Eightmile Creek Watershed Management Plan

A Sub-Watershed of the Mobile River Basin

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Introduction

Previous Studies

In 1998, both Eightmile Creek and the Gum Tree Branch were placed on ADEM's 303(d) list of impaired waters for exceeding the maximum allowable levels of pathogens (fecal coliform). Both waterbodies were classified as Fish and Wildlife, with the exception of a section of Eightmile Creek from Gumtree Branch upstream to US Hwy 45 that is listed as Public Water Supply. ADEM identified urban runoff, failing septic systems, and sanitary sewer collection system failure as the sources of pollution in the Eightmile Watershed (which includes Gum Tree Branch).

In 2004, the US Environmental Protection Agency (EPA) approved the pathogen TMDL for Eightmile Creek/Gumtree Branch. According to ADEM water quality criteria, "the bacteria of the fecal coliform group shall not exceed a geometric mean of 1,000/100 mL October-May or 200/100 mL June-September, nor exceed a maximum of 2,000/100 mL" for any water body classified as Fish and Wildlife or Public Water Supply. Therefore, for these impaired water body segments to meet this standard, Eight Mile Creek would require a 72% reduction in contamination with a 72% reduction necessary for Gum Tree Branch. In general the TMDL provides valuable information for the development of strategies to reduce pollution in the watershed. These will be discussed more thoroughly throughout this plan.

In 2005 the Mobile Bay National Estuary Program (MBNEP) initiated a monitoring program within the Eightmile Creek Watershed with funding from the US EPA Gulf of Mexico Program. This program was a three-phase effort to examine the hydrology, drainage basin characteristics, pathogen load, and determine the source of pathogens in the Watershed. The program was consistent with the MBNEP Comprehensive Conservation and Management Plan (MBNEP 2002).

- Phase One – sampling, analysis, and monitoring, was to establish the current water quality within the Watershed. It involved collecting samples once a month for 12 consecutive months at ten monitoring stations located on Eightmile Creek and Gumtree Branch. The phase was carried out by ADEM.

- Phase Two – GIS coordination, collected and compiled information about existing conditions within the Watershed into a Geographical Information System (GIS). This effort was conducted by the Mobile Group and the South Alabama Regional Planning Commission (SARPC).

- Phase Three – Source identification, was to collect and compile data regarding various potential sources and infrastructure located and discharging to the impaired water bodies. This effort was conducted by the Mobile Group.

Purpose and Goals

Watershed management planning fosters the coordinated implementation of programs to control point source discharges, reduce polluted runoff, and protect drinking water, as well as identify sensitive natural resources. The Eightmile Creek Watershed Plan moves toward this goal by recommending educational strategies and supporting existing programs that serve to reduce non-point source pollution.

It is the goal of this Plan to make recommendations necessary to bring all water quality parameters within State water quality standards for Fish & Wildlife as identified in Chapter 335-6-10 of the Alabama Code. The overall goal of these efforts is to identify and implement strategies that will lead to the necessary load reductions as determined by ADEM in the TMDL (72% reduction in pathogens for Eightmile Creek, and a pathogen reduction of 78% for the Gum Tree Branch). This Plan seeks to implement environmentally protective and economically realistic best management practices (BMPs), where practical and technologically feasible, in order to meet or exceed water quality standards. BMP types and numbers prescribed in this plan are recommendations based on current land use practices, land cover, and watershed activities. Voluntary, incentive-based approaches will be used to implement BMPs throughout the watershed. Providing opportunities for local stakeholder input and participation will continue to be a critical BMP implementation component.

This plan was developed to address EPA's nine key elements for watershed management plans. Compliance with these requirements within this document is noted below. These requirements include:

1. (a) An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve load reductions estimated in the watershed based protection plan.

1. (b) Sources that need to be controlled should be identified at the significant subcategory level with estimates of the extent to which they are present in the watershed.

2. Estimate of load reductions expected for the management measures described.

3. A description of the nonpoint source management measures that will need to be implemented to achieve load reductions, and a description of the critical areas in which those measures will be needed to be implemented.

4. An estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon, to implement the plan.

5. An information and education component used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the nonpoint source management measures that will be implemented.

6. A schedule for implementing the NPS management measures identified in the plan that is reasonable and expeditious.

7. A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.

8. A set of criteria that can be used to determine whether pollutant loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether the watershed management plan needs to be revised.

9. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item (8).

