state 305(b) and 303(d) lists of impaired waters.

VIII. PLANNED OUTREACH FOR IMPLEMENTATION

Table 8 lists and describes outreach activities that will be conducted to support this implementation plan, or help to improve water quality in the segment watershed. Identify either the projected start date or completion date. At a minimum, this is to include all education/outreach activities defined in the contractual Scope of Work for TMDL Implementation Plan development or revisions.

Table 8. PLANNED OUTREACH FOR IMPLEMENTATION

RESPONSIBILITY	DESCRIPTION	AUDIENCE	START OR COMPLETION DATE
CSRA Regional Development Center	The CSRA RDC will make the TMDL Implementation plan available to interested stakeholders and will meet with and discuss the plan with interested parties. The RDC will also inform all governing bodies affected by or potentially affected by the plan.	Any interested stakeholder or governing body in the 13 county CSRA region.	Ongoing

IX. MILESTONES AND MEASURES OF PROGRESS FOR BEST MANAGEMENT PRACTICES (BMPs) AND OUTREACH

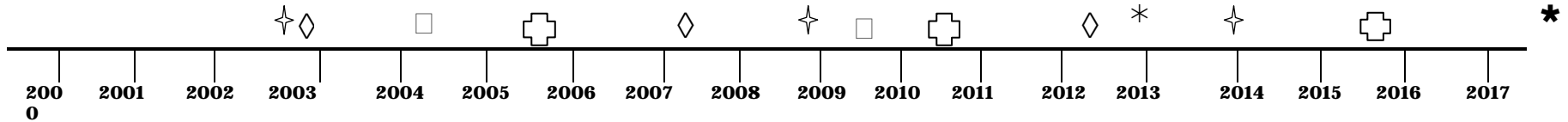
Table 9 tracks and reports progress of significant management measures identified in Tables 6A, 6B, and other sections of this plan, including outreach, additional monitoring and assessments, and enhancement or installation of BMPs. Significant activities and the target dates of accomplishment are listed under STATUS, and comments are provided on the effectiveness of the management measure, the degree of community support, what was learned, how the measure might be improved in the future, and other pertinent observations.

Table 9. MILESTONES AND MEASURES OF PROGRESS

BEST MANAGEMENT PRACTICE	RESPONSIBLE ORGANIZATION	STATUS PROPOSED INSTALLED		COMMENT
Federal Clean Water Act Section 404	EPD	Ongoing		
Georgia Water Quality Control Act (OCGA 12-5-20)	GA DNR EPD	Ongoing		
Georgia's Best Management Practices	Georgia Forestry Commission , GA EPD	Ongoing		

PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from receipt of this TMDL Implementation Plan by Georgia EPD.



- ✦ Projected EPD Basin Group Monitoring
- New TMDLs Completed
- ◇ Revised or Updated TMDL Implementation Plan Received by EPD
- ⊕ Evaluation of Implementation Plan/water Quality Improvement
- * Project Attainment for Plans Prepared in 2002
- * Project Attainment for Plans Prepared in 2007

Prepared By:	Amanda Prior		
Agency:	CSRA Regional Development Center		
Address:	3023 Riverwatch Parkway		
City:	Augusta	ST:	GA ZIP: 30907
E-mail:	aprior@csrardc.org		
Date Submitted to EPD:	August 1, 2007	Revision:	1

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APPENDIX A.
STAKEHOLDERS

All stakeholders with a major interest in this watershed, including local governments, agricultural or commercial forestry organizations, significant landholders, businesses and industries, and local organizations, including environmental groups and individuals, are listed in Table 5. Attendees of the stakeholder meeting on January 16, 2007 and June 5, 2007 are listed in the table below.

Jan. 9, 2007	June 7, 2007
Jimmie Harris, CSRA RC&D	Amos Jones, NRCS
James Henry, Jenkins County Board of Commission	Ed Meadows, CSRA NRCS
Stephen Murray, Burke County Health Department	
William Owens, Burke County Planning Commission	
Lee Webster, Burke County Planning Commission	

APPENDIX B.

UPDATES TO THIS PLAN

If this is a major or minor revision of an existing plan, this section will describe the date, section or table updated, and a summary of what was changed and why. Georgia EPD has developed guidelines for revising existing TMDL implementation plans.

N/A – this is a new TMDL Implementation Plan.

APPENDIX C.

FIELD SURVEYS, NOTES, PHOTOGRAPHS, AND MAPS.

