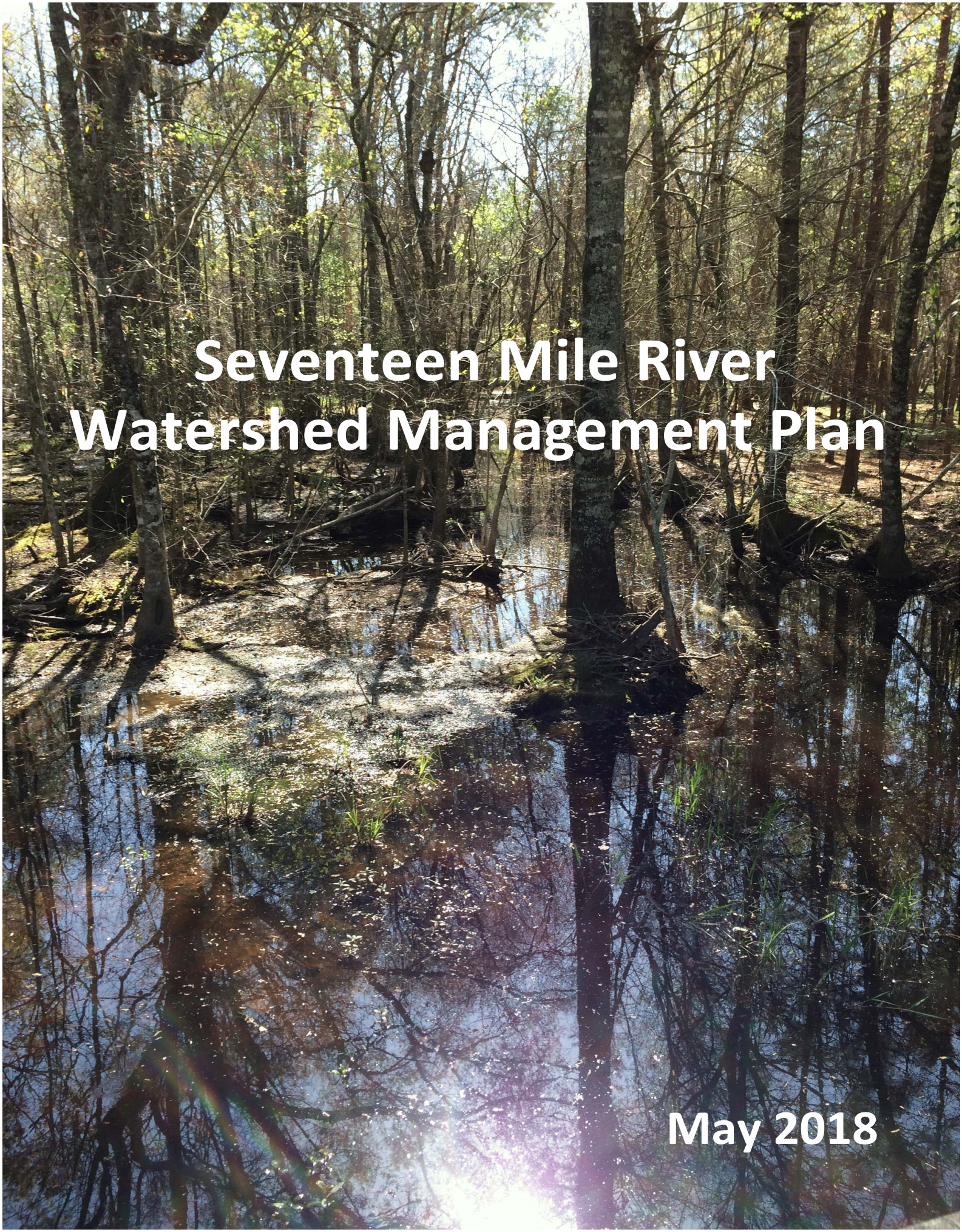

Seventeen Mile River Watershed Management Plan

May 2018

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resource management strategies

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Seven Rivers RC&D
Eugene Dyal, Program Coordinator
Brenda Hallman, Program Administrator

Watershed Advisory Committee
Atkinson County Public Health Department
Coffee County Public Health Department
Georgia Forestry Commission
GA DNR, Environmental Protection Division, Denisse Hernandez
GA DNR, Wildlife Resources Division, Fisheries Management, Bert Deener
Georgia Soil & Water Conservation Commission
Jeff Davis County Public Health Department
Satilla River Keeper
Satilla River Soil and Water Conservation District
South Georgia Regional Commission
Suwannee-Satilla Regional Water Planning Council
University of Georgia, Cooperative Extension
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I. Introduction

The purpose of the Seventeen Mile River Watershed Management Plan, HUC-10 #0307020105, is to provide a tool that demonstrates a holistic approach to water quality management by actively engaging stakeholders within the watershed in the selection of management strategies that will be implemented to solve identified problems.

This Plan, builds on the Satilla River Basin Management Plan 2002 by supporting the following basin-wide goals and objectives, specifically:

- Goals
  - Protect, maintain, and where appropriate and practicable, identify opportunities to enhance water quality and river base flows.
  - Identify opportunities to manage stormwater to improve water quantity and quality.
  - Identify and implement actions to better measure and share water use data and information.

- Objectives
  - protecting water quality in lakes, rivers, estuaries, and coastal water through attainment of water quality standards and support for designated use, and
  - preserving habitat suitable for the support of healthy aquatic and riparian ecosystems.

This Plan also supports implementation of milestone activities in the 2014 Georgia Non-point Source Management Plan regarding green infrastructure, education, reduction of agricultural and urban non-point source pollution through implementation of best management practices, education and outreach, partnership development, and targeted water quality monitoring.

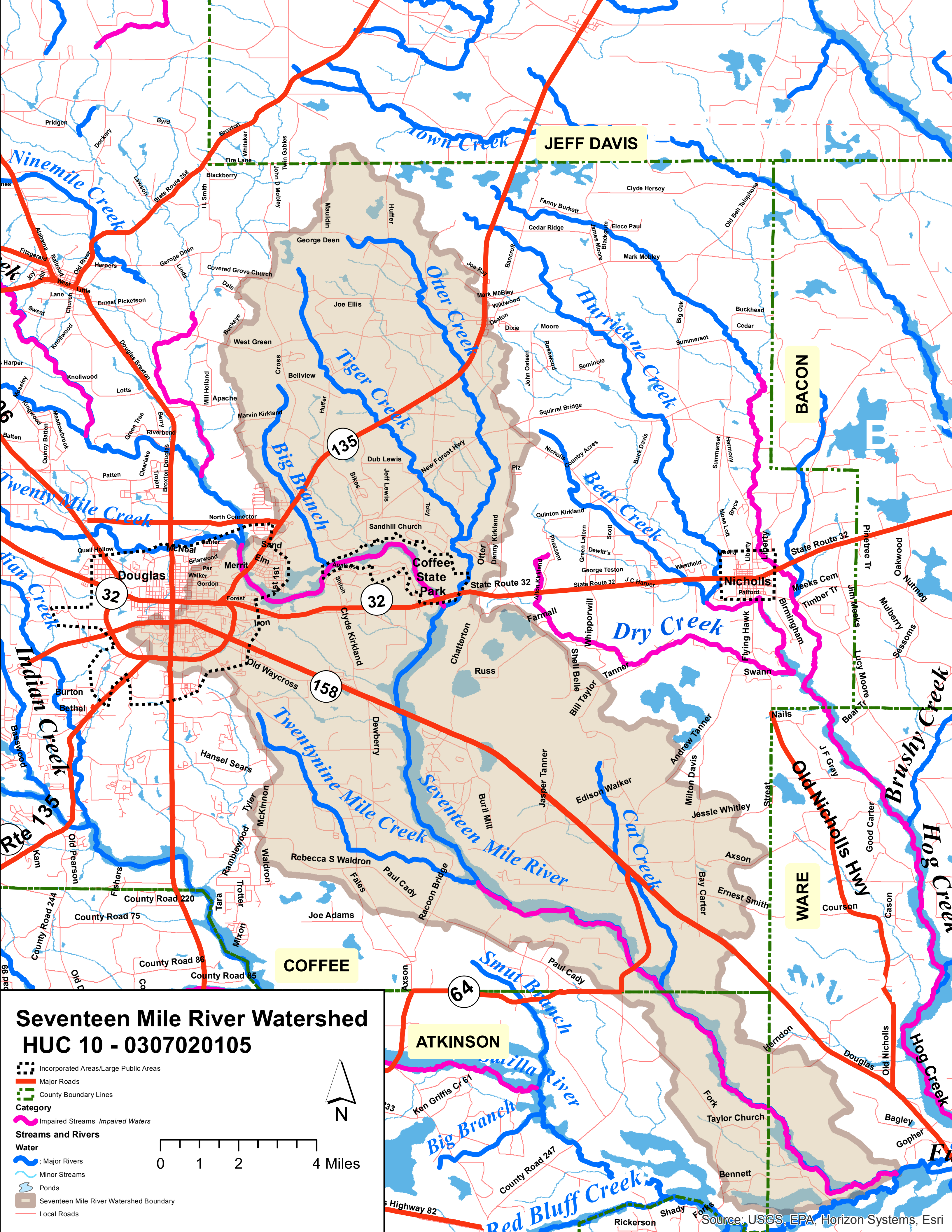
Achieving the goals and objectives of this Plan is the responsibility of State and federal agencies, local government, non-profit organizations, industry, and local citizens.

This document is not regulatory. Its preparation process engages stakeholders to recognize issues and provide feedback on how to deal with them, as well as to develop momentum and contribute to the restoration effort.

PLAN GOAL: Develop a nine-element watershed management plan (WMP) for Seventeen Mile River Watershed that:

- addresses water quality impairments in stream segments identified as not supporting their designated uses based on the 2014 Georgia Integrated 305(b)/303(d) List of Waters: and

- identifies implementation policies and activities that will reduce impairments and improve water quality to meet targeted Total Maximum Daily Loads (TMDL) established by the Georgia Environmental Protection Division (EPD) and long-term, meet State water quality standards.


Seventeen Mile River Watershed
HUC 10 - 0307020105
Incorporated Areas/Large Public Areas
Major Roads
County Boundary Lines
Category
Impaired Streams Impaired Waters
Streams and Rivers
Water
; Major Rivers
Minor Streams
Ponds
Seventeen Mile River Watershed Boundary
Local Roads
0 1 2 4 Miles
N
Source: USGS, EPA, Horizon Systems, Esri
JEFF DAVIS
BACON
COFFEE
WARE
ATKINSON
Douglas
Nicholls
Coffee State Park
Seventeen Mile River
Twentynine Mile Creek
Big Branch
Tiger Creek
Otter Creek
Hurricane Creek
Bear Creek
Dry Creek
Cat Creek
Twenty Mile Creek
Indian Creek
Ninemile Creek
Town Creek
Smut Branch
Satilla River
Big Branch
Red Bluff Creek
Brushy Creek
Hog Creek
State Route 32
State Route 268
Old Nicholls Hwy
135
32
158
64

II. Stream Selection

In 2002, the Georgia Environmental Protection Division (GA EPD) developed a Total Maximum Daily Load (TMDL) Implementation Plan for Seventeen Mile River[1]. The Implementation Plan addressed two impaired segments of the river;

- Twenty Mile Creek, north of Douglas, to Otter Creek, south of General Coffee State Park (7 miles in Coffee County), and
- Twentynine Mile Creek to the Satilla River (13 miles in Coffee, Atkinson, and Ware counties).

The designated use of the Seventeen Mile River is fishing. The Implementation Plan found that the seven-mile segment did not support, and the thirteen-mile segment only partially supported, its designated use due to fecal coliform and dissolved oxygen impairments. (See Map 1). However, by 2006, the thirteen-mile segment was also found to not support its designated use.[2]

A TMDL establishes the allowable pollutant loadings or other quantifiable parameters for a water body based on the relationship between pollutant sources and instream water quality conditions. Water quality standards for fecal coliform and dissolved oxygen limit the amount of pollution allowed to load into a river or stream. If a stream does not meet water quality standards, a TMDL is established for that pollutant. Implementation tools, such as watershed-based plans, are then developed to reduce the pollutants loading into the stream from various (point and nonpoint) sources and restore the water body so that it meets water quality standards.

To meet State water quality standards, the 2002 TMDL Implementation Plan notes that a 64% reduction in nonpoint/point source fecal loads is necessary in the seven-mile segment and a 68% reduction is necessary in the thirteen-mile segment. The 2002 TMDL Implementation Plan was followed with a TMDL Evaluation in 2006[3] and 2011[4], with the latter indicating a 65% reduction is necessary on the thirteen-mile segment.

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[1] TMDL Implementation Plan, Satilla River Basin, Georgia Environmental Protection Division, 2002, p.1.

[2] 2006 305(b)/303(d) Rivers/Streams Not Fully Supporting Designated Uses, Georgia Environmental Protection Division, p.110.

[3] Total Maximum Daily Load Evaluation for Eighteen Stream Segments in the Satilla River Basin for fecal coliform, Georgia Environmental Protection Division, January 2006.

[4] Total Maximum Daily Load Evaluation for Ten Stream Segments in the Satilla River Basin for fecal coliform, Georgia Environmental Protection Division, March 2011, p. vi.

To address dissolved oxygen in the River, both the seven- and thirteen-mile segments require a 24% point source load reduction and an 11% - 54% nonpoint source load reduction.[5]

The above-discussed plans attribute both point and nonpoint sources to fecal coliform contamination. The sole point source is the City of Douglas Water Pollution Control Plant, NPDES permit GA0024431. Nonpoint sources include uncovered manure piles, farm animal waste, access to waterways by livestock, urban and rural development, poultry industry runoff, spills/discharge of raw sewage, pet excrement, and leaking septic systems.

These same contamination sources also contribute to dissolved oxygen impairment. Additional sources of oxygen-demanding substances include surface storm water runoff of chemicals and fertilizers from agricultural areas; industrial, residential, and urban stormwater runoff; automotive care products; improper methods of trash collection and disposal; land disturbing activities; and organic material from lawns and city or county rights-of-way.

In addition to the non-supporting streams, the 2016 Integrated 305(b)/303(d) List of Waters identifies two stream segments in the watershed meeting water quality standards and are therefore designated as supporting segments:

! Otter Creek (Tiger Creek to Seventeen Mile River), 2 miles in Coffee County;
! Seventeen Mile River (Otter Creek to Twenty-nine Mile Creek), 8 miles in Coffee County.

During development of the Watershed Management Plan, specific actions were identified and designed to meet the specific objectives thus insuring that the proposed actions could objectively achieve the goals of the Seventeen Mile River Watershed Management Plan.

OBJECTIVES:

- Establish a Watershed Partnership (WP) as long-term committee charged with working with the Seven Rivers RC&D to implement Watershed Management Plan.
- Long-term monitoring to provide current data to support decision-making.
- Identification of potential contaminant sources.
- Implementation of management practices to reduce fecal coliform contamination from identified sources.
- Implementation of management practices to facilitate dissolved oxygen levels to meet state standards.
- Manage growth and land use activities so that they do not negatively effect overall water quality or improvements made through implementation of this watershed management plan.
- Promotion of public awareness, understanding, and stewardship through public education and training opportunities for the general population and government agencies.

[5]Seventeen Mile River Dissolved Oxygen TMDLs, Satilla River Basin (HUC 03070201), June 2002, p.27.

III. Formation of a Watershed Advisory Committee

This Plan's development relied upon the participation of a Watershed Advisory Committee (WAC) which represented the Seventeen Mile River watershed and consisted of stakeholders that would assist with plan implementation. (See Appendix). Meetings were held with the WAC on the following dates to engage the public in the process of designing an implementation plan: October 6, 2017 and March 23, 2018. Meetings focused on gathering input concerning potential problems and solutions, developing priorities, evaluating what BMPs might be met with the best public reception, and obtaining insight on the watershed management plan. Finally, approval was sought for the document to serve as the plan on which implementation efforts will follow to restore and maintain the watershed.

IV. Source Assessment

Based on the TMDL Evaluations, TMDL Implementation Plans, current water quality monitoring, visual survey, land use, tax assessor data, and WAC input, the potential causes of water quality impairment were determined as follows:

Seventeen Mile River Watershed Potential Sources of Contamination	
Identified Impairment	Potential Source/Cause
Fecal Coliform	Agricultural operations
	Livestock access to waterways and/or inadequate buffers between fenced livestock and river
	Unpaved roads that cross the river or end at river's edge and associated runoff
	Failing/leaking individual septic systems
	Public Sewerage system leaks and overflows
	City of Douglas Wastewater Treatment Plant
	Wildlife
Dissolved Oxygen	Runoff of agricultural fertilizer and animal waste
	Storm water runoff
	Sanitary sewer overflows
	Industrial facilities
	City of Douglas wastewater treatment plant

V. Assessment and Characterization of Current Conditions

Overview

The Seventeen Mile River HUC-10 watershed contains 98,182 acres of agricultural and forested land primarily in Coffee, Atkinson, Ware, and Jeff Davis counties and residential, commercial, and industrial lands in and adjacent to the City of Douglas.

The watershed is comprised of five major streams, Big Branch, Tiger, Otter, Cat, and Twentynine Mile creeks, each fed by numerous first- and second-order tributaries.

Seventeen Mile River's headwaters begin north-east of Ambrose in Coffee County. From there, it meanders south-east through agricultural and to a lesser extent, forest land in unincorporated Coffee County to just north of Douglas where it accepts runoff from residential and commercial land uses, to General Coffee State Park where it turns south to its confluence with the Satilla River, flowing through primarily through agricultural and forest land.

Based on water quality monitoring data, GA EPD identified two healthy streams in the watershed, Otter Creek and the segment of Seventeen Mile River from Otter Creek to its confluence with Twenty-nine Mile Creek. A healthy watershed is one in which natural land cover supports:

- dynamic hydrologic and geomorphologic processes within their natural range of variation;
- habitat of sufficient size and connectivity to support native aquatic and riparian species; and
- physical and chemical water quality conditions able to support healthy biological communities.

A healthy watershed has the structure and function in place to support healthy aquatic ecosystems. Key components of a healthy watershed include:

- intact and functioning headwater streams, floodplains, riparian corridors, biotic refuge, instream habitat, and biotic communities;
- natural vegetation in the landscape; and
- hydrology, sediment transport, fluvial geomorphology, and disturbance regimes expected for its location.

Based on water quality monitoring data, GA EPD identified two impaired stream segments in the watershed:

- Seventeen Mile River (Twenty Mile Creek north of Douglas to Otter Creek downstream Gen. Coffee St. Park) 7 miles in Coffee County;
- Seventeen Mile River (Twenty-nine Mile Creek to Satilla River), 13 miles in Coffee, Atkinson, and Ware counties;

The non-supporting segments are so identified due to non-point source fecal coliform contamination and dissolved oxygen impairment. The designation of these segments as "not supporting" are based on fecal coliform sampling data from 2003 and 2004, and 2008 and 1998 dissolved oxygen data. Sampling was conducted by the Georgia Department of Natural Resources, Environmental Protection Division's (GA EPD) and United States Geological Survey (USGS) at the following locations:

- Seventeen Mile River at State Route 32 near Douglas (GA EPD)
- Seventeen Mile River at Highway 64 near Pearson (GA EPD)
- Seventeen Mile River at Highway 158 (USGS)

Climate

The Satilla River basin, which includes the Seventeen Mile River watershed, is characterized by mild winters and hot summers. Mean annual precipitation ranges from 46 to 54 inches per year. Rainfall is fairly evenly distributed throughout the year, but a distinct dry season occurs from mid-summer to late fall. Rainfall is usually greatest in March and least in October. The mean annual temperature is about 68 degrees Fahrenheit.[6]

Habitat

The Satilla River basin, which includes the Seventeen Mile River HUC-10 watershed, supports a diverse and rich mix of terrestrial and aquatic habitats and is home to several federally and state-protected species; however, there is no list of such species and habitats specifically for the Seventeen Mile River watershed.

The watershed is largely rural with fair wildlife habitat in predominantly cropland and woodland settings. Major plants of importance to terrestrial wildlife include greenbrier, bush and annual lespedeza, panic grass, croton, ragweed, partridge pea, paspalum, tickclover, and sumac. Understory and overstory woodland plants of importance are sweetgum, oak, hackberry, button bush, and maple. Domestic plants of importance to wildlife include peanuts, corn, soybeans, bahiagrass, and small grains. Cropland and pastureland, interspersed with pine plantations and hardwood forests, provide habitat for white-tailed deer, mourning dove, raccoons, gray squirrel, opossum, fox, and other wildlife. Rabbit and bobwhite quail populations are good in areas which have suitable food an cover.

Unmanaged pasture, old fields, pine plantations, and thinned woodlands produce numerous native woody and herbaceous plants important as food and cover for white-tailed deer, rabbit, fox, quail, and other wildlife species.

Continued land use trends toward extensive clearing of woodland for agriculture and urban development and the introduction of irrigation adversely affect fish and wildlife populations. Removal of crop residue from fields, removal of hedgerows and odd areas, and increased siltation have an adverse effect on fish

[6] Satilla River Basin Management Plan, GA DNR, EPD, 2002, Section 2, pg. 2-3.

and wildlife habitat. Many of the chemicals used to increase agricultural production have severe affects on small birds and animals. The most seriously affected game species is quail.

Restoring hedgerows, field borders, windbreaks, and odd areas in fields will improve habitat for wildlife as well as prescribed burning in pine plantations and retaining mast-producing trees such as oaks.

Wetland habitats support a variety of furbearers including otter, beaver, bobcat, racoon, and waterfowl. The best wetland habitat is bottomland hardwoods along several rivers in the Satilla Basin, including Seventeen Mile River.

Important fresh water sport fish include largemouth bass, crappie, channel catfish, bluegill, and redear sunfish. Anadromous sport fish species include striped bass and shad.

Because of the fragile habitat requirements of fish, special efforts are needed to restrict and retard both point and nonpoint sources of water pollution in the watershed.[7]

Wildlife

According to the Georgia Department of Natural Resources, Wildlife Resources Division (GA WRD), the impact of wildlife on fecal coliform contamination varies widely. 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 racoons, beavers, muskrats, and to a lesser extent, river otters, and mink. Population estimates of these animal species in Georgia are not available.

White-tailed deer are abundant in the watershed. According to GA WRD, fecal coliform bacteria contributions to water bodies from deer are generally considered less significant than that of waterfowl, racoon, and beaver due to a greater portion of their time being spent in terrestrial habitats. This is also true for other terrestrial mammals such as squirrels and rabbits, and terrestrial birds. While feces deposited on the land surface can result in the introduction of fecal coliform to streams during runoff from storm events, in the warm, humid environments typical of the southeast, there may be considerable decomposition of the fecal matter. This may result in a decrease in the associated fecal coliform numbers introduced from to streams during runoff from storm events.

Rapidly expanding feral swine populations have become a significant presence in the floodplain areas of major rivers in Georgia. Wild hogs are reported west of the Seventeen Mile River watershed with only minor migration of the species into Atkinson and Ware counties. None have been reported in Coffee County.

[7] Soil Survey of Atkinson, Bacon, and Coffee Counties, Georgia, USDA, SCS, April 1988, pp. 49-51.

Physical and Natural Features

Topography

Elevations in the watershed range from 35 to 75 feet above sea level.

Streambanks

Streambanks on the impaired and healthy streams evidence little erosion and are generally well vegetated.

Stream Buffers

To help protect water quality, the state mandates wooded stream buffers of at least 25' on each side of the stream bank. Based on a review of 2017 aerial photographs, natural vegetated buffers (see Map 2) are adequate throughout much of the watershed, along the main channel as well as its tributaries with the exception of the following:

- portions of Douglas County Country Club; and,
- major transportation crossings.

Highway 64

Douglas County Country Club

Highway 32 East

Railroad crossing

Soils

The Seventeen Mile River watershed is contained two Major Land Resource Areas (MLRA): the Atlantic Coast Flatwood and the Southern Coastal Plain.

The dominant soil orders in Atlantic Coast Flatwood MLRA are Spodosols and Ultisols. The soils are generally are very deep, well drained to very poorly drained, and loamy or clayey.[8]

The dominant soil orders in the Southern Coastal Plain MLRA are Ultisols, Entisols and Inceptisols. These soils generally are very deep, somewhat excessively drained to poorly drained, and loamy.[9] Soils in this MLRA are dominated by nearly level and very gently sloping Tifton, Leefield, and Fuquay soils on uplands and nearly level Pelham soils along drainageways and floodplains. Tifton soils are well drained upland soils that have a sandy surface layer and a yellowish brown or strong brown, loamy subsoil. The surface layer is normally loamy sand and is about 10 inches thick. The subsoil is mostly sandy clay loam. Fuquay and Leefield soils have a thicker sandy surface than Tifton, and Leefield soils have a water table is higher. Characteristic of these soils is a layer of plinthite in the subsoil at a depth of about 30 inches. Plinthite is an iron-rich mixture of clay with quartz and other constituents that can perc water during wet seasons. Pelham soils are nearly level and poorly drained. They have a sandy surface layer 20 to 40 inches thick over a loamy subsoil. Water tables are commonly at or near the surface during wet seasons, and the soils are subject to flooding.

[8]Georgia Soil Survey 153A – Atlantic Coast Flatwoods, USDA, NRCS, Georgia.

[9]Georgia Soil Survey 133A - Southern Coastal Plain, USDA, NRCS, Georgia.

Major resource concerns are erosion, maintenance of the content of organic matter and productivity of the soils, control of surface water, artificial drainage, and management of surface compaction and soil moisture.

The predominate soils in the watershed are:

- Kinston and Johnston, generally found on floodplains, and are very poorly to poorly drained. The soils are well-suited to growing pine trees, are poorly suited to field crops, hay, and pasture and severely limited for non-farm uses.
- Leefield, somewhat poorly drained and generally found on smooth, upland areas with a slope of 0 to 2 percent including the City of Douglas. This soil is moderately suited to urban uses and recreational development but, due to wetness, can limit uses where septic systems are required. This limitation can be overcome by special design and application.
- Pelham soils are poorly drained and generally found on in broad, smooth areas and near drainways and depressions. The soils are well-suited to growing pine trees, poorly suited to field crops, hay, pasture, and recreational development due to wetness and flooding which also severely restricts urban uses.

The following table depicts the Seventeen Mile River watershed generalized soils and provides a general description of the soil associations found in the watershed. See Map 3.

Seventeen Mile River Watershed Soils			
Soil Name	Acreage	Percent	Characteristics
Ailey	441.62	0.46%	well drained
Albany	5305.62	5.52%	poorly drained
Bayboro	226.87	0.24%	very poor
Blanton	801.39	0.83%	moderately well drained
Bonifay	1410.39	1.47%	well drained
Cainhoy	6.94	0.01%	Excessively well drained
Carnegie	6599.03	6.87%	well drained
Clarendon	3638.58	3.79%	moderately well drained
Cowarts-Sunsweet	176.56	0.18%	well drained
Dothan	1382.44	1.44%	well drained
Esto	216.23	0.23%	well drained
Fuquay	5139.79	5.35%	well drained
Kershaw	6290.08	6.55%	excessively well drained
Kinston and Johnston	14184.12	14.77%	poorly/very poorly drained
Leefield	11092.1	11.55%	poorly drained
Leon	17.46	0.02%	poorly /very poorly drained
Mascotte	111.7	0.12%	poorly/very poorly drained
Meldrim	49.4	0.05%	moderately well drained
Olustee	308.92	0.32%	somewhat poorly drained
Pelham	19022	19.80%	poorly drained
Rigdon	2567.44	2.67%	poorly drained
Sapelo	4974.72	5.18%	poorly drained
Stilson	2071.43	2.16%	moderately well drained
Surrency	4606.87	4.80%	poorly drained
Tifton	4783.23	4.98%	well drained
Troup-Ailey	193.61	0.20%	well drained
Wahee	201.53	0.21%	poorly drained
Water	116.77	0.12%	NA
Wicksburg	115.8	0.12%	well drained

Source: - U.S. Department of Agriculture, Natural Resources Conservation Service, 2015; Soil Survey of Atkinson, Bacon, and Coffee Counties, USDA NRCS; April 1988. Web Soil Survey (Ware County) https://websoilsurvey.nrcs.usda.gov/app/. Survey Geographic (SSURGO) Database.

Flooding

Flooding in the watershed is associated with Otter and Tiger creeks, Seventeen Mile River, the lower half of Twentynine Mile Creek, and an unnamed tributary of Seventeen Mile River north of Highway 158 (E. Baker Hwy.). See Map 4.

Water Resources

Hydrology

The Seventeen Mile River HUC-10 watershed includes 144 miles of perennial and intermittent streams, 369 acres of lakes, and 26.576 acres of wetlands.

Groundwater Recharge Areas and Pollution Susceptibility

Groundwater is among the Nation's most important natural resources. It provides drinking water to urban and rural communities, supports irrigation and industry, sustains the flow of streams and rivers, and maintains riparian and wetland ecosystems. In many areas of the Nation, the future sustainability of ground-water resources is at risk from over use and contamination. Because groundwater systems typically respond slowly to human actions, a long-term perspective is needed to manage this valuable resource. It is therefore essential to the health, safety, and welfare of the public that the quality of subsurface public drinking water be maintained.

Groundwater resources exist in underground reservoirs known as aquifers. These aquifers are zones of rock beneath the earth's surface that are capable of providing water for a well. They occupy vast regions of the subsurface and are replenished by infiltration of surface water runoff in zones of the surface, known as groundwater recharge areas. Groundwater is susceptible to contamination when development occurs within groundwater recharge areas. Certain land use activities, such as septic tanks, underground tanks, and chemical spills, pose a significant threat to the quality of groundwater supplies. Therefore, it is necessary to manage land uses within groundwater recharge areas in order to ensure that pollution threats and development impacts are minimized.

The Georgia Department of Natural Resources mapped areas of high, average (or medium), and low susceptibility of groundwater to pollution in Georgia. This map is commonly known as Hydrologic Atlas 20 or the Groundwater Pollution Susceptibility Map of Georgia. The Seventeen Mile River watershed is located in a “average” to “high” groundwater pollution susceptibility area. (See Map 5). However, within a pollution susceptibility area are also significant groundwater recharge areas. These areas are mapped on the Hydrologic Atlas 18 or the Groundwater Recharge Area Map of Georgia. (See Map 6). Four groundwater recharge areas are located in the Seventeen Mile River watershed; two of which intersect impaired segments.

The significant groundwater recharge areas in the watershed are subject to pollution from spills, discharges, leaks, impoundments, applications of chemicals, injections and other human activities in the watershed. Once in the aquifer, pollutants can spread uncontrollably to other parts of the aquifer thereby decreasing or endangering water quality for an entire region. Once polluted, it is almost impossible for a groundwater source to be cleaned up.

Floridian Aquifer

Groundwater resources in the Satilla River basin, which includes the Seventeen Mile River watershed, are supplied by the Floridan aquifer system is highly permeable and one of the most productive

ground water reservoirs in the United States. The system supplies about 50 percent of the ground water used in the state and is a major water source throughout most of South Georgia.

Wetlands

Extensive wetlands are found throughout the watershed. See Map 7.

Land Use and Demographics

Land Use

The predominant existing land use in the watershed is agricultural, 59%, followed by forestry, 28%. Urbanized land use accounts for less than 10% of the watershed and most is devoted to residential use in Douglas and the surrounding area and north of Ga Highway 32. See Maps 8 and 9.

Existing Land Use, 2007		
Land Use Classification	Acreage	Percent
Agriculture	58496.05	58.82%
Commercial	516.97	0.52%
Industrial	132.43	0.13%
Forestry	28643.8	28.80%
Park/Recreation/Conservation	2841.4	2.86%
Public/Institutional	583.19	0.59%
Residential	8241.45	8.29%

Source: South Georgia Regional Commission

By 2027, the predominate land use will continue to be agriculture and forestry. Current forested land is expected to transition primarily to residential land use and comprise about 14 percent of the watershed. Residential development is anticipated along Tiger Creek, between Highway 158 and Seventeen Mile River, and adjacent to Twentynine Mile Creek. See Map 10.

Future Land Use, 2027		
Classification	Acreage	Percent
Agriculture	146920	81.36
Commercial	2149	1.19
Park/Recreation/Conservation	2838	1.57
Public/Institutional	3118	1.73
Residential	25548	14.15
Total	180573	

Source: South Georgia Regional Commission

Demographics

From 2000 - 2010, Atkinson, Coffee, and Ware counties population grew by a combined 29.79 percent and Douglas, 9.58 percent. Estimated county population growth from 2020 to 2030 show the majority growth will occur in Coffee County. No population data exists solely for the Seventeen Mile River watershed.

Total Population and Percent Change, 2000 – 2030							
County/City	2000	2010	% change 2000-2010	2020	% change 2010–2020	2030	% change 2020-2030
Atkinson	7609	8365	9.93	8890	6.27	9377	5.47
Coffee	37413	42738	14.23	52825	23.60	65233	23.49
Ware	35483	36366	2.63	35811	-1.53	35974	0.46
Douglas, City	10639	11659	9.58				

Source: US Census Bureau, 2000, 2010; Carl Vinson Institute of Government, 2020, 2030.

Agriculture

As the majority of the watershed is in Coffee County, and to a lesser extent, Atkinson and Ware counties, data will focus on only these three counties. Agricultural land in the watershed covers 58,496.05 acres, or 58.82 percent of the watershed. County-wide, the average farm size from 203 acres in Ware County, 286 acres in Coffee County, and 448 acres Atkinson County. The majority of farms are between 10 and 499 acres. Top crop products in Atkinson, Coffee, and Ware counties are corn for grain, tobacco, soybeans, cotton, peanuts, and vegetables. Land devoted to blueberry orchards increased in Coffee County by 92% from 2007 to 2017 and totals 458 acres.[10]

The number of poultry animals increased between 2007 and 2012 while all other animal numbers decreased. During the same time frame, Coffee and Atkinson counties experienced an increase in acres devoted to crop production, particularly in cotton, peanuts, tobacco, and soybeans

The majority of the intensive agricultural uses in the watershed are currently located in Coffee County and consist of cattle, swine, and poultry operations. Agricultural operations in the Tiger and Otter creek subwatershed consist primarily of crops/pasture and some swine. Agricultural operations in the Twentynine Mile Creek subwatershed consist primarily of poultry and beef cattle.

Agricultural BMPs previously installed on poultry operations in the Twentynine Mile Creek subwatershed include stackhouses and incinerators. One poultry operation plans to install a stackhouse and composter in 2018. Other practices installed in the Seventeen Mile River watershed

[10]Census of Agriculture, USDA, National Agricultural Statistics Service, 2007 and 2012.

include conservation tillage, cattle practices, tree planting, and cover crops. However, water quality monitoring data indicates that contamination continues in the Twentynine Mile Creek subwatershed. A possible source is cattle operations where dry poultry litter is spread on the pastures.

Silviculture

The majority of soil erosion from forested land occurs during timber harvesting and the period immediately following, and during reforestation. Once the forest is re-established, very little soil erosion occurs. Timber harvesting includes the layout of access roads, log decks, and skid trails, the construction and stabilization of these areas, and the cutting of trees.

According to the 2015 Georgia Forestry Commission Survey, statewide, correct implementation of forestry best management practices (BMPs) was 91.13 percent, a 1.20 percent improvement in BMP implementation from 2013. By ownership, the percentage of BMP implementation was 93.62 percent on corporate lands, 96.21 percent on public lands and 89.74 percent on private lands. BMP implementation for 2015, improved significantly for streamside management zones from the 2013 survey by 7.7
percentage points, to a score of 94.20 percent in 2015. Of particular interest is the fact that the number of Water Quality Risks observed decreased from 100 to 63 for an improvement of 37% over 2013.[11]

LAS/NPDES Permits

Point sources are defined as discharges of treated wastewater to the river and its tributaries, regulated under the National Pollutant Discharge Elimination System (NPDES). These are divided into two main types—permitted wastewater discharges, which tend to be discharged at relatively stable rates, and permitted storm water discharges, which tend to be discharged at highly irregular, intermittent rates, depending on precipitation.

GA EPD implements a permit for land application systems (LAS); a nondischarging waste disposal system which is not intended to discharge treated effluent to surface waters. LAS are means of disposing liquid wastewater sludge that has gone through treatment process onto the land.

LAS permits also regulate the disposal of wet manure and processed wastewater from new and existing animal feeding operations (AFOs) on a land treatment system within the State of Georgia for owners of existing, new, and expanding AFOs.

Operations in the watershed that hold LAS permits are:

- Roscoe Meeks Farm - Swine operation located on New Forest Highway, the farm holds general industrial LAS AFO (300 to 1000 animal units) permit #GAG920005.

[11] Results of Georgia's 2015 Silvicultural Best Management Practices Implementation and Compliance Survey, Georgia Forestry Commission, December 10, 2015.

- Tim Meeks Farm - Swine operation located on Danny Kirkland Road, the farm holds general industrial permit LAS AFO (>1000 animal units) permit #GAG940004.
- Tom Meeks Farm - Swine operation located on Whisperwood Road, the farm holds an industrial permit GAG940003 General LAS AFO (> 1000 animal units) permit #GAG94003.

The EPD NPDES permit establishes specific effluent limitations and specifies compliance schedules that must be met by the point-source discharger. Effluent limitations are designed to achieve water quality standards in the receiving water and are reevaluated at least every 5 years.

There are also a number of poultry operations in the watershed. Because these operations utilize dry manure, no LAS permit is required.

Municipal wastewater treatment plants are among the most significant point sources regulated under the NPDES program in the Satilla River basin as they account for the majority of the total point source effluent flow (exclusive of cooling water). These plants collect, treat, and discharge large volumes of treated wastewater into nearby surface waters (receiving streams). Pollutants associated with treated wastewater include pathogens, nutrients, oxygen-demanding waste, metals, and chlorine residuals.

The City of Douglas Southeast WPCP holds the only municipal NPDES permit (#GA0024431) in the watershed.

Water Supply and Sewerage System

Water Supply System

Douglas is the only jurisdiction in the watershed that offers public water supply service. The system operates under permit GA0690002 and primarily serves the City of Douglas. Residents outside the service area rely on private wells or community wells.

Douglas' water comes from six municipal groundwater wells approximately 700 feet deep. The water source is the Upper Floridian Aquifer. Wells pump an average of 4.8 million gallons per day and serve a population of 18,172 comprised of 4,700 households and 1683 commercial uses.