General Description of the Watershed

Physical Setting

The Eightmile Creek Watershed (Figure 1) is located in southwestern Alabama within Mobile County. Figure 2 shows the majority of the 37-square mile watershed is located within the incorporated areas of the City of Prichard (pop. 28,633), the City of Mobile (pop. 198,915), and the City of Chickasaw (pop. 6,364). Eight Mile Creek joins Chickasaw Creek in a swampy area at its confluence with the Mobile River, which flows into Mobile Bay on its way to the Gulf of Mexico. The Eightmile Creek Watershed is located in the "03160204 Mobile-Tensaw, Alabama" Hydrologic Unit Code, which comprises 972 square miles.

The downstream portion of the watershed, including the Gum Tree Branch, is heavily urbanized while the headwaters of Eightmile Creek originate in rural and suburban land. The State of Alabama has identified Eightmile Creek as being impaired by pathogens for a length of 3.2 miles as reported on the 1998 §303(d) list of impaired waters(see Table 1), and Gum Tree Branch is also listed as impaired by pathogens for a length of 2.2 miles.

Table 1. Impaired stream segments of the Eightmile Creek Watershed (ADEM 2005).

Waterbody Name (ID)	Support Status	Use Classifications	Sources of Impairment	Size (Miles)	Downstream/ Upstream Location
Eightmile Creek (03160204-050_01)	Partial	Public Water Supply Fish & Wildlife	Urban runoff/ Storm sewers Collection system failure	3.2	AL Hwy. 45 / Highpoint Blvd.
Gum Tree Branch (03160204-050_02)	Non	Fish & Wildlife	Urban runoff/ Storm sewers Collection system failure	2.2	Eightmile Creek/ Its Source

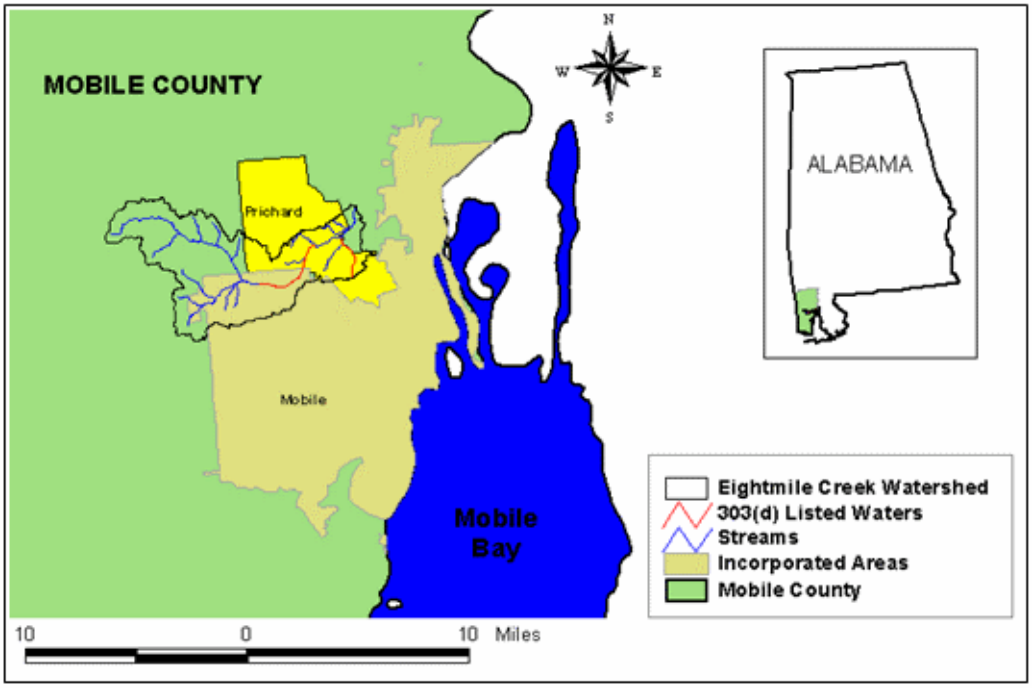

Figure 1. Location of the Eightmile Creek Watershed (ADEM 2005)

