

**STATE OF GEORGIA**

**TIER 2 TMDL Implementation Plan (Revision # 01)**

**Segment Name:** LONG CREEK **Date:** June 15, 2007

**River Basin:** Savannah River Basin

**Local Watershed Governments:**

Oglethorpe and Wilkes Counties

Cities of Lexington, Crawford, Rayle and Tignall

**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
Long Creek	Macks Creek to Clark Creek	3 miles	Fecal Coliform	NS

\* Plan to be done by EPD

## II. GENERAL INFORMATION ABOUT THE HUC 10 AND THE SPECIFIC SEGMENT WATERSHEDS

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 are in **bold** and underlined.

The HUC 10 # 0306010405 encompasses parts of Oglethorpe and Wilkes Counties. The City of Lexington is entirely within the watershed. Cities that lie partially within the watershed are Crawford, Rayle and Tignall. The Long Creek TMDL segment is not supporting its designated use of fishing due to fecal coliform impairment. Long Creek is a tributary of the Broad River, which is also listed for several impaired segments with established TMDLs. The HUC 10 watershed is 170,172.8 Acres.

2004 NEGRDC Land Use for Long Creek TMDL Segment Watershed			The Long Creek (Macks Creek to Clark Creek) TMDL segment is 3 miles in length and is located on the Oglethorpe County/Wilkes County line. The data that listed the segment were collected at the Wilkes County Rd. 109 (Saxton-Mattox Rd.) crossing near Tignall in 2002. Wilkes County is not in the NEGRDC region, therefore TMDL implementation efforts will be concentrated in Oglethorpe County. The Oglethorpe County portion of the watershed is 104,446.3 acres
Land Use Category	Area (Acres)	% of total	
Residential	6294.8	6%	Primary land uses in the watershed are forestry/logging, animal production and residential. Forestry/logging accounts for 77% of land use and represents all of the land in close proximity to the stream segment. The primary source on forestry/logging land is wildlife, but there can be human sources during hunting season. Animal production accounts for 12% of the watershed land use and consists primarily of pasture for cattle, swine production, and poultry and egg production. Residential land accounts for 6% of the watershed. Crawford is the only municipality in Oglethorpe to have sanitary sewerage facilities, but as of October 2005 no sewer lines had been built within the portion of the city that is in the Long Creek watershed, and the treatment facility is located outside of the watershed as well. Most if not all of the residences in the Long Creek watershed are served by individual septic systems. The watershed is very rural in nature, but the population of Oglethorpe County is growing rapidly.
Commercial	1483.3	1%	
Industrial	41.6	0%	
Transportation/Communication/Utility	1379.6	1%	
Park/Recreation/Conservation	874.5	1%	
Public/Institutional	236.5	0%	
Mining/Extraction	389.1	0%	
Crop Production	1114.5	1%	
Animal Production	12524.5	12%	
Forestry/Logging	80057.2	77%	
Game Preserve	40.7	0%	
Other	9.8	0%	
<b>Total</b>	<b>104446.3</b>	<b>100%</b>	

There are two landfills in the watershed. The Oglethorpe County US 78 C/D Landfill is open and the Oglethorpe County-US 78 Phase 1 is inactive. Both Oglethorpe landfills are permitted.

Town Creek is the water source for the city of Crawford. The NEGRDC conducted a regional water resources study in 2004. In the section on Water Supply it says that Oglethorpe County is in urgent need of a larger water supply. Its demand is estimated to have already exceeded its supplies. In the section on wastewater treatment capacity, it shows that the Crawford wastewater treatment plants are predicted to exceed capacity by 2010. The Crawford WPCP is being shut down and a new facility will be constructed in the Oconee River Basin. There has been essentially no treatment in old system. Probably a contributor to fecal coliform loads.

The Oglethorpe County Comprehensive Plan was written in 2005. According to this plan, Oglethorpe County and the City of Crawford adopted a Small Water Supply Watershed Protection Plan for the Town Creek intake that supplies Crawford with drinking water. The small water supply watershed protection criteria require a 100 ft. vegetated buffer and a 150ft. septic drainfield and impervious surface setback for streams within a 7-mile radius upstream of the intake and a limit of 25% impervious surface in the watershed or existing use, whichever is greater. This does not apply to existing land use. The plan also states that Oglethorpe County adopted River Corridor Protection, Groundwater Recharge and Wetlands Protection ordinances. Crawford has also adopted Groundwater Recharge and Wetlands Protection Ordinances. Oglethorpe County has exceeded state buffer requirements increasing the buffer from 25ft to 75ft for 1<sup>st</sup> and 2<sup>nd</sup> order streams and increasing the buffer from 100ft. to 150ft. for 3<sup>rd</sup> or higher order or the 100 year flood plain whichever is greater.

Keep Madison Beautiful led the 2005 and 2006 Rivers Alive Cleanups on the Broad River in Oglethorpe, Madison, and Elbert Counties. The Broad River Watershed Association is active in Broad River watershed in Oglethorpe County and has been conducting a water quality study on Long Creek and other streams in the Broad River watershed. Oglethorpe County is in the Oconee River RC&D region. The Oconee River RC&D provides Erosion and Sedimentation Control training that is available to all member counties. In addition, they have led EPA 319(h) funded programs in other counties in the region, but these have not been active in the Long Creek watershed.

**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<sub>sw</sub>), 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 <sub>sw</sub>	LA	TMDL
Long Creek	Macks Creek to Clark Creek	Fecal Coliform			9.22E+11 counts/30days	1.02E+12 counts/30days

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 nonpoint source loads estimated in the TMDL.

**Table 3. SOURCES OF IMPAIRMENT INDICATED IN THE TMDLs**

CRITERIA VIOLATED :	WQ STANDARD	SOURCES OF IMPAIRMENT	NEEDED % REDUCTION (FROM THE TMDL)
Fecal Coliform Bacteria (FC)	1,000 per 100 ml (geometric mean Nov-April) 200 per 100 ml (geometric mean May-Oct)	NP	62

#### 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.

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Sources in the Long Creek TMDL segment watershed were identified by conducting visual field surveys of the stream crossings and the watershed land use. Prior to the visual field surveys, point data from the Georgia Environmental Protection Division was compiled and analyzed to determine the location of any point sources of pollution in the watershed. This data included the location of NPDES permitted facilities, landfills, LAS and CAFOs. In addition, 2005 aerial photos from the National Agricultural Imagery Program were used to determine possible sources of fecal coliform pollution within the watershed. 2004 RDC land use data was also consulted to determine the extent of potential sources of fecal coliform. One purpose of the TMDL implementation plan is to compare the most recent RDC land use data with the 1995 land use data that was used in the development of the TMDLs. However, in the case of the Long Creek segment watershed, the TMDL land use data included the portion of the watershed that is in Wilkes County, which is outside of our region, so comparison was not possible.