Active wells are located on city-owned property. These properties are protected from activities that could potentially cause contamination of these water sources. The city performs treatment at each of these wells to include chlorine disinfection and fluoridation. Additionally, the city has four, half-million gallon elevated storage tanks. The average daily demand is 0.700 mgd with a peak demand of 0.900 mgd.

Sanitary Sewer System

Douglas is also the only jurisdiction in the watershed operating a sanitary sewer and disposal system. See Map 11. The system serves the developed area inside the Loop (Bowens Mill Road SW and SE) with the exception of about 15 homes that remain on individual septic systems, an area along Highway 158, the west side of Highway 135, and the east side of US 441-S near the airport. The

residential and commercial area in the northeast portion of city between Highway 135 and Seventeen Mile River is not served by public sewer.

The City of Douglas operates its Southeast water pollution control plant (WPCP) under permit GA0024431. The plant located at 622 Iron Road discharges up to 6.0 MGD of treated wastewater to an unnamed tributary to Seventeen Mile River.

Discharges and spills

The WPCP has experienced a number of spills. Georgia defines a "spill" as any discharge of raw sewage by a publically owned sewage treatment plant to the waters of the State. In general, a "major spill" is any discharge of raw sewage that exceeds 10,000 gallons or results in water quality violations in waters of the State. "Major Spill" monitoring lasts for a period of one year beginning with daily monitoring for the first week and then once/week monitoring for weeks 2-4 following the initial spill. Then once/week throughout the third month from the initial spill date and then once week on the twelfth month from the original spill date. See Appendix for monitoring data.

- March 1, 2017 – Approximately 9,000 gallons of wastewater was spilled. The minor spill was due to blockage of a sewer lateral - a pipe that goes to individual homes. The sewage overflowed into a storm drain that discharges to an unnamed tributary of the Seventeen Mile River.

- April 6, 2017 – A minor wastewater spill occurred in an unnamed tributary to Seventeen Mile River due to a sanitary sewer overflow from a manhole located inside the Southeast Water Pollution Control. Approximately 7,000 gallons were spilled due to localized flooding from heavy rains which caused overloading of the sewer beyond its design capacity due to inflow and infiltration of water. Year-long monitoring is not required although the city will voluntarily conduct monitoring.

- August 23-24, 2017 – Approximately 720,000 gallons of wastewater was spilled into the Seventeen Mile River from a lift station located on Ridge Lane. The cause of this major wastewater spill was "an improper drive setting in conjunction with a faulty alarm float during upgrades to the lift station." As a result of the spill, water quality sampling was initiated on August 24, 2017 on Seventeen Mile River up and downstream of the spill at Highway 135 and Coffee State Park, respectively. At the time of the spill, the lift station was under renovation. The station has since been completed and a diesel pump was installed to serve as a backup in case of failure of the primary pump.

Based on water quality monitoring data, there was no long-term water quality impairment to the Seventeen Mile River from these spills.

The City of Douglas has been fined twice since 2016 under GA EPD Enforcement Orders.

- Enforcement Order EPD-WQ-8005, was executed January 26, 2016 for Spills to waters of the state; violations of NPDES Permit, and Pretreatment Program; exceeded weekly average Permit limitations; and, failure to maintain proper usage records. The City was required to submit to GA EPD a Corrective Action Plan/schedule, including review and assessment of City's Pretreatment

Program, inspect all Industrial Users for bypass lines with plans to address lines; implement plan; provide final progress report outlining activities accomplished, as required; comply with all monitoring frequencies required in Permit including any adjustments, and report findings on monthly Discharge Monitoring Report. The settlement amount was $30,000.00.

- Enforcement Order EPD-WP-8419, was executed January 30, 2018 for a lift station overflow which discharged pollutants into wasters of the state. The City was required to submit to GA EPD a plan to prevent sewage spills or overflows during lift station rehabilitation; and, submit documentation demonstrating the Respondent's commitment to purchase and install a natural gas or diesel powered bypass pump at the Bojo lift station. The settlement amount was $5,000.00.

A portion of current SPLOST funds are earmarked for station upgrades and decreasing 'points of inflow' where storm waters are able to flow into the sewer system. System upgrades should be completed by 2019.

Private Septic Systems

County Boards of Health and the Geogia Department of Human Resources regulate the siting and installation of septic systems up to 10,000 gallon tank capacity. Larger systems are permitted by GA EPD. However, property owners are responsible for properly operating and maintaining the septic system to increase life expectancy and prevent failures.

Outside of the sewer service area in the city, residents rely on community systems or individual septic systems. Residents in the unincorporated areas of the watershed rely on individual or community septic systems.

The Coffee County Health Department indicates there have been past problems with septic systems in the residential/commercial area in northeast Douglas bounded by Highway 135 and the Seventeen Mile River and in the area of Old Axson Road. Further, the Coffee County Health Department reports that most problems with septic systems are reported in the winter months when the water table is high.

The WAC noted concerns with older systems in the northern portion of the watershed and the need for septic system maintenance education.

<u>Impervious Surface</u>

A significant portion of rainfall in forested watersheds is absorbed into soils (infiltration), is stored as ground water, and is slowly discharged to streams through seeps and springs. Flooding is less significant in these conditions because some of the runoff during a storm is absorbed into the ground, thus lessening the amount of runoff into a stream during the storm. However, as watersheds are urbanized, much of the vegetation is replaced by impervious surfaces, thus reducing the area where infiltration to ground water can occur. Thus, more stormwater runoff occurs - runoff that must be collected by extensive drainage systems that combine curbs, storm sewers, and ditches to carry stormwater runoff directly to streams. More simply, in a developed watershed, much more water

arrives into a stream much more quickly, resulting in an increased likelihood of more frequent and more severe flooding.

Impervious surface in the watershed includes roads, parking lots, and buildings, most of which are located in Douglas and to a lesser extent, northeast of Douglas along Highway 135. See Map 12.

As more development occurs in the watershed, the amount of impervious surface will increase leading to more urban runoff and potential for water quality contamination.

Unpaved Rural Roads

Roads are a major source of stormwater runoff but have a varied impact on sedimentation, depending on their surface. Primitive, unimproved or soil surface roads have the greatest impact, with gravel or stone roads, the next greatest impact. Erosion from unpaved roadways can be a significant sediment source to creeks. Road erosion occurs when soil particles are loosened and carried from the roadway, ditch or road bank by water, wind, or traffic.

The water use classifications of fishing, recreation, and drinking water are potentially threatened in waterbodies by erosion and loading of sediment which can alter stream morphology, impact habitat, and reduce water clarity. Potential sources include urban runoff and development (particularly construction), unpaved rural roads, forestry practices, and agriculture. In 2002, GA EPD did not identify any stream segments in any Satilla River subbasin, including the Seventeen Mile River watershed, that had sediment loading concerns.[12]

However, the WAC indicated sediment contamination concerns with unpaved roads that cross the river or are near the river's edge. There has been little water quality testing for turbidity and total suspended solids (TSS) in the watershed. To confirm the validity of this concern and degree of contamination, regular turbidity and TSS monitoring is required. Regardless whether there is monitoring, the counties can implement the guidelines presented in Georgia Better Back Roads Field Manual available at http://www.tworiversrcd.org/forms/Georgia%20Better%20Back%20Roads%20Field%20Manual%20final.pdf. The manual presents "better" practices that reduce or eliminate contamination from unpaved roads.

Stormwater

Stormwater is a leading cause of water pollution. It runs off solid surfaces and collects pollutants such as oil, pesticides, sediments, bacteria, and other chemicals, and then deposits them into our waterways thus degrading water quality. Flooding increases as impervious surfaces replace natural vegetation, because water is unable to slowly filter into the landscape.

[12] Satilla River Basin Management Plan 2002, Georgia Department of Natural Resources, Environmental Protection Division, p.6-3.

Stormwater deposits sediment that decreases the depth of waterways, further increasing flooding. During storms, these pollutants are washed off and drain to storm drains and then directly into streams, rivers and lakes. Pollutant levels are typically much higher in the first inch of runoff, commonly referred to as the "first flush." Some studies have found that approximately 90% of the pollutant loading is contained in the "first flush" of a one-inch rainfall. Therefore, effective water quality protection requires the treatment of the "first flush" through the use of various preventive and control measures. The Center for Watershed Protection's research has demonstrated that as little as eight percent impervious coverage of a watershed can result in degradation of the water quality. At 25% impervious coverage, the waterways have lost most of their biological diversity and have significant impairments. A two-acre single home lot has about 12% impervious cover and a shopping center has over 90% impervious cover. Although low-density development reduces impervious surfaces in that area it leads to increased impervious surfaces elsewhere, because of more roads and parking that sprawling development requires. Roads and parking lots can account for more than 60% of a low-density development's impervious area. Although large lawns might seem capable of absorbing runoff from adjacent surfaces, they are typically compacted by construction equipment and can generate up to 90% as much runoff as pavement.

Douglas' system is partially mapped and the city is in the process of developing a Storm Discharge Master Plan. The city's current storm water management ordinance establishes minimum stormwater management requirements for land development projects and promotes traditional structural management to capture and treat stormwater.[13] The ordinance does not provide for green infrastructure, development practices that can reduce stormwater and its impact on watershed streams and rivers.

Green infrastructure is a cost-effective, resilient approach to managing wet weather impacts that provides many community benefits. While single-purpose gray stormwater infrastructure—conventional piped drainage and water treatment systems—is designed to move urban stormwater away from the built environment, green infrastructure reduces and treats stormwater at its source while delivering environmental, social, and economic benefits.

Waterbody and Watershed Conditions

Visual Survey

A visual survey of the Seventeen Mile River watershed was conducted March 24, 2017.

The purpose of a visual survey is to determine if there are observable problems in the river and streams and to characterize the environment through which the river flows. The visual survey helps pinpoint areas that may be the source of water quality impairments and determine the overall condition of the stream. Results of the visual survey did not indicate any obvious source(s) of water quality impairment.

[13] Unified Land Development Code, Chapter 6.

Throughout the watershed, most of the stream channels are shady with occasional open areas adjacent to bridge or road crossings. Additionally, there was one area observed at the Douglas Country Club where there is no buffer and managed turf extends to the river's edge. Otherwise, vegetative buffers adjacent to the stream meet the state-mandated standard, 25', and in most cases, are much wider.

Water Quality Monitoring Data

Extensive water quality monitoring has been conducted for pH, dissolved oxygen (DO), and fecal coliform at three stations in the watershed; Otter Creek at Georgia Highway 32 (2010), Seventeen Mile River at Georgia Highway 158 (2003), and Seventeen Mile River at Georgia Highway 64 (1991 – 2010). Additionally, the Seven Rivers RC&D conducted water quality monitoring at the following six sites in the watershed during the period June – October 2017. Parameters measured were e-coli, dissolved oxygen, pH, and conductivity at the following sites:

- Seventeen Mile River at Hwy 135
- Otter Creek at Sand Hill Church Road
- Otter Creek at Hwy 32
- Twentynine Mile Creek at Raccoon Bridge Road
- Seventeen Mile River at Highway 64
- Seventeen Mile River at Taylor Church Road

Following, is information on each parameter monitored and its general impact on water quality.

- DO – Potential point source affecting in-stream DO concentrations includes wastewater treatment plants, industrial facilities, combined sewer overflows, sanitary sewer overflows, and stormwater runoff.

  Nonpoint sources of oxygen demanding substances are separated into urban and rural components. In urban settings, potential loading sources are stormwater runoff, failing septic systems, and leakage and overflows from sanitary sewer systems. In rural areas potential sources may include diffuse runoff of agricultural fertilizer and animal wastes (from manure application or grazing animals), erosion of sediments, and runoff from concentrated animal operations.

  The relationship between dissolved oxygen and water temperature is critical for aquatic life in a stream, river or lake. More dissolved oxygen is present in water with a lower temperature compared to water with a higher temperature. DO levels below 3 ppm are stressful to most aquatic organisms. DO levels below 2 or 1 ppm will not support fish; levels of 5 to 6 ppm are usually required for growth and activity.

  State standard is an average of 5.0 mg/l and no less than 4.0 mg/l at all times.

! pH – In Georgia streams, pH ranges between 6.5 and 8.2 though black-water streams can be found as low as 3.5 mg/l. Temperature has a measurable yet very slight effect on the pH of water. As the water temperature increases, pH value decreases. The converse is also true: colder water has a higher pH value.

! Fecal coliform – Georgia's water quality standards set a maximum number of 200 colonies per 100 milliliters of water from May through October, or 1000 colonies per 100 milliliters from November through April. Values in excess are in violation of the State bacteria water quality standard. In addition, a single sample in excess of 4000 colonies per 100 milliliters from November through April or a single sample in excess of 400 colonies per 100 milliliters from May through October.

! Turbidity and Total Suspended Solids (TSS) - Turbidity and Total Suspended Solids (TSS) – Total suspended solids (TSS) concentrations and turbidity both indicate the amount of solids suspended in the water, whether mineral (e.g., soil particles) or organic (e.g., algae). However, the TSS test measures an actual weight of material per volume of water, while turbidity measures the amount of light scattered by particles of dirt or organic matter floating in a sample (more suspended particles cause greater scattering). Measuring TSS and turbidity is valuable since high readings can be used as "indicators" of other potential pollutants. Additionally, concentrations of particulate matter can cause increased sedimentation and siltation in a stream, which in turn can ruin important habitat areas for fish and other aquatic life as well as impact recreational values (fishing, boating, swimming) in a waterbody.

  Turbidity - In general, a turbidity reading below 5 NTU appears clear, while a reading of 55 NTU will start to look cloudy and a reading over 500 NTU will appear completely opaque.[14] During the monitoring period turbidity was below 8.0 NTU thus confirming that sediment is not presently a contaminant of concern in the watershed.

  TSS (Total Suspended Solids) - Georgia has no numerical standard for turbidity but instead requires "All watersheds shall be free from material related to municipal, industrial or other discharges which produce turbidity, color, odor or other objectionable conditions which interfere with legitimate water uses.[15] A TSS concentration below 20 mg/L appears clear, while levels over 40 mg/L may begin to appear cloudy.

! Biological Oxygen Demand (BOD) - Biological oxygen demand is a measure of the quantity of oxygen used by microorganisms (e.g., aerobic bacteria) in the oxidation of organic matter. Natural sources of organic matter include plant decay and leaf fall. However, plant growth and decay may be unnaturally accelerated when nutrients and sunlight are overly abundant due to human influence. Urban runoff carries pet wastes from streets and sidewalks; nutrients from lawn fertilizers; leaves, grass clippings, and paper from residential areas, which increase oxygen demand. When BOD levels are high, dissolved oxygen (DO) levels decrease because the oxygen that is available in the water is being consumed by the bacteria. Since less dissolved oxygen is

[14] Turbidity, Total Suspended Solids and Water Clarity." Fundamentals of Environmental Measurements. Fondriest Environmental, 13 Jun. 2014.

[15] Water Use Classification and Water Quality Standards, §391–3-6-.03.

available in the water, fish and other aquatic organisms may not survive. A BOD level of 1-2 ppm indicates very good water quality and there will not be much organic waste present in the water supply. A level of 3-5 indicates fair (moderately clean) water quality.

Otter Creek at Highway 32

Based on EPD-collected water quality data obtained from February through July, 2010, Otter Creek was determined to support its designated use of fishing. Data indicate the following:

- DO – DO was within acceptable parameters during the sample period.
- pH – Of the eleven samples events, pH was low only three times. In each case water temperature had increased and this was likely due to an increase in water temperature from the previous sampling event.
- Fecal coliform – Samples were collected in March and April. Geometric mean was 132 colonies/100 mL and 171 colonies/100mL respectively, well below both the State summer and standard.
- During the monitoring period, TSS ranged from 4.4 - 10 mg/L indicating little sediment contamination. The volume of suspended solids generally correlates to the amount of rain received. No rain was received during the monitoring period.
- BOD levels measured during the sampling period indicate generally very good water quality.

Seventeen Mile River at Georgia Highway 158 and Georgia Highway 64

Water quality data is available for two monitoring stations location along the supporting stream segment; Seventeen Mile River at Highway 158 and Seventeen Mile River at Highway 64. EPD-collected water quality data was obtained in 2003 at Highway 158, and from 1991 - 2010 at Highway 64. In 2006, based on this data, the segment of Seventeen Mile River from Otter Creek to its confluence with Twentynine Mile Creek was determined to support its designated use of fishing in. Data indicate the following:

- DO – DO fluctuated throughout the monitoring period with generally higher levels during the winter months. However, overall water quality data indicates that DO was within acceptable parameters during the sample period and met the State standard.
- pH – pH was within acceptable limits throughout the sampling period.
- Fecal coliform – Over a ten-year sampling period, only three times did the geometric mean exceed state standards and two were marginally above the standard. Generally, geometric mean was well-below the state standard.

Seventeen Mile River at Highway 135

DO met State standard.

Fecal coliform counts exceeded state standards 150 % to 233 % three out of the four months sampled during a period of no rainfall. This site is influenced by stormwater runoff and human activities from the Douglas' urbanized area including the Douglas County Club. Additionally, while much of the urbanized area is served by public sewer, the residential and commercial area in north-east Douglas

bounded by Highway 135 and the Seventeen Mile River are served by individual septic systems. Although non-point source pollution has a significant effect on bacterial levels in runoff water and in water resources, this effect would be the result of factors other than just rainfall.

The WAC noted concerns with operations upstream of this sampling point but outside the watershed that may contribute to contamination at this monitoring location.

Likely contamination sources:
- Failing/leaking septic tanks.
- Stormwater runoff.
- Facilities upstream of sampling point but outside the watershed.

Seventeen Mile River at Highway 32

DO and pH were within acceptable parameters.

Fecal coliform counts were elevated at each sampling event and three of the four sampling event counts were consistent with elevated counts upstream at Seventeen Mile River at Highway 135. This creek segment flows entirely through forested land though likely receives some runoff from residential and commercial development around Highway 135. Wildlife could also account for some of the elevated counts.

Likely contamination sources:
- Failing/leaking septic tanks
- Stormwater runoff from the Douglas urbanized area,
- Wildlife.

Otter Creek at Sand Hill Church Road

This sampling site is just below the confluence of Otter and Tiger creeks. The segment of Otter Creek below its confluence with Tiger Creek is identified as a supporting segment. RC&D sampling in June and August demonstrated fecal coliform counts exceeded state standards 844 percent and 97 percent, respectively. Dissolved oxygen and pH were within acceptable parameters.

Without further water quality testing, it is difficult to determine the potential source of the fecal coliform contamination or whether the fecal coliform spikes are indicative of ongoing non-point source contamination. However, both Otter and Tiger creeks are similarly developed with agriculture and forest uses though the Tiger Creek subwatershed has more agricultural ponds in addition to residential areas on Hill Road and Haley Court, that are adjacent to the stream. Homes in these subdivision are served by individual septic systems and could be a possible source of the contamination.

Likely contamination sources:
- Leaking/failing septic systems
- Agricultural uses.

Twentynine Mile Creek at Raccoon Bridge Road

Twentynine Mile Creek has not been previously monitored but was selected for monitoring due to the large-scale agriculture uses in the subwatershed as well as its confluence at the most-downstream point of the supporting segment of Seventeen Mile River.

Dissolved oxygen levels were below 2.0 ppm three of the four months sampled with a four-month average of 2.15 ppm. A low dissolved oxygen level indicates a demand on the oxygen in the system. Low dissolved oxygen (DO) primarily results from excessive algae growth caused by phosphorus. Phosphorus is a common constituent of agricultural fertilizers, manure, and organic wastes in sewage and industrial effluent. Nitrogen is another nutrient that can contribute to algae growth. As the algae die and decompose, the process consumes dissolved oxygen. This can result in insufficient amounts of dissolved oxygen available for fish and other aquatic life. Die-off and decomposition of submerged plants also contribute to low dissolved oxygen. Sources of phosphorus include discharges from municipal and private wastewater treatment, cropland, urban storm water runoff, and natural decay of vegetation.

Fecal coliform counts were above state standard two of the four months monitored. July's count was 566 percent above state standard, and October's, 150 percent. pH levels were within acceptable range.

Likely contamination sources:
- Agricultural uses, particularly cattle operations where dry poultry litter is spread on fields.
- Leaking/failing septic tanks.

Seventeen Mile River at Highway 64

This site was monitored by both GA EPD from 1991 - 2010 and the RC&D in 2017. Dissolved oxygen and pH were within acceptable range. During both monitoring periods, the fecal colifom geometric mean exceeded State standard only once.

Land in this portion of the watershed is primarily forest, with some agriculture but extensive vegetated buffers or 1,000 feet or greater.

Seventeen Mile River at Taylor Church Road

This segment was first monitored in 2017 by the RC&D. Dissolved oxygen and pH are within acceptable limits though fecal coliform counts were elevated in June and July, above state standard by 38 percent and 205 percent, respectively. The potential source of the two spikes are unknown as this portion of the watershed is mostly forested and buffers are extensive, generally 1,000 feet or greater though there is some agricultural use and associated ponds that could potentially contribute to contamination. Further monitoring of this site is recommended to better determine water quality concerns, if any. If trends show fecal colifom consistently above State standard, installation of Agricultural BMPs should be pursued, as appropriate.

Likely contamination sources:

- Possibly agricultural uses though additional monitoring is recommended as a first step.

Healthy Watersheds

GA EPD identifies Otter Creek and Seventeen Mile River from Otter Creek to Twenty-nine Mile Creek as Category 1 streams indicating that they are meeting water quality standards and are therefore, healthy watersheds. As such, steps should be taken locally to insure that water quality in the healthy watershed is not degraded by human activity.

US EPA defines a healthy watershed as a watershed where structure and function are in place to support healthy aquatic ecosystems. Key components of a healthy watershed include:

- intact and functioning headwater streams, floodplains, riparian corridors, instream habitat, and biotic communities;
- natural vegetation in the landscape; and
- hydrology, sediment transport, fluvial geomorphology, and disturbance regimes expected for its location.

The systems approach to healthy watersheds assessment and protection is based on an integrated evaluation of:

- Landscape Condition
- Habitat
- Hydrology
- Geomorphology
- Water Quality
- Biological Condition.

Ecological processes and natural disturbance regimes are addressed in the context of these six components.

Landscape Condition – Landscape condition assessments examine the condition and configuration of natural land cover in the landscape. Natural vegetative cover stabilizes soil, regulates watershed hydrology and provides habitat to terrestrial and riparian species. The type, quantity, and structure of the natural vegetation within a watershed have important influences on aquatic habitats. Natural land cover provides connectivity among riparian habitats and between terrestrial and aquatic ecosystems.

Many aquatic organisms depend on being able to move through connected systems to habitats in response to variable environmental conditions. Forested riparian zones are often some of the best remaining corridors for connecting habitat patches on the landscape. Vegetated landscapes cycle nutrients, retain sediments, and regulate surface and ground water hydrology. Natural disturbances on the landscape, such as fire, help to regulate nutrient and organic matter input to aquatic ecosystems.

Habitat – Freshwater habitats are comprised of flowing (i.e., streams and rivers) and standing (i.e., lakes, ponds, and wetlands) waters. Habitat extent and quality are directly related to landscape condition and hydrologic and geomorphic processes. Habitat quality is also affected by the physical and chemical characteristics of the water (e.g., water temperature). The number and distribution of different habitat types and their connectivity influence species population health.

Geomorphology – Watershed inputs (water, sediment and organic matter) and valley characteristics (valley slope and width, bedrock and surficial geology, soils and vegetation) determine a river channel's form (pattern, profile and dimension). Although watershed inputs and channel form vary over time, they are balanced in natural systems. This natural balance is termed "dynamic equilibrium" and refers to sediment size and volume being in balance with stream slope and discharge.

Any time one of these variables changes, the other variables will respond to bring the stream back to a dynamic equilibrium. Disturbances such as floods or forest fires are natural, episodic events that cause a stream to become unbalanced. After such disturbances, the stream will "seek" equilibrium conditions through adjustment of the other components until the stream is once again in a form that allows it to efficiently perform its functions of water and sediment discharge.

These periodic disturbances, of natural intensity and frequency, can increase aquatic biodiversity by creating opportunities for some species and scaling back the prevalence of others. When disturbances are of extreme intensity or frequency, as many human disturbances are, a stream channel will undergo adjustment to a new form. This can result in habitat degradation and threats to public safety and infrastructure.

Hydrology – Watershed hydrology is driven by climatic processes; surface and subsurface characteristics such as topography, vegetation, and geology and human activities such as water and land use. Aquatic ecosystems are dependent on surface and/or ground water hydrology. For example, groundwater-dependent ecosystems rely on water that infiltrates to the subsurface discharging to nearby streams or recharging to an aquifer and then discharging to springs, seeps, wetlands, streams, and lakes.

Hydrologic regimes (flows in rivers and water levels in lakes and wetlands) create habitat and are important to aquatic species life histories (e.g., providing cues for spawning and migration during discrete times of the year). Natural flow regimes are composed of seasonally varying environmental flow components, including high flows, base flows, pulses and floods that can be characterized in terms of their magnitude, frequency, duration, timing and rate of change. Natural lake levels will vary depending on precipitation, evaporation and/or ground and surface water hydrology.

Water Quality – Aquatic ecosystems are substantially affected by the quality of their water, but also by the chemical and physical characteristics of the air, surrounding watershed soils and sediment transported through the aquatic system. EPA and states have established water quality criteria for freshwater ecosystems that address important ecological constituents. Chemical and physical constituents include:

- concentrations of organic and inorganic constituents, such as nutrients, trace metals and dissolved organic matter;
- additional chemical parameters indicative of habitat suitability, such as pH and dissolved oxygen; and
- physical parameters, including water temperature and turbidity.

Many of these parameters are dynamic and related to natural watershed processes. For example, dissolved oxygen fluctuations in streams are related to nutrient cycling, biotic activity, stream flow and temperature.

Biological Condition – Freshwater aquatic biodiversity refers to the richness of native species (e.g., fish, invertebrates and plants), genetic variety, and multiple habitats and ecosystems types (e.g., lakes, ponds, and reservoirs, rivers and streams, groundwater and wetlands). The biological condition of an aquatic ecosystem is often thought of as the ultimate indicator of watershed health, as aquatic organisms and communities reflect the cumulative conditions of all other watershed components.

Biological condition is measured in a variety of ways. For example, multimetric indices measure the presence, numbers and condition of aquatic organisms and communities in an aquatic ecosystem. They are intended to represent the biological condition of an aquatic ecosystem relative to some regionally-defined reference condition. RIVPACS (River Invertebrate Prediction and Classification System) models quantify biological condition by comparing the observed (O) taxa at a site to expected (E) taxa in the absence of human-caused stress. The O/E ratio is the index of biological integrity and measures loss of native taxa or biodiversity. Biodiversity is also measured by presence of rare, threatened and endangered (RTE) species. State natural heritage programs have inventories of aquatic RTE.

The US Environmental Protection Agency Office of Water's Healthy Watersheds Program (HWP) develops assessments of watershed health and vulnerability to support states' efforts to identify and protect watersheds that are in good condition. During 2016, the HWP assessed the health and vulnerability of small scale watersheds (HUC-12, averaging 36 sq mi in area) in each of the conterminous 48 states. This Preliminary Healthy Watersheds Assessment (PHWA) followed an established HWP assessment methodology adapted for the HUC-12 scale and the use of nationally consistent indicator data.

Georgia's Preliminary Healthy Watersheds Assessment (PHWA) assessed HUC-12 watersheds at both the statewide and ecoregional scale, resulting in paired Watershed Health and Watershed Vulnerability scores per HUC12 watershed (i.e., one set of statewide scores and one set of ecoregional scores per watershed). Together, these scores provide insights on a watershed's condition relative to others within the state, as well as those watersheds sharing similar ecological characteristics across the ecoregion.

Statewide and ecoregional index scores are presented as both raw scores ("Score", between 0 and 1) and percentiles (0 to 100%).

The 2016 Preliminary Healthy Watershed Assessment (PHWA) Watershed Index Survey for Otter Creek provided the following:

PHWA Watershed Index Summary	WATERSHED HEALTH INDEX				WATERSHED VULNERABILITY INDEX			
	STATEWIDE		ECOREGIONAL		STATEWIDE		ECOREGIONAL	
	Score	Percentile	Score	Percentile	Score	Percentile	Score	Percentile
Otter Creek	0.68	50.1	0.67	28.9	0.31	61.5	0.29	64.1

Relative to other HUC-12 watersheds in the state, as well as those watersheds sharing similar ecological characteristics across the ecoregion, Otter Creek ranks in the middle, statewide, and approximately in the upper 25 percentile its ecoregion for watershed health. Otter Creek's potential for future degredation or vulnerability index is in the 60th percentile statewide, and 64th percentile for its ecoregion meaning that it is at some risk for degradation. (The higher the percentile, the greater the risk, comparatively, for degradation.)

The Otter Creek HUC-12 watershed (headwaters to its confluence with Seventeen Mile River) is comprised Otter Creek, a second-order stream, and several tributaries, including Tiger Creek. The HUC-12 watershed evidences limited, low-density disturbance, primarily forestry and agricultural (crops/pasture). Vegetative buffers tend to be heavily wooded and extensive, generally exceeding 200' on each side of the creek banks. Residential and commercial uses are scattered, low-density, and typically well outside the vegetive buffers. Particularly, in the lower half of the stream, extensive inter-connected wetlands are situated adjacent to the Creek. Overall, this is a relatively undisturbed watershed. Lack of disturbance coupled with an absence of merging degraded streams largely accounts for its health. However, 2017 monitoring data indicates that development in the adjacent Tiger Creek HUC-12 may be impacting the water quality of the downstream portion of Otter Creek.

Future land use in this HUC-12 watershed anticipates that the primary land use will continue to be agriculture/silviculture with only scattered residential development through 2027. Lack of intense development coupled with Coffee County's ordinances should allow the subwatershed to remain healthy for the foreseeable future. However, continued water quality monitoring is recommended, particularly on Tiger Creek above its confluence with Otter Creek.

The Seventeen Mile River supporting segment subwatershed, upstream of its confluence with Twentynine Mile Creek, is a third-order stream with several first- and second-order tributaries. The watershed evidences limited, low-density disturbance, primarily forestry and agricultural (crops/pasture), and one large-scale poultry operation. Vegetative buffers tend to be heavily wooded and extensive, generally exceeding 300' on each side of the river's banks. With the exception of a residential area south of Highway 158, residential and commercial uses are scattered, low-density, and typically well outside the vegetive buffers. Extensive inter-connected wetlands are situated adjacent to the River. Overall, this is a relatively undisturbed watershed and future land use through 2027 indicates this subwatershed will see little additional development. Lack of disturbance coupled with an absence of degraded tributaries and Coffee County's development ordinances largely account for its designation as a healthy watershed.

No PHWA index survey has been completed for Seventeen Mile River segment above Twentynine Mile Creek.

Land Management Ordinances and Activities

A suite of land management ordinances are used by jurisdictions in the watershed, though ordinances are only as effective as their enforcement. Coffee and Jeff Davis counties, as well as the City of Douglas, have a number of ordinances that indirectly address water quality though development and infrastructure siting restrictions. A number of ordinances are model ordinances developed by the State of Georgia and require stream buffers, protection of wetlands, larger lot sizes in groundwater recharge areas where there is no public sewer, regulating land-disturbing activities, etc.

The portion of the watershed most affected by current and future development is located in Douglas and Coffee County.

Douglas has a number of ordinances that apply to land development, either directly or indirectly, and five that specifically facilitate water quality; soil erosion and sedimentation, river corridor protection, stormwater management, unified land development code, and wetlands protection. The river corridor protection ordinance mandates a 100 foot natural vegetative buffer on each side of the river and prohibits construction within the buffer. All ordinances, except the unified land development code are State-mandated model codes and can be effective provided there is adequate review, inspection, and enforcement. The unified land development code permits pervious pavement which allows stormwater to infiltrate the soil rather than simply running off the hard surface. The code also permits planned development in order to provide "natural features and open spaces" though neither term is defined nor quantified so it is difficult to assess its impact on water quality.

Recommendation:

- Update the unified land development code to define natural features and open spaces and provide guidance on how to prioritize for conservation.
- Require green infrastructure as a method to handle stormwater in new development and opportunities to retrofit older development. Green infrastructure is an approach to water management that protects, restores, or mimics the natural water cycle thus reducing the impact of stormwater on streams. In particular, the WP advised that the proposed Wal-Mart Distribution Facility would be an excellent development to utilize green infrastructure.

Coffee County has a number of ordinances that apply to land development, either directly or indirectly, and four that specifically facilitate water quality; soil erosion and sedimentation, groundwater recharge, wellhead, and wetlands protection. All ordinances, except the unified land development code are State-mandated model codes and can be effective provided there is adequate review, inspection, and enforcement. Chapter 6 of the Land Development Code notes the chapter's purpose is to protect natural resources in Coffee County and to implement policies in the comprehensive plan, and specifically states that Chapter 6 includes protection for groundwater recharge areas and river corridors. The Comprehensive Plan was amended to include river corridor protection but no ordinance has been adopted to implement protection.

The Seventeen Mile River is not listed as a "protected river" by GA DNR thus there is no requirement that the County require a 100 foot buffer along the river. The State-mandated minimum river buffer is 25 feet and concern has been expressed by the WAC that the 100 foot buffer recommended in the Coffee County Comprehensive Plan is not feasible on agricultural properties due to economic loss. At present, buffer depth is not a cause of contamination as most buffers far exceed 100 feet.

Recommendation:

- The Land Development Code requires set aside of 25% of development as open space in Planned Development though there are no guidelines for determining what constitutes open space. To best benefit water quality, open space should be undeveloped. Update the Land Development Code to define provide guidance for identifying and prioritizing open spaces for conservation.

Seventeen Mile River Watershed Land Management Ordinances (2017)

ATKINSON COUNTY

Regulation/Ordinance	Description
Flood Damage Prevention	Establishes minimum requirements effecting land-disturbing activities. Does not address water quality. NOTE: Ga EPD is the Local Issuing Authority meaning EPD has responsbility for enforcing ordinance.

COFFEE COUNTY

Regulation/Ordinance	Description
Flood Damage Prevention	Establishes minimum standards for new construction in flood hazard areas to reduce damage from flooding. Does not address water quality.
Groundwater Recharge	Included as Chapter 6 of Land Development Code. Regulates development in groundwater recharge areas, as mapped on Georgia Hydrologic Atlas #18, for the purpose of protection public drinking water. Specifically places restrictions on septic tanks, drain fields; and spray fields; provides minimum sizes for lots requiring septic systems; and controls on landfills, above-ground chemical or petroleum tanks, agricultural waste lagoons, and certain other hazardous waste land uses. Addresses water quality.
Land Develoipment Code	Provides development design and improvement standards to ensure functional and attractive development. Includes standards for Planned Development which requires set aside of 25% of development as open space. Does not address water quality. Note: Chapter 6 for the Land Development Code notes the chapter's purpose is to protect natural resources in Coffee County and to implement policies in the comprehensive plan, and specifically states that Chapter 6 includes protection for groundwater recharge areas and river corridors. The Comprehensive Plan was amended to include river corridor protection but no ordinance has been adopted to implement protection.
Soil Erosion and Sedimentation Control Ordinance	Establishes minimum requirements effecting land-disturbing activities. Addresses water quality.
Wellhead Protections	Establishes a wellhead protection zone, 100 foot radius from center of well, surrounding the wellheads for all wells which are supply sources for the County water system. Addresses water quality.
Wetlands Protection	Wetlands Protection District adopted as component of County development regulations protecting wetlands from most types of development. Addresses water quality. NOTE: Comprehensive Plan Community Assessment 2007 notes that limited code enformcement suggests the County's wetlands may be at risk for increased housing subdivision development. Protecting existing wetlands is crucial to preserving the County's water sources especially as greater development occurs.

JEFF DAVIS COUNTY	
Regulation/Ordinance	**Description**
Flood Damage Prevention	Establishes minimum standards for new construction in flood hazard areas to reduce damage from flooding. Does not address water quality.
Soil Erosion and Sedimentation Control	Establishes minimum requirements effecting land-disturbing activities. Addresses water quality.
Groundwater Recharge	Included as Chapter 36, Article IV, Division 2 of the Code of Ordinances. Regulates development in groundwater recharge areas, as mapped on Georgia Hydrologic Atlas #18, for the purpose of protection public drinking water. Specifically places restrictions on septic tanks, drain fields; and spray fields; provides minimum sizes for lots requiring septic systems; and controls on landfills, above-ground chemical or petroleum tanks, agricultural waste lagoons, and certain other hazardous waste land uses. Addresses water quality.
Major River Corridor Protecton	Included as Chapter 36, Article IV, Division 2 of the Code of Ordinances. Established a river corridor protection area of 100' on each side of the river from the top of the river bank; requires 100' natural vegetative buffer on each side of river and prohbits construction within buffer. Addresses water quality.
Wetlands Protection	Included as Chapter 36, Article IV, Division 2 of the Code of Ordinances. Protecting wetlands from most types of development. Addresses water quality.
WARE COUNTY	
Regulation/Ordinance	**Description**
Soil Erosion and Sedimentation Control	Establishes minimum requirements effecting land-disturbing activities. Addresses water quality.
Wellhead Protections	Establishes a wellhead protection zone, 100 foot radius from center of well, surrounding the wellheads for all wells which are supply sources for the County water system. Addresses water quality.

CITY OF DOUGLAS	
Regulation/Ordinance	**Description**
Flood Damage Prevention	Establishes minimum standards for new construction in flood hazard areas to reduce damage from flooding. Does not address water quality.
River Corridor Protection	Established a river corridor protection area of 150' on each side of the river from the top of the river bank; requires 100' natural vegetative buffer on each side of river and prohbits construction within buffer. Addresses water quality.
Soil Erosion and Sedimentation Control	Establishes minimum requirements effecting land-disturbing activities. Addresses water quality.
Stormwater Management	Regulates stormwater runoff from activity causing an increase on stormwater runoff for the purpose of protecting local water resources from degradation. Addresses water quality.
Tree Ordinance	Provide for preservation and maintenance of trees on public lands and in the public rights-of-way. Requires tree protection during development.
Unified Land Development Code	1) Provides for limit on impervious surface coverage by zoning category. 2) Allows use of pervious concrete. 3) Allows Planned Development with stated purpose for development to provide "natural features and open spaces" though neither a defined nor quantified. 4) Requires preservation of trees at least 6" dbh and historic trees (trees that have achieved 50 percent or more of the typical DBH for that species); applies to all development except single-family, manufactured homes not located in a manufactured home park, and bona fide agricultural uses and operations. Address water quality in some sections of Code.
Wetlands Protection	Wetlands Protection District adopted as component of County development regulations protecting wetlands from most types of development. Addresses water quality.
STATEWIDE	
Regulation/Ordinance	**Description**
On-Site Sewage Management Systems	Rules established by the Georgia Department of Public Health. Applies to all on-site sewage management systems except those under the jurisdiction of and regulated by GA DNR, as well as any public or community sewage treatment system.