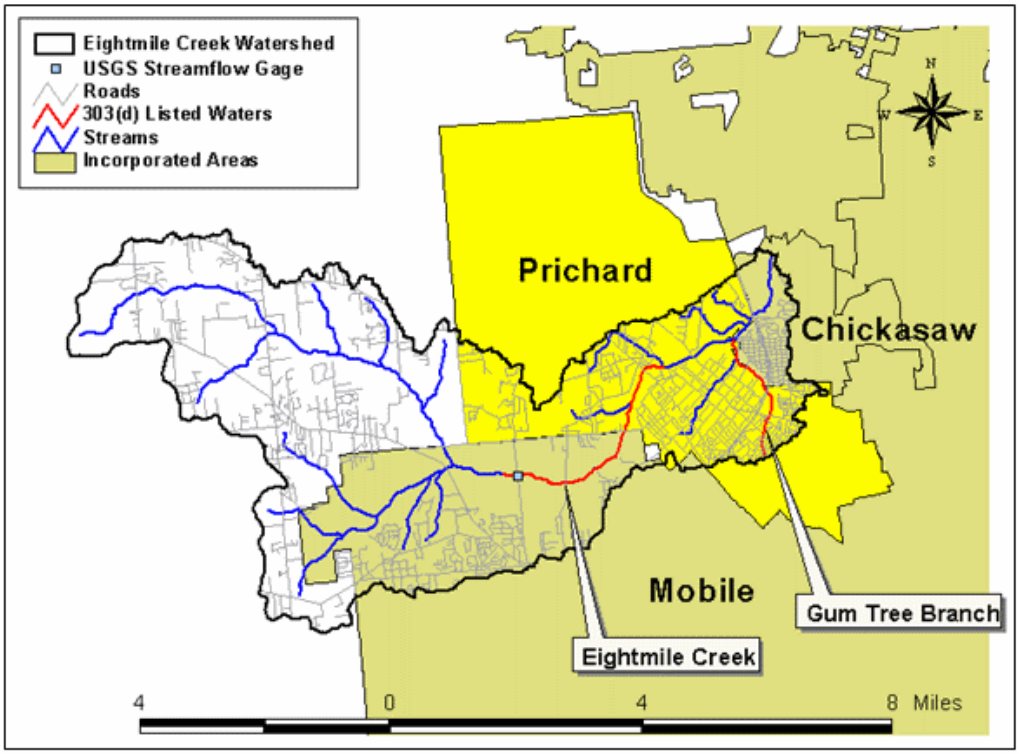

Figure 2. Locations of impaired stream segments within the Eightmile Creek Watershed (ADEM 2005)

Climate

The climate of the Eightmile Creek Watershed area is greatly influenced by the subtropical marine waters of the Gulf of Mexico (USGS 1988). In winter, polar air and precipitation resulting from frontal systems and cyclonic development in the Gulf, dominate area weather (USGS 1988). In summer, weather is dominated by tropical maritime air, thunderstorms, and occasional tropical cyclones, including tropical storms and hurricanes (USGS 1988).

In the spring, strong frontal systems routinely move into coastal Alabama from Great Plains states. The average daily temperatures in Mobile County range from 81 in July to 52 in January (SARPC 1994). The average rainfall for Mobile is 64 inches, and in the summer months (June-August) thunderstorms are a near daily occurrence (SARPC 1994). Storms normally occur in the afternoon and early evening and are commonly confined to areas of one square mile or less. These storms can potentially produce localized heavy rainfall and strong winds, and smaller storms have been known to produce over one inch of rain in less than one hour (ADEM 1994).

In the late summer to early fall, drier, calmer weather dominates coastal Alabama Precipitation is light to moderate and spread over a wider area (O'Neil and Mettee 1982).

Geology/Soils

Mobile County is located in the southwest corner of Alabama, in the coastal plain region of the state, in the Southeastern Plains and Southern Coastal Plains ecoregions, and is characterized by nearly level land from the Gulf of Mexico to low rolling hills in the northern portion of the County (EPA 1996).

Mobile County soils contain a layer low in organic material. Soils in the Eightmile Creek Watershed are primarily a sandy loam that is identified as the Troup-Heidel-Bama unit. Soils of this unit are well drained, have loamy sub-soils, and are formed in loamy marine sediments on nearly level to undulating uplands.

Population

Portions of the City of Mobile, Prichard, Chickasaw, and Saraland lie within the Eightmile Creek Watershed. Information regarding population is unavailable on the watershed level; therefore, for the purposes of this plan City of Prichard level information will be utilized as it includes the most densely populated urban area within the watershed. According to US Census Bureau data, Prichard's population was 27, 576 in 2009, down slightly from the 28,633 reported in 2000. Population in 1990 was 34,311, representing a net loss of 5,678 people. If this trend continues, 2020 population projections for Prichard range from 17,277 to 19,940 people (City of Prichard Comprehensive Plan).

Table 2. Population for the City of Prichard. Data from the US Census Bureau and * The City of Prichard Comprehensive Plan

Projection	1990	2000	2009	2020*
Population	34,311	28,633	27,576	19,940 to 17,277
Percent change from 1990		-16.5%	-19.6%	-41.9% to -49.6%

Economic Development

Information concerning economic development of the Eightmile Creek Watershed on the watershed level was unavailable; therefore data regarding the total population of the City of Prichard is utilized (Table 3) to give a general idea of the local economic situation. Information regarding the main sectors of employment and industry reaffirm that the area is generally urban.