The visual field survey consisted of a windshield survey of land use in the watershed and a visual assessment of stream condition at road crossings. The stream segment was not conducive to walking due to private property. Sources investigated during the windshield survey were primarily animal production facilities, because these are easy to identify from aerials and it can be readily apparent if they are not using certain Best Management Practices such as animal exclusion from streams. These facilities were considered to be priority sources if animals had access to the stream or there were not best management practices in place to prevent runoff of fecal matter into the stream. Notes and photographs were taken to document observations of the stream segment and the surrounding watershed.

The field surveys were presented to stakeholders at a TMDL implementation meeting. Any comments that were made in the meeting were included in the visual field survey report, which can be found in Appendix C of this document. The field surveys were posted on the NEGRDC website TMDL page.

##### **Point Sources**

There is one urbanized area in the Long Creek watershed (Crawford), which has sewer systems. However, sanitary sewer lines have yet to be extended into the watershed for the Long Creek segment, so contamination from sewer leaks is not likely. The Crawford WPCP is being shut down and a new facility will be constructed in the Oconee River Basin. There has been essentially no treatment in old system. Probably a contributor to fecal coliform loads.

There are two NPDES permitted facilities in the Long Creek watershed, and both are maintained by the Oglethorpe County Board of Education. The two facilities are over 20 miles upstream of the TMDL segment. No activities related to these facilities were observed during the watershed survey.

## **Non-Point Sources**

### Wildlife

77% of the watershed land use is forestry/logging. In addition there is a Wildlife Management Area. Almost all of the land in close proximity to the TMDL segment is forestry land. In forested areas it is likely that wildlife is the primary source of fecal coliform; however, there may be human sources as well (hunting camps). A 2005-2006 update to the Georgia DNR Wildlife Resources Division's 2005-2014 Deer Management Plan calculates the actual, average deer population for Elbert, Madison, and Oglethorpe Counties (Deer Management Unit 5) to be 34.1 deer/forested square mile. Forested designates all areas that are not residential, commercial or industrial, cropland or open pastureland. That would equate to 4,266 deer in the watershed. Projected optimum deer density (number of deer that the habitat can support in full health) for DMU 5 remains at 35-deer/square mile. Contributions from deer to coliform bacteria loadings in water bodies are considered less significant than contributions made from waterfowl, raccoons and beavers. According to Oglethorpe County officials, there is a large feral hog population on Long Creek. Much of the TMDL segment is bordered by forestry/logging land, so wildlife have access to all areas of the segment and many areas on the tributaries.

### Animal Production

Animal Production accounts for 12% of the watershed land use. There are several farms in the Long Creek watershed. However, there are no farms in close proximity to the TMDL segment. 2006 estimated livestock populations for Oglethorpe County are: 17,100 beef cattle, 1,000 dairy cattle, 700 goats, 1,200 horses, 16,000 hogs, 250 sheep, 127,200 chickens (layer), 11,635,000 chickens (broilers), and 196,707 chickens (breeders). During the watershed survey, we visited several farms to determine if there was in fact animal production at the site and to make observations of any activity that could contribute to fecal coliform loading, such as animal access to the stream. No such activities were observed. There are 4 permitted swine CAFOs (Dean Pierce Farm, Indian Creek Farm, Stocks Farm Inc., and Mossland Farms Inc.) in the Oglethorpe County portion of the watershed that house a total of 9,465 swine. There are 2 swine CAFOs pending permit approval that may be within the watershed (Bridges Farm and Walker Turkey Farms, Inc.), which house 7,500 swine. There is also a Dairy CAFO in the Wilkes County portion of the watershed (Smith's Dairy Farms, Inc.), which houses 750 cattle.

### Failing Septic Systems

Residential accounts for 6% of watershed land use. The majority of residences in the watershed are served by individual septic systems. The City of Crawford has sewer lines but according to RDC GIS data the sewer lines have not extended to the Long Creek watershed. It is likely that there are failing septic systems in the watershed, because there is no ordinance requiring maintenance. There is a requirement for permitting of septic systems upon installment, and systems must be repaired if they are reported to be failing. In Oglethorpe County there were 3,448 septic systems in 1990 and 6,075 septic systems in 2002. 117 systems were repaired from 1990-2002. It is estimated that there are 1,092 residential parcels with septic systems in the watershed, assuming that no residences have been connected to sewer. About 150 of these parcels are adjacent to a stream in the watershed, and 3 of them are adjacent to the TMDL segment. There are no known residences that lack sewage treatment, but it is possible that some exist in the watershed.

### Urban Runoff

There are two municipalities (Lexington and Crawford) in the watershed with slightly increased commercial growth and impervious surface. Storm water runoff is increased in urban areas due to impervious surfaces. Runoff can carry pet, human and wildlife waste to streams.

#### Landfills

There are two landfills in the watershed. The Oglethorpe County US 78 C/D Landfill is open and the Oglethorpe County-US 78 Phase 1 is inactive. Both Oglethorpe landfills are permitted.

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.

<b>Rating A:</b> Estimated Geographic Extent of the Source or Cause in the Contributing Watershed	<b>Rating B:</b> Estimated Portion of Contribution from the Source to the Pollutant Load Causing the Impairment	<b>Rating</b>
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.**

<b>POTENTIAL SOURCES</b>	<b>ESTIMATED EXTENT OF CONTRIBUTION</b>		<b>ESTIMATED PORTION OF CONTRIBUTION</b>		<b>IMPACT RATING (A X B)</b>
	<b>Comments</b>	<b>Rating (A)</b>	<b>Comments</b>	<b>Rating (B)</b>	
Wildlife	77% of land use is forestry/logging	5	Wildlife likely to be abundant and some in close proximity to the stream	3	15
Animal Production	12% of land use is animal production	1	Farms in close proximity to tributaries	3	3
Septic Systems/Straight Pipes	6% of land use is residential	1	Some in close proximity to stream segment	1	1
Urban Runoff	Very little urban development in watershed	0.5	Increased impervious surface results in more runoff of pollutants	1	0.5
Illegal Dumping		UNK		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, recommendations, and approvals.

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Stakeholders were involved in the TMDL implementation planning process through public meetings about TMDLs and TMDL implementation, through invitation to participate in visual field surveys, through county meetings to draft the plans, through one-on-one meetings, and through correspondence via e-mail and telephone.

### Stakeholder Identification

Stakeholders were identified by compiling lists of stakeholders who participated in previous implementation activities and by reviewing TMDL implementation plans written by other RDCs to determine which organizations they brought to the table. Others were identified by word of mouth.

Press releases were sent out to local newspapers announcing public meetings, and memorandums were sent to previously identified key stakeholders. The Press releases and memos suggested that stakeholders invite others who are interested in water quality to the meetings as well. At the meetings it was made known that the stakeholder advisor group is ever expanding and that anyone with a vested interest in water quality should be added.