VI. Recommended Management Practices

Previous watershed studies identified fecal coliform and dissolved oxygen as parameters of concern in the non-supporting stream segments. Seventeen Mile River non-supporting stream segments appear to regularly meet standards for DO and are within acceptable parameters for pH. Based on historical and current sampling data, fecal coliform continues to be the contaminant of concern in the non-supporting segments. Additionally, current water quality data indicate DO and fecal coliform are contaminants of concern in the Twentynine Mile Creek subwatershed. Primary sources of likely fecal coliform pollution and low DO were identified as agricultural runoff, leaking failing septic systems, and urban runoff. WPCP spills, while somewhat frequent, appear to only have a very short-term impact on the Seventeen Mile River.

Watershed implementation priorities are:

- upgrades to the Douglas WPCP;
- repair and replacement of leaking/failing septic systems;
- implementation of Agricultural BMPs to address agricultural runoff particularly in the Twentynine Mile Creek and Tiger/Otter Creek subwatershed;
- ordinance updates; and,
- implementation of green infrastructure in Douglas and better management of stormwater.

The suite of potential structural and non-structural management practices identified to control the above-listed pollutant loadings are:

- agricultural best management practices;
- individual septic system repair/replacement;
- continued upgrades to the Douglas WPCP and sewerage system;
- completion and implementation of stormwater master plan; and,
- implementation of green infrastructure structural management to capture and treat stormwater runoff before it is discharged into streams.

The following screening criteria will be used to evaluate the suitability of a potential management practice: (Criteria are listed in descending order of importance).

- Priority Area – Will the management practice be implemented effectively within the identified critical areas in the watershed?
- Load Reduction – Will the management practice provide a significant load reduction?
- Ease of Implementation – Will the implementation of the management practice be easy to undertake (potential legal issues, permits, etc.)
- Maintenance – What level of maintenance is required for the practice to function optimally?
- Cost Effectiveness – Is the practice cost-effective when compared to its impact on contamination?
- Unintended Impacts/Added benefits – Are the any unintended impacts or added benefits that result from installation of the management practice?
- Social Acceptance - Will the practice have public support?

Recommended Management Practice Effectiveness

Agriculture

The implementation of systems of BMPs reduces nonpoint source pollution. BMPs are defined as structural, vegetative, or managerial conservation practices which reduce or prevent detachment, transport and delivery of nonpoint source pollutants to surface or ground waters. The BMPs result in fewer nutrients and waste being delivered to the water bodies.

The BMPs in a water quality project must be targeted to priority agriculture properties within the watershed (i.e., those that contribute runoff to adjacent hydrologic systems such as lakes, streams, ditches, wetlands and flood plains). Additional priority areas are feedlots, water storage systems, and waste management systems. Reporting of specific pollutant load reductions will be calculated for all properties where new BMPs are installed; however, a general estimated load reduction, by installed practice, is provided below to assist with the suitability evaluation of a management practice.

Agricultural Best Management Practices to Address Non-Point Source Pollution				
Practice Number	Practice Name	Fecal Coliform	Estimated Load Reduction	Cost*
313	Waste Storage Facility	M	96%	medium - high
316	Animal Mortality Facility	M	Products from composting facilities can be incorporated into the soil and improve agronomic conditions and can also be used a part of a nutrient management plan.	moderate – high
317	Composting Facility	M	70-80%	medium - high
329, 345, 346	Conservation Tillage	M	up to 70%	varies by scope of project
330	Contour Farming	M	25-50%	low
332	Contour Buffer Strip	M	20-75%	low
340	Cover Crop		40-60%	low
342	Critical Area Planting	M	75%	high
359	Waste Treatment Lagoon	M	80%	moderate - high
360	Waste Facility Closure	M	reduces likelihood of residual nutrients entering water.	high – depends on scope of project
365	Anerobic Digester - Ambient Temperature	M	90-99%	high. Requires maintenance.
366	Anerobic Digester - Controlled Temperature	M	90-99%	high. Requires maintenance.
367	Waste Facility Cover	M	protect integrity and capacity of storage facility and reduce overflow.	high
382	Fence	M	50 - 90% in higher order streams, 99% in second order streams	low
390	Riparian Herbaceous Cover	M	50-75%	low - moderate
391	Riparian Forest Buffer	M	50-75%	moderate
393	Filter Strip	M	50-80%	moderate, maintenance required
472	Access Control	M	50 - 90% in higher order streams, 99% in second order streams	low - moderate

Agricultural Best Management Practices to Address Non-Point Source Pollution				
Practice Number	Practice Name	Fecal Coliform	Estimated Load Reduction	Cost*
516	Pipeline - Livestock	M	As part of an alternative water supply or a waste management system, pipelines indirectly reduce negative water quality impacts.	moderate
528	Prescribed Grazing		75%	low
578	Stream Crossing	M	Stream crossings reduce animal access, provide stable traffic paths and reduce the amount of nutrients and sediment entering water.	medium - high. Best to redirect around stream.
586	Field Stripcropping	M	75%	low
590	Nutrient Management	M	35% P, 15% N	low - moderate
606	Tree & Shrub Establishment	M	50%	low - moderate
634	Waste Transfer	M	promote nutrient reduction in soil	moderate
635	Vegetated Treatment Area	M	80 - 90% in feedlots	low
642	Water Well	M	No available information	varies by scope of project

Source: Best Management Practices for Georgia Agriculture, Georgia Soil and Water Conservation Comm., Sept 2013.

*For additional information on Practice Number costs, see Appendix, Georgia FY 2017 EQIP Policy.

Sanitary Sewerage System

Continue with planned upgrades to the Douglas WPCP and sewerage system.

Individual Septic System

Coordinate between the Coffee County Code Enforcement and Coffee County Health Department to identify and assist users of septic systems with maintenance issues though septic repair, replacement, pump-out, and/or education.

Stormwater System

Complete and implement Douglas stormwater master plan. Include green infrastructure in plan and associated ordinances. Install green infrastructure in new development and retrofit old development.

There are a variety of practices Douglas can implement to mitigate the impact of stormwater on water quality. These practices would be beneficial in new development and as a retrofit in older development.

Typical practices include:

- Permeable pavements systems, permeable concrete, porous asphalt

  
  Permeable Pavement System (sidewalk)

  These practices percolate rainwater through the substrate paving and into the ground, reduce stormwater flow volumes and minimize the pollutants introduced into storm water runoff from impervious surfaces. They are appropriate for pedestrian areas and for very low-volume, low-speed areas such as overflow parking, residential driveways, bike paths, patios, plazas, sidewalks, alleys, and parking stalls. Depending on design, paving material, soil type, and rainfall, permeable paving can infiltrate as much as 70% to 80% of annual rainfall[16] and remove 60% of Phosphorus and Nitrogen, and 80% of fecal coliform and total suspended solids.[17]

  Permeable pavements attenuate peak flows, improve water quality by reducing fine-grained sediment, organic matter and trace metals, and, reduce heat island effect (the phenomenon of urban areas retaining heat due to the prevalence of pavement). Such pavements are limited to slopes less than 5 percent and function poorly on sites with compacted soils.

- Rainwater harvesting

  By retaining stormwater runoff for on-site use, harvesting systems reduce flow volumes and pollutant loads entering the stormwater collection system, helping to restore predevelopment hydrology and mitigate impacts on downstream water quality impacts. The impact of rainwater harvesting on pollutant load reduction varies widely. Passive rainwater harvesting systems can be fairly easy to implement but they present limited opportunity for significant

[16] Low Impact Development Toolkit, Metropolitan Area Planning Council, http://www.mapc.org/sites/default/files/LID_Fact_Sheet_-_Permeable_Paving.pdf

[17] Georgia Stormwater Management Manual, volume 2, Technical Handbook, 2016 ed., p.139.

reduction in stormwater runoff due to their relatively small volume, and an inability to ensure that stormwater retention volume is available at the onset of precipitation events. Outreach campaigns are recommended on optimal use of these systems. Additionally, to achieve significant stormwater flow reduction benefit, widespread implementation is needed.

Rainwater harvesting works best where above-ground storage can be sited in a stable, flat area that cannot block paths of travel for fire safety access; and, overflow locations are designed to direct flows away from building foundations and adjacent properties.

Advantages of this system are reduced volume and peak flows of stormwater entering the sewer; low maintenance for above ground cisterns; good for sites where infiltration is not an option; and recycles water for nonpotable reuse.

Disadvantages are that the system may require pumps or valves to access stored water; roof surfaces may contain copper or materials treated with fungicides and herbicides that would contaminate water for irrigation; the stored water is prone to algal growth if it is in a warm and sunny location; and, the harvesting does not remove pollutants.

- Rain gardens

A rain garden is a garden which takes advantage of rainfall and stormwater runoff in its design and plant selection. Usually, it is a small garden which is designed to withstand the extremes of moisture and concentrations of nutrients, particularly nitrogen and phosphorus, that are found in stormwater runoff. Rain gardens are ideally sited close to the source of the runoff and serve to slow and treat the stormwater as it travels downhill. The stormwater has more time to infiltrate, which contributes to removal of contaminants, and less opportunity to gain momentum and erosive power.

Rain Garden

Rain gardens work well in residential yards, office and commercial storefronts, parks, rights-of-way, and parking lots. They are easy and inexpensive to install, provide a wide range of scales and site applicability, improve water and air quality, are aesthetically pleasing, and reduce runoff volume. A gentle slope is best so that excess accumulation can exit downhill.

- Bioswales

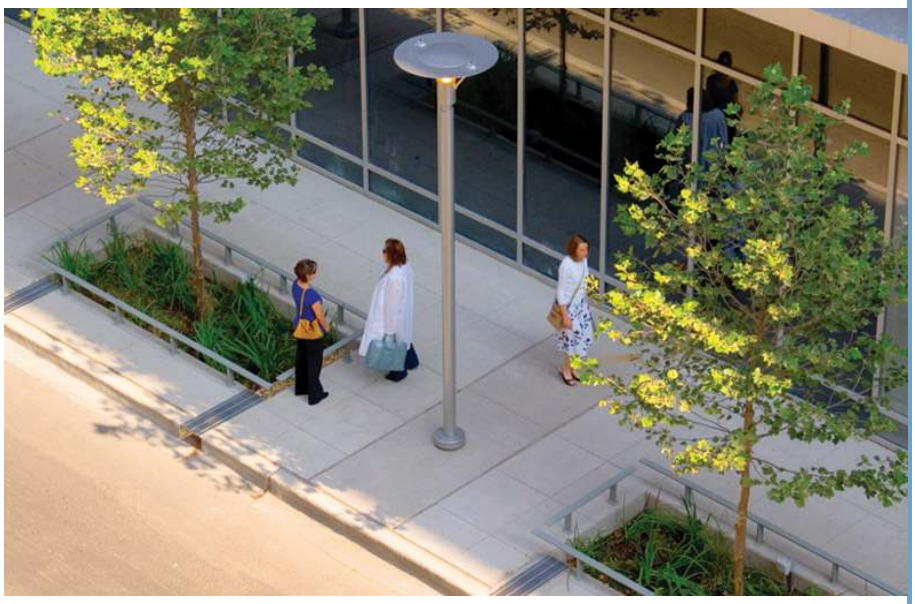
  Bioswales are designed to manage a specified amount of runoff from a large impervious area such as a parking lot or roadway. They consist of a swaled drainage course with gently sloped sides (less than 6 percent) and filled with vegetation, compost and/or riprap. The water's flow path, along with the wide and shallow ditch, is designed to maximize the time water spends in the swale, which aids the trapping of pollutants and silt. Bioswales can reduce phosphorus and nitrogen pollutant loads by 50 percent and heavy metals, 40 percent.[18]

Bioswale

  The effectiveness of bioswales increases with increased contact time between soil and stormwater, and increased vegetative cover. This is all best achieved by using soils that can adequately slow down, infiltrate, and retain water, as well as support plant life.

- Flow-through planter

  These planters allow stormwater to flow and filter through vegetation, growing medium and gravel. They temporarily store stormwater runoff on top of the soil and remove sediment and pollutants as water infiltrates down through the planter. Planters do not infiltrate runoff into the ground, rather they rely on evapotranspiration and short-term storage to manage stormwater. Stormwater planters are presumed to remove 80% of the total suspended solids (TSS) load in typical urban post-development runoff when sized, designed, constructed, and maintained in accordance with the recommended specifications. Stormwater planters also remove 60% of Phosphorus and Nitrogen, and 80% of fecal coliform and total suspended solids.



Flow-through planter

[18] Georgia Stormwater Management Manual, volume 2, Technical Handbook, 2016 ed., p.139.

These planters work on poorly drained sites, sites with contaminated soils, and adjacent to streets where runoff from impervious surfaces may be directed for treatment. Additionally, flow-through planters work well to accept drainage from rooftop gutters. Planted vegetation helps lessen stormwater flows, traps sediment, reduces stormwater volume, removes pollutants, and provides water detention in significant rainfall events. During the dry season, irrigation may be required to maintain plants.

The initial cost of a planter averages around $8 per square foot; however, the overall cost will vary depending on the type and size of vegetation and planters used. Maintenance costs average around $400-$500 per year for a 500-square-foot planter. These also vary depending on size and plant choice.[19]

- Urban tree canopy.

  Urban tree canopy is a network of green spaces in a community where trees and other woody plants are maintained to improve air quality, stormwater management, and wildlife habitat. Mature trees provide significant stormwater quantity and rate control benefits through soil storage, interception, and evapotranspiration. A tree with a 25-foot diameter canopy and associated soil can manage the 1-inch rainfall from 2,400 square feet of impervious surface. Interception and evapotranspiration also decrease runoff volume with larger trees providing exponentially more benefit than smaller trees.[20]

- Vegetated roof

  A vegetated roof, or green roof system, is composed of multiple layers including a waterproof membrane, subsurface drainage pipes, engineered planting soils and specially selected plants. Green roofs can be installed on many types of roofs, from small slanting roofs to large, flat commercial roofs. There are two basic types of green roofs: extensive and intensive. An extensive green roof system is a thin, lighter-weight system (usually less than 6 inches deep) planted predominantly with drought-tolerant succulent plants and grasses. An intensive green roof is deeper, often 18 inches, and can support plants that require great root depth.

  Vegetated roofs can reduce TSS by 80 percent, and phosphorus and nitrogen by 50 percent.

  Vegetated roofs perform best on commercial, multifamily, and industrial structures, as well as single-family homes, garages and sheds and can be used for new construction or to reroof an existing building if there is sufficient structural support. Roof slopes less than 5 degrees or greater than 20 degrees are not suitable for vegetated roofs.

  Advantages of vegetated roofs are a reduction in the volume and velocity of stormwater runoff from roofs by temporarily storing stormwater; added insulation and noise reduction

[19] Georgia Stormwater Manual, volume 2, Technical Handbook, 2016 ed., p. 339.

[20] Stormwater Trees, Technical Memorandum, US EPA, September 2016.

compared to conventional roofs; reduced urban heat island effect and lower temperature of stormwater runoff; increased biodiversity and habitat; and aesthetic amenities for building occupants or owners.

Disadvantages are that vegetated roofs are limited to roof slopes less than 20 degrees; additional structural or seismic support may be needed to bear added weight; irrigation required to establish plants and maintain them during dry periods; and, high upfront cost compared to other green infrastructure.

Extensive green roofs can range from roughly $5-$20 per square foot. Intensive green roofs can range from roughly $20-$80 per square foot. Although the cost per square foot of a green roof is notably higher than a regular roof, green roofs have been reported to save costs associated with energy consumption and increasing the life span of the roof.[21]

Vegetated roof

[21] Georgia Stormwater Manual, volume 2, Technical Handbook, 2016 ed., p. 241.

VII. Working With The Public

Public support is a key element in the implementation process. Education is extremely important for increasing public awareness of the water quality problems and offering feasible solutions for remediation and prevention of water quality degradation.

Outreach Goals

The overarching goal of the outreach campaign is to engage agricultural producers, residents, and government agencies in reducing fecal coliform non-point source pollution and maintain appropriate DO levels in the watershed. This will be accomplished by developing and promoting initiatives on water quality issues in the watershed, actions that may be taken to improve water quality, and programs available to assist with water quality improvement projects.

Objectives for education include:

- Educating agricultural producers on non-structural and structural agricultural best management practices that could be implemented.
- Educating property owners utilizing individual septic system concerning septic tank maintenance.
- Educating developers, citizens, and city leaders on the benefits of green infrastructure.
- Increasing watershed residents and government agencies knowledge on the importance of water quality and controlling non-point source pollution in the Seventeen Mile River watershed.
- Increase K-12 education concerning water quality issues.

Goal 1: To educate the general public about the watershed plan and its implementation.

- Post permanent signs along major roads notifying travelers that they are entering the Seventeen Mile River watershed.

- Coordinate with the local citizens and organizations to hold periodic cleanup events to remove smaller debris from watershed streams.

Goal 2: Educate elected officials and government agencies in the watershed about the watershed plan and its implementation.

- Convene a workshop to provide information on the watershed management plan and its implementation.

Goal 3: Educate agricultural producers and users of individual septic systems in the watershed about watershed issues and solutions.

- Provide information on appropriate agricultural best management practices, their cost and effectiveness in reducing water quality impairment, and available funding assistance programs.

- Provide homeowners utilizing individual septic systems information regarding proper care and maintenance of their system.

Goal 4: Educate development community and elected officials regarding benefit of green infrastructure.

- Provide Douglas City Council, staff, and development community with information on green infrastructure.

Goal 5: Increase K-12 education concerning water quality issues.

- Provide demonstrations and programs at local schools regarding water quality concerns, human impact on water quality, and solutions.

VIII. Long-Term Monitoring Plan

Instream monitoring is important to gage the recovery of streams after remediation projects are installed, and is also crucial to support partners as they engage in periodic strategic planning of remediation priorities.

Long-term monitoring associated with this watershed management plan will have the following objective:

- To verify long-term, whether water quality meets State standards for fecal coliform and dissolved oxygen following implementation of the measures outlined in this plan.

The most intractable sources of variation are likely to be changes over time. Since the primary sources of non-point source contamination in the watershed are agricultural runoff, nutrients, the sanitary and individual sewerage systems, and urban runoff, the concentration of fecal coliform and dissolved oxygen will vary seasonally and with variations in precipitation. The most important quality assurance measure will be to sample many times throughout a range of hydrologic conditions.

A long-term monitoring plan for, at a minimum, fecal coliform and DO should:

- measure the long-term effectiveness of management practices;
- analyze trends; and
- redefine water quality problems, if any.

Monitoring should be accomplished by Adopt-a-Stream certified personnel under a GAEPD–approved QA/QC Monitoring Plan that follows Adopt-A-Stream methodologies, and focuses, at a minimum, on the impaired segments of Seventeen Mile River, Twentynine Mile Creek, and Otter and Tiger creeks. This will give a broad picture of water quality conditions in the watershed, a rough assessment of potential pollutant sources, and a general assessment of management measure implementation and effectiveness.

IX. Implementation, Evaluation, and Revision

Management Strategies

The basic strategy for implementation of this watershed management plan is to create and manage a program that features both structural and non-structural controls within the watershed to address the fecal coliform and dissolved oxygen concerns. The goal of this program is to restore the watershed to the extent that the impaired segment as well as all streams in the watershed meet State water quality standards. Measures that will be utilized to accomplish the goals include increasing installation of agricultural BMPs, repair and replacement of the sanitary sewerage system, repair, if needed, to the stormwater system, implementing practices to mitigate the impact of stormwater on water quality (green infrastructure), and available educational opportunities to encourage public and governmental participation in the watershed improvement process.

Priority Areas for Management Practices

While inclusion of landowners from the entire watershed will be eligible for any cost-share or grant funded projects, agricultural producers in the Twentynine Mile subwatershed, and Tiger and Otter Creek subwatersheds are designated as a priority based on water quality monitoring data. Properties served by individual septic systems are designated a priority in the Seventeen Mile River segment upstream of Highway 32, Tiger Creek, and Twentynine Mile Creek. Projects in this portion of the watershed are likely to have the greatest impact on fecal coliform load reduction and dissolved oxygen levels.

Implementation Plan and Interim Milestones

This Watershed Management Plan anticipates an implementation period of ten years. However, specific projects may be implemented over shorter periods. This section outlines objectives that apply across the entire implementation process and measurable milestones that should reveal significant progress.

#	ACTIVITY	TIMEFRAME	RESPONSIBLE PARTY*	COST ESTIMATE	FUND SOURCE*	EVALUATION MEASURE
Watershed Partnership						
1	Establish Watershed Partnership (WP) to assist Seven Rivers RC&D with Plan implementation and periodic Plan review.	2018-2020	Seven Rivers RC&D	0	NA	Number of members
2	Review Watershed Management Plan every 2 years and amend, as necessary.	2020, 2022, 2024, 2026, 2028	Seven Rivers RC&D	0	NA	Completion of plan review.
Monitoring Program						
1	Update GA EPD-approved Water Monitoring Plan to provide for post-BMP monitoring for fecal coliform or e.coli, DO, and pH.	2018-2020	Seven Rivers RC&D	$250	319(h) grant	EPD-approved plan, number and frequency of sites monitored.
2	Conduct post-BMP water quality monitoring by AAS-certified personnel under GA EPD-approved Water Quality Monitoring Plan.	2020-2025	Seven Rivers RC&D	$400/yr assuming 5 sites per month	319(h) grant	Monthly water quality data downstream of installed BMPs on impaired segments and including Twentynine Mile Creek; 40% reduction in fecal coliform loading.
3	Hold periodic AAS training for purpose of certifying volunteers to assist with post-BMP and long-term watershed monitoring.	2020-2028	Seven Rivers RC&D; WP; Georgia AAS	NA	NA	Number of individuals certified.

#	ACTIVITY	TIMEFRAME	RESPONSIBLE PARTY*	COST ESTIMATE	FUND SOURCE*	EVALUATION MEASURE
4	Undertake long-term water quality monitoring by AAS-certified personnel under GA EPD-approved monitoring plan. *Note: If post–BMP monitoring demonstrates improved water quality, long-term monitoring should be for fecal coliform rather than E.coli and include geometric means in to order to potentially delist stream as non-supporting.*	2025-2028	Seven Rivers RC&D; certified volunteers	E.coli – $400/yr. Fecal coliform – $640/yr	County and/or City partner	Monthly water quality data.
Management Practices						
1	Review nutrient management plans with agricultural producers to insure appropriate implementation.	2018-2020	Seven Rivers RC&D, NRCS	0	NA	Number of plans reviewed.
2	Contact agricultural producers for participation in cost-share programs. Priority is producers in Seventeen Mile Creek subwatershed, Seventeen Mile River below Highway 64, and Tiger Creek subwatershed.	2020-2025	Seven Rivers RC&D, NRCS, GSWCC, SWCD	0	NA	Number of producers contacted.
3	Install appropriate agricultural BMPs.	2020-2025	Seven Rivers RC&D, NRCS, GSWCC	$300,000 – $500,000	319(h), EQIP, FSA	Number of installed BMPs, estimated contaminant load reduction.

#	ACTIVITY	TIMEFRAME	RESPONSIBLE PARTY*	COST ESTIMATE	FUND SOURCE*	EVALUATION MEASURE
4	Coordinate with Health Department to identify failing/leaking septic systems and contact property owners for participation in cost-share program. Priority is property owners in Seventeen Mile Creek watershed between Douglas and Coffee State Park and Tiger Creek subwatershed.	2020-2025	Seven Rivers RC&D, Coffee County Health Department	$50,000	319(h)	Number of projects installed, estimated contaminant load reduction.
5	Install green infrastructure project(s) in new development and retrofit old development in City of Douglas.	2020-2028	Seven Rivers RC&D, City of Douglas	varies by project scope and scale	319(h), TE Grant, CWSRF, GAC, CWSRF, UWSG, CDBG, developer, City of Douglas	Number of projects installed.
Education, Involvement, and Stewardship						
1	Hold workshop for elected officials and government agencies to inform of content of Watershed Management Plan and its implementation.	2018-2020	Seven Rivers RC&D, WP	0	NA	Number of participants and local governments.

#	ACTIVITY	TIMEFRAME	RESPONSIBLE PARTY*	COST ESTIMATE	FUND SOURCE*	EVALUATION MEASURE
2	Develop and expand partnerships with K-12 schools in the watershed to establish drinking water source and water conservation education, and stewardship programs for youth, including classroom and field experiences.	2018-2028	Seven Rivers RC&D, GACD, Board of Education, UGA Coop Ext.	Varies by scope of program.	USEPA EE grant, Capt. Planet Foundation, Gerald C. Corcoran Education Grant, Wal-Mart Foundation State Giving Program (outdoor classroom funding)	Number of participants.
3	Utilize brochures, videos, and web-based products to educate public about septic system maintenance.	2018-2028	Seven Rivers RC&D, Health Department	0	NA	Number of brochures distributed, number of participants at events, number of web site visits.
4	Hold annual river cleanup event.	2018-2028	Seven Rivers RC&D, WP	$1,000	local sponsors, River's Alive, Georgia Power	Number of participants, amount and type of trash collected.
5	Provide for web-based watershed information and education on Seven Rivers RC&D web page.	2018-2028	Seven Rivers RC&D	0	NA	Number of visits to website.
6	Install watershed signage at watershed boundaries on the following roads: Highway 64, Highway 158, Highway 32, Highway 135, and others roads identified by the WP.	2020-2022	Seven Rivers RC&D, Atkinson Co, Coffee Co, Jeff Davis Co, Ware Co.	$60/sign (purchased from Bureau of Prisons)	local	Number and location of signs installed.

#	ACTIVITY	TIMEFRAME	RESPONSIBLE PARTY*	COST ESTIMATE	FUND SOURCE*	EVALUATION MEASURE
7	Build partnerships with universities and other research entities to conduct, support, and share research on urban ecology, green infrastructure, and community engagement.	2020-2028	Seven Rivers RC&D, WP	0	NA	Number of partnerships.
8	Conduct educational presentations on watershed issues and activities to local civic groups, elected officials, and at festivals and events.	2020-2028	Seven Rivers RC&D, WP	$2500/yr	Georgia Power Foundation, Robert W. Woodruff Foundation	Number of presentations and participants.

*Responsible Party and Fund Sources:

CDBG – US Housing and Urban Development, Community Development Block Grant
CWSRF – US EPA Clean Water State Revolving Fund
EPA EE – US EPA Environmental Education Grant
GAC – US EPA Office of Sustainable Communities Greening America's Communities Program
GACD – Georgia Association of Conservation Districts
GA AAS – Georgia Adopt-a-Stream
SWCD – Soil and Water Conservation District
TE – Georgia Department of Transportation, Transportation Enhancement Grant
UWSG – EPA Urban Water Small Grants Program
WP – Watershed Partnership

Indicators to Measure Progress

Targeted water quality monitoring is necessary to measure long-term progress of installed practices. Monitoring must take place under a GA EPD-approved QA/QC Monitoring Plan. Monthly monitoring will, at a minimum, occur at Twentynine Mile Creek at Raccoon Bridge Road, Seventeen Mile River at Highway 135, and Otter Creek at Highway 32 to provide current data and to evaluate water quality improvements in the Seventeen Mile River watershed.

For more finite objectives, the Evaluation Measure associated with each task in the Implementation Plan will reveal progress that the implementation program is gaining momentum. Referencing these should provide an indication of specific tasks needing more focus. Eligible producer and property owner participation rates will be another useful tool in determining the success of grant implementation. Education and outreach participation rates will also be analyzed to help measure progress.

Indicators identified by the WP to measure the status of the watershed management process and educational outreach outlined in this Plan are:

Indicator Type	Specific Indicator
Environmental	E.coli/fecal coliform bacteria and DO - Direct water quality measurement of Seventeen Mile River, Otter and Tiger creeks, Twentynine Mile Creek.
Programmatic	Number of urban and agricultural best management practices implemented.
Programmatic	Number of educational initiatives accomplished and number of participants.
Programmatic	Number of river cleanup events.
Social	Participation rate in outreach programs.

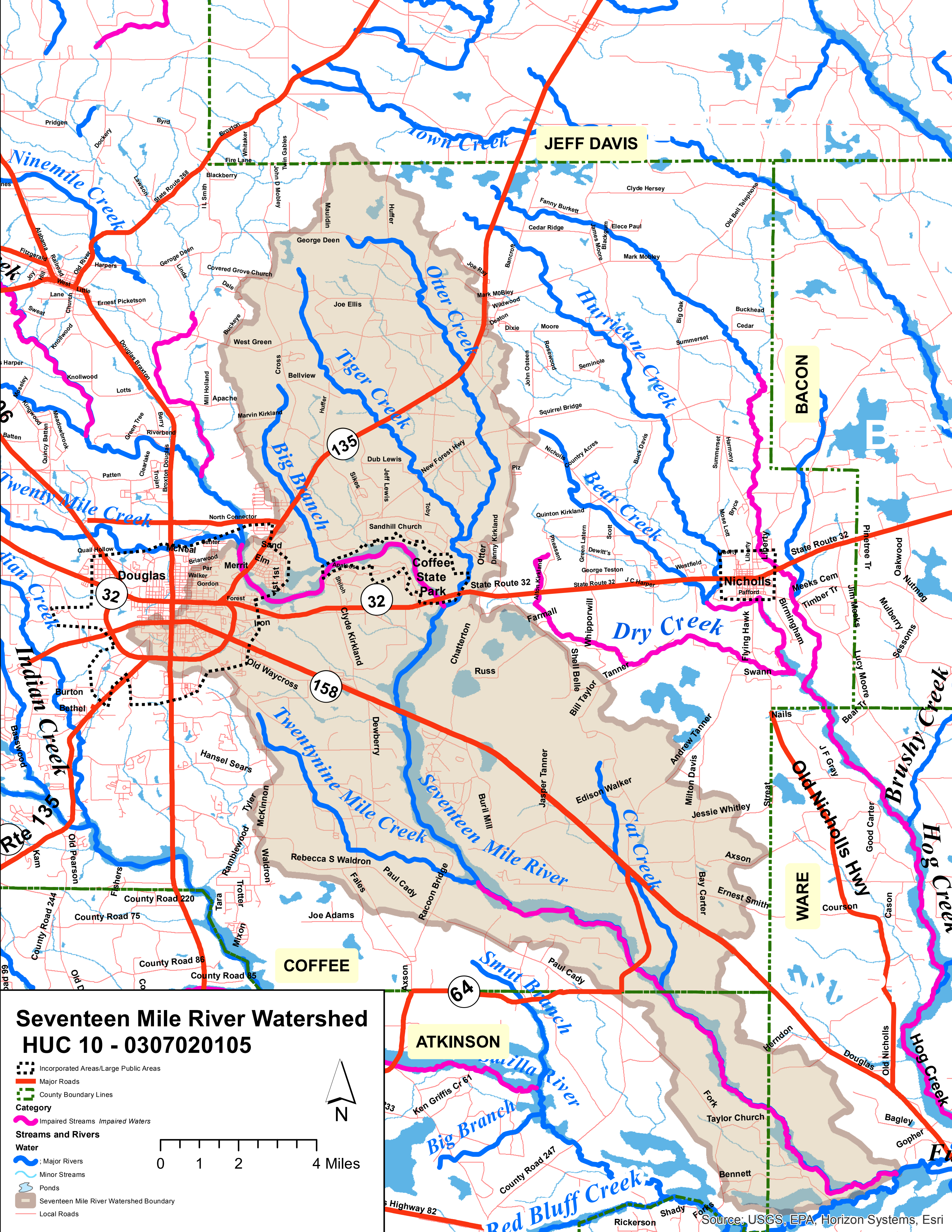
Of greatest importance, is the measure of how the various implementation projects have translated towards accomplishing the goal of attaining State water quality standards. Tracking the watershed management plan and its water quality improvements will best indicate progress toward reducing fecal contamination.

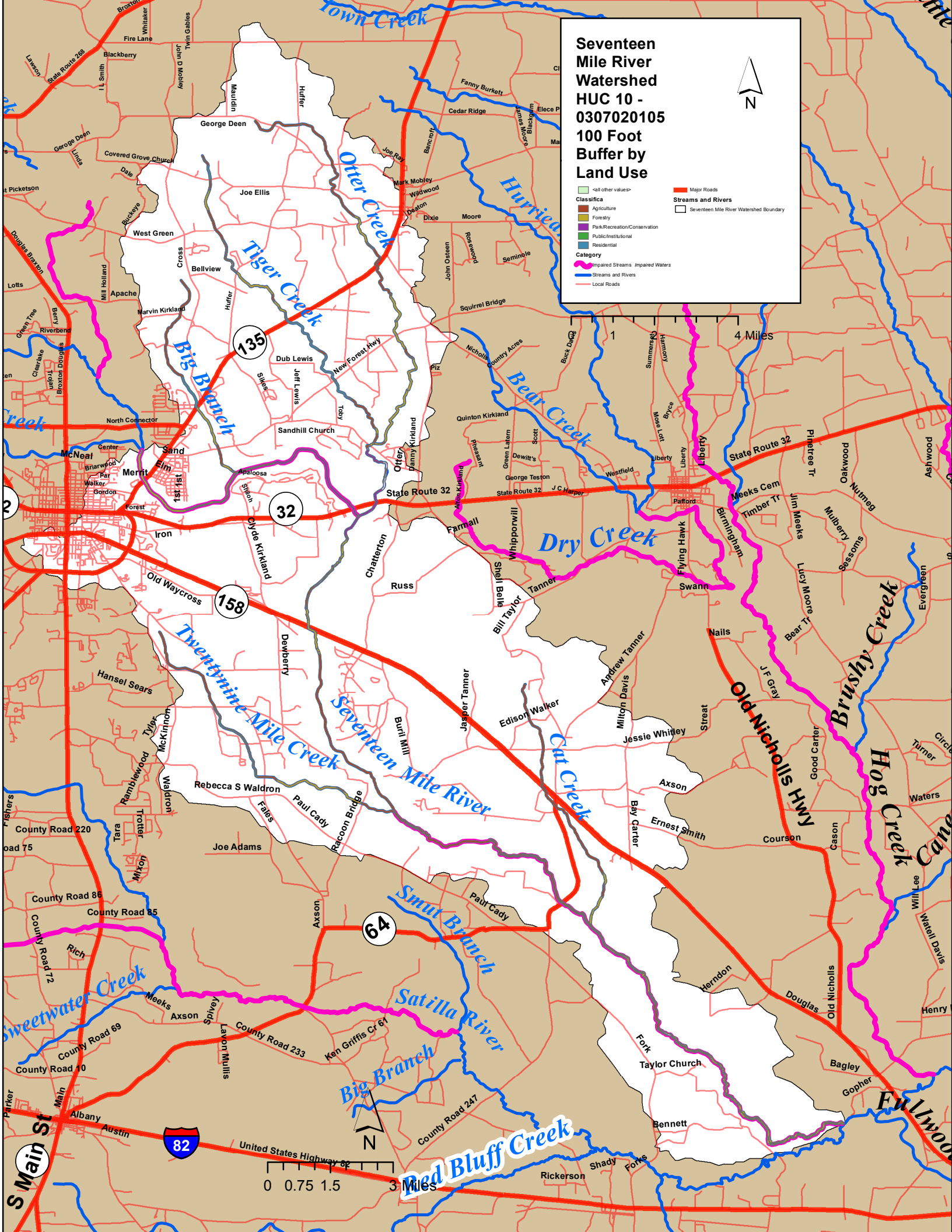
At a minimum of every two years, assessment of the implementation schedule and review of accomplishments are necessary to determine whether task milestones are being met.