Relatively few males are employed in management and professional occupations, less than 10%, compared to 26% for women. The largest occupation category for men is production and transportation, which is consistent with Prichard's location at a major transportation hub, with easy access to interstate highways, rail, and the Port of Alabama. The most prevalent employment categories for women are service occupations, followed closely by sales and office professions.

In general, economic measures for Prichard indicate a city with low levels of income, educational attainment, and unemployment rates which are higher than surrounding municipalities. Data suggests that both unemployment and underemployment are serious concerns for the City (City of Prichard Comprehensive Plan).

Table 3. Occupational data for the City of Prichard (US Census Bureau)

Category	Total	Male	Female
Total:	**8,767**	**4,101**	**4,666**
Management, professional, and related occupations:	**1,418**	**397**	**1,201**
Service occupations	**2,197**	**600**	**1,597**
Healthcare support occupations	350	26	324
Protective service occupations:	155	68	87
Fire fighting, prevention, and law enforcement	83	42	41
Other protective service workers	72	26	46
Food prep and serving related occupations	669	171	498
Building and grounds clearing and maintenance occupations	792	293	499
Personal care and service occupations	231	42	189
Sales and office occupations:	**1,944**	**469**	**1,475**
Sales and related occupations	872	241	631
Office and administrative support occupations	1,072	228	844
Farming, fishing, and forestry occupations:	**6**	**6**	**0**
Construction, extraction, and maintenance occupations:	**1,119**	**1,080**	**39**
Construction and extraction occupations:	706	674	32
Supervisors, construction and extraction workers	57	57	0
Construction trades workers	644	612	32
Extraction workers	5	5	0
Installation, maintenance, and repair occupations	413	406	7
Production, transportation, and material moving occupations:	**2,083**	**1,549**	**534**
Production occupations	1,039	719	320
Transportation and material moving occupations:	1,044	830	214
Supervisors, transportation and material moving workers	29	29	0
Aircraft and traffic control occupations	0	0	0
Motor vehicle operators	440	356	84
Rail, water, and other transportation occupations	68	42	26
Material moving workers	507	403	104

Land Use

As shown in Table 3, the urban component is 14 percent of land use. Land use coverage within the Watershed is dominated by forest at 55 percent with row crops and pasture comprising 7 percent and 18 percent, respectively. Although the upper portion of the Watershed consists of predominantly forested and unorganized areas, it should be noted that the impaired portions of the Gum Tree Branch and Eightmile Creek are located in the center of a heavily urbanized portion of the watershed. This reiterates the point made by ADEM in the TMDL assessment for the Eightmile Creek Watershed that the nonpoint source problems are largely related to urban land use issues.

Table 3. Land Use Distribution in the Eightmile Creek Watershed, Including Gum Tree Branch (from ADEM 05).

Subwatershed	Crop-land	High Density Urban	High Density Residential	Low Density Residential	Bare Rock/ Mining	Transitional	Forest	Pasture	Water	Total Acres
1	23.13	8.01	44.26	117.87	7.78	36.47	773.49	94.07	0.00	1105
2 (Gum Tree Br)	0.44	1.33	6.89	29.36	0.00	4.23	29.36	4.67	0.00	76
3 (Gum Tree Br)	18.90	14.90	60.71	246.86	12.90	47.15	547.76	204.60	0.00	1154
4 (UT to Gum Tree Br)	26.69	132.32	216.39	617.81	8.01	45.37	253.08	153.01	0.00	1453
5	10.90	44.48	56.27	184.59	2.00	17.57	139.44	52.04	0.00	507
6	26.02	28.24	42.25	227.73	14.46	48.04	740.13	157.68	5.12	1290
7	62.49	30.25	17.57	116.31	88.74	65.16	1770.03	203.71	11.12	2365
8	70.72	26.91	18.68	201.49	41.59	64.27	874.23	231.51	0.00	1529
9	595.57	54.49	49.82	349.38	112.53	169.69	2393.63	1424.43	11.34	5161
10	288.00	37.36	19.13	118.54	115.64	203.27	2650.94	873.79	0.22	4307
11	175.47	20.91	0.44	55.15	32.02	81.84	911.82	360.95	7.12	1646
12	318.47	14.68	0.89	34.03	57.16	160.35	1937.72	537.97	4.00	3065
Total Acres	1616.80	413.88	533.30	2299.11	492.83	943.40	13021.61	4298.43	38.92	23658
Percentage	7%	2%	2%	10%	2%	4%	55%	18%	0%	100%