### Elbert/Madison/Oglethorpe Counties Public Meetings

November 13, 2006 (14 attendees)

- Viewed video entitled “Watershed Wisdom: Georgia’s TMDL Program”
- PowerPoint presentation entitled “Introduction to TMDL Implementation “ was presented by RDC

March 6, 2007 (11 attendees)

- Presented visual field surveys
- Presented case studies of BMP implementation and 319 (h) projects used for TMDL implementation

### Stakeholder Comments/Questions

- Concerns were raised about the accuracy of the RDC land use layer on the maps
  - GIS staff found more updated land use layers, but they are from 2004 so any changes since 2004 will not be included
  - Land use layers are parcel based. Parcel land use is determined by aerial photos and tax data from the internet. Some parcels may be labeled inaccurately
- Concerns were raised that the listing of water bodies is based on very limited sampling

- Mary Gazaway of EPD responded that as of 2002, 4 samples must be collected within a 30-day period and the geometric mean of those samples has to exceed the limit for the stream to be listed. EPD recommends that sampling be conducted quarterly.
- Dudley Hartel mentioned that Madison County has a Adopt-a-Stream Program
- Ruth Ann Tesanovich said Madison County is in the process of revising its comprehensive land use plan. As part of the proposed revision the riparian buffers would be increased to 50ft. Property Owners for Commonsense Growth recommended it be increased to 75ft.
  - The revision was passed with riparian buffer requirements being increased to 50ft.
- Can volunteers submit water quality data for listing/delisting decisions?
  - Yes, but they must have an EPD approved Sampling Quality Assurance Plan and the samples must be analyzed in an EPD certified lab
  - UGA (Engineering or Ecology) has an EPD certified lab that volunteers can use (ask Mark Risse)
  - Municipal Wastewater Treatment Facilities have EPD certified labs
- The suggestion was made that future meetings be conducted during the day so there will be more participation
- Another suggestion was to meet with each county separately at the county seat

### **Oglethorpe County Advisory Group Meeting**

**April 24<sup>th</sup>, 2007**

**(8 Attendees)**

- Presented draft implementation plans for Long Creek and South Fork Broad River (Madison/Oglethorpe)
- Revised plan based on stakeholder comments/suggestions

### **Stakeholder Comments/Suggestions**

- The advisory group believes wildlife to be primary source of fecal coliform pollution for Long Creek.
- Suggestion was made that the estimated contribution from wildlife be rated 3 instead of 1.
- The suggestion was made that some of the wording in the animal production source paragraph be changed.
- Rory Richardson of NRCS mentioned that the Oconee River RC&D plans to conduct a 319 funded agricultural BMP installation project in the Long Creek watershed.
- Norman McGlohon mentioned that the livestock population numbers are not accurate. He said he would e-mail a link to the correct numbers.
- There are no lift stations in Oglethorpe County
- Sewer lines were smoke tested last year
- Stakeholders would like copies of land use maps
- County doesn't have the resources to implement new regulations or participate in cost share programs.
- The Crawford WPCP is being shut down and a new facility will be constructed in the Oconee River Basin. There has been essentially no treatment in old system. Probably a contributor to fecal coliform loads.
- County extension publishes article in local newspaper, including articles about septic maintenance.
- Master Equine Program began in Oglethorpe County and will not be back in Oglethorpe for a while, but there are other similar programs.

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**

NAME/ORG	ADDRESS	CITY	STATE	ZIP	PHONE	E-MAIL
Randy Gordon, Oglethorpe County Planning and Zoning	109 Boggs St.	Lexington	GA	30648	706-743-8159	randy@onlineoglethorpe.com
John Faz, Oglethorpe County Code Enforcement	109 Boggs St.	Lexington	GA	30648	706-743-7262	<a href="mailto:occeo@alltel.net">occeo@alltel.net</a>
Sheila Arnold, Oglethorpe County Clerk	P.O. Box 261	Lexington	GA	30648	706-743-5270	Sarnold61@alltel.net
Robert Johnson, Oglethorpe County Commission	P.O. Box 261	Lexington	GA	30648	706-743-5670	
George Spearing, Crawford Water Department	P.O. Box 383	Crawford	GA	30630	706-743-5996	crawfordwater@alltel.net
Rory Richardson, Natural Resource Conservation Service	52 A Lexington Ave.	Washington	GA	30673	706-678-2630	<a href="mailto:Rory.Richardson@usda.gov">Rory.Richardson@usda.gov</a>
Herman Wheatley, Natural Resource Conservation Service	52 A Lexington Ave.	Washington	GA	30673	706-678-2630	<a href="mailto:Herman.wheatley@usda.gov">Herman.wheatley@usda.gov</a>
C. Norman McGlohon, Former Oglethorpe County Extension Director	Room 304 Hoke Smith Building, University of Georgia	Athens	GA	30603	706-524-1206	<a href="mailto:mcglohon@uga.edu">mcglohon@uga.edu</a>
Cary Fordyce, Oglethorpe County Chamber of Commerce	P.O. Box 56	Crawford	GA	30630	706-743-3113	foxtrote@sprynet.com
Beverly Montgomery, Oglethorpe County Commission	P.O. Box 285	Lexington	GA	30648-0285	706-743-8213	bkmontgomery@alltel.net

Major stakeholders in the watershed are listed in Appendix A.

**VI. MANAGEMENT MEASURES AND ACTIVITIES**

Table 6A identifies significant BMPs that either have been or may be taken 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.

<b>BMP Extent</b> (Percentage of Sources to Which the BMP Has or Will Be Applied)	<b>BMP Effectiveness</b> (Percent Removal of Pollutant by the BMP)	<b>Rating</b>
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**

<b>BEST MANAGEMENT PRACTICE (1)</b>	<b>RESPONSIBILITY (2)</b>	<b>DESCRIPTION (3)</b>	<b>SOURCES OF FUNDING &amp; RESOURCES (4)</b>	<b>STATUS CODE (5)</b>	<b>TARGET DATE (6)</b>	<b>EXTENT RATING (7)</b>	<b>EFFECT. RATING (8)</b>
Federal Clean Water Act, Section 305(b) and 303(d)	USEPA, Georgia DNR/EPD, Local/County Government	The congressional objective of the CWA “is to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Section 305 (the <i>National Water Quality Inventory</i> ) requires states to report progress in restoring impaired waters to EPA on a biennial basis. Section 303(d) requires states to identify ‘impaired’ waters, submit a list to EPA every two years, and develop TMDLs for these waters.	Federal, State	A	In Place, On Going		
Georgia Water Quality Control Act (OCGA 12-5-20)	Georgia Rules and Regulations for Water Quality Control, Chapter 391-3-6	Law prohibiting discharge of excessive pollutants (sediments, nutrients, pesticides, animal wastes, 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.	Federal, State, Local/County Governments	A	In Place, Ongoing		