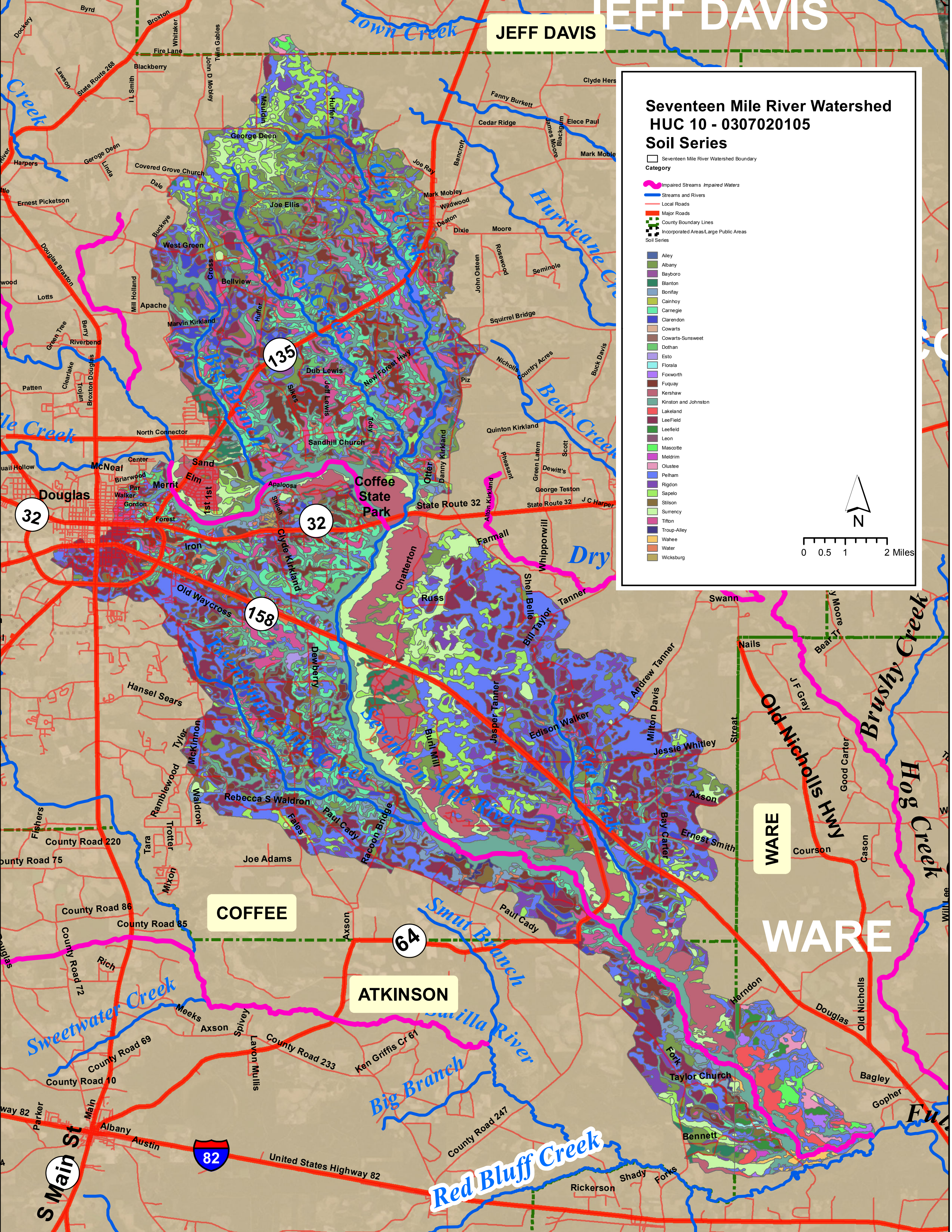
Long-term Plan Implementation

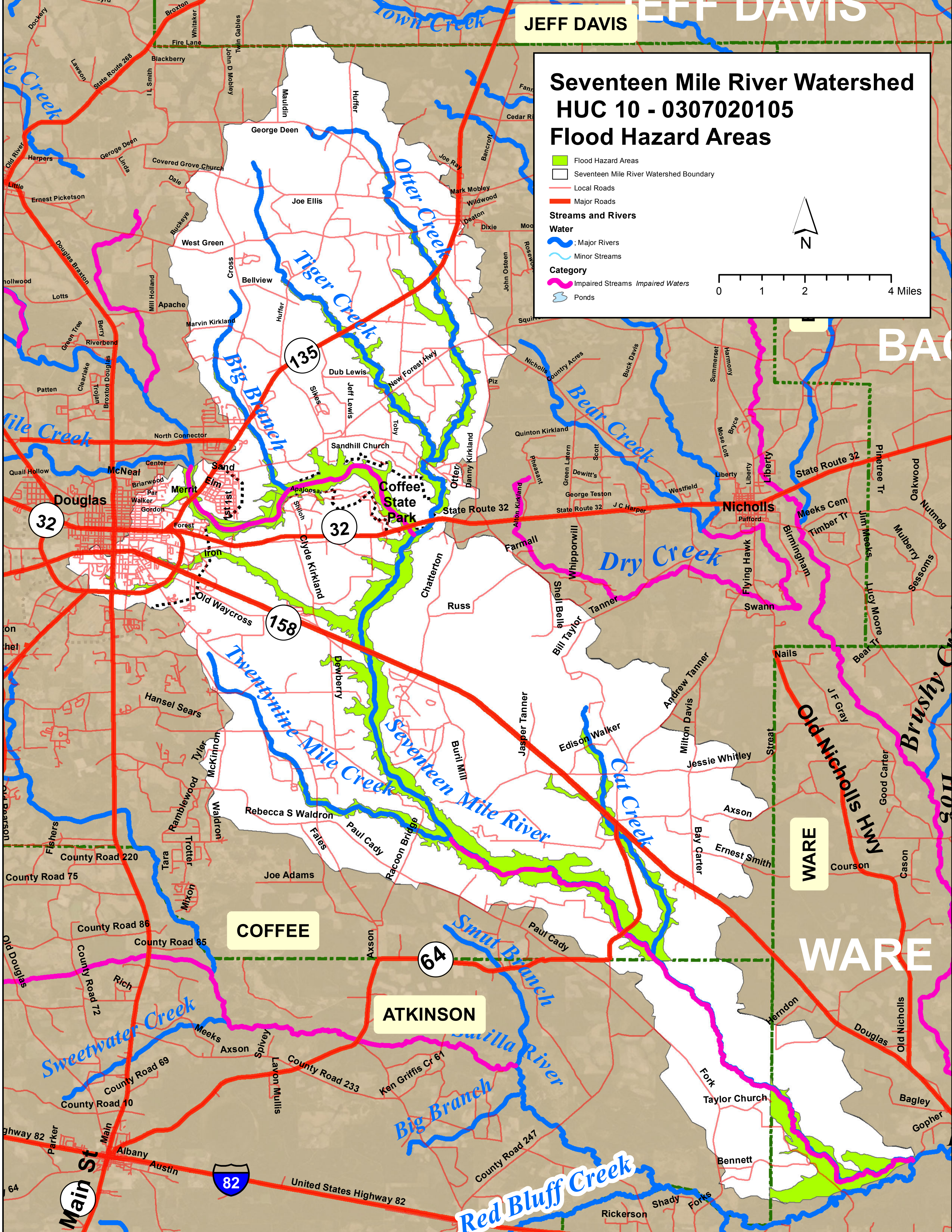
Seven Rivers RC&D with counsel from the WP will be the lead agency to implement the plan. NRCS, GSWCC, UGA Ag. Extension, and the Satilla River Soil and Water Conservation District will continue to assist agricultural producers with BMP installation through their respective agency programs. However, funding for other plan implementation activities must be secured through grants, loans, or governmental agencies. Continued plan implementation will be dependent on available funding.

X. Appendix

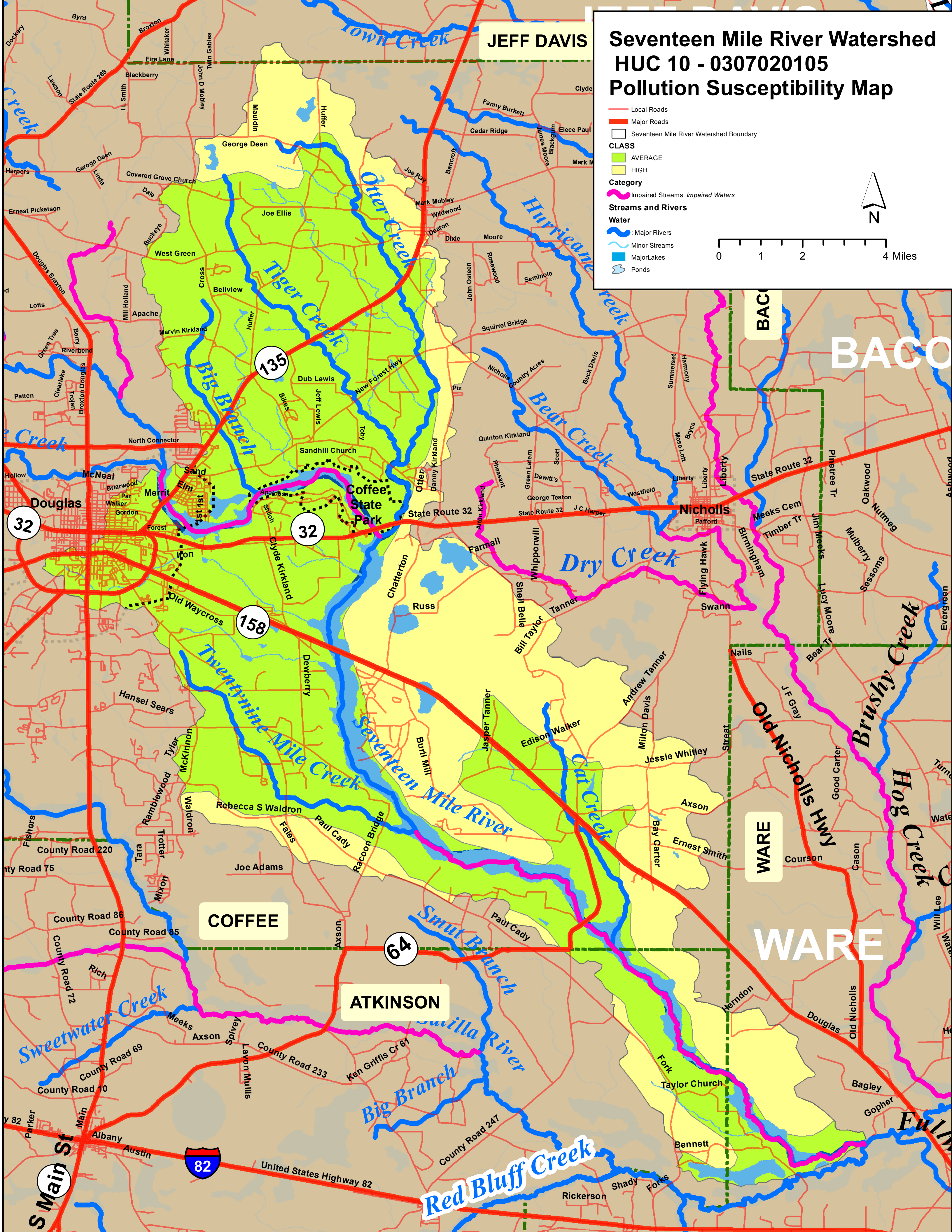

Seventeen Mile River Watershed
HUC 10 - 0307020105
Incorporated Areas/Large Public Areas
Major Roads
County Boundary Lines
Category
Impaired Streams Impaired Waters
Streams and Rivers
Water
; Major Rivers
Minor Streams
Ponds
Seventeen Mile River Watershed Boundary
Local Roads
0 1 2 4 Miles
N
Source: USGS, EPA, Horizon Systems, Esri
JEFF DAVIS
BACON
COFFEE
WARE
ATKINSON
Douglas
Nicholls
Coffee State Park
Seventeen Mile River
Twentynine Mile Creek
Twenty Mile Creek
Ninemile Creek
Town Creek
Otter Creek
Tiger Creek
Big Branch
Hurricane Creek
Bear Creek
Dry Creek
Cat Creek
Indian Creek
Brushy Creek
Hog Creek
Smut Branch
Big Branch
Red Bluff Creek
Old Nicholls Hwy
State Route 32
State Route 268
135
32
158
64
Rte 135


Seventeen Mile River Watershed HUC 10 - 0307020105 100 Foot Buffer by Land Use
N
<all other values>
Classifica
Agriculture
Forestry
Park/Recreation/Conservation
Public/Institutional
Residential
Category
Impaired Streams Impaired Waters
Streams and Rivers
Local Roads
Major Roads
Streams and Rivers
Seventeen Mile River Watershed Boundary
0 1 2 4 Miles
Town Creek
Otter Creek
Tiger Creek
Big Branch
Bear Creek
Dry Creek
Twentynine Mile Creek
Seventeen Mile River
Cat Creek
Brushy Creek
Hog Creek
Old Nicholls Hwy
Smut Branch
Satilla River
Sweetwater Creek
Red Bluff Creek
Fulwood
S Main St
George Deen
Joe Ellis
West Green
Bellview
Apache
Dub Lewis
Sandhill Church
McNeal
Merrit
Iron
Russ
Swann
Nails
Joe Adams
Rebecca S Waldron
Hansel Sears
Rich
Axson
Courson
Taylor Church
Bennett
Rickerson
Pafford
Liberty
Westfield
Quinton Kirkland
George Teston
Jessie Whitley
Ernest Smith
Bay Carter
Edison Walker
Jasper Tanner
Andrew Tanner
Milton Davis
Shell Belle
Bill Taylor
Tanner
Whipporwill
Farmall
Chatterton
Clyde Kirkland
Dewberry
Burril Mill
Paul Cady
Racoon Bridge
Fales
Ramblewood
Waldron
Tyler
McKinnon
Tara
Trotter
Mixon
Lawson Mullis
Spivey
Meeks
Ken Griffis Cr
Fork
Herndon
Douglas
Old Nicholls
Bagley
Gopher
Shady Forks
Pinetree Tr
Oakwood
Ashwood
Nutmeg
Meeks Cem
Timber Tr
Jim Meeks
Mulberry
Sessoms
Lucy Moore
Bear Tr
Evergreen
Birmingham
Flying Hawk
J F Gray
Good Carter
Turner
Waters
Cason
Willie Lee
Watell Davis
Henry
Circle
Fanny Burkett
Cedar Ridge
Elece P
James Moore
Blackburn
Joe Ray
Bancroft
Mark Mobley
Wadwood
Deaton
Dixie
Moore
Rosewood
John Osteen
Seminole
Squirrel Bridge
Nicholls Country Acres
Buck Dr
Summerset
Harmony
Moose Lott
Bryce
Liberty
Liberty
Quinton Kirkland
Green Latern
Dewitt's
Scott
Phaesant
Alton Kirkland
Danny Kirkland
Otter
Piz
Toby
Jeff Lewis
Sikes
New Forest Hwy
Sand
Elm
1st 1st
Apaloosa
Shilon
Forest
Center
Briarwood
Par
Walker
Gordon
North Connector
Riverbend
Berry
Green Tree
Lotts
Douglas Braxton
Clearlake
Trojan
Broxton Douglas
Mill Holland
Marvin Kirkland
Huffer
Cross
Buckeye
Dale
Covered Grove Church
Linda
Geroge Deen
Lawson
State Route 268
Blackberry
Fire Lane
Whitaker
Broxton
John D Mobley
Twin Gables
I L Smith
Mauldin
Huffer
Picketson
County Road 220
County Road 86
County Road 85
County Road 72
County Road 69
County Road 10
County Road 233
County Road 247
Albany
Austin
Main
Parker
United States Highway 82
State Route 32
J C Harper
135
32
158
64
82

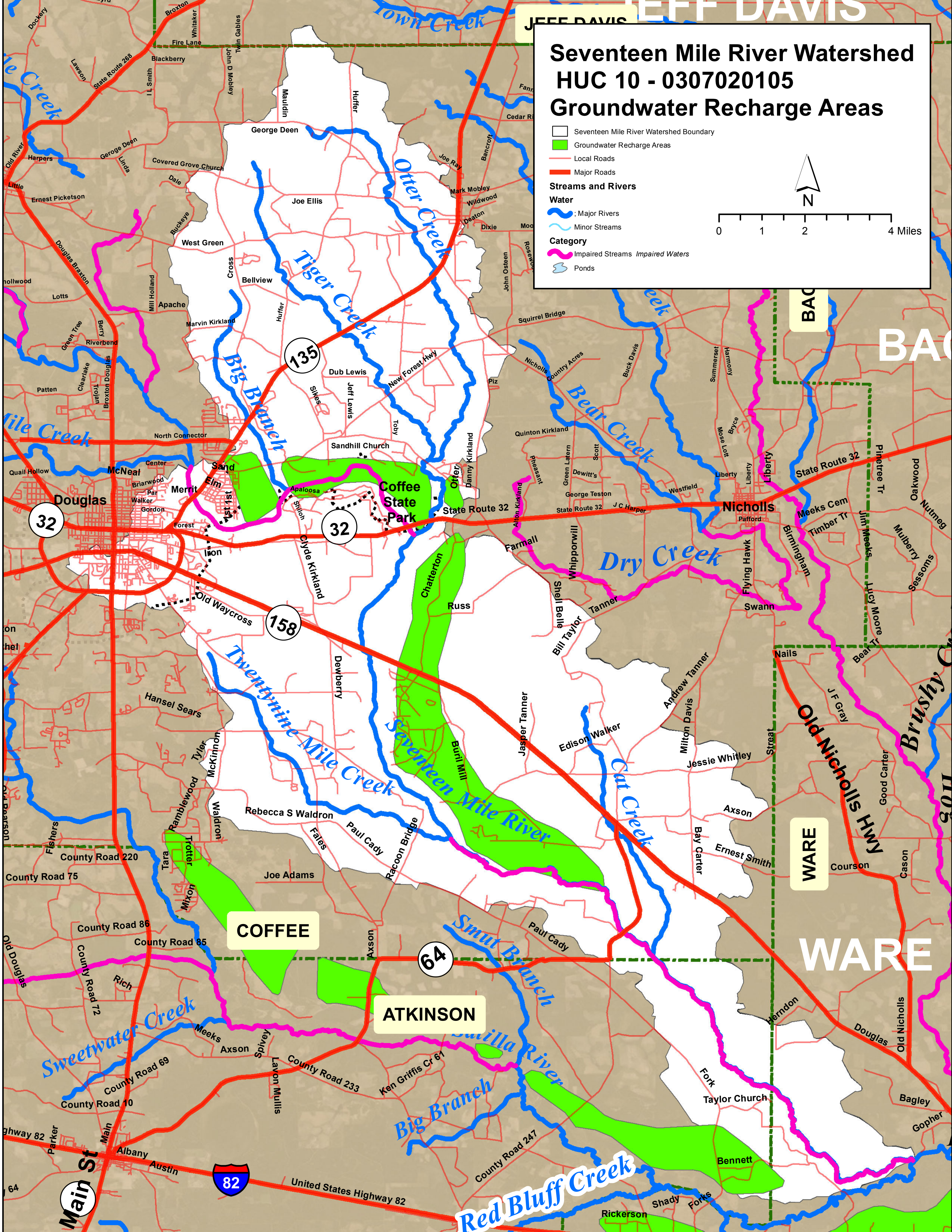

Seventeen Mile River Watershed
HUC 10 - 0307020105
Soil Series
Seventeen Mile River Watershed Boundary
Category
Impaired Streams Impaired Waters
Streams and Rivers
Local Roads
Major Roads
County Boundary Lines
Incorporated Areas/Large Public Areas
Soil Series
Ailey
Albany
Bayboro
Blanton
Bonifay
Cainhoy
Carnegie
Clarendon
Cowarts
Cowarts-Sunsweet
Dothan
Esto
Florala
Foxworth
Fuquay
Kershaw
Kinston and Johnston
Lakeland
LeeField
Leefield
Leon
Mascotte
Meldrim
Olustee
Pelham
Rigdon
Sapelo
Stilson
Surrency
Tifton
Troup-Alley
Wahee
Water
Wicksburg
N
0 0.5 1 2 Miles
JEFF DAVIS
COFFEE
ATKINSON
WARE
Douglas
Coffee State Park
Seventeen Mile River
Big Branch
Sweetwater Creek
Satilla River
Red Bluff Creek
Smut Branch
Hurricane Creek
Bear Creek
Brushy Creek
Hog Creek
Town Creek
32
135
158
64
82
United States Highway 82
State Route 32
Old Nicholls Hwy



Seventeen Mile River Watershed
HUC 10 - 0307020105
Flood Hazard Areas
Flood Hazard Areas
Seventeen Mile River Watershed Boundary
Local Roads
Major Roads
Streams and Rivers
Water
; Major Rivers
Minor Streams
Category
Impaired Streams Impaired Waters
Ponds
N
0 1 2 4 Miles
JEFF DAVIS
COFFEE
ATKINSON
WARE
Douglas
Nicholls
McNeal
Coffee State Park
Otter Creek
Tiger Creek
Big Branch
Bear Creek
Dry Creek
Twentynine Mile Creek
Seventeen Mile River
Cat Creek
Smut Branch
Satilla River
Sweetwater Creek
Big Branch
Red Bluff Creek
Town Creek
Brushy Creek
135
32
158
64
82
State Route 32
United States Highway 82
Old Nicholls Hwy
County Road 220
County Road 75
County Road 86
County Road 85
County Road 233
County Road 247
County Road 10
County Road 69
Main St



Seventeen Mile River Watershed
HUC 10 - 0307020105
Pollution Susceptibility Map
Local Roads
Major Roads
Seventeen Mile River Watershed Boundary
CLASS
AVERAGE
HIGH
Category
Impaired Streams Impaired Waters
Streams and Rivers
Water
; Major Rivers
Minor Streams
MajorLakes
Ponds
N
0
1
2
4 Miles
JEFF DAVIS
BACON
COFFEE
ATKINSON
WARE
Douglas
Nicholls
Coffee State Park
Seventeen Mile River
Twentynine Mile Creek
Tiger Creek
Otter Creek
Big Branch
Hurricane Creek
Bear Creek
Dry Creek
Cat Creek
Town Creek
Brushy Creek
Hog Creek
Smut Branch
Satilla River
Sweetwater Creek
Red Bluff Creek
State Route 32
State Route 268
Old Nicholls Hwy
United States Highway 82
New Forest Hwy
North Connector
Old Waycross
135
32
158
64
82


Seventeen Mile River Watershed
HUC 10 - 0307020105
Groundwater Recharge Areas
Seventeen Mile River Watershed Boundary
Groundwater Recharge Areas
Local Roads
Major Roads
Streams and Rivers
Water
; Major Rivers
Minor Streams
Category
Impaired Streams Impaired Waters
Ponds
N
0 1 2 4 Miles
JEFF DAVIS
BACON
WARE
COFFEE
ATKINSON
Douglas
Nicholls
Coffee State Park
Town Creek
Otter Creek
Tiger Creek
Big Branch
Bear Creek
Dry Creek
Twentynine Mile Creek
Seventeen Mile River
Cat Creek
Smut Branch
Satilla River
Sweetwater Creek
Big Branch
Red Bluff Creek
Brushy Creek
135
32
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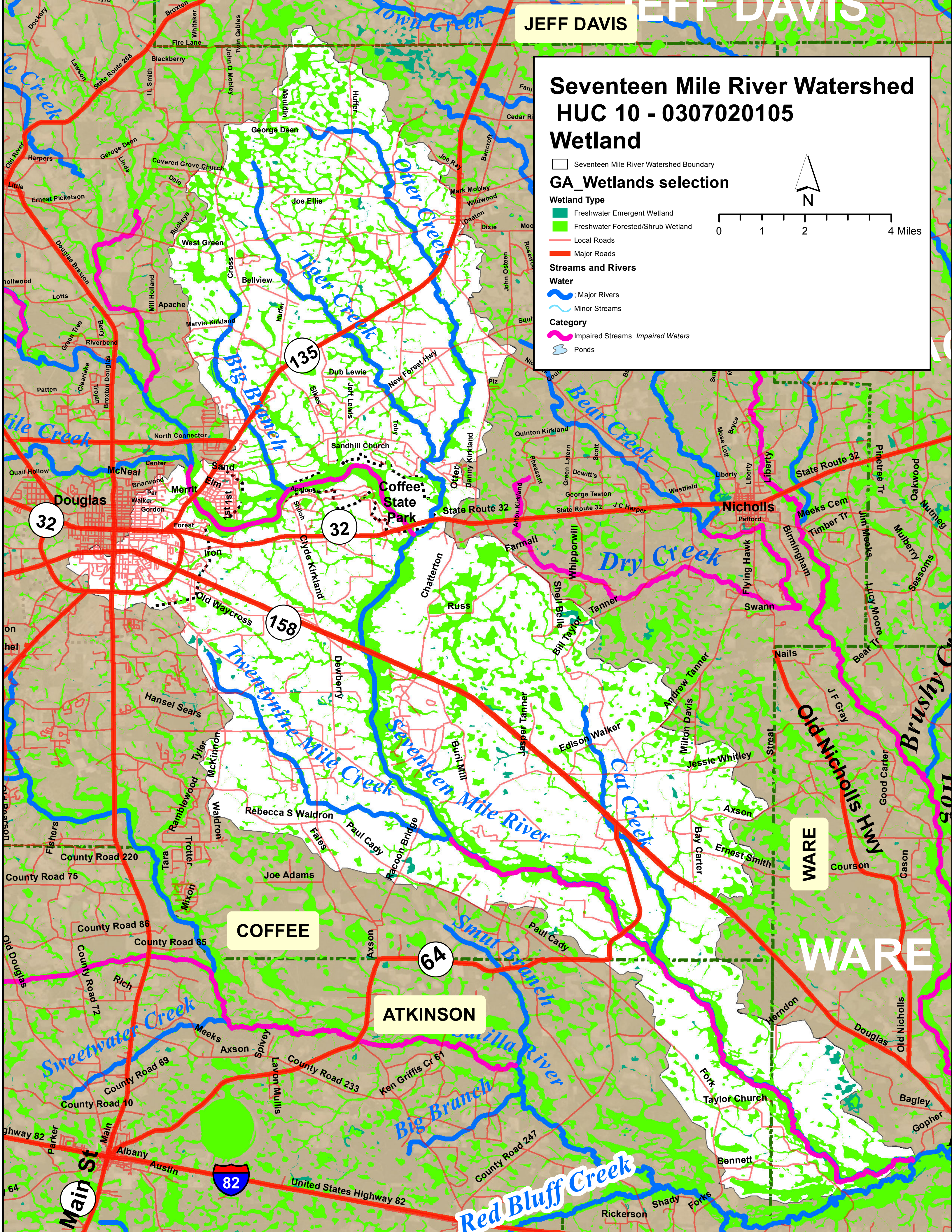
82
State Route 32
Old Nicholls Hwy
United States Highway 82
George Deen
Joe Ellis
West Green
Bellview
Dub Lewis
Sandhill Church
McNeal
Merrit
Russ
Farmall
Tanner
Swann
Nails
Edison Walker
Jessie Whitley
Axson
Ernest Smith
Rebecca S Waldron
Paul Cady
Joe Adams
County Road 220
County Road 75
County Road 86
County Road 85
County Road 233
County Road 69
County Road 10
County Road 247
Taylor Church
Bennett
Rickerson
Main St


Seventeen Mile River Watershed
HUC 10 - 0307020105
Wetland
Seventeen Mile River Watershed Boundary
GA_Wetlands selection
Wetland Type
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Local Roads
Major Roads
Streams and Rivers
Water
; Major Rivers
Minor Streams
Category
Impaired Streams Impaired Waters
Ponds
N
0 1 2 4 Miles
JEFF DAVIS
COFFEE
ATKINSON
WARE
Douglas
Nicholls
Coffee State Park
Seventeen Mile River
Twentynine Mile Creek
Tiger Creek
Otter Creek
Big Branch
Cat Creek
Dry Creek
Bear Creek
Smut Branch
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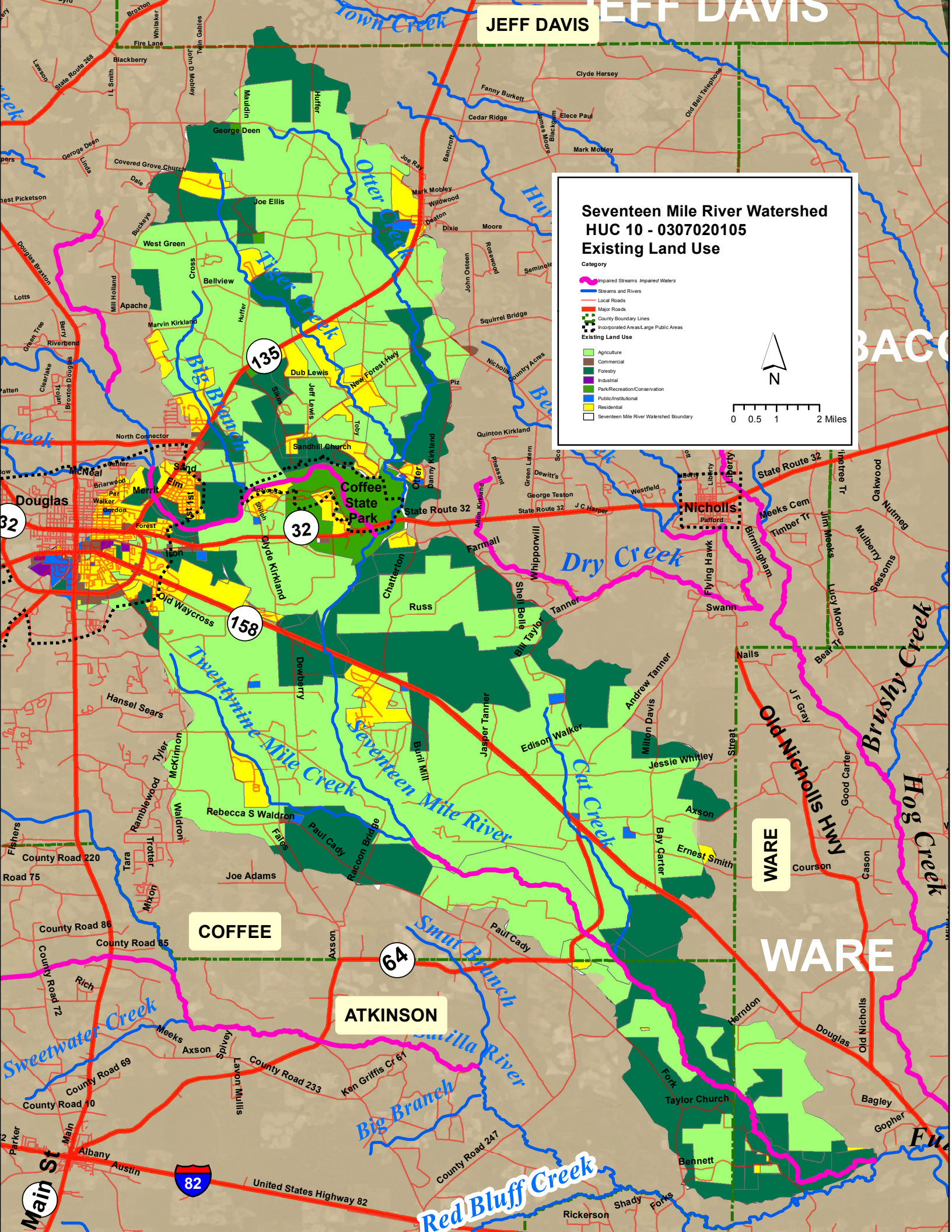
State Route 32
Old Nicholls Hwy
United States Highway 82
Main St