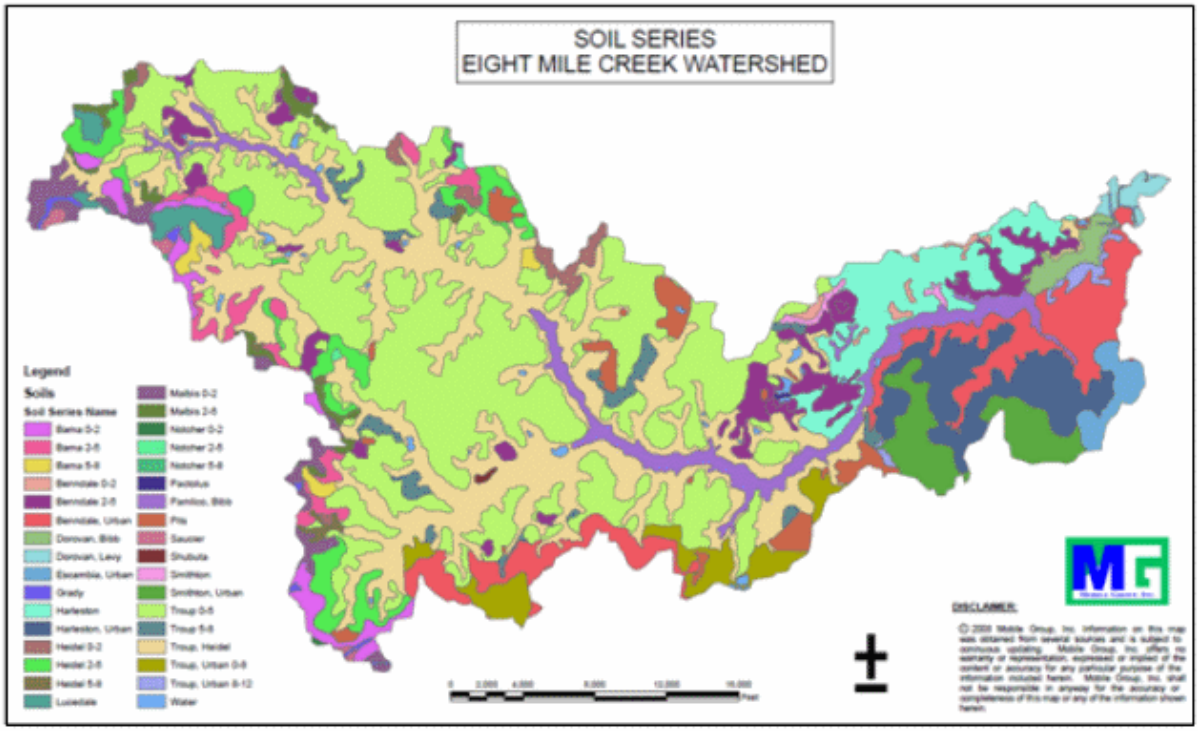

Figure 3. Soil types for the Eightmile Creek Watershed (MBNEP 2008)