		Law authorizing Georgia EPD to control water pollution, eliminate phosphate detergents and regulate sludge disposal; to require permits for agricultural ground and surface water withdrawals; to prohibit siltation of state waters by land disturbing activities and require undisturbed buffers along state waters; to require land-use plans that include controls to protect drinking water supply sources and wetlands; to require river basin management plans on a rotation schedule for all major river basins.					
Georgia Planning Act, Part 5	Oglethorpe County, municipalities	Coordinated Planning Program, managed by Georgia DCA, requires local governments to identify Developments of Regional Impact (DRI) and develop plans to protect and manage Regional Impact Resources (RIR).	Local/County Governments Impact Fees	A	In Place, On going		Effectiveness varies with the specific BMPs applied.
Regulation of On-Site Sewage Management Systems, IAW O.C.G.A. 290-5-26	Georgia DHR, County Board of Health	Rules and regulations for installation and repair of on-site sewage management systems.	State, County Board of Health	A	In place, On-going	5	3 (in new development)
Conservation Subdivision Ordinance	Oglethorpe County	Ordinance allowing for conservation subdivisions with high-density residential development, minimization of development impacts, and the preservation of 40% of the property as greenspace.		A	Ongoing	.5	.5
Georgia Planning Act, Part 5 - River/Stream Corridor Protection Ordinance	Oglethorpe County	Coordinated Planning Program, managed by Georgia DCA, assigns local governments Environmental Planning Criteria (set by Georgia DNR) to include in local long-term comprehensive plans. Exceeds state standards for riparian buffer requirement by requiring a 75ft. riparian buffer for 1 <sup>st</sup> and 2 <sup>nd</sup> order streams and a 150ft. riparian buffer for 3 <sup>rd</sup> or higher order streams (or the 100 year flood plain whichever is greater) (applies to new development)		A	Ongoing	1	3 (for new and redevelopment)
Georgia Planning Act, Part 5 - Small Water Supply Watershed Protection	Oglethorpe County, City of Crawford	Coordinated Planning Program, managed by Georgia DCA, assigns local governments Environmental Planning Criteria (set by Georgia DNR) to include in local long-term comprehensive plans.		A	2001	.5	3 (for new and redevelopment)

Ordinance		Increases buffer requirements and development and impervious surface restrictions within the watershed of the Town Creek water supply intake.					
Georgia Planning Act, Part 5 - Wetlands Protection Ordinance	Oglethorpe County, Cities of Arnoldsville, Crawford, Maxeys	Coordinated Planning Program, managed by Georgia DCA, assigns local governments Environmental Planning Criteria (set by Georgia DNR) to include in local long-term comprehensive plans.		A	2001, Maxeys 2007	.5	3 (for new and redevelopment)
Georgia Planning Act, Part 5 - Groundwater Recharge Protection Ordinance	Oglethorpe County, City of Crawford	Coordinated Planning Program, managed by Georgia DCA, assigns local governments Environmental Planning Criteria (set by Georgia DNR) to include in local long-term comprehensive plans.		A	2001	.5	1
Soil Erosion and Sedimentation Control	Cities of Lexington and Maxeys			A	2001	.5	.5
Rivers Alive	Keep Madison Beautiful	Annual river cleanup. Keep Madison Beautiful leads volunteer effort on Broad River in Elbert, Madison and Oglethorpe Counties.		A	Ongoing	.5	.5
Illegal Dumping Programs	Oglethorpe County, Cities Crawford and Lexington	Ordinance forbidding illegal dumping of waste, place no dumping signs, and allow for citizen reporting of illegal dumping and illicit discharge		A	Ongoing	UNK	UNK
Georgia Best Management Practices	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.	Informs those involved in the agricultural business of effective practices to minimize non-point source pollution.	State	A	Ongoing		Varies with BMP applied.
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.		R	Ongoing	1	5 (in new developments)
National Pollutant Discharge Elimination	Environmental Protection Agency and Georgia	Permitting program created under the Clean Water Act to protect and improve water quality by regulating Concentrated Animal	Federal and State	R	Ongoing	1	5 (in new developments)

System (NPDES) Permit Regulations for CAFOS (40 CFR Part 122 & 412)	Environmental Protection Division	Feeding 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	R	Ongoing		Effectiveness will vary with the specific application.
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 (Farm Bill 2002) 50% cost share with possible additional incentive payments. 75% if considered small farmer. 90% if considered limited resource farmer	A	Ongoing		Varies with BMP applied.
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.	A	Ongoing	UNK	Effectiveness will vary with the specific application.
Master Equine Program	Oconee River RC&D, County Extension, NRCS	Program to educate horse farmers on topics critical to starting and managing a horse related business. The program also educates farmers on environmental concerns and water quality.	Farmers pay \$100 to take classes, cooperative extension, NRCS, Oconee River RC&D, etc.	A	Fall 2006		Varies with BMP applied.
Conservation Security Program (CSP) (available for Broad River Watershed in 2007)	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-	Federal (Farm Bill 2002) Cost Share. There are three tiers of involvement, which result in different expectations and cost share opportunities.	A	2007	.5	Varies with BMP applied.

		Muckalee, Middle Flint, and Upper Ochlockonee. An enhancement example is to install a riparian buffer,					
Water Quality newspaper articles	County Extension	Extension agent has a column in the local paper. Periodically runs water quality articles related to agricultural BMPs, septic maintenance, etc.		A		.5	3
Targeted Sampling Volunteer Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	Targeted sampling for E. coli using 3M petrifilm to determine priority sources of fecal coliform. Will be a publicized volunteer sampling event and public water quality education effort.	Section 106 Grant for TMDL implementation, Donations	NR	2008	5	3
Follow-Up to Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	Results from targeted sampling monitoring event will be presented to local officials and stakeholders to stimulate and guide their course of action. Data obtained from sampling would isolate the most likely sources of E. coli and help prioritize use of funding and resources.	Section 106 Grant for TMDL Implementation	NE	2008	5	3
Agricultural BMP Assistance 319(h) project	Oconee River RC&D	Project will focus on installing BMPs on farms with livestock to prevent fecal coliform contamination. Farms will be prioritized for funding if they are in close proximity to the stream segment.	Section 319(h) grant, farmers will provide match	NR	June 2008	3	5

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 4). 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 4)	IMPACT RATING (2) (From Table 4)	APPLICABLE BMPs (3) (From Table 6A)	EVALUATION SUMMARY (4)	ADDITIONAL INFORMATION / MEASURES NEEDED (5)
Wildlife	15	None	There is no reasonable assessment of the contributions of animal wastes from wild animals in wooded areas, waterfowl, or wild or domestic animals in or near stream corridors in urban or suburban areas. Management of wild animal wastes in wooded areas and urban stream corridors may not be feasible, but there are several management practices that may be applied to control waterfowl and domestic animal wastes.	<p>Conduct a study to determine whether contributions of fecal coliform bacteria come from exclusively non-human sources (BST monitoring) or “natural conditions”. Should the study show that contributions from non-human sources occasionally exceed 200/100ml (geometric mean), submit data to EPD requesting a change in the fecal coliform standard to levels compliant with “natural conditions” for the segment.</p> <p>Should waterfowl be a significant contributor, consider measures to discourage waterfowl occupancy or manage populations.</p>