Seventeen Mile River Watershed
HUC 10 - 0307020105
Existing Land Use
Category
Impaired Streams Impaired Waters
Streams and Rivers
Local Roads
Major Roads
County Boundary Lines
Incorporated Areas/Large Public Areas
Existing Land Use
Agriculture
Commercial
Forestry
Industrial
Park/Recreation/Conservation
Public/Institutional
Residential
Seventeen Mile River Watershed Boundary
N
0 0.5 1 2 Miles
JEFF DAVIS
COFFEE
ATKINSON
WARE
Douglas
Nicholls
Coffee State Park
Twentynine Mile Creek
Seventeen Mile River
Dry Creek
Tiger Creek
Otter Creek
Big Branch
Cat Creek
Brushy Creek
Hog Creek
Sweetwater Creek
Red Bluff Creek
Smut Branch
Old Nicholls Hwy
State Route 32
United States Highway 82
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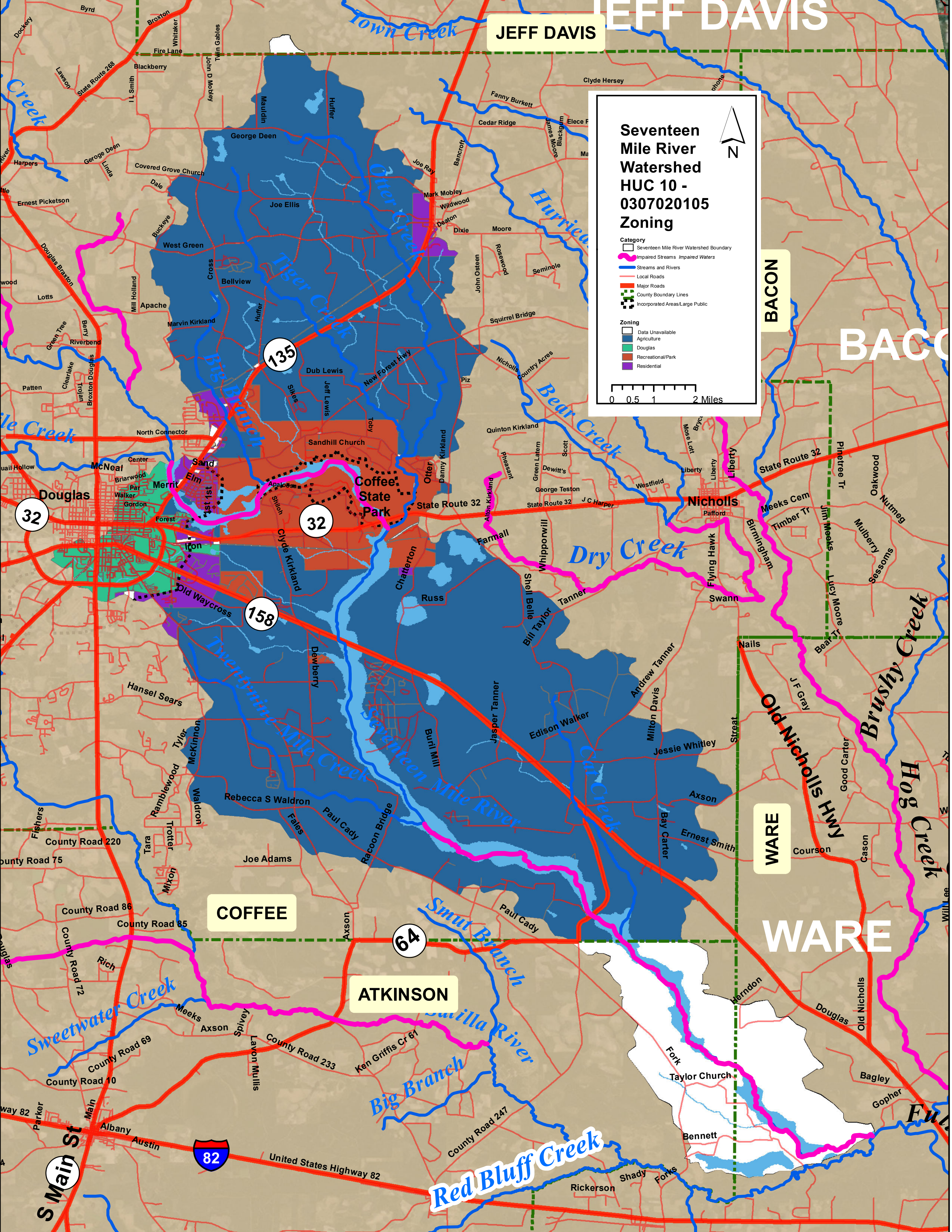
Seventeen Mile River Watershed HUC 10 - 0307020105 Zoning
N
Category
Seventeen Mile River Watershed Boundary
Impaired Streams Impaired Waters
Streams and Rivers
Local Roads
Major Roads
County Boundary Lines
Incorporated Areas/Large Public
Zoning
Data Unavailable
Agriculture
Douglas
Recreational/Park
Residential
0 0.5 1 2 Miles
JEFF DAVIS
BACON
COFFEE
ATKINSON
WARE
Douglas
Nicholls
Coffee State Park
Seventeen Mile River
Twentynine Mile Creek
Big Branch
Tiger Creek
Otter Creek
Bear Creek
Dry Creek
Cat Creek
Brushy Creek
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State Route 32
United States Highway 82
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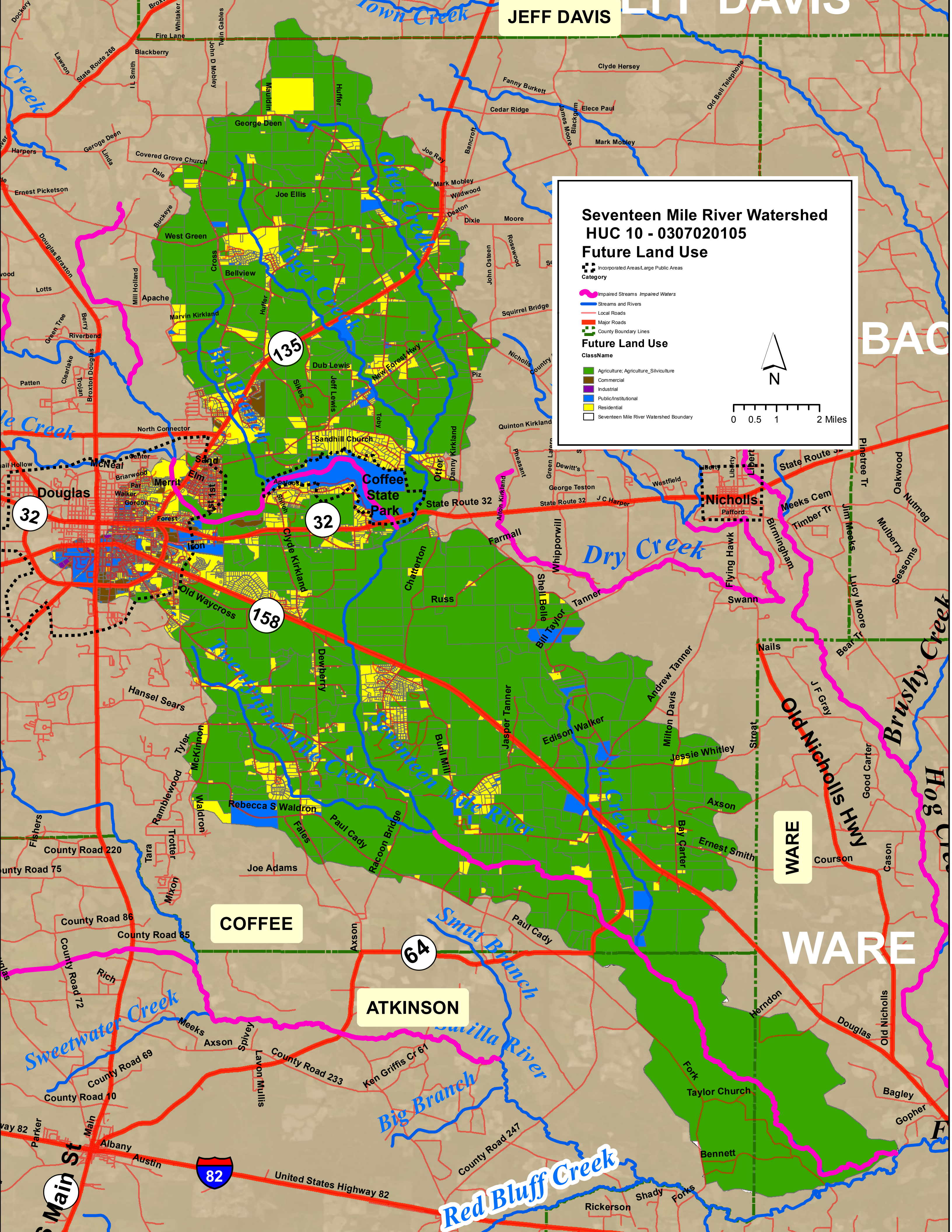
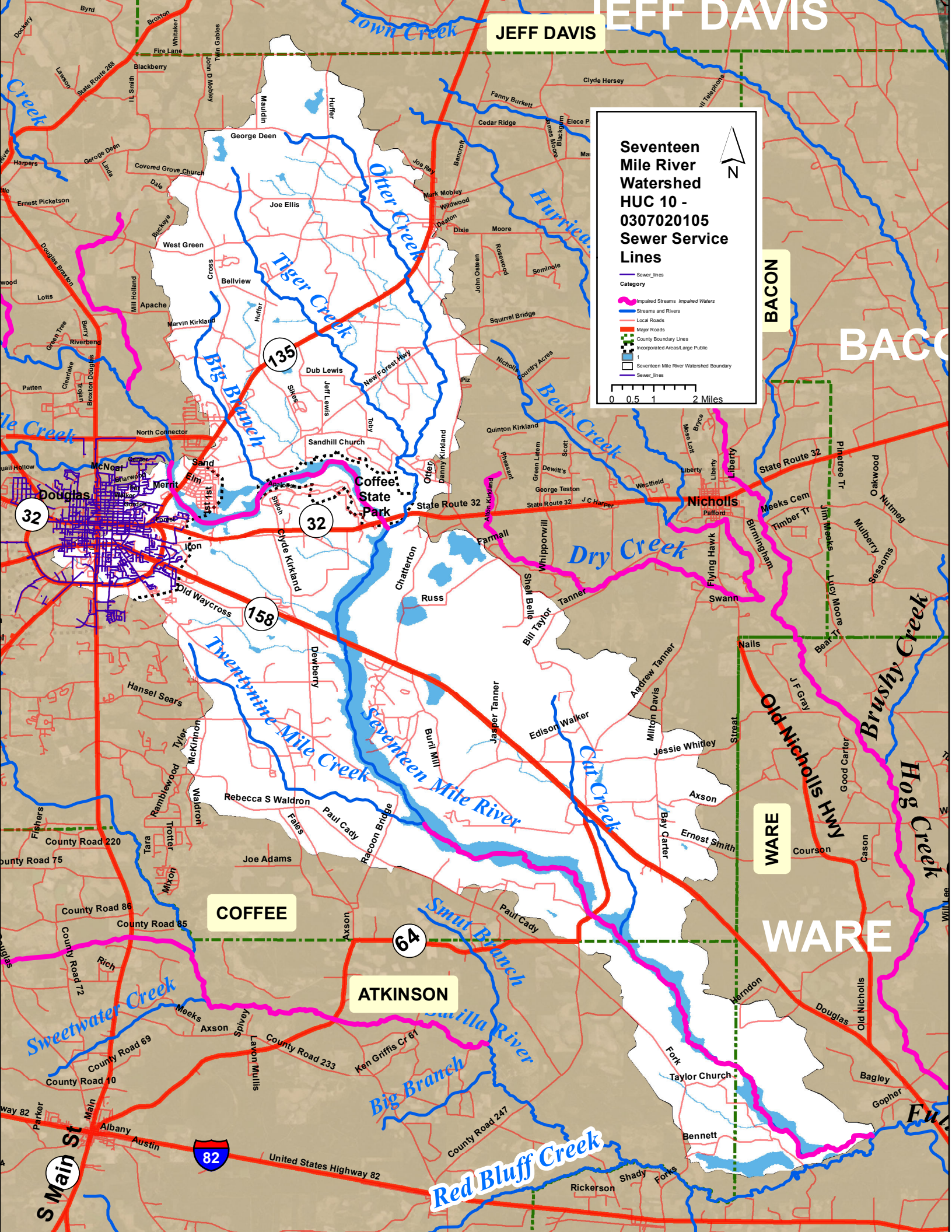
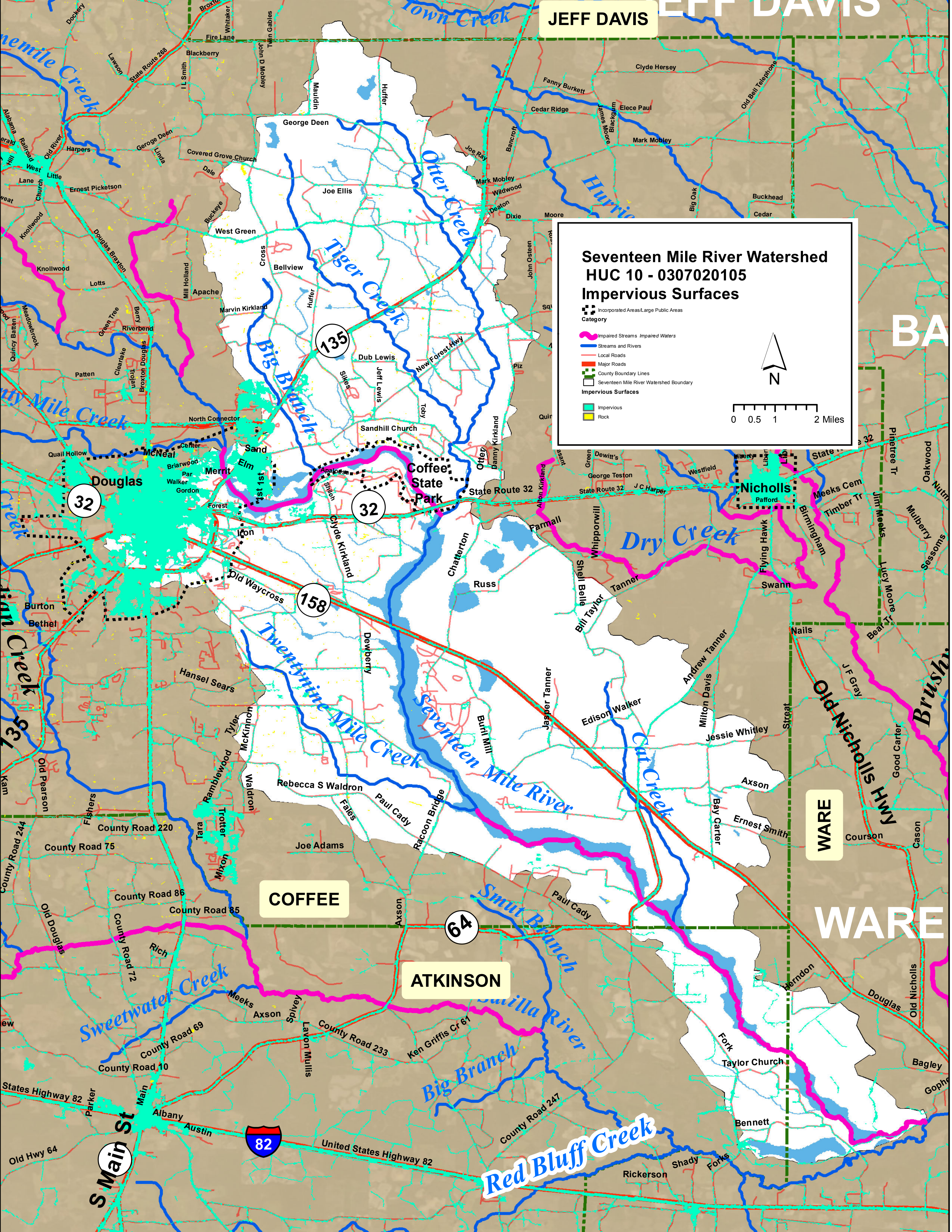
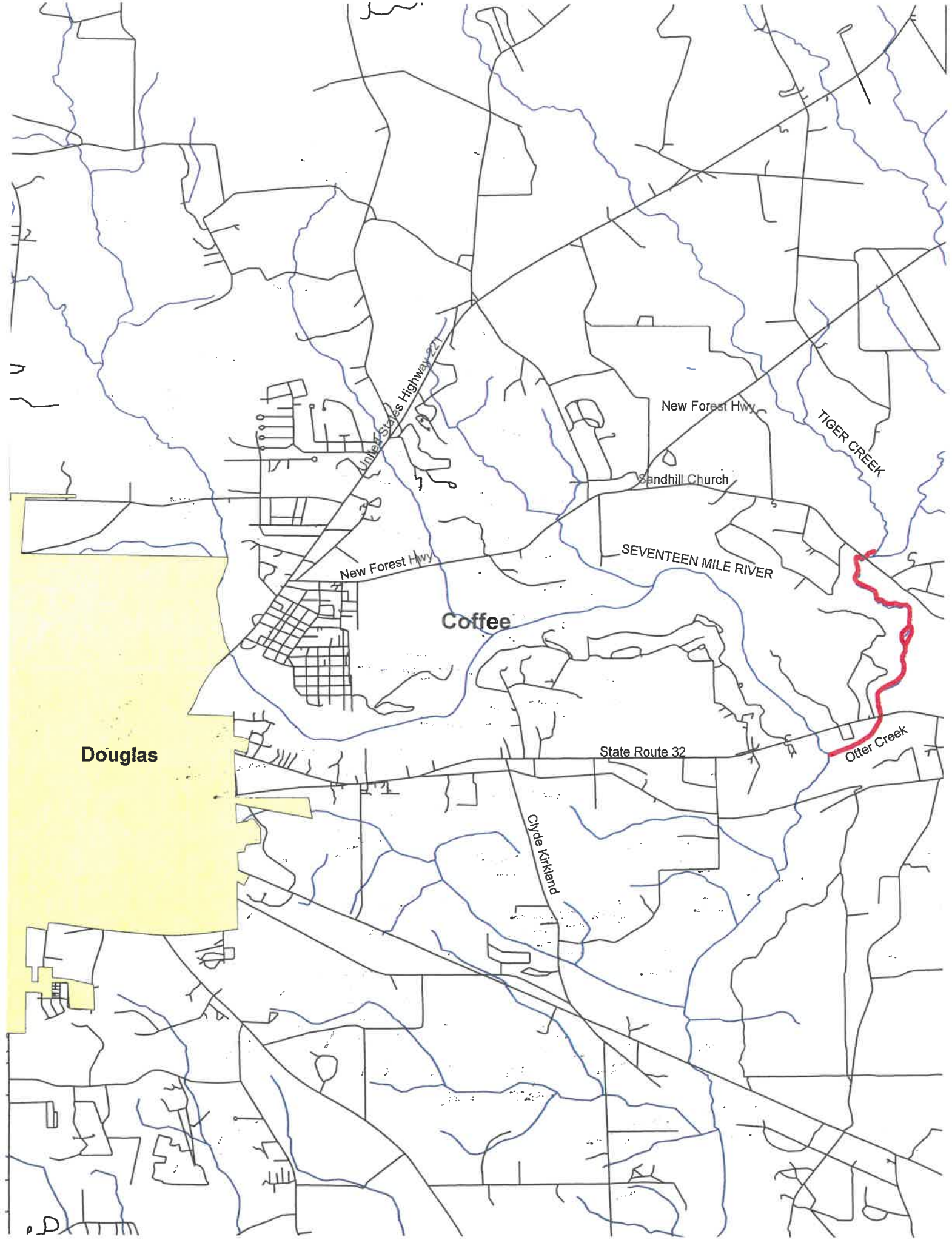

Seventeen Mile River Watershed
HUC 10 - 0307020105
Future Land Use
Incorporated Areas/Large Public Areas
Category
Impaired Streams Impaired Waters
Streams and Rivers
Local Roads
Major Roads
County Boundary Lines
Future Land Use
ClassName
Agriculture; Agriculture_Silviculture
Commercial
Industrial
Public/Institutional
Residential
Seventeen Mile River Watershed Boundary
N
0 0.5 1 2 Miles
JEFF DAVIS
COFFEE
ATKINSON
WARE
BAC
Douglas
Nicholls
Coffee State Park
Otter Creek
Tiger Creek
Big Branch
Dry Creek
Twentymile Creek
Seventeen Mile River
Cat Creek
Smut Branch
Satilla River
Sweetwater Creek
Big Branch
Red Bluff Creek
Brushy Creek
Hog Creek
135
32
158
64
82
State Route 268
State Route 32
North Connector
Old Waycross
Old Nicholls Hwy
New Forest Hwy
United States Highway 82
County Road 220
County Road 75
County Road 86
County Road 85
County Road 72
County Road 69
County Road 10
County Road 233
County Road 247
Ken Griffis Cr 61
S Main St
George Deen
Joe Ellis
West Green
Bellview
Apache
Marvin Kirkland
Dub Lewis
Sandhill Church
Clyde Kirkland
Chatterton
Russ
Dewberry
Hansel Sears
Rebecca S Waldron
Paul Cady
Racoon Bridge
Joe Adams
Jasper Tanner
Edison Walker
Jessie Whitley
Andrew Tanner
Milton Davis
Bay Carter
Ernest Smith
Axson
Fork
Taylor Church
Bennett
Rickerson
Shady
Forks
Herndon
Douglas
Bagley
Gopher
Old Nicholls
Courson
Cason
Good Carter
J F Gray
Nails
Swann
Flying Hawk
Birmingham
Meeks Cem
Timber Tr
Jim Meeks
Lucy Moore
Mulberry
Sessoms
Oakwood
Nutmeg
Pinetree Tr
Bear Tr
Streat
Pafford
Liberty
Westfield
J C Harper
George Teston
Dewitt's
Whipporwill
Shell Belle
Bill Taylor
Tanner
Farmall
Alton Kirkland
Pheasant
Quinton Kirkland
Nicholls
Country
Piz
Squirrel Bridge
John Osteen
Rosewood
Moore
Dixie
Deaton
Wildwood
Mark Mobley
Joe Ray
Bancroft
Cedar Ridge
Fanny Burkett
Clyde Hersey
Elece Paul
James Moore
Blackgum
Old Bell Telephone
Fire Lane
Whitaker
Twin Gables
John D Mobley
Blackberry
I L Smith
Lawson
Dockery
Harpers
Geroge Deen
Linda
Covered Grove Church
Dale
Ernest Picketson
Buckeye
Douglas Braxton
Lotts
Mill Holland
Cross
Huffer
Mauldin
Green Tree
Berry
Riverbend
Clearlake
Trojan
Broxton Douglas
Patten
Sikes
Jeff Lewis
Toby
Danny Kirkland
McNeal
Center
Sand
Elm
Merrit
1st
Briarwood
Par
Walker
Gordon
Forest
Iron
Apaloosa
Shiloh
Buril Mill
Tyler
McKinnon
Ramblewood
Waldron
Fales
Tara
Trotter
Mixon
Fishers
Rich
Meeks
Spivey
Lavon Mullis
Parker
Main
Albany
Austin


Seventeen Mile River Watershed HUC 10 - 0307020105 Sewer Service Lines
N
Sewer_lines
Category
Impaired Streams Impaired Waters
Streams and Rivers
Local Roads
Major Roads
County Boundary Lines
Incorporated Areas/Large Public
1
Seventeen Mile River Watershed Boundary
Sewer_lines
0 0.5 1 2 Miles
JEFF DAVIS
BACON
WARE
COFFEE
ATKINSON
Douglas
Nicholls
McNeal
Coffee State Park
Town Creek
Otter Creek
Tiger Creek
Big Branch
Hurricane Creek
Bear Creek
Dry Creek
Seventeen Mile River
Twentynine Mile Creek
Car Creek
Smut Branch
Big Branch
Sweetwater Creek
Red Bluff Creek
Brushy Creek
Hog Creek
Old Nicholls Hwy
State Route 32
United States Highway 82
S Main St
135
158
32
64
82


Seventeen Mile River Watershed
HUC 10 - 0307020105
Impervious Surfaces
Incorporated Areas/Large Public Areas
Category
Impaired Streams Impaired Waters
Streams and Rivers
Local Roads
Major Roads
County Boundary Lines
Seventeen Mile River Watershed Boundary
Impervious Surfaces
Impervious
Rock
N
0 0.5 1 2 Miles
JEFF DAVIS
COFFEE
ATKINSON
WARE
Douglas
Nicholls
Coffee State Park
Seventeen Mile River
Twentymine Mile Creek
Big Branch
Tiger Creek
Otter Creek
Dry Creek
Cat Creek
Satilla River
Smut Branch
Red Bluff Creek
Sweetwater Creek
State Route 32
Old Waycross
Old Nicholls Hwy
United States Highway 82

Metadata

Map	Data Source
Base Aerial	ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Soils	Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database.
Impaired Waters	U.S. Geological Survey, 2016, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed August 12,2017, at URL [http://waterdata.usgs.gov/nwis/].
Wetlands	U.S. Geological Survey's National Hydrography Dataset (NHD), 2012
Streams/Rivers	U.S. Geological Survey, 2016, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed August 12,2017, at URL [http://waterdata.usgs.gov/nwis/].
Roads	Georgia Forestry Commission- Satilla Response Maps
Existing Land use	Southern Georgia Regional Commission- 2007
County	Georgia Forestry Commission- Satilla Response Maps
Watershed Boundary	U.S. Geological Survey, 2016, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed August 12,2017, at URL [http://waterdata.usgs.gov/nwis/].
Flood Areas	National Flood Hazard- FEMA
Groundwater Recharge	Georgia Planning, USGS Groundwater data,1992
Impervious Surfaces	National Gap Analysis, USGS, Geospatial Gateway,2008
Land Use	National Gap Analysis, USGS, Geospatial Gateway,2008
Zoning	Southern Georgia Regional Commission
Future Land Use	Southern Georgia Regional Commission
Sewer Lines	Southern Georgia Regional Commission


United States Highway 221
New Forest Hwy
TIGER CREEK
Sandhill Church
New Forest Hwy
SEVENTEEN MILE RIVER
Coffee
Douglas
State Route 32
Otter Creek
Clyde Kirkland

New reach 2012

Otter Creek

Tiger Creek - Seventeen Mile River

Station_ID: **0701050201**

Water Quality Data Report for:

cy2010 Data

Otter Crk at SR 32 near Douglas, GA

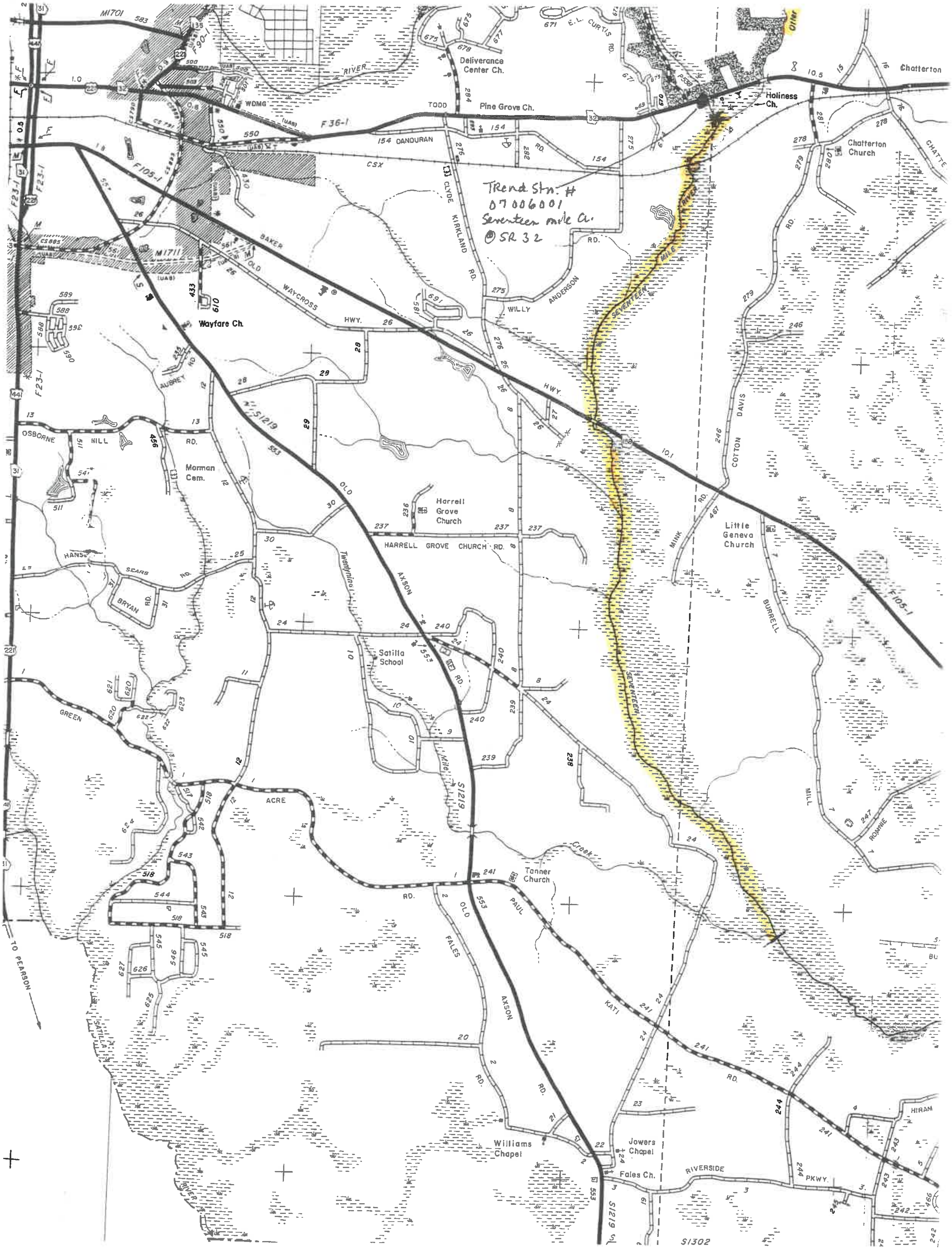
Old_Ga_Num: | USGS_NUMBER: <NULL> | Lat / Lon: 31.512051, -82.743357 | Print Date: 24-May-11

Collection Date/Time	DO mg/L	pH	Temp °F	Fecal mpn/100ml	
1/11/2010 10:15:00 AM	12.5	6.99	33.6		
2/22/2010 11:15:00 AM	8.68	7.03	51.7		
3/16/2010 10:00:00 AM	8.68	6.45	52.5	170	
3/22/2010 9:45:00 AM	8.04	6.49	55	80	gm=152
3/24/2010 10:30:00 AM	8.85	6.95	55.1	170	
4/15/2010 10:00:00 AM	6.36	5.68	63.1	230	
4/19/2010 9:45:00 AM	4.87	5.63	60.9	130	gm=171
4/27/2010 10:25:00 AM	6.71	6.72	63.9	220	
4/29/2010 11:00:00 AM	6.79	6.23	58.2	130	
5/18/2010 9:45:00 AM	4.58	5.19	70.6		
7/6/2010 10:15:00 AM	5.3	5.96 66	74.6		
Total # of Values =====>	11	11	11	7	

DO 9/11 pH 3/11 T 0/11 FC 0/2 gm

GA EPD Station No.	Station Name						
RV_07_2972	Otter Crk at SR 32 near Douglas, GA						
	Date	PH pH units	COND umho/cm	TEMP Deg C	TEMP_AIR Deg C	DO mg/l	FECAL #/100 ml
	2010-01-11 10:15:00.0	6.99	70.0	0.87	9.0	12.5	
	2010-02-22 11:15:00.0	7.03	58.0	10.96	17.0	8.68	
	2010-03-16 10:00:00.0	6.45	55.0	11.37	17.0	8.68	170.0
	2010-03-22 09:45:00.0	6.49	60.0	12.76	13.0	8.04	80.0
	2010-03-24 10:30:00.0	6.95	60.0	12.84	21.0	8.85	170.0
	2010-04-15 10:00:00.0	5.68	58.0	17.29	19.0	6.36	230.0
	2010-04-19 09:45:00.0	5.63	63.0	16.06	20.0	4.87	130.0
	2010-04-27 10:25:00.0	6.72	59.0	17.71	19.0	6.71	220.0
	2010-04-29 11:00:00.0	6.23	60.0	14.57	22.0	6.79	130.0
	2010-05-18 09:45:00.0	5.19	54.0	21.46	27.0	4.58	
	2010-06-14 10:15:00.0				31.0		
	2010-07-06 10:15:00.0	5.96	74.0	23.64	31.0	5.3	
	Latitude						
	31.51205						
	Longitude						
	-82.743355						
	River Basin						
	SATILLA						
	Hydrologic Unit Code						
	030702010501						
	County						
	Coffee						
	Water Plan Region						
	SUWANNEE - SATILLA						
	Eco-region						
	75H						
	Water Body Type						
	Stream						
	Source: GA EPD						

GA EPD Station No.	Station Name					
RV_07_2972	Otter Crk at SR 32 near Douglas, GA					
	Date	PH pH units	TEMP Deg C	TEMP_AIR Deg C	DO mg/l	FECAL #/100 ml
	2010-01-11 10:15:00.0	6.99	0.87	9.0	12.5	
	2010-02-22 11:15:00.0	7.03	10.96	17.0	8.68	
	2010-03-16 10:00:00.0	6.45	11.37	17.0	8.68	170.0
	2010-03-22 09:45:00.0	6.49	12.76	13.0	8.04	80.0
	2010-03-24 10:30:00.0	6.95	12.84	21.0	8.85	170.0
	2010-04-15 10:00:00.0	5.68	17.29	19.0	6.36	230.0
	2010-04-19 09:45:00.0	5.63	16.06	20.0	4.87	130.0
	2010-04-27 10:25:00.0	6.72	17.71	19.0	6.71	220.0
	2010-04-29 11:00:00.0	6.23	14.57	22.0	6.79	130.0
	2010-05-18 09:45:00.0	5.19	21.46	27.0	4.58	
	2010-06-14 10:15:00.0			31.0		
	2010-07-06 10:15:00.0	5.96	23.64	31.0	5.3	
	Latitude					
	31.51205					
	Longitude					
	-82.743355					
	River Basin					
	SATILLA					
	Hydrologic Unit Code					
	030702010501					
	County					
	Coffee					
	Water Plan Region					
	SUWANNEE - SATILLA					
	Eco-region					
	75H					
	Water Body Type					
	Stream					
	Source: GA EPD					


TRend Stn. #
07006001
Seventeen mile Cr.
@ SR 32
Chatterton
Holiness Ch.
Deliverance Center Ch.
Pine Grove Ch.
Chatterton Church
E.L. CURTIS RD.
TODD
DANDURAN RD.
CSX
RIVER
CLYDE KIRKLAND RD.
BAKER RD.
ANDERSON RD.
WILLY
OLD WAYCROSS HWY.
Wayfare Ch.
AUBREY RD.
OSBORNE HILL RD.
Morman Cem.
OLD AXSON RD.
Harrell Grove Church
HARRELL GROVE CHURCH RD.
SEARS RD.
BRYAN RD.
Twentymile
Satilla School
GREEN
ACRE RD.
SEVENTEEN MILE
Creek
Tanner Church
PAUL KATI RD.
OLD FALES RD.
AXSON RD.
Williams Chapel
Jowers Chapel
Fales Ch.
RIVERSIDE PKWY.
HIRAM
Little Geneva Church
COTTON DAVIS RD.
MINK RD.
BURRELL MILL
ROMNIE
TO PEARSON
SATILLA
RIVER

other creek - twenty nine mile creek

cy03 Station# 07016101 **Seventeen Mile River at SR 158 near Douglas**

Collection Date/Time	DO	pH	Temp °F	Fecal	
01/21/2003 1:05:00 PM	10.1	5.55	45		
02/03/2003 1:49:00 PM	8.91	5.61	50.6	20	
02/10/2003 3:50:00 PM	8.42	6.37	54.6	50	gm=48
02/17/2003 2:39:00 PM	8.3	5.85	52.8	270	
02/24/2003 11:41:00 AM	7.8	5.58	52.7	<20	
03/10/2003 1:32:00 PM	6.96	5.09	61		
03/19/2003 1:50:00 PM	6.1	4.77	65.9		
04/08/2003 1:46:00 PM	5.95	6.81	67.8		
05/01/2003 11:00:00 AM	4.31	5.26	68.6	130	
05/08/2003 1:16:00 PM	4.85	6.15	76.3	210	gm=149
05/14/2003 12:13:00 PM	5.53	6.08	69.7	20	
05/19/2003 12:46:00 PM	3.74	6.24	73.3	1700	
05/21/2003 1:03:00 PM	5.88	5.72	70.5		
05/29/2003 12:31:00 PM	4.42	6	69.5	80	
07/17/2003 1:00:00 PM	4.32	5.9	77.2		
08/05/2003 12:09:00 PM	7.26	5.29	74.8	1300	
08/12/2003 1:57:00 PM	4.89	5.7	76.4	235	gm= 125
08/18/2003 12:28:00 PM	4.93	6.24	77.4	20	
08/26/2003 1:15:00 PM				40	
09/04/2003 1:47:00 PM	2.97	6.25	78.4		
10/09/2003 1:13:00 PM	4.98	6.84	69.2		
11/03/2003 2:45:00 PM				80	
11/03/2003 3:45:00 PM	6.5	6.14	65.6		gm= 34
11/05/2003 1:46:00 PM	4.64	6.06	70.5	20	
11/12/2003 3:10:00 PM	6.27	6.02	63.4	20	
11/18/2003 1:49:00 PM				40	
	2/24	11/24	9/24	FC 9/4 gm	

cy03 Station# 07016101 **Seventeen Mile River at SR 158 near Douglas**

12/11/2003 3:05:00 PM	8.45	6.55	48.4	

GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

455 14th Street NW, Atlanta, GA 30318-7900
(404) 206-5269

LABORATORY REPORT

TO: U.S. Geological Survey
Trend Monitoring Program
Peachtree Business Ctr Ste 130
3039 Amwiler Rd

Sample ID:	AE04679
Facility Name:	Seventeen Mile Crk @Sr158
Site ID:	07016101
Location ID:	
Location Descr:	BRUNSWICK METALS

Date Collected:	3/19/03
Time Collected:	13:50
Sample Collector:	PAGE/BASMAJI
Chlorination:	
Sample Type:	
Received By:	TNB
Date Received:	3/21/03
Time Received:	10:08 AM
Project:	WQ
Reporting Date:	4/11/03
Received Temperature:	0.0 C

ANALYTE	PARAMETER CODE	NOTE	EPA METHOD	RESULT	QUALIFIER	UNITS	RL	ANALYST	ANALYSIS DATE	MCL or QC Range
QC Batch 55970										
Suspended Solids	00530		EPA 160.2	2.7		mg/L	1.0	RH	3/24/03	
Water Quality Metals by ICPMS QC Batch 55985										
Chromium 52	01034		EPA 200.8	Not Detected		ug/L	5	VK	3/31/03	
Nickel 60	01067		EPA 200.8	Not Detected		ug/L	10	VK	3/31/03	
Copper 65	01042		EPA 200.8	Not Detected		ug/L	5	VK	3/31/03	
Zinc 66	01092		EPA 200.8	Not Detected		ug/L	10	VK	3/31/03	
Arsenic 75	01002		EPA 200.8	Not Detected		ug/L	5	VK	3/31/03	
Selenium 82	01147		EPA 200.8	Not Detected		ug/L	5	VK	3/31/03	
Molybdenum 98	01062		EPA 200.8	Not Detected		ug/L	5	VK	3/31/03	
Silver 107	01077		EPA 200.8	Not Detected		ug/L	5	VK	3/31/03	
Cadmium 111	01027		EPA 200.8	Not Detected		ug/L	0.7	VK	3/31/03	
Tin 118	01102		EPA 200.8	Not Detected		ug/L	30	VK	3/31/03	
Antimony 121	01097		EPA 200.8	Not Detected		ug/L	5	VK	3/31/03	
Barium 137	01007		EPA 200.8	34		ug/L	2	VK	3/31/03	
Thallium 205	01059		EPA 200.8	Not Detected		ug/L	1	VK	3/31/03	
Lead 207	01051		EPA 200.8	1.6		ug/L	1	VK	3/31/03	
ICP Metals QC Batch 55995										
Aluminum	01105		EPA 200.7	650		ug/L	60	LA	3/31/03	
Beryllium	01012		EPA 200.7	Not Detected		ug/L	10	LA	3/31/03	
Calcium	00916		EPA 200.7	3800		ug/L	1000	LA	3/31/03	
Cobalt	01037		EPA 200.7	Not Detected		ug/L	10	LA	3/31/03	
Iron	01045		EPA 200.7	3100		ug/L	20	LA	3/31/03	
Potassium	00937		EPA 200.7	Not Detected		ug/L	5000	LA	3/31/03	

ug/L: micrograms/liter
mg/L: milligrams/liter
mg/kg: milligrams/kilogram
ug/kg: micrograms/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion
org/L: organisms/liter

<: less than
MCL: Maximum Contaminant Level
RL: Reporting Limit
LSPC: result less than lower specification
USPC: result greater than upper specification
TIE: Tentatively Identified or Estimated
VIOL: Violation (result exceeds MCL)

Laboratory Contacts:

Inorganics:	Pat Sammons	404-206-5239
Metals:	Mark Tolbert	404-206-5240
Organics:	Danny Reed	404-206-5252
GC Mass Spec:	Steve Bryan	404-206-5260
Microbiology:	Viola Reynolds	404-206-5210

ANALYTE	PARAMETER CODE	NOTE	EPA METHOD	RESULT	UNITS	QUALIFIER RL	ANALYST	ANALYSIS DATE	MCL or QC Range
Magnesium	00927		EPA 200.7	2400	ug/L	1000	LA	3/31/03	
Manganese	01055		EPA 200.7	49	ug/L	10	LA	3/31/03	
Sodium	00929		EPA 200.7	4600	ug/L	1000	LA	3/31/03	
Titanium	01152		EPA 200.7	Not Detected	ug/L	10	LA	3/31/03	
Vanadium	01087		EPA 200.7	Not Detected	ug/L	10	LA	3/31/03	
QC Batch 55992									
Mercury	71900		EPA 245.1	Not Detected	ug/L	0.2	PB	3/25/03	2.0

ug/L: micrograms/liter
mg/L: milligrams/liter
mg/kg: milligrams/kilogram
ug/kg: micrograms/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion
org/L: organisms/liter

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GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

455 14th Street NW, Atlanta, GA 30318-7900
(404) 206-5269

LABORATORY REPORT

TO: U.S. Geological Survey
Trend Monitoring Program
Peachtree Business Ctr Ste 130
3039 Amwiler Rd

Date Collected:	5/21/03
Time Collected:	14:03
Sample Collector:	PUGH/BASMAJI
Chlorination:	
Sample Type:	
Received By:	AAA
Date Received:	5/23/03
Time Received:	10:23 AM
Project:	WQ
Reporting Date:	6/10/03
Received Temperature:	0.0 C

Sample ID:	AE10165
Facility Name:	Seventeen Mile Crk @Sr158
Site ID:	07016101
Location ID:	
Location Descr:	BRUNSWICK METALS

ANALYTE	PARAMETER CODE	NOTE	EPA METHOD	RESULT	UNITS	QUALIFIER	RL	ANALYST	ANALYSIS DATE	MCL or QC Range
QC Batch 57463										
Suspended Solids	00530		EPA 160.2	1.7	mg/L		1.0	RH	5/28/03	
Water Quality Metals by ICPMS QC Batch 57487										
Chromium 52	01034		EPA 200.8	Not Detected	ug/L		5	PT	5/29/03	
Nickel 60	01067		EPA 200.8	Not Detected	ug/L		10	PT	5/29/03	
Copper 65	01042		EPA 200.8	Not Detected	ug/L		5	PT	5/29/03	
Zinc 66	01092		EPA 200.8	Not Detected	ug/L		10	PT	5/29/03	
Arsenic 75	01002		EPA 200.8	Not Detected	ug/L		5	PT	5/29/03	
Selenium 82	01147		EPA 200.8	Not Detected	ug/L		5	PT	5/29/03	
Molybdenum 98	01062		EPA 200.8	Not Detected	ug/L		5	PT	5/29/03	
Silver 107	01077		EPA 200.8	Not Detected	ug/L		5	PT	5/29/03	
Cadmium 111	01027		EPA 200.8	Not Detected	ug/L		0.7	PT	5/29/03	
Tin 118	01102		EPA 200.8	Not Detected	ug/L		30	PT	5/29/03	
Antimony 121	01097		EPA 200.8	Not Detected	ug/L		5	PT	5/29/03	
Barium 137	01007		EPA 200.8	37	ug/L		2	PT	5/29/03	
Thallium 205	01059		EPA 200.8	Not Detected	ug/L		1	PT	5/29/03	
Lead 207	01051		EPA 200.8	Not Detected	ug/L		1	PT	5/29/03	
ICP Metals QC Batch 57457										
Aluminum	01105		EPA 200.7	400	ug/L		60	LA	5/28/03	
Beryllium	01012		EPA 200.7	Not Detected	ug/L		10	LA	5/28/03	
Calcium	00916		EPA 200.7	4900	ug/L		1000	LA	5/28/03	
Cobalt	01037		EPA 200.7	Not Detected	ug/L		10	LA	5/28/03	
Iron	01045		EPA 200.7	2300	ug/L		20	LA	5/28/03	
Potassium	00937		EPA 200.7	Not Detected	ug/L		5000	LA	5/28/03	

ug/L: micrograms/liter
mg/L: milligrams/liter
mg/kg: milligrams/kilogram
ug/kg: micrograms/kilogram
ug/g: micrograms/gram
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Organics:	Danny Reed	404-206-5252
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Microbiology:	Viola Reynolds	404-206-5210

ANALYTE	PARAMETER CODE	NOTE	EPA METHOD	RESULT	QUALIFIER UNITS	RL	ANALYST	ANALYSIS DATE	MCL or QC Range
Magnesium	00927		EPA 200.7	2600	ug/L	1000	LA	5/28/03	
Manganese	01055		EPA 200.7	50	ug/L	10	LA	5/28/03	
Sodium	00929		EPA 200.7	5300	ug/L	1000	LA	5/28/03	
Titanium	01152		EPA 200.7	Not Detected	ug/L	10	LA	5/28/03	
Vanadium	01087		EPA 200.7	Not Detected	ug/L	10	LA	5/28/03	
QC Batch 57479									
Mercury	71900		EPA 245.1	Not Detected	ug/L	0.2	PB	5/28/03	2.0

ug/L: micrograms/liter
mg/L: milligrams/liter
mg/kg: milligrams/kilogram
ug/kg: micrograms/kilogram
ug/g: micrograms/gram
ppm: parts per million
ppb: parts per billion
org/L: organisms/liter

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Organics:	Danny Reed	404-206-5252
GC Mass Spec:	Steve Bryan	404-206-5260
Microbiology:	Viola Reynolds	404-206-5210