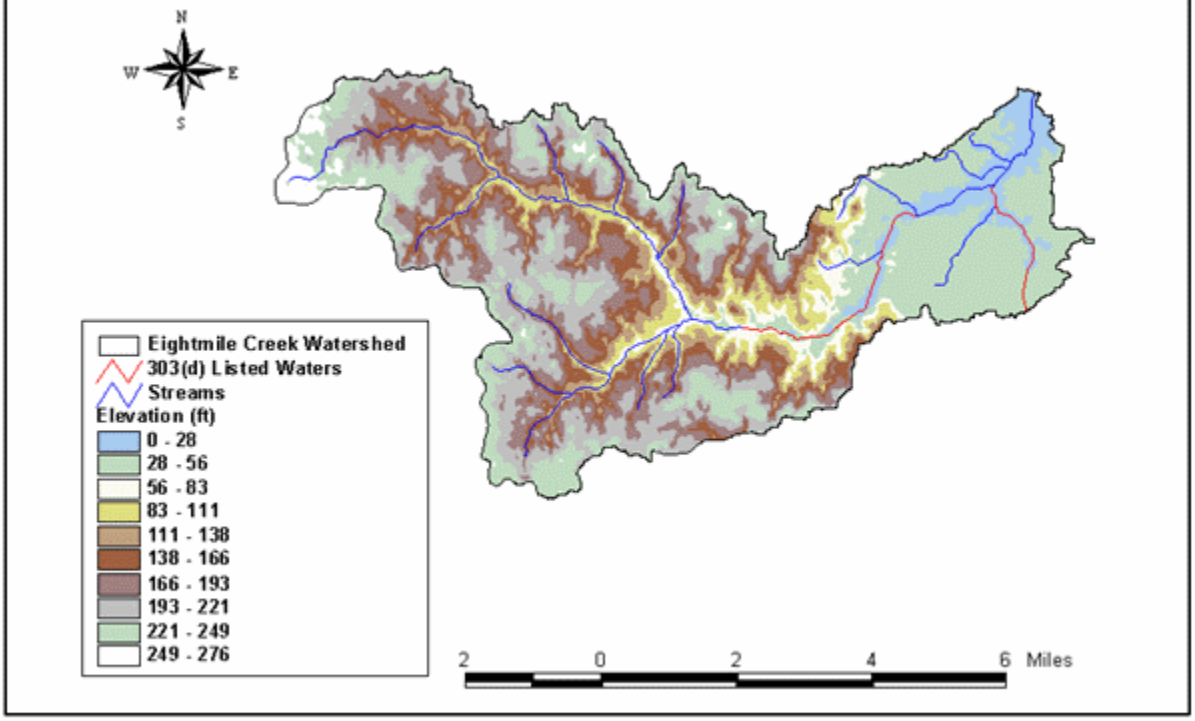

Figure 4. Elevation of the Eightmile Creek Watershed (MBNEP 2008)

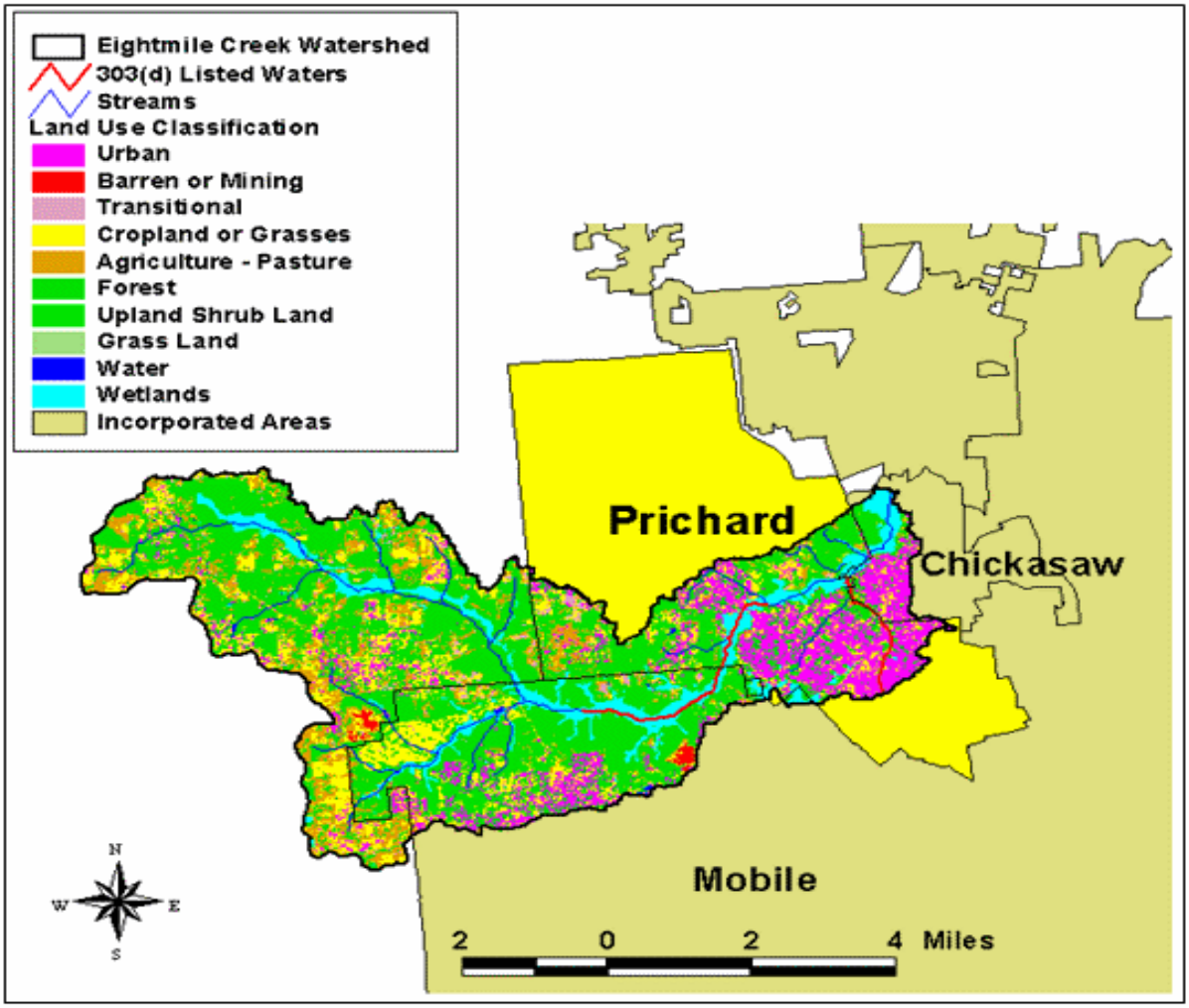

Figure 5. Land Use in the Eightmile Creek Watershed (from ADEM 05).