Animal Production	3	Georgia Best Management Practices	Current management practices do not target farms that are in close proximity to the TMDL segment or those that are shown to have a direct impact on water quality.	Successful implementation of programs requires technical, assistance, education and marketing
		Georgia Rules and Regulations for Water Quality Control Chapter 391-3-6-.20 & . 21		If loads from animal production are not being reduced, consider improving marketing to farms close to TMDL segment.
		National Pollutant Discharge Elimination System (NPDES) Permit Regulations for CAFOS (40 CFR Part 122 & 412)		
		Chapter 40-13-8 Animal Manure Handlers Rules of Georgia Department of Agriculture Animal Industry Division		
		Environmental Quality Incentives Program (EQIP)		
		Conservation Reserve Program (CRP)		
		Master Equine Program		
		Conservation Security Program (CSP) (available for Broad River Watershed in 2007)		
Agricultural BMP Assistance 319(h) project				
Failing Septic Systems/Straight Pipes	1	Regulation of On-Site Sewage Management Systems, IAW O.C.G.A. 290-5-26	Effective enforcement of septic installation and permitting requirements will minimize future failures	If loads from septic systems are not being reduced, consider implementing a septic maintenance education program
		River/Stream Corridor Protection Ordinance	Implementing and enforcing water quality related ordinances that restrict use of impervious surfaces, installation of septic systems and increasing the riparian buffer width requirement within environmentally sensitive areas will reduce the amount of polluted runoff being input into streams	319 (h) funds can be used to implement a septic repair initiative in the watershed to reduce inputs from failing septic systems
		Small Water Supply Watershed Protection Ordinance		
		Wetlands Protection Ordinance		
		Groundwater Recharge Protection Ordinance		
		Soil Erosion and Sedimentation Control		

Urban Runoff	0.5	River/Stream Corridor Protection Ordinance	Implementing and enforcing water quality related ordinances that restrict use of impervious surfaces and increase the riparian buffer width requirement within environmentally sensitive areas will reduce the amount of polluted runoff being input into streams.	
		Small Water Supply Watershed Protection Ordinance		
		Wetlands Protection Ordinance		
		Groundwater Recharge Protection Ordinance		
		Soil Erosion and Sedimentation Control		
		Illegal Dumping Programs		
Illegal Dumping	UNK	Illegal Dumping Programs	Effective enforcement minimizes the impact of illegal dumping on water quality impairment.	Encouragement of citizen reporting recommended.

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.

<b>BMP Extent</b> (Percentage of Sources to Which the BMP Has or Will Be Applied)	<b>BMP Effectiveness</b> (Percent Removal of Pollutant by the BMP)	<b>Rating</b>
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.**

<b>BEST MANAGEMENT PRACTICE (1)</b>	<b>RESPONSIBILITY (2)</b>	<b>DESCRIPTION (3)</b>	<b>SOURCES OF FUNDING &amp; RESOURCES (4)</b>	<b>STATUS CODE (5)</b>	<b>TARGET DATE (6)</b>	<b>EXTENT RATING (7)</b>	<b>EFFECT. RATING (8)</b>
Targeted Sampling Volunteer Monitoring Event "River Rendezvous"	Broad River Watershed Association, Adopt-A-Stream, EPD	Targeted sampling for E. coli using 3M petrifilm to determine priority sources of fecal coliform. Will be a publicized volunteer sampling event and public water quality education effort.	Section 106 Grant for TMDL implementation, Donations	NR	2008	5	3
Follow-Up to Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	Results from targeted sampling monitoring event will be presented to local officials and stakeholders to stimulate and guide their course of action. Data obtained from sampling would isolate the most likely sources of E. coli and help prioritize use of funding and resources.	Section 106 Grant for TMDL Implementation	NE	2008	5	3
Agricultural BMP Assistance 319(h) project	Oconee River RC&D	Project will focus on installing BMPs on farms with livestock to prevent fecal coliform contamination. Farms will be prioritized for funding if they are in close proximity to the stream segment.	Section 319(h) grant, farmers will provide match	NR	June 2008	3	5

**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 [ X ].

**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	Broad River Watershed Association, Adopt-A-Stream, EPD	Recommended	2008	Ongoing	Determine priority sources through targeted sampling with Petrifilm (or IDEXX)

**VIII. PLANNED OUTREACH FOR IMPLEMENTATION**

Table 8 lists and describes outreach activities that will be conducted to support this implementation plan. (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	DATE
NEGRDC	Distribution of TMDL implementation plans to counties, cities, and others participating in the implementation process	Stakeholders	June 2007
Broad River Watershed Association, Adopt-A-Stream, EPD	Distribution of water quality education materials to volunteers helping with targeted sampling	Volunteer citizens	2008
NEGRDC	Presentation of potential implementation activities. Oconee River RC&D may apply for 319 grant funding in the future to implement suggested management practices mentioned in the meeting.	Oconee River RC&D	June 2007

**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, 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.

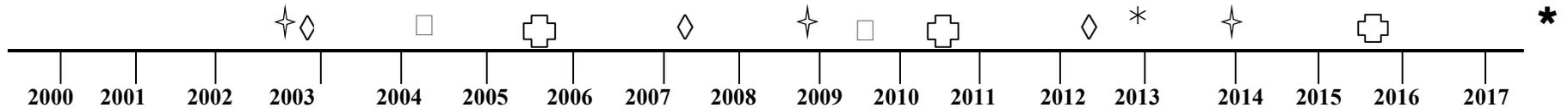
**Table 9. MILESTONES AND MEASURES OF PROGRESS**

BEST MANAGEMENT PRACTICE	RESPONSIBLE ORGANIZATION	STATUS		COMMENT
		PROPOSED	INSTALLED	
Georgia Best Management Practices	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.		On-going	Varies with BMP applied.
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.		On-going	Assume no discharge and >75% removal.
Chapter 40-13-8 Animal Manure Handlers Rules of Georgia Department of Agriculture Animal Industry Division	Georgia Department of Agriculture		On-going	Effectiveness will vary with the specific application.
Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services		On-going	Varies with BMP applied. EQIP programs should be targeted to farms that are located near TMDL segments.
Conservation Reserve Program (CRP)	Natural Resources Conservation Services / USDA Farm Services Agency		On-going	Effectiveness will vary with the specific application.
Master Equine Program	Oconee River RC&D, County Extension, NRCS		2006	Effectiveness varies based on BMPs applied
Conservation Security Program (CSP) (available for Broad River Watershed in 2007)	Natural Resources Conservation Services	2007		Effectiveness varies with specific application. Only available to farms that have Best Management Practices in place. Reward for environmental stewardship.
Regulation of On-Site Sewage Management Systems, IAW O.C.G.A. 290-5-26	Georgia DHR, County Board of Health		On-going	Requires permitting of septic systems prior to installation and inspection after installation. Applies to all new septic systems. It has an effectiveness rating of 25-50%. Maintenance of systems is not enforced.
Soil Erosion and Sedimentation Control	Cities of Lexington and Maxeys		2001	Requires a 25ft buffer on all state waters and a 50ft. buffer on waters classified as trout streams. The ordinances are predicted to reduce impact of new development and have an effectiveness rating of 5-25%.
Conservation Subdivision Ordinance	Oglethorpe County		Ongoing	Minimization of impervious surface and preservation of greenspace may reduce runoff of pollutants.
Wetlands Protection Ordinance	Oglethorpe County, Cities of Crawford and Maxeys		2001, Maxeys 2007	Wetlands have high pollutant removal efficiency, but extent of wetlands in watershed is low.
Groundwater Recharge Protection	Oglethorpe County, City of		2001	Extent of groundwater recharge areas is low. Ordinance offers