GA EPD Station I	Station Name					
RV_07_2973	Seventeen Mile River at SR 158 near Douglas					
	Date	PH pH units	TEMP Deg C	TEMP_AIR Deg C	DO mg/l	FECAL #/100 ml
	2003-01-21 13:05:00.0					
	2003-02-03 13:49:00.0					20.0
	2003-02-10 15:50:00.0					50.0
	2003-02-17 14:39:00.0					270.0
	2003-02-24 11:41:00.0					20.0
	2003-03-10 13:32:00.0					
	2003-03-19 13:50:00.0	4.77	18.82	27.5	6.1	
	2003-04-08 13:46:00.0					
	2003-05-01 11:00:00.0					130.0
	2003-05-08 13:16:00.0					210.0
	2003-05-14 12:13:00.0					20.0
	2003-05-19 12:46:00.0					1700.0
	2003-05-21 13:03:00.0	5.72	21.41		5.88	
	2003-05-29 12:31:00.0					80.0
	2003-06-09 15:37:00.0					
	2003-07-17 13:00:00.0	5.9	25.11	37.0	4.32	
	2003-08-05 12:09:00.0	5.29	23.77	30.0	7.26	1300.0
	2003-08-12 13:57:00.0	5.7	24.67	32.0	4.89	235.0
	2003-08-18 12:28:00.0	6.24	25.23	33.0	4.93	20.0
	2003-08-26 13:15:00.0					40.0
	2003-09-04 13:47:00.0	6.25	25.78	35.0	2.97	
	2003-10-09 13:13:00.0	6.84	20.64	25.0	4.98	
	2003-11-03 14:45:00.0					80.0
	2003-11-03 15:45:00.0	6.14	18.65	30.0	6.5	
	2003-11-05 13:46:00.0	6.06	21.4	33.0	4.64	20.0
	2003-11-12 15:10:00.0	6.02	17.42	32.0	6.27	20.0
	2003-11-18 13:49:00.0					40.0
	2003-12-11 13:05:00.0					
	2003-12-11 15:05:00.0	6.55	9.1	21.0	8.45	
	Source: GA EPD					

GA EPD Station No.	Station Name				
RV_07_2976	Seventeen Mile River - Georgia Highway 64 near Pearson, GA				
	Date	PH pH units	TEMP Deg C	TEMP_AIR Deg C	DO mg/l
	1991-07-31 08:55:00.0	6.2	24.5	26.0	6.3
	1991-09-18 08:45:00.0	6.31	24.0	28.0	2.9
	1991-11-14 09:45:00.0	6.76	8.0	14.0	4.2
	1992-01-22 13:15:00.0	6.08	8.0	17.0	6.1
	1992-03-11 11:20:00.0	6.08	13.0	9.0	5.9
	1992-05-27 10:25:00.0	6.34	23.5	28.0	2.8
	1992-07-15 10:40:00.0	6.49	25.5	30.0	2.4
	1992-09-16 10:00:00.0	6.07	23.0	27.5	4.6
	1992-11-05 12:00:00.0	6.42	20.0	21.5	3.4
	1993-01-20 10:20:00.0	6.09	11.0	10.0	7.8
	1993-03-17 10:15:00.0		10.0	15.0	9.1
	1993-05-12 09:05:00.0	6.41	19.0	23.0	4.1
	1993-07-15 09:45:00.0	7.08	27.0	36.0	3.6
	1993-09-15 09:40:00.0	6.61	25.0	29.5	3.0
	1993-11-04 09:00:00.0	6.7	13.0	19.5	
	1994-01-12 11:00:00.0	6.52	10.0	18.5	7.9
	1998-02-12 11:50:00.0	6.4	11.5	18.5	8.1
	1998-02-17 10:40:00.0	6.4	14.7	22.0	7.2
	1998-02-25 10:05:00.0	6.4	12.5	18.0	8.8
	1998-03-12 12:10:00.0	6.1	11.1	7.0	8.0
	1998-03-31 10:20:00.0	6.5	21.0	24.0	6.6
	1998-04-09 10:30:00.0	6.4	19.0	25.0	5.0
	1998-04-16 09:20:00.0	6.4	17.8	25.0	5.9
	1998-04-23 10:10:00.0	6.5	16.3	21.0	6.0
	1998-05-07 09:20:00.0	6.4	20.7	25.0	5.2
	1998-06-03 10:00:00.0	6.7	25.8	32.0	3.3
	1998-08-06 10:50:00.0	6.2	23.9	31.0	3.8
	1998-08-11 08:20:00.0	6.2	24.5	27.5	6.7
	1998-09-01 09:50:00.0	6.7	25.5	32.5	2.4
	1998-09-03 11:25:00.0	6.7	24.0	25.0	3.2
	1998-10-07 09:50:00.0	6.2	24.5	28.5	5.2
	1998-11-05 11:05:00.0	6.5	16.0	14.5	4.9
	1998-11-12 10:35:00.0	6.6	16.5	17.0	4.7
	1998-11-18 10:30:00.0	6.6	17.5	20.5	4.2
	1998-12-03 10:10:00.0	6.7	15.5	17.0	5.1
	2001-01-02 10:38:00.0				
	2001-01-02 14:00:00.0	6.5	3.5	12.0	
	2001-02-12 14:28:00.0	7.07	12.79	17.0	
	2001-02-28 12:30:00.0				
	2001-03-19 12:02:00.0	5.54	13.81	19.0	7.61
	2001-03-21 13:17:00.0				
	2001-03-26 12:32:00.0				
	2001-03-28 11:24:00.0				
	2001-04-11 11:45:00.0	6.11	21.39	35.0	4.53
	2001-05-03 14:00:00.0	6.13	17.56	32.0	4.51
	2001-05-03 15:00:00.0				
	2001-05-15 12:00:00.0				
	2001-05-23 11:55:00.0				
	2001-05-30 13:27:00.0				

GA EPD Station No.	Station Name				
RV_07_2976	Seventeen Mile River - Georgia Highway 64 near Pearson, GA				
	Date	PH pH units	TEMP Deg C	TEMP_AIR Deg C	DO mg/l
	2001-06-20 13:00:00.0	6.41	24.48	34.0	4.81
	2001-06-20 14:00:00.0				
	2001-07-18 12:30:00.0	6.06	23.85	38.0	2.13
	2001-07-18 13:30:00.0				
	2001-08-02 12:39:00.0	6.35	24.98	33.0	4.44
	2001-08-02 13:39:00.0				
	2001-08-30 10:23:00.0	6.52	24.55	37.0	1.39
	2001-08-30 11:23:00.0				
	2001-09-10 14:25:00.0	6.36	25.17	35.0	3.72
	2001-09-10 15:25:00.0				
	2001-09-19 14:21:00.0	6.22	22.82	37.0	4.33
	2001-09-19 15:16:00.0				
	2001-09-24 12:43:00.0	6.49	23.44	33.0	4.78
	2001-09-24 13:43:00.0				
	2001-10-04 11:36:00.0	6.78	17.44	32.0	4.96
	2001-10-04 12:36:00.0				
	2001-11-07 12:55:00.0	6.34	10.23	30.0	3.02
	2001-12-03 14:30:00.0	6.46	13.42	25.0	3.09
	2001-12-10 11:30:00.0	6.73	17.7	23.0	3.19
	2001-12-18 12:06:00.0	6.93	15.92	23.0	6.82
	2001-12-26 13:30:00.0	7.11	6.68	18.0	8.42
	2002-01-02 12:33:00.0				
	2002-01-10 12:37:00.0	7.07	7.53		8.8
	2002-02-04 12:37:00.0	6.91	12.12	25.0	5.95
	2002-02-27 13:19:00.0				
	2002-03-04 12:34:00.0				
	2002-03-12 11:49:00.0	6.36	15.92	29.0	6.39
	2002-03-18 12:59:00.0	6.49	23.16	34.0	5.93
	2002-04-09 13:14:00.0	6.54	19.63	32.0	5.0
	2002-05-06 12:46:00.0	6.5	21.95	37.0	0.57
	2002-06-03 12:15:00.0				
	2002-06-04 12:15:00.0	6.25	23.17	25.0	2.41
	2002-06-11 12:10:00.0	6.37	22.07	33.0	0.55
	2002-06-17 14:25:00.0	6.5	24.79	32.0	3.3
	2002-06-19 13:45:00.0	6.68	24.45	31.0	1.11
	2002-07-09 12:31:00.0	6.6	25.93	32.0	1.88
	2002-08-01 13:14:00.0	5.95	25.44	32.2	2.71
	2002-09-03 14:03:00.0				
	2002-09-03 14:10:00.0	6.63	24.85	36.1	3.57
	2002-09-10 13:23:00.0	6.48	22.75	34.4	5.11
	2002-09-18 13:41:00.0	6.16	25.25	35.5	5.82
	2002-09-24 11:50:00.0	6.38	23.88	26.7	2.94
	2002-10-10 11:35:00.0	6.44	22.73	27.0	2.27
	2002-11-05 13:58:00.0	6.4	16.72	28.0	5.22
	2002-12-05 13:11:00.0	6.2	8.52	12.0	7.84
	2002-12-10 13:17:00.0	6.26	8.66	13.0	7.89
	2002-12-16 12:59:00.0	6.11	7.6	23.0	9.4
	2002-12-18 14:08:00.0				
	2002-12-19 14:08:00.0	6.09	9.09	20.0	9.75

GA EPD Station No.	Station Name				
RV_07_2976	Seventeen Mile River - Georgia Highway 64 near Pearson, GA				
	Date	PH pH units	TEMP Deg C	TEMP_AIR Deg C	DO mg/l
	2003-01-21 12:33:00.0				
	2003-02-03 13:18:00.0				
	2003-02-10 15:07:00.0				
	2003-02-17 14:08:00.0				
	2003-02-24 11:09:00.0				
	2003-03-10 13:03:00.0				
	2003-03-19 14:30:00.0	5.01	18.73	31.0	5.98
	2003-04-08 11:49:00.0				
	2003-05-01 09:43:00.0				
	2003-05-08 12:36:00.0				
	2003-05-14 13:23:00.0				
	2003-05-19 13:15:00.0				
	2003-05-29 13:00:00.0				
	2003-06-09 16:05:00.0				
	2003-07-17 13:39:00.0	5.92	26.31	37.0	3.42
	2003-08-05 13:34:00.0	5.54	24.35	30.0	7.35
	2003-08-12 12:50:00.0	5.43	25.05	33.0	4.53
	2003-08-18 13:00:00.0	5.88	25.29	33.0	3.9
	2003-08-26 13:54:00.0				
	2003-09-04 14:19:00.0	6.17	26.61	33.0	3.25
	2003-10-09 13:48:00.0	6.56	20.89	25.0	3.92
	2003-11-03 15:27:00.0				
	2003-11-03 16:27:00.0	6.18	18.34	30.0	7.45
	2003-11-05 14:11:00.0	6.12	21.43	33.0	5.27
	2003-11-12 15:40:00.0	6.14	17.64	30.0	7.29
	2003-11-18 14:32:00.0				
	2003-12-11 15:41:00.0	6.17	9.65	21.0	8.62
	2004-01-06 14:04:00.0	7.12	13.85	20.0	8.1
	2004-01-13 13:42:00.0	7.27	6.86	21.0	11.54
	2004-01-20 12:17:00.0	7.11	7.67	21.0	10.0
	2004-02-04 12:36:00.0				
	2004-02-04 12:43:00.0			17.0	
	2004-03-11 11:30:00.0	6.25	10.92	23.0	9.91
	2004-04-13 13:07:00.0	6.58	19.16	28.0	3.31
	2004-04-19 11:36:00.0	6.46	13.76	34.0	4.27
	2004-04-21 13:00:00.0	6.4	14.28	35.0	1.26
	2004-04-28 13:00:00.0	6.35	16.44	32.0	1.28
	2008-01-29 11:30:00.0	6.55	7.6	16.0	9.92
	2008-02-13 11:50:00.0	6.6	14.33	15.0	5.71
	2008-03-18 11:10:00.0	6.13	16.37	22.0	6.19
	2008-03-24 11:15:00.0	6.21	14.3	12.0	6.76
	2008-03-31 10:45:00.0	6.88	14.87	13.0	4.67
	2008-04-07 10:30:00.0	6.51	19.11	21.0	3.76
	2008-05-14 10:45:00.0	6.48	18.18		1.1
	2008-05-21 11:00:00.0	6.59	22.57	29.0	3.42
	2008-06-04 10:30:00.0	6.4	25.17	31.0	1.73
	2008-06-11 11:15:00.0	6.3	25.29	32.0	1.6
	2008-07-23 11:15:00.0	6.26	25.97	29.0	2.4
	2008-08-25 09:30:00.0	6.43	24.21	28.0	1.82

GA EPD Station No.	Station Name				
RV_07_2976	Seventeen Mile River - Georgia Highway 64 near Pearson, GA				
	Date	PH pH units	TEMP Deg C	TEMP_AIR Deg C	DO mg/l
	2008-09-15 11:35:00.0	6.7	25.73	31.0	0.32
	2008-09-23 11:25:00.0	6.46	22.03	27.0	0.78
	2008-09-29 11:45:00.0	6.61	19.77	31.0	0.3
	2008-10-06 11:15:00.0	6.46	19.38	28.0	2.27
	2008-11-05 10:15:00.0	5.96	15.33	16.0	4.29
	2008-12-08 11:45:00.0	6.19	7.89	15.0	9.12
	2008-12-15 13:00:00.0	6.7	12.11	24.0	8.25
	2008-12-22 11:45:00.0	6.67	10.78	6.0	6.45
	2008-12-29 10:15:00.0	7.16	16.41	18.0	4.14
	2010-01-19 12:30:00.0	6.4	11.62	19.0	8.93
	2010-02-03 12:30:00.0	6.75	10.38	16.0	9.32
	2010-03-08 10:15:00.0	6.9	8.36	15.0	9.4
	2010-04-12 09:45:00.0			18.0	
	2010-05-25 09:00:00.0	6.14	22.03	26.0	2.66
	2010-06-15 09:30:00.0	6.19	26.11	34.0	1.32
	2010-07-19 08:45:00.0	6.13	25.3	29.0	3.16
	2010-07-19 09:15:00.0				
	2010-08-09 09:15:00.0	5.94	24.94	30.0	2.81

GA EPD Station No.	Station Name					
RV_07_2976	Seventeen Mile River - Georgia Highway 64 near Pearson, GA					
	Date	PH pH units	TEMP Deg C	TEMP_AIR Deg C	DO mg/l	FECAL #/100 ml
	1991-07-31 08:55:00.0	6.2	24.5	26.0	6.3	630.0
	1991-09-18 08:45:00.0	6.31	24.0	28.0	2.9	
	1991-11-14 09:45:00.0	6.76	8.0	14.0	4.2	490.0
	1992-01-22 13:15:00.0	6.08	8.0	17.0	6.1	
	1992-03-11 11:20:00.0	6.08	13.0	9.0	5.9	330.0
	1992-05-27 10:25:00.0	6.34	23.5	28.0	2.8	130.0
	1992-07-15 10:40:00.0	6.49	25.5	30.0	2.4	1300.0
	1992-09-16 10:00:00.0	6.07	23.0	27.5	4.6	170.0
	1992-11-05 12:00:00.0	6.42	20.0	21.5	3.4	1300.0
	1993-01-20 10:20:00.0	6.09	11.0	10.0	7.8	50.0
	1993-03-17 10:15:00.0		10.0	15.0	9.1	
	1993-05-12 09:05:00.0	6.41	19.0	23.0	4.1	1300.0
	1993-07-15 09:45:00.0	7.08	27.0	36.0	3.6	20.0
	1993-09-15 09:40:00.0	6.61	25.0	29.5	3.0	80.0
	1993-11-04 09:00:00.0	6.7	13.0	19.5		230.0
	1994-01-12 11:00:00.0	6.52	10.0	18.5	7.9	
	1998-02-12 11:50:00.0	6.4	11.5	18.5	8.1	50.0
	1998-02-17 10:40:00.0	6.4	14.7	22.0	7.2	490.0
	1998-02-25 10:05:00.0	6.4	12.5	18.0	8.8	80.0
	1998-03-12 12:10:00.0	6.1	11.1	7.0	8.0	210.0
	1998-03-31 10:20:00.0	6.5	21.0	24.0	6.6	
	1998-04-09 10:30:00.0	6.4	19.0	25.0	5.0	410.0
	1998-04-16 09:20:00.0	6.4	17.8	25.0	5.9	20.0
	1998-04-23 10:10:00.0	6.5	16.3	21.0	6.0	20.0
	1998-05-07 09:20:00.0	6.4	20.7	25.0	5.2	40.0
	1998-06-03 10:00:00.0	6.7	25.8	32.0	3.3	
	1998-08-06 10:50:00.0	6.2	23.9	31.0	3.8	170.0
	1998-08-11 08:20:00.0	6.2	24.5	27.5	6.7	130.0
	1998-09-01 09:50:00.0	6.7	25.5	32.5	2.4	170.0
	1998-09-03 11:25:00.0	6.7	24.0	25.0	3.2	790.0
	1998-10-07 09:50:00.0	6.2	24.5	28.5	5.2	
	1998-11-05 11:05:00.0	6.5	16.0	14.5	4.9	160.0
	1998-11-12 10:35:00.0	6.6	16.5	17.0	4.7	170.0
	1998-11-18 10:30:00.0	6.6	17.5	20.5	4.2	330.0
	1998-12-03 10:10:00.0	6.7	15.5	17.0	5.1	330.0
	2001-01-02 10:38:00.0					330.0
	2001-01-02 14:00:00.0	6.5	3.5	12.0		
	2001-02-12 14:28:00.0	7.07	12.79	17.0		230.0
	2001-02-28 12:30:00.0					80.0
	2001-03-19 12:02:00.0	5.54	13.81	19.0	7.61	230.0
	2001-03-21 13:17:00.0					330.0
	2001-03-26 12:32:00.0					70.0
	2001-03-28 11:24:00.0					80.0
	2001-04-11 11:45:00.0	6.11	21.39	35.0	4.53	20.0
	2001-05-03 14:00:00.0	6.13	17.56	32.0	4.51	
	2001-05-03 15:00:00.0					80.0
	2001-05-15 12:00:00.0					330.0
	2001-05-23 11:55:00.0					110.0
	2001-05-30 13:27:00.0					50.0
	2001-06-20 13:00:00.0	6.41	24.48	34.0	4.81	
	2001-06-20 14:00:00.0					140.0
	2001-07-18 12:30:00.0	6.06	23.85	38.0	2.13	
	2001-07-18 13:30:00.0					310.0
	2001-08-02 12:39:00.0	6.35	24.98	33.0	4.44	
	2001-08-02 13:39:00.0					
	2001-08-30 10:23:00.0	6.52	24.55	37.0	1.39	
	2001-08-30 11:23:00.0					

GA EPD Station No.	Station Name					
RV_07_2976	Seventeen Mile River - Georgia Highway 64 near Pearson, GA					
	Date	PH pH units	TEMP Deg C	TEMP_AIR Deg C	DO mg/l	FECAL #/100 ml
	2001-09-19 15:16:00.0					105.0
	2001-09-24 12:43:00.0	6.49	23.44	33.0	4.78	
	2001-09-24 13:43:00.0					140.0
	2001-10-04 11:36:00.0	6.78	17.44	32.0	4.96	
	2001-10-04 12:36:00.0					260.0
	2001-11-07 12:55:00.0	6.34	10.23	30.0	3.02	
	2001-12-03 14:30:00.0	6.46	13.42	25.0	3.09	130.0
	2001-12-10 11:30:00.0	6.73	17.7	23.0	3.19	130.0
	2001-12-18 12:06:00.0	6.93	15.92	23.0	6.82	270.0
	2001-12-26 13:30:00.0	7.11	6.68	18.0	8.42	
	2002-01-02 12:33:00.0					300.0
	2002-01-10 12:37:00.0	7.07	7.53		8.8	80.0
	2002-02-04 12:37:00.0	6.91	12.12	25.0	5.95	
	2002-02-27 13:19:00.0					
	2002-03-04 12:34:00.0					500.0
	2002-03-12 11:49:00.0	6.36	15.92	29.0	6.39	300.0
	2002-03-18 12:59:00.0	6.49	23.16	34.0	5.93	110.0
	2002-04-09 13:14:00.0	6.54	19.63	32.0	5.0	
	2002-05-06 12:46:00.0	6.5	21.95	37.0	0.57	
	2002-06-03 12:15:00.0					
	2002-06-04 12:15:00.0	6.25	23.17	25.0	2.41	170.0
	2002-06-11 12:10:00.0	6.37	22.07	33.0	0.55	500.0
	2002-06-17 14:25:00.0	6.5	24.79	32.0	3.3	20.0
	2002-06-19 13:45:00.0	6.68	24.45	31.0	1.11	230.0
	2002-07-09 12:31:00.0	6.6	25.93	32.0	1.88	
	2002-08-01 13:14:00.0	5.95	25.44	32.2	2.71	
	2002-09-03 14:03:00.0					
	2002-09-03 14:10:00.0	6.63	24.85	36.1	3.57	130.0
	2002-09-10 13:23:00.0	6.48	22.75	34.4	5.11	80.0
	2002-09-18 13:41:00.0	6.16	25.25	35.5	5.82	130.0
	2002-09-24 11:50:00.0	6.38	23.88	26.7	2.94	220.0
	2002-10-10 11:35:00.0	6.44	22.73	27.0	2.27	
	2002-11-05 13:58:00.0	6.4	16.72	28.0	5.22	
	2002-12-05 13:11:00.0	6.2	8.52	12.0	7.84	170.0
	2002-12-10 13:17:00.0	6.26	8.66	13.0	7.89	80.0
	2002-12-16 12:59:00.0	6.11	7.6	23.0	9.4	80.0
	2002-12-18 14:08:00.0					70.0
	2002-12-19 14:08:00.0	6.09	9.09	20.0	9.75	
	2003-01-21 12:33:00.0					
	2003-02-03 13:18:00.0					20.0
	2003-02-10 15:07:00.0					70.0
	2003-02-17 14:08:00.0					110.0
	2003-02-24 11:09:00.0					50.0
	2003-03-10 13:03:00.0					
	2003-03-19 14:30:00.0	5.01	18.73	31.0	5.98	
	2003-04-08 11:49:00.0					
	2003-05-01 09:43:00.0					170.0
	2003-05-08 12:36:00.0					50.0
	2003-05-14 13:23:00.0					70.0
	2003-05-19 13:15:00.0					70.0
	2003-05-29 13:00:00.0					80.0
	2003-06-09 16:05:00.0					
	2003-07-17 13:39:00.0	5.92	26.31	37.0	3.42	
	2003-08-05 13:34:00.0	5.54	24.35	30.0	7.35	130.0
	2003-08-12 12:50:00.0	5.43	25.05	33.0	4.53	20.0
	2003-08-18 13:00:00.0	5.88	25.29	33.0	3.9	20.0
	2003-08-26 13:54:00.0					40.0

GA EPD Station No.	Station Name					
RV_07_2976	Seventeen Mile River - Georgia Highway 64 near Pearson, GA					
	Date	PH pH units	TEMP Deg C	TEMP_AIR Deg C	DO mg/l	FECAL #/100 ml
	2003-11-03 16:27:00.0	6.18	18.34	30.0	7.45	
	2003-11-05 14:11:00.0	6.12	21.43	33.0	5.27	170.0
	2003-11-12 15:40:00.0	6.14	17.64	30.0	7.29	70.0
	2003-11-18 14:32:00.0					40.0
	2003-12-11 15:41:00.0	6.17	9.65	21.0	8.62	
	2004-01-06 14:04:00.0	7.12	13.85	20.0	8.1	20.0
	2004-01-13 13:42:00.0	7.27	6.86	21.0	11.54	20.0
	2004-01-20 12:17:00.0	7.11	7.67	21.0	10.0	60.0
	2004-02-04 12:36:00.0					20.0
	2004-02-04 12:43:00.0			17.0		
	2004-03-11 11:30:00.0	6.25	10.92	23.0	9.91	
	2004-04-13 13:07:00.0	6.58	19.16	28.0	3.31	90.0
	2004-04-19 11:36:00.0	6.46	13.76	34.0	4.27	20.0
	2004-04-21 13:00:00.0	6.4	14.28	35.0	1.26	130.0
	2004-04-28 13:00:00.0	6.35	16.44	32.0	1.28	20.0
	2008-01-29 11:30:00.0	6.55	7.6	16.0	9.92	
	2008-02-13 11:50:00.0	6.6	14.33	15.0	5.71	
	2008-03-18 11:10:00.0	6.13	16.37	22.0	6.19	70.0
	2008-03-24 11:15:00.0	6.21	14.3	12.0	6.76	50.0
	2008-03-31 10:45:00.0	6.88	14.87	13.0	4.67	80.0
	2008-04-07 10:30:00.0	6.51	19.11	21.0	3.76	310.0
	2008-05-14 10:45:00.0	6.48	18.18		1.1	330.0
	2008-05-21 11:00:00.0	6.59	22.57	29.0	3.42	110.0
	2008-06-04 10:30:00.0	6.4	25.17	31.0	1.73	330.0
	2008-06-11 11:15:00.0	6.3	25.29	32.0	1.6	130.0
	2008-07-23 11:15:00.0	6.26	25.97	29.0	2.4	
	2008-08-25 09:30:00.0	6.43	24.21	28.0	1.82	
	2008-09-15 11:35:00.0	6.7	25.73	31.0	0.32	1100.0
	2008-09-23 11:25:00.0	6.46	22.03	27.0	0.78	800.0
	2008-09-29 11:45:00.0	6.61	19.77	31.0	0.3	700.0
	2008-10-06 11:15:00.0	6.46	19.38	28.0	2.27	170.0
	2008-11-05 10:15:00.0	5.96	15.33	16.0	4.29	
	2008-12-08 11:45:00.0	6.19	7.89	15.0	9.12	70.0
	2008-12-15 13:00:00.0	6.7	12.11	24.0	8.25	220.0
	2008-12-22 11:45:00.0	6.67	10.78	6.0	6.45	300.0
	2008-12-29 10:15:00.0	7.16	16.41	18.0	4.14	130.0
	2010-01-19 12:30:00.0	6.4	11.62	19.0	8.93	
	2010-02-03 12:30:00.0	6.75	10.38	16.0	9.32	
	2010-03-08 10:15:00.0	6.9	8.36	15.0	9.4	
	2010-04-12 09:45:00.0			18.0		
	2010-05-25 09:00:00.0	6.14	22.03	26.0	2.66	
	2010-06-15 09:30:00.0	6.19	26.11	34.0	1.32	
	2010-07-19 08:45:00.0	6.13	25.3	29.0	3.16	
	2010-07-19 09:15:00.0					
	2010-08-09 09:15:00.0	5.94	24.94	30.0	2.81	
	Source: GA EPD					

Stream Monitoring Program Report Form For A Major Spill

Name of City/County: Douglas/Coffee

Spill Amount:_____ 720000gal

Date Spill Occurred: 8/23-8/24/17

Date Spill Reported toEPD: 8/24/2017

Spill Location:

Date of PublicNotice (PN): 8/24/2017

Name OF Receiving Stream Affected: _____ Seventeen Mile River

Upstream Sampling Location: West Green Hwy 17 mile bridge

Written Report Submitted to EPD: (Y/N) Y

Downstream Sampling Location: Coffee State Park

Copy of PN Submitted to EPD: (Y/N) Y

	Above					Below				
	Date	DO	Temp	pH	Fcoli	Date	DO	Temp	pH	Fcoli
Day 1	8/24/2017	0.32	89.6	6.6	≥2419.6	8/24/2017	4.35	93.3	5.68	34.5
Day 2	8/25/2017	0.46	78.8	6.67	≥2419.6	8/25/2017	1.09	76.1	6.24	43.5
Day3	8/26/2017	0.88	78.8	6.79	≥2419.6	8/26/2017	1.76	75.7	6.36	435.2
Day 4	8/27/2017	1.15	79.5	6.71	≥2419.6	8/27/2017	2.11	80.8	6.53	≥2419.6
Day 5	8/28/2017	4.17	80.6	6.53	≥2419.6	8/28/2017	3.3	80.8	6.32	387.3
Day 6	8/29/2017	1.74	76.1	6.53	1046.2	8/29/2017	1.01	75.2	5.97	41.7
Day7	8/30/2017	1.16	79.3	6.58	1413.6	8/30/2017	0.8	8.17	6.19	71.7
Week 1 Geometric Mean					1988					152
Week 2	9/6/2017	3.65	75.7	6.47	109.2	9/6/2017	5.19	77	6.4	186
Week 3	9/18/2017	6.35	78.4	7.35	816	9/18/2017	5.88	80	7.5	145
Week 4	9/25/2017	6.91	80.2	7.2	70	9/25/2017	5.2	80.2	7.1	102
Month 1 Geometric Mean (use all 10 data points)					973					149
Month 3										
Week 1	12/26/2017	7.26	52.7	7.28	187.2	12/26/2017	8.84	52.3	7.19	261.3
Week 2	1/2/2018	7.47	39.5	6.6	93.3	1/2/2018	11.03	37	7.3	143
Week3	1/9/2018	7.74	52.1	7.19	35.5	1/9/2018	9.01	52.3	7.31	110.8
Week 4	1/16/2018	8.41	60.9	7	142.1	1/16/2018	9.02	70.1	6.8	155.2
Month 3 Geometric Mean:					96.88					159.21
Month 12										
Week 1										
Week 2										
Week3										
Week 4										
Month 12 Geometric Mean										

* Submit Site Location Map

Bill Hawthorne
Phone: 912-262-7284
Fax Number: 912-262-3160
Email: bill.hawthorne@dnr.state.ga.us

authorized official _____ Date: _____

authorized official _____ Date: _____

authorized official _____ Date: _____

authorized official _____ Date: _____

Stream Monitoring Program Report Form For A Major Spill

Name of City/County: Douglas / Coffee

Spill Amount: 9,000 gal

Date Spill Occurred: 3/1/17

Date Spill Reported toEPD: 3/1/17

Spill Location: 231 W. Ward St.

Date of PublicNotice (PN): 3/3/17

Name OF Receiving Stream Affected: Unnamed Tributary of Seventeen Mile River

Upstream Sampling Location: Ashley St. / corner of Daughtrey

Written Report Submitted to EPD: (Y/N)

Downstream Sampling Location: 231 W. Ward

Copy of PN Submitted to EPD: (Y/N)

	Above					Below				
	Date	DO	Temp	pH	Fcoli	Date	DO	Temp	pH	Fcoli
Day 1	3/13/17	5.10	58.6°F	7.12	72419	3/13/17	7.69	59°F	7.30	1733
Day 2	3/14/17	4.18	56.5°F	7.23	866	3/14/17	7.14	55.9°F	7.12	1203
Day3	3/15/17	4.89	59°F	7.01	1046	3/15/17	7.11	58.1°F	7.14	770
Day 4	3/16/17	4.70	58.3°F	7.04	72419	3/16/17	7.61	57.7°F	7.15	72419
Day 5	3/17/17	5.77	60.6°F	7.11	72419	3/17/17	5.89	60.2°F	7.19	72419
Day 6	3/18/17	5.99	64.3°F	7.31	72419	3/18/17	6.51	63.9°F	7.06	72419
Day7	3/19/17	6.19	62.4°F	7.22	72419	3/19/17	5.71	61.3°F	7.09	72419
Week 1 Geometric Mean					1853					1772
Week 2	3/22/17	7.77	66.7°F	6.93	72419.6	3/22/17	7.95	66.2°F	7.17	1732.9
Week 3	3/26/17	4.96	67.2°F	7.28	172.5	3/26/17	4.95	64.5°F	7.27	290.9
Week 4	4/2/17	2.71	68.7°F	7.18	261.3	4/2/17	2.63	68.1°F	7.14	461.1
Month 1 Geometric Mean (use all 10 data points)					1234					647
Month 3										
Week 1										
Week 2										
Week3										
Week 4										
Month 3 Geometric Mean:										
Month 12										
Week 1										
Week 2										
Week3										
Week 4										
Month 12 Geometric Mean										

* Submit Site Location Map

Bill Hawthorne
Phone: 912-262-7284
Fax Number: 912-262-3160
Email: bill.hawthorne@dnr.state.ga.us

Ward Spill

Stream Monitoring Program Report Form For A Major Spill

Name of City/County: Douglas/Coffee

Spill Amount:_____ 720000gal

Date Spill Occurred: 8/23-8/24/17

Date Spill Reported toEPD: 8/24/2017

Spill Location:

Date of PublicNotice (PN): 8/24/2017

Name OF Receiving Stream Affected: _____ Seventeen Mile River

Upstream Sampling Location: West Green Hwy 17 mile bridge

Written Report Submitted to EPD: (Y/N) Y

Downstream Sampling Location: Coffee State Park

Copy of PN Submitted to EPD: (Y/N) Y

	Above					Below				
	Date	DO	Temp	pH	Fcoli	Date	DO	Temp	pH	Fcoli
Day 1	8/24/2017	0.32	89.6	6.6	≥2419.6	8/24/2017	4.35	93.3	5.68	34.5
Day 2	8/25/2017	0.46	78.8	6.67	≥2419.6	8/25/2017	1.09	76.1	6.24	43.5
Day3	8/26/2017	0.88	78.8	6.79	≥2419.6	8/26/2017	1.76	75.7	6.36	435.2
Day 4	8/27/2017	1.15	79.5	6.71	≥2419.6	8/27/2017	2.11	80.8	6.53	≥2419.6
Day 5	8/28/2017	4.17	80.6	6.53	≥2419.6	8/28/2017	3.3	80.8	6.32	387.3
Day 6	8/29/2017	1.74	76.1	6.53	1046.2	8/29/2017	1.01	75.2	5.97	41.7
Day7	8/30/2017	1.16	79.3	6.58	1413.6	8/30/2017	0.8	8.17	6.19	71.7
Week 1 Geometric Mean					1988					152
Week 2	9/6/2017	3.65	75.7	6.47	109.2	9/6/2017	5.19	77	6.4	186
Week 3	9/18/2017	6.35	78.4	7.35	816	9/18/2017	5.88	80	7.5	145
Week 4	9/25/2017	6.91	80.2	7.2	70	9/25/2017	5.2	80.2	7.1	102
Month 1 Geometric Mean (use all 10 data points)					973					149
Month 3										
Week 1	12/26/2017	7.26	52.7	7.28	187.2	12/26/2017	8.84	52.3	7.19	261.3
Week 2	1/2/2018	7.47	39.5	6.6	93.3	1/2/2018	11.03	37	7.3	143
Week3	1/9/2018	7.74	52.1	7.19	35.5	1/9/2018	9.01	52.3	7.31	110.8
Week 4	1/16/2018	8.41	60.9	7	142.1	1/16/2018	9.02	70.1	6.8	155.2
Month 3 Geometric Mean:					96.88					159.21
Month 12										
Week 1										
Week 2										
Week3										
Week 4										
Month 12 Geometric Mean										

* Submit Site Location Map

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authorized official _____ Date: _____

authorized official _____ Date: _____

authorized official _____ Date: _____

authorized official _____ Date: _____

Site	Monitoring Site Description	Jun-17						Jul-17					
		E.coli cfu/100 ml	Fecal Coliform cfu/100 ml	Dissolved Oxygen	Dissolved Oxygen Saturation	pH	Conductivity	E.coli cfu/100 ml	Fecal Coliform cfu/100 ml	Dissolved Oxygen	Dissolved Oxygen Saturation	pH	Conductivity
1	Seventeen Mile River at Hwy 135	300.00	500.00	5.00	60.52	6.0	100.00	400.00	666.67	3.80	52.63	6.0	100.00
2	Seventeen Mile River at Hwy. 32	300.00	500.00	4.00	49.45	6.0	90.00	300.00	500.00	5.50	76.21	6.5	90.00
3	Twentynine Mile River at Raccoon Bridge Rd.	100.00	166.67	1.50			140.00	800.00	1333.33	3.80	50.80	6.0	140.00
4	Seventeen Mile River at Hwy 64	33.30	55.50	5.00	57.71	6.0	90.00	66.00	110.00	5.00	64.35	6.0	160.00
5	Seventeen Mile River at Taylor Church Rd	366.00	610.00	4.00			90.00	166.00	276.67	5.00			80.00
6	Otter Creek at Sand Hill Church Road	1133.00	1888.33	2.50	30.59	6.0	100.00	33.00	55.00	3.80	50.69	6.0	90.00
	Rainfall - previous 24 hours (inches)	0						0					
	Monitoring Site Description	**Aug-17**						**Oct-17**					
		E.coli cfu/100 ml	Fecal Coliform cfu/100 ml	Dissolved Oxygen	Dissolved Oxygen Saturation	pH	Conductivity	E.coli cfu/100 ml	Fecal Coliform cfu/100 ml	Dissolved Oxygen	Dissolved Oxygen Saturation	pH	Conductivity
1	Seventeen Mile River at Hwy 135	400	666.67	4.2	54.25	6.0	120.00	100.00	166.67	3.20	37.31	6.5	90.00
2	Seventeen Mile River at Hwy. 32	160	266.67	4			80.00	333.63	556.05	2.60		6.5	90.00
3	Twentynine Mile River at Raccoon Bridge Rd.	100	166.67	1.5	17.55	6.0	140.00	300.00	500.00	1.80	20.24	5.5	130.00
4	Seventeen Mile River at Hwy 64	33	55.00	3.4	43.59	6.4	200.00	66.66	111.10	1.40		6.5	150.00
5	Seventeen Mile River at Taylor Church Rd	33	55.00	3			80.00	100.00	166.67	5.00		5.5	50.00
6	Otter Creekr at Sand Hill Church Road	233.00	388.33	3.5	48.50	6.5	120.00	33.33	55.55	2.60		6.5	120.00
	Rainfall - previous 24 hours (inches)	0.00						0.00					
			exceeds seasonal fecal coliform standard (200 May - Oct))										

Georgia FY 2017 EQIP Policy

This Policy is based on the Final Rule (IFR) for EQIP, published 12/12/14 in Vol. 79 No. 239 of the Federal Register, 7 CFR Part 1466.

Planned conservation practices must be maintained for the lifespan of the practice, as indicated on the NRCS-CPA-1155 or -1156. **All practices must also meet the minimum criteria in the Conservation Practice Standard (see the Georgia eFOTG)** and the criteria listed below. Extents above the minimum necessary to meet practice criteria are not eligible for payment. Note: Payment for some practices is only authorized when used in conjunction with another practice, as detailed in the Conservation Plan of Operation (CPO), with or without payment. The applicant is responsible for the installation, use, and maintenance of all components required in the conservation management system.

Management Practices - Management practice payments are only available on acres where the practice option has not been previously applied &/or utilized, and where there will be a higher level of management required for the requested practice option. Management payments are not authorized if the conservation practice option has previously been implemented on the acres in the application, with or without financial assistance. A management practice payment is only authorized once per acre within the length of the contract period for that conservation practice. Some management practices, where noted in the practice footnotes, are limited to no more than three separate management practices combined per acre.