Historical Significance

Prichard is a community of rich history and cultural diversity. According to the City of Prichard Comprehensive Plan of 2006, the incorporation of the City of Prichard took place in 1925. At that time small settlements began popping up throughout the area currently included in the city limits more than 80 years before. Settlements in Africatown, Whistler, Eight Mile, and east Prichard began throughout the mid to late 1850's. Following incorporation, the city would become a bustling town that would see its population rise to more than 47,000 in 1960. A period of population decline began in the late 1960's and continues today.

The 2006 Comprehensive Plan states that the historic settlement of Africatown includes portions of Prichard and Mobile bordering Telegraph Road (U.S. 43). While settlers arrived in the 1830's, its most notable settlers and namesakes arrived in 1860 when a slave trade ship named the *Clotilde* landed on the banks of the Mobile Bay about three miles north of downtown Mobile. The land marked the last recorded attempt to import Africans into the United States for the purpose of slavery. These people would later form the nucleus of Africatown. After the Civil War, the original group of intended slaves and others who joined them formed their own, largely self-governing community, all the while maintaining a strong sense of African cultural heritage. This sense of heritage and sense of community remains today.

A large parcel of undeveloped, city-owned land along Chicasabogue Creek between Shelton Beach Road and Crystal Springs Road in the Eight Mile area has been designated by the State of Alabama for future development as a state park celebrating the history of the Africatown community. A living-history African village concept has been proposed for the park.

The Whistler community is one of the oldest communities in the region with houses dating back to the early 1800's. The Alabama Historical Commission listed the Whistler Historic District in 1975. The historic district includes the Main Street industrial area and Whistler. The historical designation of this district is largely symbolic and does not provide regulatory protection to the integrity of the district or to the individual buildings or landscapes (see City of Prichard Comprehensive Plan, pages 2-27 – 2-29).

Environmental Resources

Natural Resources

The primary natural resources in the Watershed include both parcels of undeveloped woodland and marshland, especially in the northern portion, and creek and estuary environments, including Eightmile Creek, Chickasabogue Creek, and their tributaries and branches. Eightmile Creek flows through the center of Prichard, dividing the Eight Mile Community on the north side from Whistler and East Prichard areas to the south. The Eightmile Creek watershed includes approximately the southern third of the Eight Mile Community, most of the Whistler Community, and the Bessemer area of East Prichard. Eightmile Creek's riparian corridor includes a wide floodway and relatively steep banks.

Chickasabogue Creek flows across the northern portion of the Eight Mile Community and into the Mobile River. The portion of Chickasabogue Creek which flows through the city of Prichard has a wide floodway, with extensive acreage in the flood zone. The relatively large area in the flood zone creates a buffer around the creek, which is an opportunity to retain natural areas within the city, maintaining the health of the stream as well as offering recreational opportunities.

The 2006 City of Prichard, AL Comprehensive Plan recommends that the flood areas around the City's creeks should be used as buffers, with no permanently occupied buildings. These buffer areas may be considered for recreational use, but maintaining a more natural appearance and function should be a priority. Health of natural ecosystems, including stream ecosystems, is also tied to promotion of good environmental practices throughout the city, including stormwater and sewer maintenance and treatment, and reduction in negative activities such as unauthorized dumping on vacant parcels and properties.

Opportunities for active recreational use of flood prone areas are limited. The 2006 Comprehensive Plan suggests that passive recreational opportunities such as pedestrian and bicycle trials are appropriate for these areas, with linkages to surrounding residential areas where access easements can be obtained. Otherwise the naturally wooded landscape should be preserved to the extent possible (see City of Prichard, AL Comprehensive Plan pages 2-30 – 2-31).

Endangered and Threatened Species

According to the U.S. Fish and Wildlife Service there are approximately 79 species of animals in danger of becoming extinct in Alabama. Around 20 of these species are found in Mobile County. In addition, there are 18 species of plants which are endangered or threatened (http://www.outdooralabama.com/watchable-wildlife/regulations/endangered.cfm).

Appendix A lists local animal and plant species that may currently be found within the Eightmile Creek Watershed. The intent of the lists is to provide information regarding the local species when restoring, creating, or protecting native environments in the area. The resources used to gather and compile these lists were retrieved from multiple online recourses such as Alabama Gap and The Alabama Natural Heritage Program.