Ordinance	Crawford			extra protection from pollutants. Does not prevent runoff.
River/Stream Corridor Protection Ordinance	Oglethorpe County		Ongoing	Requires 75ft. buffers for 1 <sup>st</sup> and 2 <sup>nd</sup> order streams and 150ft. buffers for higher order streams. Expected to have high removal efficiency for new and redevelopment.
Volunteer E. Coli Monitoring Event "River Rendezvous"	Broad River Watershed Association, Adopt-A-Stream, EPD	2008		Targeted sampling to determine sources with a water quality education initiative
Follow-Up to Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	2008		Results from targeted sampling monitoring event will be presented to local officials and stakeholders to stimulate and guide their course of action.
Distribution of TMDL Implementation Plans	NEGRDC	June 2007		Hard copies to be distributed to requesting stakeholders. Plans to be posted on webpage.
Water Quality newspaper articles	County Extension		On-going	Periodically runs water quality articles related to agricultural BMPs, septic maintenance, etc.
Rivers Alive Cleanup	Keep Madison Beautiful		On-going	Annual water quality education and river clean-up event
Meeting with Oconee River RC&D Council	NEGRDC	June 2007		Presentation of potential future 319(h) projects to address sources of fecal coliform in the TMDL watersheds.
Agricultural BMP Assistance 319(h) project	Oconee River RC&D	June 2008		Project will focus on installing BMPs on farms with livestock to prevent fecal coliform contamination. Farms will be prioritized for funding if they are in close proximity to the stream segment.

## PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from acceptance 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:	Christina Baker		
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Date Submitted to EPD:	6/15/2007	Revision:	01

Preparation of this report was financed in part through a grant from the U.S. Environmental Protection Agency under the provisions of Section 106 of the Federal Water Pollution Control Act, as amended.

**APPENDIX A.**  
**STAKEHOLDERS**

List the names, addresses, telephone numbers, and e-mail addresses for local governments, agricultural or commercial forestry organizations, significant landholders, businesses and industries, and local organizations, including environmental groups and individuals, With a major interest in this watershed.

<b>NAME/ORGANIZATION</b>	<b>ADDRESS</b>	<b>CITY</b>	<b>STATE</b>	<b>ZIP</b>	<b>PHONE</b>	<b>E-MAIL</b>
Randy Gordon, Oglethorpe County Planning and Zoning	109 Boggs St.	Lexington	GA	30648	706-743-8159	randy@onlineoglethorpe.com
John Faz, Oglethorpe County Code Enforcement	109 Boggs St.	Lexington	GA	30648	706-743-7262	<a href="mailto:occeo@alltel.net">occeo@alltel.net</a>
Sheila Arnold, Oglethorpe County Clerk	P.O. Box 261	Lexington	GA	30648	706-743-5270	Sarnold61@alltel.net
Robert Johnson, Oglethorpe County Commission	P.O. Box 261	Lexington	GA	30648	706-743-5670	
George Spearing, Crawford Water Department	P.O. Box 383	Crawford	GA	30630	706-743-5996	crawfordwater@alltel.net
Rory Richardson, Natural Resource Conservation Service	52 A Lexington Ave.	Washington	GA	30673	706-678-2630	<a href="mailto:Rory.Richardson@usda.gov">Rory.Richardson@usda.gov</a>
Herman Wheatley, Natural Resource Conservation Service	52 A Lexington Ave.	Washington	GA	30673	706-678-2630	<a href="mailto:Herman.wheatley@usda.gov">Herman.wheatley@usda.gov</a>
C. Norman McGlohon, Former Oglethorpe County Extension Director	Room 304 Hoke Smith Building, University of Georgia	Athens	GA	30603	706-524-1206	<a href="mailto:mcglohon@uga.edu">mcglohon@uga.edu</a>
Cary Fordyce, Oglethorpe County Chamber of Commerce	P.O. Box 56	Crawford	GA	30630	706-743-3113	foxtrote@sprynet.com
Beverly Montgomery, Oglethorpe County Planning Commission	P.O. Box 285	Lexington	GA	30648-0285	706-743-8213	bkmontgomery@alltel.net
Karen Callaway, Oglethorpe County Health Department	109 South Boggs St.	Lexington	GA	30648	706-743-8181	
Russell Yeany, Oglethorpe County Planning Commission	563 Hutchins Rd.	Crawford	GA	30630	706-743-5948	<a href="mailto:ryeany@att.net">ryeany@att.net</a>
Kelly Postin, Oglethorpe County Cattlemen's Association	P.O. Box 358	Stephens	GA	30667		
Sam Linhart, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-783-2308	jeansmithga@earthlink.net
Dudley R. Hartel, Broad River Watershed Association	1339 Madison St	Comer	GA	30629-401	706-5594236	drhartel@alltel.net

**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.

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**APPENDIX C.**

**FIELD SURVEYS, NOTES, PHOTOGRAPHS, AND MAPS.**

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Visual Field Survey for Long Creek (Macks Creek to Clark Creek), January 2007

**Visual Field Survey**  
**For**  
**Long Creek**  
**(Macks Creek to Clark Creek)**  
**In the**  
**Savannah River Basin**  
**January 2007**

Prepared by the Northeast Georgia Regional Development Center with the support of the Environmental Protection Division of the Georgia Department of Natural Resources

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## 1.0 INTRODUCTION

### 1.1 Location

The Long Creek (Macks Creek to Clark Creek) TMDL segment is listed as not supporting its designated use of fishing due to excess fecal coliform bacteria. The data that put the segment on the 303(d) list were collected in 2002. The three-mile segment is located on the border of Oglethorpe and Wilkes counties just south of Elbert County. The watershed is located in Oglethorpe and Wilkes Counties. A small portion of the City of Crawford lies within the watershed.

### 1.2 Watershed Description

The Long Creek TMDL segment watershed is comprised of 103,557.72 acres of land in Oglethorpe County. It is located within the HUC 10-0306010405, and is comprised of HUC 12-030601040501, HUC 12-030601040502, HUC 12-030601040503, HUC 12-030601040504, and HUC 12-030601040505, and part of HUC 12-030601040507. Land cover was determined by classifying 2004 NEGRDC parcels data using the Land-Based Classification System of the American Planning Association. The primary land uses in the watershed are forestry/logging and animal production. **Table 1** shows the area and percent of each land use type in the watershed. **Table 2** lists the LBCS categories and function codes that relate to each land use category used for this survey. The land use map for the Long Creek watershed is included as **Figure 1**. **Figure 2** shows the stream crossings that were surveyed and includes data obtained from EPD.