Structural Practices - Structural practices include conservation practices that are either structural or vegetative, and have a multi-year lifespan. Structural practices involve the establishment, construction, or installation of site-specific measures. Payments are established as a one-time payment. The landowner must be a signatory to a contract which has EQIP funds used for any structural practice. Extents above the minimum necessary to meet practice criteria are not eligible for EQIP payment. Note: Payment for some practices is only authorized when used in conjunction with another practice, as detailed in the Conservation Plan of Operation (CPO), with or without payment.

Conservation Activity Plans (CAP) - Conservation Activity Plans are conservation plans developed for producers to assist in identifying conservation practices needed to address a specific natural resource need. CAPs are completed by NRCS certified Technical Service Providers (TSP). The list of NRCS certified TSPs is available on the NRCS TSP webpage: *www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp*

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
472	**Access Control**						
	Bat Cave Exclusion	SqFt	$10.80		$12.96		10 Years
Excluding people from an area in order to address identified resource concerns. This is for facilitating exclusion of people to protect or enhance natural resource values. Control will be by a gate and support posts.							
Applicable to Wildlife Landuse Only. Only allowed on caves actively utilized as bat hibernacula that are in need of access control. **Must receive prior approval from the NRCS State Biologist** to implement this practice. Must be planned as a supporting practice in conjunction with 643 Restoration and Management of Rare and Declining Habitats.							
309	**Agrichemical Handling Facility**						
	Open building, locked chemical storage room, concrete slab floor 1/	SqFt	$13.14		$15.77		
	Enclosed building, locked chemical storage room, concrete slab floor 2/	SqFt	$20.79		$24.95		15 Years
1/ Includes following components of an open, post frame agrichemical handling facility: wash down station, locked chemical storage area, curbed reinforced concrete pad with collection sump area, and roof structure. Planner may add the following (if needed): critical area planting, mulch, HUA for entrance pads, and roof runoff. **Building must be designed and installation certified by registered Georgia PE or Area Engineer.**							
2/ Includes following components of an enclosed, roofed agrichemical handling facility: wash down station, locked chemical storage area, curbed reinforced concrete pad with collection sump area, a flexible membrane beneath concrete pad, and roof structure. Planner may add the following (if needed): critical area planting, mulch, HUA for entrance pads, and roof runoff. **Building must be designed and installation certified by registered Georgia PE or Area Engineer.**							
316	**Animal Mortality Facility**						
	Static pile, Wood Bin(s) 1/	SqFt	$6.76		$8.12		
	Composting - Small Animals 2/	LB/Day	$13.72		$16.47		
	Composting - Large Animals 3/	LB/Day	$73.34		$88.00		15 Years
If applicant has a functioning composter, incinerator, or rotary drum at the farm, they are eligible for a new composter, incinerator, or rotary drum only if the capacity of the existing animal mortality facility is not sufficient to handle the volume of mortality at the farm (for example: size of operation has increased since existing animal mortality facility was purchased or constructed). **NRCS approved Comprehensive Nutrient Management Plan required.**							
1/ Composters for animal mortality must use this scenario. Cost covers concrete floor , wooden walls, and any required excavation. Must add roofs and covers, concrete HUA access pad and critical area planting and mulch (if needed). Covers all types of composters (side shed, stand alone, and inside stackhouse). Area for payment is the area of concrete pad from post to post.							
2/ Rotary drums and incinerators - Poultry. Rotary cost include rotary drum, concrete pad and concrete entrance pad. Minimum width of the pad under the composter is 10 feet, and minimum length of pad will be the length of the machine plus 4 feet on each end. Incinerator must be a Type IV. Use the calculated total pounds/day from the Cost Estimator under the "Rotary Drum & Incinerators" tab. The value for pounds/day for this item is highlighted in yellow.							
3/ Rotary drums and incinerators - Swine. See note 2.							
396	**Aquatic Organism Passage**						
	Concrete Dam Removal	CuYd	$105.01		$126.01		
	Earthen Dam Removal	CuYd	$45.57		$54.69		
	Blockage Removal	CuYd	$73.31		$87.97		
	Nature-Like Fishway	Acre	$70,948.49		$85,138.19		
	CMP Culvert 1/	Each	$21,314.39		$25,577.27		
	Bottomless Culvert 1/	Each	$31,189.17		$37,427.01		
	Concrete Box Culvert 1/	Each	$37,920.58		$45,504.70		
	Concrete Ladder	Ft	$9,298.13		$11,157.76		
	Low Water Crossing	CuYd	$468.22		$561.86		5 Year
Applicable to Wildlife Landuse Only. This practice shall only be used in instances where rare and declining aquatic species passage has been identified as a resource concern (does not include low water crossing). Must receive prior approval from the State Biologist and engineer to schedule these scenarios.							
Landowner must secure required CWA and other necessary permits							

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
1/ If used on perennial streams must meet ACOE regional conditions and may need to submit a ACOE PCN.							
314	**Brush Management**						
	Mechanical, Hand tools 5/	Acre	$37.62		$45.15		
	Mechanical Bush Hog 3/	Acre	$27.82		$33.38		
	Mechanical Roller Chopper 4/	Acre	$41.42		$49.71		
	Mechanical & Chemical, Small Shrubs, Medium Infestation 2/	Acre	$105.03		$126.04		
	Chemical - Ground Applied 1/	Acre	$38.56		$46.27		
	Chemical, Aerial Applied 6/	Acre	$55.39		$66.47		10 Years
Applicable to Wildlife Landuse Only. Method selected must have the least negative effect on desirable native vegetation							
1/ Brush management on grazed forest, or pasture thru the use of broadcast application of material using chemical(s) to reduce or remove undesirable deciduous species (brush) in uplands and other areas not in or directly adjacent to streams, ponds, or wetlands.							
2/ Removal of small woody vegetation infestations by the use of mechanical cutter, chopper or other light equipment followed by an application of low cost chemicals in low volume							
3/ Removal of brush by the use of mechanical cutter.							
4/ The removal of brush by the use of chopper.							
5/ The removal of brush by the use of hand tools on sentitive areas where mechanical equipment will cause damage to the ecological site.							
6/ The removal of brush by using aerial equipment.							
5/ **Applicable to Wildlife Landuse Only**. Use of mechanical hand treatments for sensitive habitats that could be damaged by broadcast applications or large machinery.							
672	**Building Envelope Improvement**						
	Building Envelope - Sealant 1/	Ft	$1.05	$ 10,000.00	$1.26	$ 10,000.00	
	Building Envelope - Greenhouse Screens 2/	SqFt	$1.55	$ 10,000.00	$1.87	$ 10,000.00	
	Greenhouse - Insulate Unglazed Walls 5/	SqFt	$0.23	$ 10,000.00	$0.28	$ 10,000.00	
	Tunnel Doors 3/	SqFt	$8.93	$ 30,000.00	$10.72	$ 30,000.00	
	Insulated Poultry House Door	SqFt	$7.81	$ 20,000.00	$9.37	$ 20,000.00	
	Attic Insulation 4/	SqFt	$0.20	$ 20,000.00	$0.24	$ 20,000.00	
	Building Envelope - Batt Wall Insulation 5/	SqFt	$1.71	$ 30,000.00	$2.05	$ 30,000.00	10 Year
Practice must be a recommended practice in a Type 2 energy audit meeting the requirements of ANSI/ASABE S 612, Completing An On Farm Energy Audit. The energy audit must have been completed within the last 4 years. **Applicant must have certified audit completed before contract ranking to be eligible. Area Engineer will review all Farm Energy Improvement applications. Designs will be completed by third parties (Registered PE, TSP,etc) or Area Engineer; all designs must be submitted/approved by State Ag Eng or State Energy POC prior to implementation.** The licensed engineer/installer will provide certification that the work was completed in accordance with local codes. Landowner will provide material specifications which are used for these practices in order to certify that the material requirements in the energy audit are achieved. Energy Savings for each practice must be included in the energy audit and these energy savings must be entered into protracts during ranking.							
1/ Payment for linear foot of gap sealed by professional contractor							
2/ Mechanical screens for greenhouse to control heat loss and gain.							
3/ Based upon square foot of tunnel opening.							
4/ Based upon a minimum R-7 insulation in addition to existing attic/ceiling; **All materials other than blown fiberglass insulation must be approved by Area Engineer.**							
5/ Payment based on square foot of **existing** wall insulated, **can also include foundation wall or end walls**. Typically only a portion of the wall height is insulated (4 to 6'). The portion of the wall where exhaust fans are located is not insulated. Only approved method of insulation is metal exterior, 3.5" fiberglass batts (R-11), vapor barrier, & interior plywood or OSB sheathing.							
372	**Combustion System Improvement**						
	Electric Motor/Centrifugal Pump in-lieu of IC Engine, < 100 hp 1/	Each	$7,979.85		$9,575.82		
	Electric Motor in-lieu of IC Engine, less than 100 hp 2/	Each	$5,372.29		$6,446.74		
	Electric Motor in-lieu of IC Engine, greater than or equal to 100 hp 3/	HP	$70.61		$84.73		10 Years
Documentation requirements include; picture of the pumping unit being replaced that shows the pump model and capacity; total Dynamic Head calculations used by the dealer to determine the required size of the new pump and/or motor; picture of the new pumping unit showing model, serial number and capacity; new pump must be installed on concrete pad. **Must be submitted by Certified Irrigation Designer (CID), Georgia PE, or Area Engineer**. Documentation that engine has been replaced and evidence (i.e. picture) that an older engine was destroyed or salvaged. Payment will be made for the motor size required by the design or to next largest commercially available pump (ie 48 hp would be a 50 hp motor). . Must address a documented energy or an air quality resource concern; see eFOTG. All electrical work must meet local and state codes.							
1/ Surface water							
2/ Well							
3/ Well or Surface water							
317	**Composting Facility**						
	Concrete floor, outer wood wall no bins	SqFt	$5.32		$6.39		
	Composter, whole concrete floor, wood or concrete bins	SqFt	$5.85		$7.02		
	Composter, whole concrete floor, no bins, organic	SqFt	$3.75		$4.50		15 Years
Only for non animal mortality composting (manure, ag by products). Use 316 scenario for dead animal composting. Add roof (if needed), critical area planting, mulch and HUA for entrance pad. Pay based on square foot of concrete pad post to post area. NRCS approved Comprehensive Nutrient Management Plan required, if waste is generated on site.							
327	**Conservation Cover**						
	Native Species 5/	Acre	$137.29		$164.75		
	Pollinator Species 1/	Acre	$449.84		$539.81		

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
	Monarch Species Mix 4/	Acre	$668.26		$801.91		
	Introduced Species 2/	Acre	$124.65		$149.59		
	Orchard or Vineyard Alleyways 3/	Acre	$86.16		$103.40		3 Years
	1/ Pollinator permanent vegetation, including mix of native grasses, legume, forbs, established on any land needing permanent vegetative cover that provides habitat for pollinators. See Job sheet specification on planting mix. Limited to 1 year.						
	2/ This practice applies to land retiring from agricultural production and on other lands needing permanent protective cover. See Forage & Biomass Planting (512) if the purpose is to reduce erosion and sedimentation. The document is filed alphabetically in the FOTG. Limited to 1 year. Payment made upon planting.						
	3/ Pecan groves needing permanent protective cover in the alleyway to reduce ground and surface water pollution. Payment made after estimating the nitrogen contribution from the legume in the spring by using UGA's Nitrogen Avaliability Calculator, or current recommended laboratory analysis, in a nutrient budget for pecans. Also, note degree of weed control provided by the legume cover. Payment applies only to area planted to conservation cover. Limited to 1 year.						
	4/ MONARCH Species: Establish permanent vegetative cover for pollinator habitat according to state specifications. Typically used for high quality nectar and pollen species. Land covered with permanent monarch habitat including a mix of milkweed species, native grasses, legumes, and forbs. Plants sown for monarch habitat may also provide cover for beneficial insects and wildlife. Typically, used for conventional or organic land on small, intensive areas that are central to specialty crop production. Not typically used for large scale plantings.						
	5/This practice typically involves conversion from a clean tilled (conventional tilled) intensive cropping system to permanent native vegetation (scenario includes native grass).See native jobsheet for specific specification for planting.						
	Applicable to Wildlife Landuse Only. Only native plantings allowed as a supporting practice to Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Creation (658), Wetland Restoration (657), or Wetland Wildlife Habitat.						
328	**Conservation Crop Rotation**						
	Basic Rotation - Organic and Non-organic 1/	Acre	$4.20		$5.03		
	Specialty Crops -Organic and Non-organic 2/	Acre	$22.37		$26.85		1 Year
	1/ 2/ The rotation established adds higher residue crop(s) to the rotation in order to reduce erosion, improve soil quality or break pest cycles. Limited to two years. Payment after evaluating weed control through harvest when the purpose is to reduce weed pressure. Follow UGA directions if managing other pests. Payment after harvest when the pupose is to have a positive effect on soil characteristics.						
340	**Cover Crop**						
	Cover Crop - Basic and organic/non-organic	Acre	$61.37		$73.65		
	Cover Crop Multiple Species Organic and Non-Organic	Acre	$72.19		$86.63		1 Year
	Basic (1 cereal or legume) and multiple (2 or more species). Payment limited only to establishing a cover crop in a conservation tillage system. Payment made after documentation of cover crop biomass at termination. May not be harvested for seed. See standard jobsheet for specific data required for each purpose in this crop production system: control soil erosion, improve soil health, increase sol moisture, protect water quality/manage nitrogen and control weeds. Limited to two years.						
342	**Critical Area Planting**						
	Grass Hydroseeding 1/	Acre	$1,958.64		$2,350.36		
	Perennial Sod Establishment	SqFt	$0.23		$0.28		
	Vegetation-normal tillage (Organic and Non-Organic) 1/	Acre	$267.60		$321.12		
	Native and Introduced Vegetation - Moderate Grading 2/	Acre	$535.98		$643.17		10 Years
	Payment made after establishment of seeded vegetation or planting rooted vegetation. Limited to one year.						
	1/ Normal tillage includes cutipacking and light tillage						
	2/ Moderate grading includes cultipacking and bulldozing						
	Applicable to Wildlife Landuse Only. Native seeding -light tillage is the only approved payment scenario for the widlife fund pool.						
362	**Diversion**						
	Diversion	Ft	$1.68		$2.02		10 Years
	Includes grading and shaping. Need to add critical area planting and mulching (if needed)						
647	**Early Successional Habitat Development/ Management**						
	Mowing 1/ 3/	Acre	$27.89		$33.47		
	Disking 2/ 3/	Acre	$26.55		$31.86		1 Year
	1/ Provides early successional habitat by mowing in forested openings where existing vegetation needs to be maintained for early successional habitat. May also need 314 brush management, 666 forest stand improvement, 315 herbaceous weed control, 327 Conservation Cover, or 666 forest stand improvement.						
	2/ Provides early successional habitat by disking vegetation and creating bare ground. May also need 314 brush management, 666 forest stand improvement, 315 herbaceous weed control, 327 Conservation Cover, or 666 forest stand improvement.						
	3/ Applicable to Wildlife Landuse Only. Allowed when planned as a supporting practice to 643, 644,645,or 666. This practice will not disturb high quality, natural habitat.						
374	**Farmstead Energy Improvement**						
	Ventilation - Paddle Stir Fan	Each	$156.68		$188.01		
	Plate Cooler ≤ 499 gal/hr	Each	$4,165.27		$4,998.33		
	Plate Cooler 500 - 749 gal/hr	Each	$4,860.01		$5,832.01		
	Plate Cooler 750 - 999 gal/hr	Each	$5,592.60		$6,711.12		
	Plate Cooler 1,000 - 4,999 gal/hr	Each	$9,279.78		$11,135.73		
	Scroll Compressor	HP	$664.34		$797.20		

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
	Variable Speed Drive ≤ 50 HP	HP	$282.21		$338.66		
	Variable Speed Drive > 50 HP	HP	$99.47	$ 15,000.00	$119.36	$ 15,000.00	
	Automatic Controller System	Each	$1,108.55	$ 7,500.00	$1,330.26	$ 7,500.00	
	Motor Upgrade ≤ 2 HP	Each	$570.48		$684.58		
	Motor Upgrade > 2 and < 40 HP	Each	$1,063.67		$1,276.40		
	Motor Upgrade 40 and < 100 HP	Each	$4,948.73		$5,938.48		
	Motor Upgrade = or > 100 HP	Each	$6,297.52		$7,557.03		
	Vacuum Pump - Compatible w/Variable Speed	Each	$3,467.79		$4,161.34		
	Heating - Radiant Systems 1/	SqFt	$0.47	$ 40,000.00	$0.56	$ 40,000.00	
	Heating (Building) 2/	kBTU/Hr	$9.59		$11.51		
	Heating - Attic Heat Recovery vents	Each	$115.39	$ 10,000.00	$138.47	$ 10,000.00	
	Compressor Heat Recovery Unit	kBTU/Hr	$2,887.29		$3,464.75		
	Grain Dryer	BU/HR	$73.52	$ 50,000.00	$88.22	$ 50,000.00	10 Years

Practice must be a recommended practice in a Type 2 energy audit meeting the requirements of ANSI/ASABE S612, Completing An On Farm Energy Audit. The energy audit must have been completed within the last 4 years. **Applicant must have certified audit completed before contract ranking to be eligible. Area Engineer will review all Farm Energy Improvement applications. Designs will be completed by third parties (Registered PE, TSP, etc) or Area Engineer; all designs must be submitted/approved by State Ag Eng or State Energy POC prior to implementation**. **All electrical practices requiring electrical wiring will be completed by licensed electrician. The licensed installer will provide certification that the work was completed in accordance with local and state codes**. Landowner will provide material specifications which are used for these practices in order to certify that the material requirements in the energy audit are achieved. Energy Savings for each practice must be included in the energy audit and these energy savings must be entered into protracts during ranking.

1/ Replacement of pancake heaters or equivalent. Can use radiant tube heaters, radiant brooders heaters (aka round radiant heaters), or quad radiant heaters. Based upon square ft. of house.

2/ Natural gas, propane, or fuel oil unit heater or boiler; typically for swine and greenhouse production.

382	**Fence**						
	Barbed/Smooth Wire	Ft	$1.83		$2.20		
	Woven Wire	Ft	$2.44		$2.93		
	Permanent Electric	Ft	$0.97		$1.16		
	Temporary Electric-Polywire	Ft	$0.63		$0.75		20 Years

515.81E(1)
Boundary fence (property line fence) or perimeter fence is eligible—
--- On expired or expiring Conservation Reserve Program (CRP) land to establish a grazing operation; however, practices may not be implemented until the CRP contract has expired. See section 515.52C regarding eligibility for EQIP on CRP.
--- On land to protect, restore, or enhance an environmentally sensitive area, such as a riparian area or wetland.
--- On land to facilitate a change in production systems per the requirements of section **515.81D(4). (see below)**.
515.81D(4)
(4) Changes in Production System
(i) Practices that facilitate a beneficial cost-effective change in production system (e.g., change in agricultural land use) provided that all of the following criteria are met:
• The change in production system results in a higher level of conservation benefit, such as a lower intensity land use
• The producer will implement a management practice that supports the change in production system
• The practices are necessary to address a natural resource concern that is associated with the new production system
• Cost-effectiveness can be documented
(ii) Example 1.—Producer is transitioning highly erodible cropland to grazed pasture. The operation currently does not support or maintain livestock, but transitioning to grazed pasture will address erosion related resource concerns and result in a higher level of conservation benefit. Program support is allowed to implement fencing (CP 382), watering facility (CP 614), prescribed grazing (CP 528) and other facilitating practices that are necessary to establish the new production system and address the resource concern.
(iii) Example 2.—Producer is transitioning cropland to pastureland to address a resource concern resulting from overgrazing on part of the operating unit. At a minimum, the EQIP schedule of operations must include prescribed grazing (CP 528) to address resource concerns associated with livestock on the cropland being converted to grazing land. Other supporting or facilitating practices likely to be needed include forage and biomass planting (CP 512), watering facility (CP 614), fence (CP 382), or other practices identified that are necessary to address resource concerns associated with the conversion from cropland to grazing land. The conversion of cropland production system to a grazing production system reduces impact to the existing operating unit and also moderates erosion by lowering the intensity of use on the converted cropland field

Applicable to Wildlife Landuse Only. Allowed when planned as a supporting practice to Prescribed Grazing (528) in conjunction with Forest Stand Improvement (666), Restoration

386	**Field Border**						
	Field Boarder, Native Species 1/	Acre	$90.79		$108.95		
	Field Boarder, Pollinator 2/	Acre	$133.83		$160.60		
	Field boarder, Introduced Species 3/	Acre	$65.21		$78.25		10 Years

1/ Practice includes seedbed prep and planting of native species. The area of the field border is taken out of production.

2/ Practice includes seedbed prep and planting of pollinator friendly herbaceous species. The area of the field border is taken out of production. See pollinator job sheet for specific planting recommendations.

3/ Practice includes seedbed prep and planting of introduced species. The area of the field border is taken out of production.

Applicable to Wildlife Landuse Only. Allowed when planted around active cropland and the area is taken out of production . Native species must be utilized . Must request a State Biologist variance to use non-native species if no suitable native species are available.

393	**Filter Strip**						
	Filter Strip, Native species 1/	Acre	$120.98		$145.17		
	Filter Strip, Introduced species 2/	Acre	$128.33		$153.99		10 Years

Payment made after establishment. Includes seedbed preparation. Limit one year.

1/ Native herbaceous vegetation - Practice includes seedbed prep and planting.

2/ Introduced herbaceous vegetation. Practice includes seedbed prep and planting.

Applicable to Wildlife Landuse Only. Only the Filter Strip payment scenaraio approvded for use under the wildlife fund pool. This practice will not disturb high quality, natural habitat.

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
394	**Firebreak**						
	Constructed - Dozer 1/	Ft	$0.23		$0.28		
	Constructed - Light Equipment 2/	Ft	$0.09		$0.10		5 Years
Install firebreak as per required burn plan and according to the GFC GA Best Management Practices for Forestry Manual.							
1/ track mounted equipment							
2/ rubber tired equipment							
512	**Forage and Biomass Planting**						
	Seedbed Prep. Seed & Seeding-Native Per. Warm Season Grass 1/	Acre	$310.84		$373.01		
	Seedbed Prep. Seed & Seeding-Intro. Perennial Grasses. 2/	Acre	$216.17		$259.40		
	Seedbed Prep. Seed & Seeding-Intro. Perennial Grasses Organic 3/	Acre	$230.83		$277.00		
	Grass Establishment-Sprigging 4/	Acre	$256.34		$307.61		
	Overseeding Legumes 5/	Acre	$182.41		$218.90		
	Overseeding Legumes - Organic□	Acre	$178.81		$214.57		
	Remediation-Seed and Seeding--Introduced Perennial Grasses 6/	Acre	$86.34		$103.61		5 Years
1/ Establish adapted perennial native warm season grasses. Used for either conventional or no-till seeding of perennial native warm season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario assumes fertilizer, seed, equipment and labor for seed bed prep, tillage, seeding, and spreading.							
2/ Establish adapted introduced grasses. Used for either conventional or no-till seedings. This scenario assumes fertilizer, seed, equipment and labor for seed bed prep, tillage, seeding ,and spreading.							
3/ Establish adapted introduced perennial grasses using organic approved seed. Used for either conventional or no-till seeding. This practice is for organic production. This scenario assumes fertilizer, seed, equipment and labor for seed bed prep, tillage, seeding ,and spreading.							
4/ Sprigging new grasses with sprigging application. This scenario assumes fertilizer, sprigs, equipment and labor for seed bed prep, tillage, sprigging ,and spreading.							
5/Overseeding legumes in an existing pasture. This practice may be utilized for organic or regular production. This scenario assumes fertilizer, seed, equipment and labor for no-till seeding and amendment spreading.							
6/ Utilize when desirable perennial grass stands have thinned to less than 50% cover. Assess and document baseline condition using Pasture Condition Scoring							
666	**Forest Stand Improvement**						
	Pre-commercial Thinning - Hand tools 1/	Acre	$85.33		$102.39		
	Pre-Commercial Thinning-Mechanical 1/	Acre	$44.18		$53.01		
	Thinning for Wildlife and Forest Health at 50BA 2/ 3/	Acre	$27.25		$32.70		
	Thinning for Wildlife and Forest Health at 60BA 2/ 3/	Acre	$20.92		$25.11		
	Thinning for Wildlife and Forest Health at 80BA 2/ 3/	Acre	$13.88		$16.66		
	Thinning for Wildlife Health at 70 BA 3/	Acre	$18.93		$22.72		10 Years
1/ Adjusting the stocking of a young, non-merchantable stand of trees. The operation is supervised by a registered forester. Mechancial equipment can be utilized to treat pre-commercial forest stand.							
2/ Used to open the canopy of a stand to improve the wildlife habitat and tree health by mechancial equipment.							
3/4/5/6 Used to open the canopy of a stand to improve the wildlife habitat and tree health.							
3/ **Applicable to Wildlife Landuse Only**. This practice scenario is approved for use under the Wildlife fund pool. This practice will be implemented according to habitat needs identified by the GA Habitat Suitability Index model and comparisons with site appropriate Ecological Site Descriptions or other suitable reference conditions.Allowed as a supporting practice to Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644).							
655	**Forest Trails and Landings**						
	Water Bars 1/	Each	$90.21		$108.25		
	Trail Erosion Control w/o Vegetation 2/	Foot	$3.16		$3.79		5 Years
Dual engineering/forestry practice, consult with NRCS Forestor and Engineer for design criteria; reference PS560, Access Road for design criteria.							
1/ Refer to Job Sheet							
2/ Grading, shaping and installation of water deflectors to control sediment delivery to waterways; not to be used in conjunction with waters bar scenario.							
410	**Grade Stabilization Structure**						
	Check Dams 1/	Ton	$45.08		$54.10		
	Embankment, Pipe <12" 2/	CuYd	$4.25		$5.10		
	Embankment, Pipe >=12" & < 36" 2/	CuYd	$4.56		$5.48		
	Embankment, Pipe >= 36" 2/	CuYd	$7.85		$9.42		
	Weir Drop Structures 3/	SqFt	$64.22		$77.06		
	Rock Drop Structures 3/	SqFt	$49.25		$59.10		15 Years
1/ Excavation and riprap, does not include vegetation. Must add critical area planting and mulch.							
2/ Payment per cubic yard of embankment fill which includes fill, pipe system and outlet protection. Must add critical area planting and mulch.							
3/ Payment is based on weir length in feet times drop in "feet". The drop (feet) is defined as the structure inlet crest elevation minus the control outlet elevation. Consult with State Biologist and Assistant SCE for planning and design.							
Applicable to Wildlife Landuse Only. Allowed when the planned purpose is wildlife habitat management or natural stream restoration in conjunction with Timber Stand Improvement (666), Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644). This practice will not disturb high quality, natural habitat.							

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
412	**Grassed Waterway**						
	Base Waterway 1/	Acre	$2,661.84		$3,194.20		
	With Checks 2/	Acre	$1,960.41		$2,352.49		10 Years
1/ Grading Only. Must add critical area planting and mulch.							
2/ Includes grading only and rock check dams. Must add critical area planting and mulch.							
561	**Heavy Use Area Protection**						
	Concrete with sand or gravel foundation 1/	Sq Ft	$1.62		$1.95		
	Rock/Gravel on Geotextile 2/	Sq Ft	$1.15		$1.38		10 Years
1/ 4" thick fiber reinforced concrete pad							
2/ Includes 6" GAB, Geotextile, Grading and Shaping.							
Applicable to Wildlife Landuse Only. Can be scheduled as a supporting practice in conjunction with Prescribed Grazing 528 when needed to protect wildlife or natural communities.							
422	**Hedgerow Planting**						
	Pollinator Habitat 1/	Ft	$1.00		$1.19		
	Wildlife Machine Plant 2/	Ft	$0.41		$0.49		15 Years
1/ A stand with a minimum of nine wildflower species and one native warm season grass should be established. This will include at least three flowering species from each of the three bloom periods (spring, summer, and fall). The stand should include a minimum of one legume species and one native bunchgrass for a total of ten or more species (see pollinator establishment jobsheet). Trees should be planted 12 foot apart and shrubs should be planted 6 foot apart following hedgerow jobsheet specifications.							
2/ This scenario is for machine planting of woody species. A minimum of two species of native plants- 2 Trees and/or shrubs are typically plant at eight foot intervals (this will vary with species selection and density goals) and a mix of 2 native grasses.							
Applicable to Wildlife Landuse Only. Native species must be utilized . This practice will not disturb high quality, natural habitat.							
315	**Herbaceous Weed Control**						
	Mechanical 1/	Acre	$32.19		$38.63		
	Chemical-Broad Band 2/	Acre	$26.59		$31.91		
	Chemical, Ground 3/	Acre	$33.46		$40.16		
	Invasive Chemical and Mechanical 4/	Acre	$477.30		$572.75		
	Mechanical, Hand 5/	Acre	$44.65		$53.58		5 Years
1/ Removal of herbaceous weeds by the use of mower, brush hog, disc, or light equipment in order to reduce fuel loading and improve ecological site conditions. Weed has exceeded desired level based on ecological site potential.							
2/ Eradication of vegetation by use of weed treatment using ground equipment to apply chemicals in a broad strip avoiding the planting row, in order to eliminate noxious weeds, and improve ecological condition. Spray a 4-6 foot wide band across seedlings after the first growing season in the early spring after planting. Forest application only.							
3/Eradication of vegetation by treating weeds with herbicides using ground equipment to apply chemicals in order to eliminate noxious weeds, promote forage productivity, or wildlife and improve ecological conditions.							
4/ Utilize a forestry mulcher, hydro axe, brush cutter, etc. mechancial equipment in combination with chemical/herbicides to eliminate noxious weeds, promote forage productivity, wildlife and improve ecological condition.							
5/ Hand treatment of sensitive habitats that could be damaged by broadcast treatment or heavy machinery use or where treatment areas are small.							
5/ **Applicable to Wildlife Landuse Only**. Only allowed when heavy invasion is present and cannot be adequately treated by less expensive alternatives.							
Applicable to Wildlife Landuse Only. Method selected must have the least negative effect on desirable native vegetation							
325	**High Tunnel System**						
	High Tunnel	SqFt	$2.89	$ 7,000.00	$3.47	$ 7,000.00	4 Years
Costs are based on purchase of manufactured kit and landowner installing the structure. Structure must be installed to manufaturer's specifications. **NOT FOR GENERAL EQIP, ONLY FOR ORGANICAND HIGH TUNNEL INITIATIVES.**							
430	**Irrigation Pipeline**						
	PVC (Iron Pipe Size)	LB	$1.80		$2.16		20 Years
Includes pipe, labor and equipment for placement. Add critical area planting and mulching where needed. Use spreadsheet in section IV of EFOTG to convert length of pipe to pounds							
436	**Irrigation Reservoir**						
	Embankment Dam with On-Site Borrow 1/	CuYd	$3.53	$ 50,000.00	$4.24	$ 50,000.00	
	Embankment Reservoir ≤ 30 Acre-Feet 2/	CuYd	$2.79	$ 50,000.00	$3.35	$ 50,000.00	
	Plastic Tank 3/	Gal	$1.14		$1.37		15 Years
1/ Earthern embankment built across a natural depression. Cost based upon volume of compacted earth fill. Must add critical area planting and mulch. **NOT FOR GENERAL EQIP, ONLY FOR IRRIGATION PILOT PROGRAM.**							
2/ Excavated reservoir, generally rectangular in shape. Must add critical area planting and mulch. **NOT FOR GENERAL EQIP, ONLY FOR IRRIGATION PILOT PROGRAM**.							
3/ Includes installation and a concrete pad. Pay per gallon of storage in tank. Use standard tank closest in volume to design volume.							
441	**Irrigation System, Micro**						
	Microjet 1/	Acre	$2,077.46	$ 30,000.00	$2,492.96	$ 30,000.00	
	Surface Micro with Screen Filter	Acre	$1,109.00	$ 30,000.00	$1,330.80	$ 30,000.00	
	Surface Micro with Sand Media Filter	Acre	$1,220.36	$ 30,000.00	$1,464.43	$ 30,000.00	

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
	Microirrigation High Tunnel	SqFt	$0.16	$ 30,000.00	$0.19	$ 30,000.00	
	SDI (Subsurface Drip Irrigation) 2/	Acre	$1,466.91	$ 30,000.00	$1,760.30	$ 30,000.00	15 Years
Water supply and conveyance from source to field is not addressed within this practice. **An IWM plan must be provided to the landowner when contracting 441, but the IWM, PS 449, does not have to be included for payment in the EQIP contract. (High Tunnel is excluded). Producers may request an IWM Plan through the IWM CAP118. Must have a copy of system design completed and certified by a Certified Irrigation Designer (CID), Georgia PE, or Area Engineer. CID designs must be reviewed by NRCS engineers.Certification must be provided that system was installed in accordance with the certified design.** Certification can be provided by the installer, provided the landowner is not the installer, the CID or field office staff. **Irrigation conversion to micro irrigation system. Must be replacing existing non-microirrigation system.** Does not include conveyance pipe from source to field under contract. Includes components for system including filters, control valves, flow meter (if required) and PVC pipe for laterals and sublaterals. **Water quality testing (see PS and eFOTG) is required prior to design.**							
1/ Orchards/vineyards using above ground emitters or spray jets							
2/ Must have a GPS guidance system or markers placed for annual crops.							
449	**Irrigation Water Management**						
	Basic IWM 1/	Acre	$10.42		$12.50		
	Intermediate IWM 2/	Acre	$18.89		$22.66		
	Advanced IWM 3/	Acre	$24.56		$29.47		
	Soil Moisture Sensors 4/	Each	$69.51		$83.42		
	Soil Moisture Sensors with Data Recorder 5/	Each	$311.83		$374.19		
	Variable Rate IWM	**Acre**	$30.32		$36.38		1 year
Records must be provided as outlined in the Irrigation Water Management Plan prior to payment.							
1/ Low intensity irrigation water management system. Soil moisture is determined by feel or other similar methods; payment after receipt of 1 growing season of data (This practice is for 1-year only).							
2/ Medium intensity irrigation water management system. Soil moisture is determined by soil moisture sensors with manual data download. Records are kept by manual input of data into a computer program. Irrigation amounts determined by flow meters on system. Use in conjunction with Soil Moisture Sensors; payment after receipt of 1 growing season of data (This practice is for 1-year only).							
3/ High intensity irrigation water management system. Soil moisture determined by remote monitor soil moisture sensors. Automated logging of soil moisture data into computer system using telemetry or mobile phone data system. Data is monitored daily and adjustments made accordingly. Use in conjunction with Soil Moisture Sensors with data logger; payment after receipt of 1 growing season of data (This practice is for 1-year only).							
4/ Manually read soil moisture sensors for use in the intermediate IWM scenario. Payment is for each individual sensor; therefore, if customer installs a shallow sensor and a deep sensor, contract would be for 2 sensors.							
5/ Soil Moisture Sensors with automated data logging system for use in the advanced IWM scenario. Use one set per irrigation management unit.							
460	**Land Clearing**						
	Heavy Equipment	Acre	$1,326.01		$1,591.21		10 Years
For use with Irrigation Reservoir only. **NOT FOR GENERAL EQIP, ONLY FOR IRRIGATION PILOT PROGRAM.**							
670	**Lighting System Improvement**						
	Lighting - CFL 1/	Each	$14.08	$ 10,000.00	$16.89	$ 10,000.00	
	Lighting - LED 1/	Each	$18.06	$ 10,000.00	$21.67	$ 10,000.00	
	Lighting - Linear Fluorescent	Each	$264.15	$ 10,000.00	$316.98	$ 10,000.00	
	Lighting - Pulse-Start Metal Halide	Each	$20.00	$ 10,000.00	$23.99	$ 10,000.00	
	Automatic Controller System	Each	$202.60	$ 2,000.00	$243.11	$ 2,000.00	
	Poultry House Lighting 2/	SqFT	$0.04	$ 6,000.00	$0.05	$ 6,000.00	10 year
Practice must be a recommended practice in a Type 2 energy audit meeting the requirements of ANSI/ASABE S 612, Completing An On Farm Energy Audit. The energy audit must have been completed within the last 4 years. **Area Engineer will review all Farm Energy Improvement applications. Applicant must have certified audit completed before contract ranking to be eligible. Area Engineer will review all Farm Energy Improvement applications. Designs will be completed by third parties (Registered PE, TSP, etc) or Area Engineer; all designs must be submitted/approved by State Ag Eng or State Energy POC prior to implementation. All electrical practices requiring electrical wiring will be completed by licensed electrician. The licensed installer will provide certification that the work was completed in accordance with local codes.** Landowner will provide material specifications which are used for these practices in order to certify that the material requirements in the energy audit are achieved;and, self-certification that these measures were installed in the correct quantities. Energy Savings for each practice must be included in the energy audit and these energy savings must be entered into protracts during ranking. Lifespan should be considered when selecting item to cost share.							
1/ Lighting design requires additional lighting and wiring to implement.							
2/ Square footage is based upon the size of the poultry house; based upon the scenario of a one for one exchange of bulbs in the house; no wiring required.							
468	**Lined Waterway or Outlet**						
	Turf Reinforced Matting 1/	SqFt	$0.64		$0.76		
	Rock Lined - 12"or less 2/	SqFt	$2.88		$3.45		15 Years
1/ Payment is for SF of waterway. Includes grading and shaping of waterway and installation of a permanent erosion control mat (TRM). Must add critical area planting and mulching.							
2/ Payment is for SF of waterway. Includes grading and shaping of waterway and installation of rock ripap with geotextile beneath it. Must add critical area planting and mulching.							
516	**Livestock Pipeline**						
	PVC (Iron Pipe Size) Linear	Ft	$1.29		$1.55		20 Years
This practice is used only for livestock water supply pipelines. Cost covers pipe materials and installation. Use this cost for any pipe that meets the requirements of CPS 516. Use critical area planting and mulch where needed. Use in conjunction with CPS 614, Watering Facility and CPS 561, Heavy Use Area Protection							

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
Applicable to Wildlife Landuse Only. Must be planned in conjunction with Prescribed Grazing (528) when planned in conjunction with Timber Stand Improvement (666), Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644). This practice will not disturb high quality, natural habitat.							
576	**Livestock Shelter Structure**						
	Portable Shade Structure	SqFt	$2.99	$ 2,200.00	$3.59	$ 2,200.00	
	Prefabricated Portable Shade Structure	SqFt	$3.58	$ 2,600.00	$4.29	$ 2,600.00	10 Years
Applicable to Grazing Landuse Only. Grassland Conservationist must be contacted for design requirements. This practice must be used in conjunction with exclusion of animals from sensitive areas, when applicable.							
484	**Mulching**						
	Natural Material - Full Coverage 2/	Acre	$332.41		$398.89		
	Erosion Control Blanket 1/	SqFt	$0.14		$0.17		
	Synthetic Material 3/	Acre	$675.97		$811.17		1 Year
1/ Blanket is typically made of coconut coir, wood fiber, straw and is typically covered on both sides with polypropylene netting. Used to help control erosion and establish vegetative cover.							
2/ Mulch provides full coverage using natural materials and is typically used with critical area planting. Assumes 125 bales/acre (3 bales/1000 sq ft). Payment limit $2,000 per contract.							
3/ Installation of geotextile, biodegradable plastic, polyethylene plastic, or other state approved synthetic mulch to conserve soil moisture, moderate soil temperature, suppress weed growth and provide erosion control. Payment based on actual area covered by mulching material. Payment limit $2,000 per contract.							
Applicable to Wildlife Landuse Only. Allowed when planned in conjunction with Timber Stand Improvement (666), Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644) to reduce short-term soil erosion concerns.							
590	**Nutrient Management**						
	Basic NM System 1/	Acre	$2.28		$2.74		
	Basic NM system with manure injection or incorporated 2/	Acre	$15.86		$19.04		
	Basic NM system with manure and/or Compost 3/	Acre	$4.05		$4.85		
	Small Farm NM 4/	Acre	$115.91		$139.10		1 Year
The planned nutrient management (NM) system will meet the current 590 standard. Records demonstrating implementation of the 4 R's of the NM criteria will be required. Must also plant cover crop, Code 340, for crop land, but not hay and pasture land. Use the Georgia Phosphorous Index when the planned rates of phosphorous exceeds UGA recommendations. Payment made upon implementation of the NM system. Limit 2 years.							
1/ Basic system - Conventional or organic. There is no application of manure. Follow the results of a soil test to develop a nutrient management plan to apply fertilizer according to soil test and 590 Nutrient Management Standard.							
2/ Basic system with the application of manure. All nutrient sources (except micronutrients) incorporated with tillage at least 3-4 in. deep or injected at least 4-6 in. deep. Not applicable to conservation tillage systems. Applicable to other sytems where manure is applied to the soil surface. Also, applicable where manure is incorporated with tillage, but want to adopt injection. Conventional or organic. Follow the results of a soil test to develop a nutrient management plan to apply nutrients according to the Nutrient Management 590 Standard. Laboratory analysis of organic nutrient sources required.							
3/ Basic system with manure and/or compost. Also applies to systems relying totally on manure or compost. Conventional or organic. Follow the results of a soil test to apply nutrients according to the 590 Nutrient Management Standard. Laboratory analysis required for organic fertilizer sources.							
4/ Small farm system (10 acres or less). Conventional or organic. Follow the results of a soil test and laboratory analysis of organic fertilizer, if applied. Apply nutrients according to the 590 Nutrient Management Standard.							
521C	**Pond Sealing or Lining - Bentonite Sealant**						
	Bentonite Treatment - Covered	CuYd	$62.14		$74.57		15 Years
Payment for installation of a liner treated with bentonite and a protective compacted fill cover. Payment volume is the sum of the volume of the liner and the volume of the cover. For waste storage ponds and lagoons only.							
521D	**Pond Sealing or Lining - Compacted Clay Treatment**						
	Material Onsite 1/	CuYd	$10.04		$12.05		15 Years
	Material Hauled 2/	CuYd	$16.47		$19.77		
1/ Payment for installation of a compacted clay liner and protective cover using **on site** materials. Volume is sum of liner and cover volumes. For waste storage ponds and lagoons only.							
2/ Payment for installation of a compacted clay liner and protective cover using **imported** materials. Volume is sum of liner and cover volumes. For waste storage ponds and lagoons only.							
521B	**Pond Sealing or Lining - Soil Dispersant**						
	Soil Dispersant - Covered	CuYd	$3.67		$4.41		20 Years
Payment for installation of a liner treated with soil dispersant and a protective compacted fill cover. Payment volume is the sum of the volume of the liner and the volume of the cover. For waste storage ponds and lagoons only.							
338	**Prescribed Burning**						
	Prescribed Burn 1/	Acre	$20.66		$24.79		
	Prescribed Burn - High Risk 2/	Acre	$30.04		$36.05		1 Year

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
1/ Burn according to designed burn plan and NRCS Prescribed Burning (338) standard and specifications. Site prep burns are included. Constructed firebreak cost is not included in cost of burn.							
2/ Prescribed burns conducted when herbaceous vegetation (grasses and forbs) is actively growing during summer months of June through September. Burn according to designed burn paln and NRCS Prescribed Burning (338) standard and specifications. Constructed firebreaks cost is not included in cost of burn.							
Applicable to Wildlife Landuse Only. Allowed when planned in conjunction with Timber Stand Improvement (666), Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644) and in a manner that burns will be conducted within the natural variability of the ecological system being restored/managed. Where necessary, plan in conjunction with Firebreak (394). Burn according to designed burn plan and NRCS Prescribed Burning (338) standard and specifications and according to the GFC GA Best Management Practices for Forestry Manual. Site prep burns are included.							
528	**Prescribed Grazing**						
	Standard 1/	Acre	$11.88		$14.25		
	Intensive 2/	Acre	$24.87		$29.85		1 Year
1/ Design and implementation of a grazing system using a 5 to 10 day rotation. Monitoring & record keeping required (ex: photo points, pre and post grazing heights, and once annual Pasture Condition Scoring).							
2/ Design and implementation of a grazing system using a 4 day or less rotational cycle. Monitoring and record keeping required (ex: photo points, pre and post grazing heights, and once annual Pasture Condition Scoring) .							
Applicable to Wildlife Landuse Only. Allowed when planned for habitat restoration or management purposes in conjunction with Timber Stand Improvement (666), Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644).							
533	**Pumping Plant**						
	Electric-Powered Pump ≤ 5 Hp 1/	BHP	$661.78		$794.14		
	Electric-Powered Pump ≤ 5 HP with Pressure Tank 2/	BHP	$1,404.56		$1,685.47		
	Electric-Powered Pump >5 HP<=30 hp 3/	BHP	$399.11		$478.93		
	Electric-Powered Pump <30 hp <=75 4/	BHP	$278.32		$333.98		
	Electric-Powered Pump >75 5/	BHP	$157.95		$189.54		
	Variable Frequency Drive 6/	BHP	$182.69		$219.23		
	Internal Combustion-Powered Pump ≤ 50HP 7/	BHP	$533.59		$640.31		
	Internal Combustion-Powered Pump > 50 to 70 HP 7/	BHP	$399.93		$479.92		
	Internal Combustion-Powered Pump > 70 HP 7/	BHP	$309.21		$371.05		
	Photovoltaic-Powered Pump 8/	BHP	$6,962.04		$8,354.45		15 Years
Payment will be made for the pump size required by the design for the pump rounded to next largest commercially available pump (ie 1.67 hp would be a 2.0 hp pump). In the case of well pumps the size for payment will be determined by the watering facility design spreadsheet. If the applicant wishes to use a larger pump than the design requires, the additional cost will be the applicant's responsibiity. All electrical work must meet local and state codes.							
1/ Pump for livestock water, waste transfer or irrigation.							
2/ Pump in well for livestock water or irrigation with pressure tank added.							
3/ Pump for livestock water, waste transfer or irrigation. Centrifugal Pump.							
4/ Pump for waste transfer or irrigation. Centrifugal Pump.							
5/ Pump for livestock or irrigation. Centrifugal Pump.							
6/ Cost includes VFD modifications only.							
7/ Irrigation and Ag Waste Transfer; **Use only when not economically feasible to use electric motor/pump combinations.**							
8/ Typical installation of photvoltaic cells to run solar pump (includes pump); **Option only when there is no available power source and not economical to run power to site. Economical threshold to run power must exceed $10,000 to be feasible.**							
Applicable to Wildlife Landuse Only. Can be scheduled as a supporting practice in conjunction with Prescribed Grazing 528 when needed to protect wildlife or natural communities.							
329	**Residue & Tillage Mgmt - Notill/Striptill Direct Seed**						
	No-Till/Strip-Till	Acre	$14.31		$17.17		1 Year
Limited to 2 years. Payment made when cash crop is seeded/planted with no-till drill or no-till/strip-till planter into cover crop residue.							
System is applicable in all cropland and land where crops are planted.							
643	**Restoration and Mgt. of Rare and Declining Habitats**						
	Habitat Monitoring and Mgt, Low Intensity and Complexity	Acre	$2.26		$2.71		
	Rare or Dec. Habitat Monitoring and Mgt, Medium Intensity 1/	Acre	$8.41		$10.10		
	Habitat Monitoring and Mgt, High Intensity and Complexity 1/	Acre	$15.68		$18.81		
	Dev.of Shallow Micro-Topo Features with Normal Farm Equip 2/	Acre	$28.70		$34.44		
	Dev.of Deep Micro-TopoFeatures with Heavy Equipment 2/	Acre	$78.19		$93.82		1 Year
1/ **Applicable to Wildlife Landuse Only.** Requires a monitoring plan, an approved agreement with the monitoring organization, and a signed landowner release agreeing that the data will be publicly available.							
2/ **Applicable to Wildlife Landuse Only.** Restore and manage according to habitat needs identified by the GA Habitat Suitability Index model and comparisons with site appropriate Ecological Site Descriptions or other suitable reference conditions.							
391	**Riparian Forest Buffer**						
	Bare-root, hand planted 1/	Acre	$191.22		$229.46		
	Bare-root, machine planted 2/	Acre	$207.60		$249.12		15 Years

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
1/ The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 40 feet wide. The planting will consist of hand planted bare-root hardwood trees. One third of the area will be planted to each woody plant type. Tree spacing will be 12' x 12'.							
2/ The buffer will be located adjacent to and up-gradient from a watercourse or water body extending a minimum of 40 feet wide. The planting will consist of machine planted bare-root hardwood trees. One third of the area will be planted to each woody plant type. Tree spacing will be 12' x 12'.							
558	**Roof Runoff Structure**						
	Roof Gutter, Small, 6 inches wide and smaller 1/	LnFt	$4.32		$5.19		
	Concrete Curb 2/	LnFt	$8.02		$9.63		
	Trench Drain 3/	LnFt	$7.69		$9.23		
	Roof Gutter with storage tank 4/	Gal	$1.17		$1.40		15 Years
1/ Price of length of roof gutter.							
2/ Price of length of concrete curb.							
3/Price of length of trench drain.							
4/ Pay per gallon of storage in tank. Use standard tank closest in volume to design volume. Cost includes length of roof gutter.							
367	**Roofs and Covers**						
	Post Frame Building 1/	SqFt	$6.42		$7.70		
	Steel Frame Building 2/	SqFt	$5.27	$ 50,000.00	$6.32	$ 50,000.00	10 Years
1/ Posts and roof system with concrete footers at support posts. Square footage is measured post to post.							
2/ Posts and roof system with concrete footers at support posts. Steel frame buildings must be designed and installation certified by a registered Georgia PE. Square footage is measured post to post. Must provide additional information as to why a steel frame building is needed (e.g meeting fire code) rather than the less expensive wooden post frame structure.							
381	**Silvopasture**						
	Commercial thinning and establishment of introduced grasses. 1/	Acre	$215.53		$258.63		
	Tree Establishment 2/	Acre	$80.33		$95.06		
	Commercial Thinning and Establishment of Native Grass 3/	Acre	$188.36		$226.03		20 Years
1/ Commercial thinning of an existing stand of trees followed by establishment of introduced grasses. Thinning should be to a basal area of 30 to 50. Cost includes grass establishment. For the Sandhills, Coastal Plain, and Flatwoods Regions Bahiagrass is the recommended forage species. For the Ridge and Valley and Blue Ridge Regions Orchardgrass and/or Tall Fescue are the recommended forage species. Tall Fescue can be used as the chosen forage species throughout the Piedmont, but Bahiagrass is also acceptable in the lower Piedmont.							
2/ The establishment of trees into an existing pasture where adequate native grasses or introduced forage is present. Typical alley arrangement is 40' wide forage alley with a minimum of 200 trees per acre.							
3/ Commercial thinning of an existing stand of trees followed by establishment of native grasses. Thinning should be to a basal area of 30 to 50. Cost includes native grass establishment. For the Sandhills, Coastal Plain, and Flatwoods Regions native grasses is the recommended forage species. For the Ridge and Valley and Blue Ridge Regions native grasses are the recommended forage species. See the native grass plant list for additional information for establishment of native grass forage species throughout the Piedmont.							
574	**Spring Development**						
	Spring Development 1/ 2/	Each	$2,571.88		$3,086.26		20 Years
1/ Includes collection system and spring box. Does not include livestock pipeline from spring box to watering facility.							
2/ **Applicable to Wildlife Landuse Only**. Allowed when planned in conjunction with Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644).This practice will not disturb high quality, natural habitat.							
442	**Sprinkler System**						
	Center Pivot System 1/	Ft	$56.80		$68.16		
	Solid Set System 2/	Acre	$3,611.96	$ 30,000.00	$4,334.35	$ 30,000.00	
	Traveling Gun System 1/	Each	$34,762.34		$41,714.81		
	Retrofit of Existing Sprinkler System 3/	Ft	$6.17		$7.40		
	VRI_System_Renovation 4/	Ft	$16.53		$19.84		15 Years
Water supply and conveyance from source to field is not addressed within this practice. **Efficiency of the system must be provided in the design package. The designer may use (FIRI) or other similar programs to document the gain in efficiency; consult with Area Engineer.** **Ag Wastewater Notes**: For Ag Wastewater the least cost system (center pivot, solid set system, or traveling gun system) will be selected based on acres figured in the Cost Estimator "Ag Waste Calculator" tab. Actual wastewater and soil samples are required to calculate acreage needed to apply yearly wastewater prior to irrigation design or payment. Example, if acreage needed to apply yearly wastewater is 9.6 acres or less then a solid set system would be the least cost system for the practice instead of a hose reel. The producer can install a hose reel but payment will be based on the solid set system. **Ag Wastewater applications will require a NMP**. **Freshwater Notes**: **An IWM plan must be provided to the landowner when contracting 442, but the IWM does not have to be included for payment in the EQIP contract. Producers can request an IWM plan through the IWM CAP 118.** If a working center pivot system is determined to be past its usable life and landowner is willing to install a new center pivot system, the calculated amount necessary to retrofit **(high to low pressure)** the old center pivot system will be provided to the landowner to offset the cost of the new center pivot system. In addition, the old center pivot system being replaced will be destroyed. Conversion from a traveler system to a pivot will be acceptable; cost-share rate will be based on the cost of retrofitting the size pivot necessary for servicing the involved field. **Must have a copy of system design completed and certified by a Certified Irrigation Designer(CID), Georgia PE, or Area Engineer**. **CID designs must be reviewed by NRCS engineers (does not include retrofits). Certification must be provided that system was installed in accordance with the certified design.** Certification can be provided by the installer (provided the landowner is not the installer), the CID or field office staff.							
1/ For Ag Wastewater Only. Use for wastewater application. Waste water application acres based on Cost Estimator "Ag Waste Calculator" tab for nitrogen.							

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
2/ Includes all components of solid set system and installation costs. Use for wastewater application. Waste water application acres based on Cost Estimator "Ag Waste Calculator" tab for nitrogen. Use for freshwater for historically underserved clients.							
3/ Payment rate covers all materials and labor for completing the retrofit in accordance with the system design . Pressure regulators are required at each sprinkler. Drop nozzles can be either wobblers, orbitors or rotator sprinklers. CID may approve the retrofit design and as-builts.							
4/ Renovation of a previously retrofitted irrigation system with proper modular components and pressure regulating devices, along with all other needed components. VRI system requirements must be shown at signup.							
570	**Stormwater Runoff Control**						
	Combination, Most common Best Management Practices	Acre	$537.15		$644.58		
	Storm Water Retention	CuYd	$5.02		$6.03		20 Years
For use with Irrigation Reservoir only. **NOT FOR GENERAL EQIP, ONLY FOR IRRIGATION PILOT PROGRAM.**							
578	**Stream Crossing**						
	Rock armored low water crossing 1/	SqFt	$4.25		$5.10		
	Concrete low water crossing	SqFt	$5.67		$6.80		
	Culvert installation 2/	In-Ft	$2.58		$3.09		
	Low water crossing using prefabricated products 3/	SqFt	$5.21		$6.25		10 Years
Must add critical area planting and mulch. May be used in WRP/ACEP-WRE and livestock systems (livestock must be fenced out of creeks). If needed in a forestry system, contact State Forester and State Engineer							
1/ Includes stream crossing with any rock surface (GAB, surge stone, riprap). Price inlcudes all surfacing materials, geotextile and installation.							
2/ Paid by inches of culvert diameter multiplied by culvert length. Must add HUA; Pipe must be designed to accommodate fish passage (Must use 396, Aquatic Organism Passage). If used on perennial streams, need to submit a ACOE PCN under Nationwide Permit 40. **Must receive prior approval from Area Engineer.**							
3/ Geocell filled with gravel, articulated concrete, pavers, or concrete block.							
Applicable to Wildlife Landuse Only. Allowed when planned for a wildlife habitat purpose and as a supporting practice to Forest Stand Improvement (666), Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644) ONLY IF a stream crossing is required to carry out wildlife management activities. Use of this practice must be justified in the conservation plan. Plan in conjunction with Aquatic Organism Passage. This practice will not disturb high quality, natural habitat. Landowner must secure required permits. **Must receive prior approval from the State Biologist and engineer to schedule these scenarios for wildlife land use.**							
395	**Stream Habitat Improvement and Management**						
	Riparian Zone Improvement-Forested	Acre	$6,176.93		$7,412.31		
	Instream wood placement	Acre	$15,032.33		$18,038.79		
	Instream rock placement	Acre	$9,645.84		$11,575.01		
	Rock and wood structures	Acre	$23,905.74		$28,686.89		
	Fish Barrier	CuYd	$4,348.10		$5,217.72		5 Years
Applicable to Wildlife Landuse Only. Must receive prior approval from the State Biologist and/or engineer to schedule these scenarios. Manage according to habitat needs identified by the Stream Visual Assessment Protocol 2 and comparisons with site appropriate Ecological Site Descriptions or other suitable reference conditions.							
Applicable to Wildlife Landuse Only. Landowner must secure required CWA and other necessary permits							
580	**Streambank and Shoreline Protection**						
	Shaping 1/	LnFt	$14.35		$17.22		
	Bioengineered 2/	LnFt	$49.00		$58.80		
	Structural 3/	LnFt	$128.34		$154.01		
	Toe Protection 4/	LnFt	$78.45		$94.14		20 Years
The Savannah District of the Corp of Engineers has put a regional restriction on Nationwide Permit 13. A preconstruction notification (PCN) must be filed with the Corp of Engineers prior to the construction of streambank stablization projects unless exempted under NWP 13. Landowner shall provide NRCS with a copy of the approved ACOE permit prior to contracting. Streambank and shoreline protection contracts must also include practices that are biologically beneficial to the system; this may include riparian forest buffer, fence, stream habitat improvement and management, etc. Consult with NRCS biologist and NRCS Assistant State Engineer prior to contracting.							
1/ Includes shaping bank and erosion control fabric. Add critical area planting and mulch as needed.							
2/ Includes shaping bank, livestake, rootwads and revetments. Add critical area planting and mulch as needed.							
3/ Includes shaping bank and installing riprap. Add critical area planting and mulch as needed.							
4/ Type I or III rock rip rap used in conjunction with shaping or bioengineered streambank stabilization.							
Applicable to Wildlife Landuse Only. Allowed when planned in for a wildlife habitat purpose in conjunction with Timber Stand Improvement (666), Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644).							
649	**Structures for Wildlife**						
	Nesting Box, Small no pole 1/	Each	$30.68		$36.81		
	Nesting Box, Small, with wood pole 2/	Number	$45.80		$54.96		
	Nesting Box, Large 3/	Each	$61.76		$74.11		
	Nesting Box or Rapture Perch, Large, with Pole 4/	Each	$181.20		$217.44		
	Escape Ramp 5/	Each	$26.12		$31.35		

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
	Fence Markers, Vinyl Undersill 6/	Ft	$0.11		$0.13		
	Brush Pile - Small 7/	Each	$23.47		$28.16		
	Brush Pile - Larg 8/	Each	$95.63		$114.76		5 Years
1/ The installation of nesting and rearing boxes that support the life-cycle needs of targeted speces, such as birds, bats and pollinators. Each nesting box is 1-1/2" x 6" x 12-1/2" w/ 1-1/2" diameter opening.							
2/ The installation nesting and rearing boxes support the life-cycle needs of targeted speces, such as blue birds and waterfowl. Each Bluebird nesting box is 1-1/2" x 6" x 12-1/2" w/ 1-1/2" diameter opening. Each Wood Post, End 6" X 8', CCA Treated.							
3/ A structure is provided to support the nesting and rearing of larger targeted species such as waterfowl, bats and barn owls, and is directly mounted to a tree, building or other structure. Habitat Box, waterfowl, typically 24" x 11" x 12" with 4" wide oval entrance, single.							
4/ Constructing a nest box or rapture perch on a steel pole with a predator guard where needed. Pipe, steel, galvanized, threaded, 1 1/4", schedule 40. Habitat Box, Waterfowl Box, typically 24" x 11" x 12" with 4" wide oval entrance,single. Predator guards (i.e. stove pipes, cone, hole guard, etc.) for habitat boxes.							
5/ Retrofit an existing watering trough/tank with an appropriately designed and installed wildlife escape ramp to reduce wildlife mortality and maintain water quality within the watering facility. Pool size 15' x 30', for small mammals less than one pound.							
6/ Existing fences are retrofitted with vinyl markers that increase wire visibility and reduce mortality due to collision for wildlife species of concern. Markers are installed approximately every 3 feet along top wire using Vinyl Undersill Strips.							
7/ Small brush piles are created to provide shrubby/woody escape cover for wildlife. Small brush piles are typically 10' x 20' area for structure covered by interlocking limbs of trees less than 12 inches in diameter.							
8/ Downed tree structures are created to provide shrubby/woody escape cover for wildlife. Large brush piles are typically 30' x 50' area for structure covered by interlocking limbs of trees at least 12" in diameter.							
600	**Terrace**						
	Broadbased	Ft	$1.60		$1.92		
	Narrow Base, less than 8% slope	Ft	$1.63		$1.95		10 Years
Add critical area planting and mulching as needed							
612	**Tree/Shrub Establishment**						
	Medium Density-hand plant Conifer B.R. 7/	Acre	$93.96		$112.76		
	Medium Density-Mech Plant Conifer 8/	Acre	$94.65		$113.57		
	High Density mech conifer planting 3/	Acre	$144.55		$173.46		
	High Density-hand plant Conifer 4/	Acre	$201.59		$241.91		
	Hardwood Hand Planting-bare 1/	Acre	$156.64		$187.97		
	Hardwood Hand Planting-bare root-protected 2/	Acre	$255.78		$306.94		
	Shrub Planting 5/	Acre	$105.32		$126.38		
	Hardwoods Tree Planting and Shrubs Hand Planting 2-3 gallon plants--protected 6/	Acre	$445.79		$534.95		15 Years
1/ Hardwood seedlings will be planted at minimum of 12X12 spacing at 300 trees per acre. ALL forestry acres are eligible for payment. Sites will be hand planted. A Forest management plan is required prior to payment.							
2/ Hardwood seedlings will be planted at minimum of 12X12 spacing by hand method at 300 trees per acre with protected tree tubes. ALL forestry acres are eligible for payment. Sites will be hand planted. A Forest management plan is required prior to payment.							
3/ Longleaf pines will be planted by mechancial method. ALL forestry acres are eligible for planting. A Forest Management plan is required prior to payment. A minimum of 605 trees per acre at a 6X12 spacing.							
4/ Longleaf Pines will be hand planted at 6X12 spacing at 605 trees per acre. ALL forestry acres are eligible for planting. A Forest Management plan is required prior to payment.Sites will be hand planted. Plant containerized longleaf pines seedling only.							
5/ **Applicable to Forestry Landuse Only**. Shrubs will be planted on a 20 X 30 spacing of 1-3 gallon shrubs plants for wildlife in forest openings. Each shrub plant will be protected with tree shelter or tree tube. A Forest Management plan is required prior to payment.							
6/ **Applicable to Wildlife Landuse Only.** In one acre openings, hand plant 20 trees (hardwood, seedling or transplant, potted or B&B 2-3gal.) per acre and 20 shrubs (seedling or transplant, potted or B&B 2-3 gal.) per acre							
7 /Conifers (loblolly or slash) will be planted by hand method. ALL forestry acres are eligible for planting. A Forest Management plan is required prior to payment. A minimum of 545 trees per acre at a 8X10 spacing.							
8 /Conifers (loblolly or slash) will be planted by machine method. ALL forestry acres are eligible for planting. A Forest Management plan is required prior to payment. A minimum of 545 trees per acre at a 8X10 spacing.							
660	**Tree/Shrub Pruning**						
	Pruning-Low Height 1/ 2/	Acre	$100.50		$120.60		1 Year
Applicable to Wildlife Landuse Only. 1/ Allowed when planned for a wildlife habitat purpose in conjunction with Timber Stand Improvement (666), Restoration and Management of Rare or Declining Habitats (643), Stream Habitat Improvement (395), Upland Wildlife Habitat Management (645), Wetland Restoration (657), or Wetland Wildlife Habitat Management (644) to restore a site-suited native plant community according to a Ecological Site Description or other appropriate reference condition.							
2/ On Grazing and Forest Land, for maintenance of established silvopasture sites only. First lift should be done when trees reach 15-20 feet in height. Prune up to 9 feet (Do not remove>50% of canopy) Second lift should be done when trees reach 30-40 feet in height. Prune to 18 feet. (Maintain a live crown of no less than 40%)							
490	**Tree/Shrub Site Preparation**						
	Mechanical - Medium 2/	Acre	$177.88		$213.46		

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
360	**Waste Facility Closure**						
	Liquid Waste Impoundment Closure with fill 1/	CuFt	$0.30		$0.36		
	Liquid Waste Impoundment Closure with no liquid/slurry 2/	CuYd	$2.96		$3.55		20 Years
Contract for one item only, not both. **Producer must provide Notice of Termination to State Agency for state permitted sites along with certification that the closure was completed to NRCS Stds. Not for freshwater conversion. A Waste Facility Closure Plan is required; may be a component of a CNMP/NMP.**							
1/ Covers the cost of pumping or hauling sludge and disposing of the wastes in accordance with a nutritent management plan and backfilling the holding pond with compacted earth fill. Need to add critical area planting and mulch (if needed).							
2/ Covers the cost of backfilling holding pond with compacted earth fill. Need to add critical area planting and mulch (if needed).							
632	**Waste Separation Facility**						
	Mechanical Separation Facility 1/	Each	$25,825.31		$30,990.37		
	Concrete Separator 2/	CuFt	$4.05		$4.86		
	Concrete Sand Settling Lane 3/	SqFt	$4.82		$5.78		15 Years
Must have an NRCS approved CNMP.							
1/ Includes equipment and concrete support pad. Must add critical area planting and mulch as needed.							
2/ Based on designed storage and includes grading and concrete placement. Must add critical area planting and mulch as needed.							
3/ Includes grading and concrete placement. Must add critical area planting and mulch as needed.							
313	**Waste Storage Facility**						
	Earthen Storage Facility 1/	CuFt	$0.23		$0.27		
	Dry Stack, concrete floor, wood wall 2/	SqFt	$4.47		$5.37		
	Conc Tank, Buried 3/	CuFt	$1.72		$2.06		
	Dry Stack, concrete floor, concrete wall 4/	SqFt	$5.59		$6.70		15 Years
NRCS Approved Comprehensive Nutrient Management Plan required.							
1/ Payment based on designed storage volume to include manure, wastewater and rainfall on contributing areas and pond surface. Pay volume does not include freeboard or sludge accumulation volume.							
2/ Must add critical area planting, mulch, roof and HUA for entrance pad. Size based on concrete pad area from post to post.							
3/ Must add critical area planting and mulch.							
4/ Must add critical area planting, mulch, roof and HUA for entrance pad. Size based on concrete pad area from post to post. Concrete walls are to be used for high moisture manures							
634	**Waste Transfer**						
	Concrete Channel 1/	SqFt	$8.75		$10.50		
	Manure Flush System of transfer through a collection basin 2/	Gal	$1.89		$2.27		
	Waste Transfer Pipeline 3/	LB	$2.43		$2.91		15 Years
NRCS Approved Comprehensive Nutrient Management Plan required.							
1/ Cost of concrete channel paid by sf of channel bottom. Must add critical area planting and mulch as needed.							
2/ Flush Tanks; Includes cost of concrete pad for flush tank. Must add critical area planting and mulch as needed.							
3/ For waste transfer from a production area to a storage or treatment facility. Must add critical area planting and mulch as needed.							
359	**Waste Treatment Lagoon**						
	Waste Treatment Lagoon	CuFt	$0.16		$0.19		15 Years
NRCS Approved Comprehensive Nutrient Management Plan required.							
Payment based on designed storage including manure, wastewater, minimum treatment volume, and rainfall on contributing drainage areas and pond surface. Pay volume does not include freeboard . Must add critical area planting and mulch as needed							
638	**Water and Sediment Control Basin**						
	WASCOB base	CuYd	$2.12		$2.55		10 Years
Add critical area planting and mulch if needed. Use in conjunction with underground outlets as needed.							
642	**Water Well**						
	Typical Well 1/	Each	$4,466.38		$5,359.66		
	Deep Well 2/	Each	$6,687.83		$8,025.40		20 Years
If existing well/water source is adequate for **the resource** need, a new well is not justified. Not to be used for providing water to confined feeding operations or in buildings. **Must be part of a prescribed grazing system or where livestock exclusion has removed a water supply. Wells may be used for irrigation only for historically underserved applicants but only when existing well/water source is inadequate to supply irrigation water needs. Does not include the cost of the pump so include CPS 533, Pumping Plant, as a companion practice. All electrical work must meet local and state codes. Documentation must be provided to justify the need for a well, refer to water well drawing on eFOTG.**							
1/ Well depth 100 to 600 feet below ground surface. Complete well installation (casing, screen, seal, filter pack, concrete pad at well head).							

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
2/ Well depth > 600 ft. below ground surface. Complete well installation (casing, screen, seal, filter pack, concrete pad at well head).							
614	**Watering Facility**						
	Less than 100 gal 1/	Each	$75.08		$90.09		
	100-200 gal 2/	Each	$196.70		$236.05		
	201-400 gal 3/	Each	$234.89		$281.87		
	401-600 gal 4/	Each	$377.70		$453.24		
	Greater Than 600 gal 5/	Each	$527.91		$633.49		
	2 Ball Freeze proof 6/	Each	$792.11		$950.53		
	4 Ball Freeze proof 6/	Each	$958.99		$1,150.79		
	Storage Tank for Solar Systems 7/	Gal	$0.79		$0.95		
	Low velocity Watering Ramp 8/	SqFt	$1.66		$1.99		
	High Velocity Watering ramp 9/	SqFt	$4.63		$5.55		10 Years
For livestock grazing systems. Not to be used in confined feeding operations or in buildings. Must use Heavy Use Area Protection, CPS 561, around watering facility. **Use of used materials is not allowed.**							
1/ Very small trough for small animals; includes installation.							
2/ Small size trough; includes installation							
3/ Medium trough; includes installation.							
4/ Large trough; includes installation.							
5/ Extra-Large trough; includes installation.							
6/ Includes concrete pad, trough and installation.							
7/ Includes tank, concrete pad, and installation.							
8/ low velocity = still water such as ponds							
9/ high velocity = moving water such as streams, creeks, etc.,.							
657	**Wetland Restoration**						
	Riverine Levee Removal and Floodplain Features	Acre	$244.35		$293.22		
	Ditch Plug	CuYd	$10.40		$12.48		
	Estuarine Fringe Levee Removal	Acre	$12.04		$14.45		
	Riverine Channel and Floodplain Restoration	Acre	$331.91		$398.29		15 Years
Applicable to Wildlife Landuse Only. Restoration will occur according to habitat needs identified by the GA Habitat Suitability Index model and comparisons with site appropriate Ecological Site Descriptions or other suitable reference conditions. Must receive State Office biologist and engineer approval prior to scheduling this practice.							
644	**Wetland Wildlife Management**						
	Habitat Monitoring and Management, Very-Low Intensity and Complexity 1/	Acre	$0.68		$0.81		
	Wetland Widlife Habitat Mongtand Mgt, Low Intensity and Complexity 2/	Acre	$2.26		$2.71		
	Habitat Monitoring and Management, Medium Intensity and Complexity 3/	Acre	$8.41		$10.10		
	Habitat Monitoring and Management, High Intensity and Complexity 4/	Acre	$20.67		$24.80		
	Dev of Shallow Micro-Topoc Features with Normal Equipment. 5/	Acre	$28.70		$34.44		
	Development of Deep Micro-Topo Features with Heavy Equipment. 6/	Acre	$78.19		$93.82		1 Year
1/ Wetland wildlife habitat is improved by implementation of annual adaptive management actions of very low intensity and complexity. The adaptive management actions such as cutting of limbs that are impeding access of birds into nest boxs, replacing damaged fence markers, cleaning of nest structures and debris around other structures requires only hand labor and less than 16 hours of labor per year.							
2/ Wetland wildlife habitat is improved by implementation of annual adaptive management acions such as cutting of limbs that are impeding access of birds into nest boxs, replacing damaged fence markers, cleaning of nest structures and debris around other structures requires only hand labor and less than 8 hours labor per year.							
3/ Two or three adaptive management efforts are required (such as cutting of limbs that are impeding access of birds into nest boxes, replacing damaged fence markers, cleaning of nest structures and debris around other structures). The adaptive mgmt requires hand labor and the occasional use of light equipment. A crew of 2 is needed for the hand labor efforts and the crew will require less than 16 total hours of labor per mgmt effort.							
4/ Two four monitoring efforts are needed and each requiring less than 2 people and less than 8 hours per effort. The adaptive management actions (2 5 efforts) such as cutting of limbs that are impeding access of birds into nest boxes, replacing damaged fence markers, cleaning of nest structures and debris around other structures requires hand labor and light equipment, requiring a 2 person crew less than 1 day per effort.							
5/ Soil is excavated with normal farming equipment (e.g. tractor and box blade) to a depth of 2 6 inches and immediately deposited. This lowering and raising of a box blade restores the original microtopographic features (6' X 6' depressions and mounds) common to most landscapes and landforms prior to clearing, tilling, and annual mowing. This scenario it typically implemented for ecosystem restoration projects.							
6/ soil is excavated with track equipment (dozer) to a depth of 6 12 inches and immediately deposited. This lowering and raising of a dozer blade restores the original deep micro topographic features (10' X10' depressions and mounds) common to many landscapes and landforms prior to the lands conversion to agricultural lands. This scenario it typically implemented for ecosystem restoration projects							
1/ **Applicable to Wildlife Landuse Only.** Requires a monitoring plan, an approved agreement with the monitoring organization, and a signed landowner release agreeing that the data will be publicly available.							

Practice Code	Conservation Practice	Payment Unit	Payment Rate	Maximum Amount	HU Payment Rate	HU Maximum Amount	Lifespan
2/ **Applicable to Wildlife Landuse Only**. Manage according to habitat needs identified by the GA Habitat Suitability Index model and comparisons with site appropriate Ecological Site Descriptions or other suitable reference conditions.							
380	**Windbreak/Shelterbelt Establishment**						
	2 Row windbreak, trees, Machine planted	Foot	$0.44		$0.52		15 Years

Two offset rows of Hardwoods/Pines/Evergreens or Shrubs planted for wind protection, shelter for livestock, wildlife habitat, air quality or to provide a visual screen. Trees should be planted at the desired spacing to meet the resource need.

FOOTNOTES

Maximum Amounts for the life of the contract are established on certain conservation practices or options, as noted in this Policy. EQIP funds provide financial assistance to eligible farmers and ranchers to help these producers enhance agricultural and forested lands in a cost-effective and environmentally beneficial manner. Establishing Maximum Amounts for the contract allows Georgia NRCS to make EQIP funding assistance available to a larger number of eligible farmers, ranchers and forest producers here in Georgia, and also as a method to make funding available to eligible producers regardless of size of operation (i.e., by not obligating large amounts of funds on operations with more acres, Georgia EQIP funds will be available to a larger number of separate operations). The specified "Maximum Amounts" for identified practices within this policy does not allow applicants to exceed the maximums through multiple offers/contracts on different acres when those acres are controlled by the same applicant(s), where 'control' means possession of the land by ownership, written lease, or other legal agreement (as generally indicated on FSA's EZ156 &/or Producer Farm Data Report forms). Historically Underserved Maximum Amounts refers to the maximum contract payment for Historically Underserved Farmers (Limited Resource Farmers, Beginning Farmers, and Socially Disadvantaged Farmers as defined in the 2014 EQIP Final Rule). NOTE: While there is no restriction on the number of applications (or contracts, if funded) that may be submitted by an applicant for EQIP, all FY17 EQIP applications (and contracted amounts) will count towards the Maximum Amount as listed in FY17 EQIP Policy for any and all FY17 EQIP applications (and FY17 EQIP contracts, if funded) where acres are controlled by the same applicant(s).

FMP = Forest Management Plan. Approved FMP's are:
(a) Forest Management Plan 106 Plan developed by a TSP OR
(b) Forest Stewardship Plan (FSP) prepared by GFC OR
(c) GFC Resource Management Plan OR
(d) Conservation Plan on Forest Land OR
(e) a site-specific plan prepared by a professional forester if this site-specific plan has been approved by either an NRCS forester or the Georgia State Forester at the time the EQIP applicant signs the CPA1200.

Conservation practices that are either structural or vegetative, and have a multi-year lifespan. Structural practices involve the establishment, construction, or installation of site-specific measures. Vegetative practices involve the establishment or planting of site-specific vegetative measures. Payments are established as a one-time only payment, not multi-year payments. Georgia policy requires the owner be a signatory to a contract which has EQIP funds used for any structural or vegetative practice, in accordance with CPM515.71(B)(2)(ii).

Technical Service Provider *(http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp)*

2/1/2017

Georgia State Conservationist Date