**Table 2: LBCS Categories and Function Codes**

Land Use Categories	LBCS Category	LBCS Function Codes
Residential	Private Household	1100
	Hotel, motel, other accommodation	1300
Commercial	General Sales and services	2000's
	Construction related business	7000's
Industrial	Manufacturing and Wholesale Trade	3000's
Transportation/Communication/Utility	Transportation, communication, information, and utility	4000's
Park/Recreation/Conservation	Arts, entertainment, and recreation	5000's
	Natural parks	5500
Public/Institutional	Education, public Admin., health care, oth. Institutional	6100
Mining/Extraction	Nonmetallic mining	8400
	Quarrying/stonecutting	8500
Crop Production	Crop Production	9100
	Support Functions for agriculture	9200
Animal Production	Animal production and slaughter, grazing land	9300
Forestry/Logging	Forestry and logging	9400
Game Preserve	Fishing, hunting and trapping, game preserves	9500
Other	Unclassifiable	9900

**Table 2: Long Creek Watershed Land Use**

Land Use	Area (Acres)	% of Total
Residential	6294.83	6%
Commercial	1483.32	1%
Industrial	41.60	0%
Transportation/Communication/Utility	1379.62	1%
Park/Recreation/Conservation	874.46	1%
Public/Institutional	236.51	0%
Mining/Extraction	389.08	0%
Crop Production	1114.54	1%
Animal Production	12524.51	12%
Forestry/Logging	80057.19	77%
Game Preserve	40.74	0%
Other	9.85	0%
Total	103577.72	101%



Figure 1. Long Creek Watershed Land Use Map

### Long Creek Land Use Map

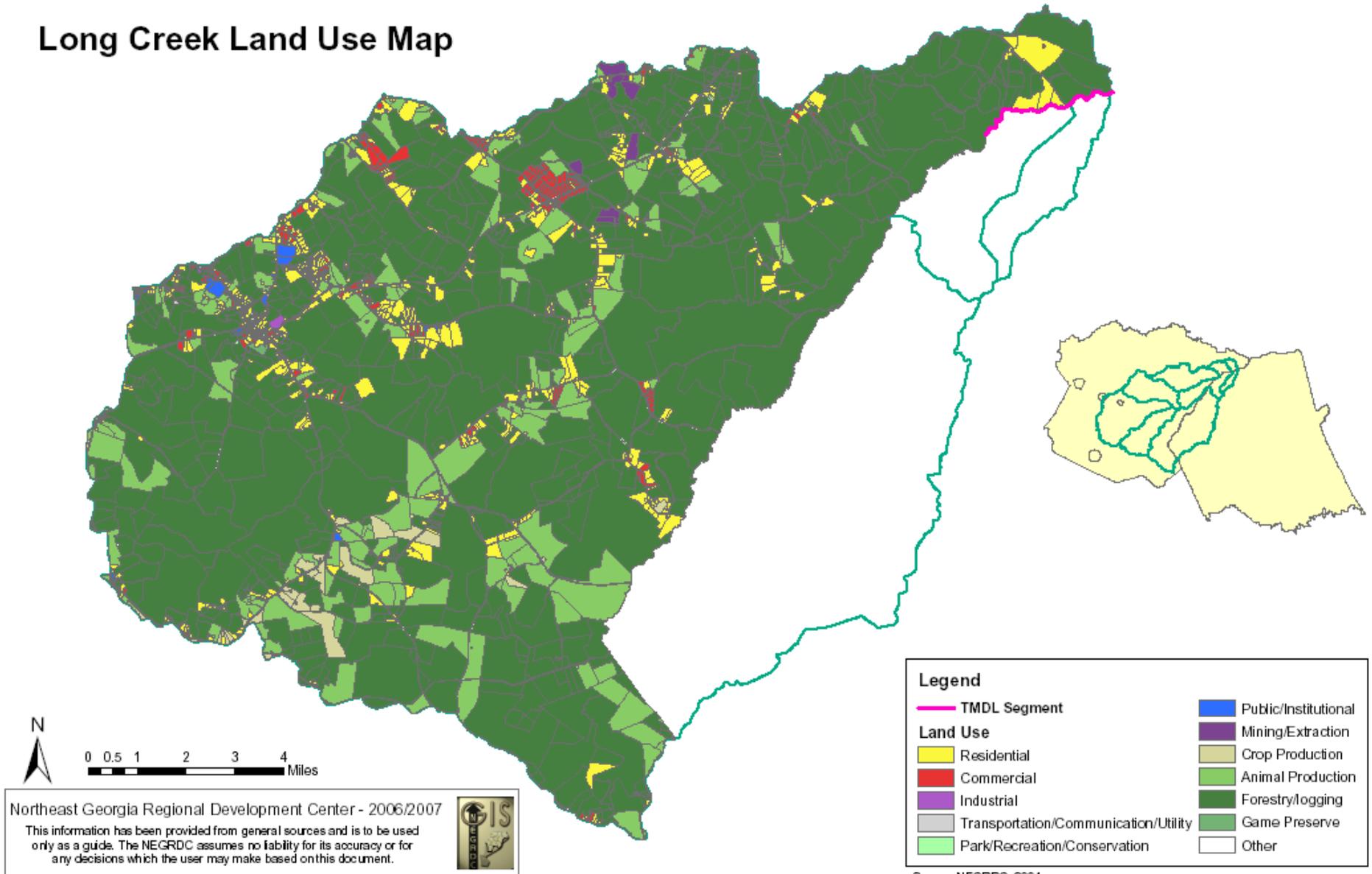
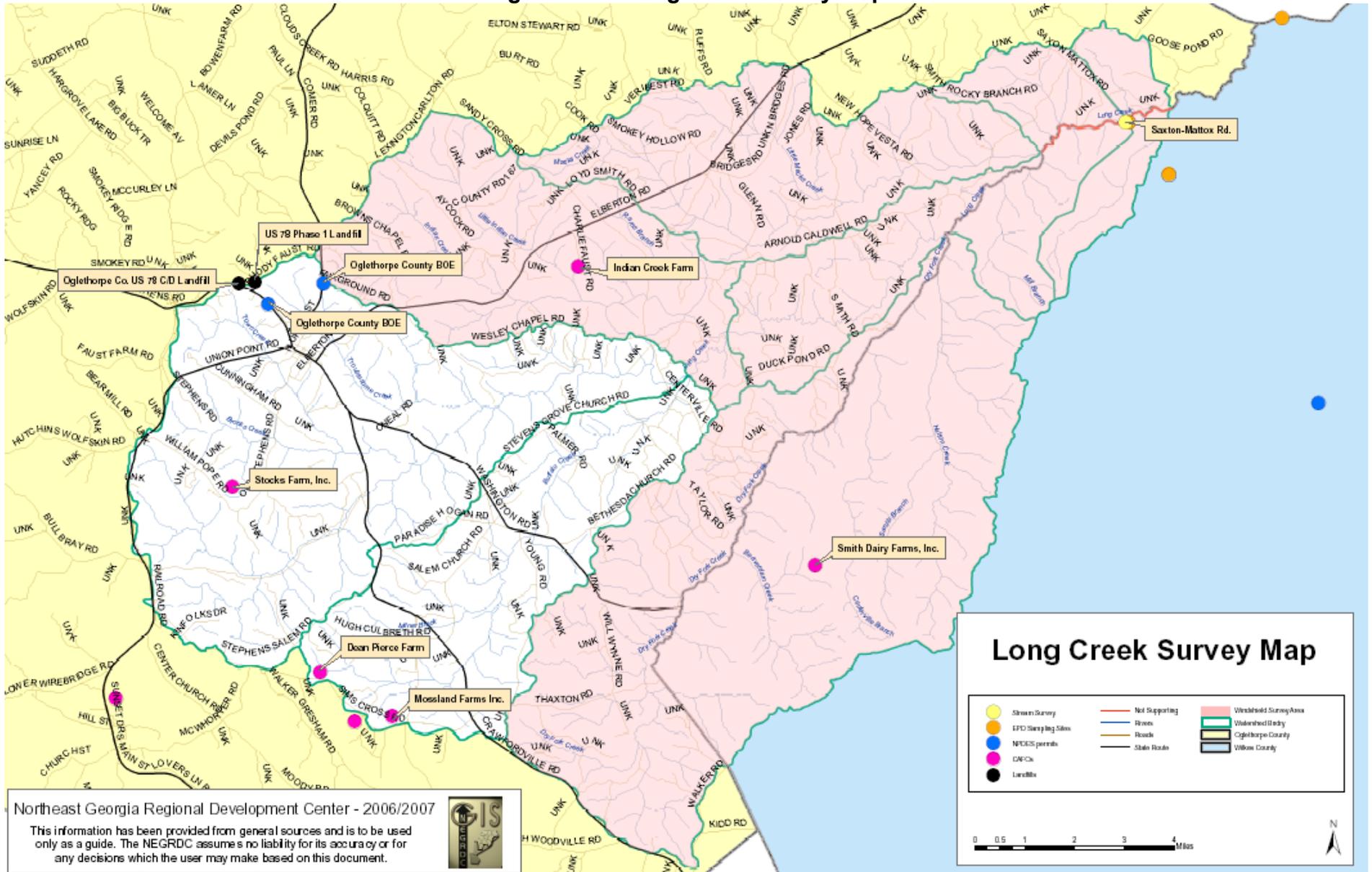


Figure 2. Long Creek Survey Map



Northeast Georgia Regional Development Center - 2006/2007

This information has been provided from general sources and is to be used only as a guide. The NEGRDC assumes no liability for its accuracy or for any decisions which the user may make based on this document.



## 2.0 METHODOLOGY

Prior to conducting the field survey, point data from the Georgia Environmental Protection Division were compiled and analyzed to determine the location of any point sources of pollution in the watershed. This data included the location of NPDES permitted facilities, landfills, LAS and CAFOs. In addition, 2005 aerial photos from the National Agricultural Imagery Program were used to determine possible sources of fecal coliform pollution within the watershed boundary that is shown on the maps on the previous pages. 2004 RDC land use data were also consulted to determine the extent of potential sources of fecal coliform. One purpose of the field surveys is to compare the most recent RDC land use data with the 1995 land use data that were used in the development of the TMDLs. However, in the case of the Long Creek (Macks Creek to Clark Creek) segment, the TMDL land use data included the Wilkes County portion of the watershed, which is not available to the RDC, so a comparison was not possible.

The visual field survey consisted of a windshield survey of land use in the watershed and a visual assessment of stream condition at road crossings. The stream segment was not conducive to walking due to private property. One road crossing was visited on the TMDL segment. The area of the windshield survey is shown on the survey map as the area shaded in pink. Sources investigated during the windshield survey were primarily animal production facilities, because these are easy to identify from aerials and it can be readily apparent if they are not using certain Best Management Practices such as animal exclusion from streams. These facilities were considered to be priority sources if animals had access to the stream or there were not best management practices in place to prevent runoff of fecal matter into the stream. Notes and photographs were taken to document observations of the stream segment and the surrounding watershed.

## 3.0 FIELD FINDINGS

### 3.1 General Characteristics

The field findings discussed here are the result of the visual surveys of the TMDL stream segment and its watershed.

The stream crossing that was visited during the survey was on Saxton-Mattox Rd. The stream was opaque, reddish brown from sediment, and had a greenish tint. The banks were eroded. The riparian buffer was wide and dense at the crossing and along most of the stream segment. There were no unusual odors or water surface abnormalities. A general photo of the stream is included as **Figure 3**.



**Figure 3. Long Creek at Saxton-Mattox Rd. Looking Downstream**

Land use activities observed during the watershed drive included cattle (beef and dairy) and poultry farms, goats, and forestry/logging.

### **3.2 Point Sources**

There is one urbanized area in the Long Creek watershed (Crawford), which has sewer systems. However, sanitary sewer lines have yet to be extended into the watershed for the Long Creek segment, so contamination from sewer leaks is not likely.

There are two NPDES permitted wastewater treatment facilities in the Long Creek watershed, and both are maintained by the Oglethorpe County Board of Education. The two facilities are over 20 miles upstream of the TMDL segment. No activities related to these facilities were observed during the watershed survey.

### **3.3 Non-Point Sources**

Potential non-point sources of fecal coliform in the Long Creek watershed include agriculture, septic malfunction, landfills, wildlife and pet waste.

77% of the watershed land use is forestry/logging. Almost all of the land in close proximity to the TMDL segment is forestry land. In forested areas it is likely that wildlife is the primary source of fecal coliform; however, there may be human sources as well. According to Oglethorpe County officials, there is a large wild hog population on Long Creek.

Animal Production accounts for 12% of the land use. There are several farms in the Long Creek watershed. However, there are no farms in close proximity to the TMDL segment. Several farms were visited during the windshield survey, but no lack of best management practices was observed.

Residential development accounts for 6% of the land use in the watershed. There are a few residential parcels in close proximity to the stream. These are likely to be old houses that may have failing septic systems or no septic system at all.

Non-point source pollution in urban areas is carried by storm water runoff. Storm water runoff is increased in urban areas due to impervious surfaces. Runoff can carry pet, human and wildlife waste to streams

### **3.4 Other Potential Individual Sources**

There are two landfills in the watershed. The Oglethorpe County US 78 C/D Landfill is open and the Oglethorpe County-US 78 Phase 1 is inactive. Both Oglethorpe landfills are permitted.

## **4.0 RANKS ASSIGNED TO POLLUTION SOURCES**

Wildlife from forestry land is likely to be the primary source of fecal coliform in the Long Creek watershed. Animal production (including livestock, poultry, egg and goat production) and failing septic systems are other potential sources.

## **5.0 SUMMARY OF FINDINGS**

The primary land uses in the Long Creek TMDL segment watershed are forestry/logging and animal production. There are two NPDES permitted facilities in the Long Creek watershed. Both are permitted to the Oglethorpe County Board of Education. Several possible non-point sources exist in the watershed

including, wildlife, animal production, failing septic systems, and landfills, although, not all sources were visibly evident.

## **6.0 STAKEHOLDER INVOLVEMENT**

Randy Gordon, the planning commissioner for Oglethorpe County, and John Faz, the code enforcement officer, met with us prior to the survey to discuss potential sources. The field surveys were presented to stakeholders at the second advisory group meeting and posted on the Northeast Georgia RDC website to facilitate stakeholder input on the survey reports