Problem Identification, Project Goals, Solutions

Problem Identification

Major contamination problems have been identified by ADEM in the TMDL for the Eightmile Creek Watershed as well as by the Mobile Group in the Source Assessment Report. Two water bodies within the watershed have been placed on the 303(d) list; Eightmile Creek and Gum Tree Branch. Due to bacteria and fecal coliform, these water bodies are violating state water quality criteria. Source assessment is an important aspect of the watershed plan; to properly address contamination problems it is necessary to understand its source. Because this plan focuses on water quality problems associated with nonpoint source pollution it is necessary to differentiate between point sources and nonpoint sources of pollution. Typically, point source impacts can be quantified through permit limits and/or direct measurements at a certain location. The potential for nonpoint source pollution can be assessed by examining the extent of human activity in a watershed.

Point Sources

In general, coliform loadings originate from either point or nonpoint sources. A point source is defined as a discernable, confined, and discrete conveyance from which pollutants are or may be discharged to surface waters. Point source contributions can typically be attributed to the following:

- Municipal wastewater facilities
- Municipal Separate Storm Sewers (MS4s)
- Illicit discharges
- Leaking or overflowing sewers

Municipal wastewater treatment facilities are permitted through the National Pollutant Discharge Elimination System (NPDES). Larger treatment facilities have disinfection systems that remove fecal coliform bacteria in effluent before it is discharged. Treatment facilities treat human waste received from collection systems and then discharge their effluent into a nearby stream.

Municipal Separate Stormwater Systems (MS4s) are point sources also regulated by the NPDES program. Discharge from stormwater pipes or conveyances potentially include urban runoff high in bacteria and other pollutants. Illicit discharges are made when facilities or persons discharge fecal coliform bacteria without a permit, or violate their defined permit discharge limit by exceeding the fecal coliform concentration. According to ADEM Water Quality Branch, limits are now based on *E. coli*, that methodology will be addressed in future monitoring.

In urban settings, sewer lines typically run parallel to the stream in the floodplain. If there is a leaking or overflowing sewer line, high concentrations of fecal coliform can flow into the stream or leach into the groundwater. Groundwater monitoring wells can signal if there are leaking sewer lines contributing to the problem.

Nonpoint sources

Nonpoint sources of fecal coliform bacteria do not have one discharge point, but rather occur over the entire length of a stream or waterbody. On the land's surface, fecal coliform bacteria accumulate over time and wash off during rain events. As the runoff transports the sediment over the land surface, more fecal coliform bacteria are collected and carried to the stream. While the concentrations of bacteria are accumulating, they also die and decay. The net loading into the stream is determined by the local watershed hydrology. Nonpoint sources of fecal coliform can be quantified from the following list of contributors:

- Urban runoff
- Septic systems in urban or rural areas
- Wildlife in forested areas
- Manure application to row crops and/or pasture
- Confined Animal Feeding Operations (CAFOs) and livestock grazing

Fecal coliform loading from urban areas is potentially attributable to multiple sources, including storm water runoff, illicit discharges of sanitary waste, runoff from improper disposal of waste materials, and domestic animals. Septic systems are common in unincorporated areas, may exist in some urban areas, and may be direct or indirect sources of bacterial pollution via ground and surface waters. Septic systems have the potential to deliver fecal coliform bacteria loads to surface waters due to system failure and malfunction. Wildlife deposit feces onto land surfaces where it can be transported during storm events to nearby streams. Wildlife deposits can be from a wide range of species in Alabama, but the most common are deer, raccoons, and waterfowl.

Point Sources in the Eightmile Creek Watershed

ADEM maintains a database of current NPDES permits and GIS files that locate permitted outfalls including municipal, semi-public/private, industrial, mining, and industrial storm water. For Eightmile Creek and Gum Tree Branch, there are no facilities permitted to discharge within the watersheds, although there are municipal sanitary sewer collection systems serving the area which deliver waste to facilities discharging elsewhere.

The two municipal wastewater plants operated by the Prichard Water Works and Sewer Board are the Carlos A. Morris WWTP and the Stanley Brooks WWTP. The Brooks plant is located within the Eightmile Creek watershed, but discharges into Chickasaw Creek upstream of the confluence with Eightmile Creek. The Morris WWTP is located to the south and discharges into Threemile Creek. In addition, the Mobile Smith WWTP, operated by MAWSS, receives wastewater from a collection system partially located within the Eightmile Creek watershed. Table 6 contains the permit limitations for the point sources that have collection systems within the Eightmile Creek and Gum Tree Branch watersheds. Figure 6 shows the location of each facility serving areas within the impaired watershed.

Although all of the municipal plants serving the Eightmile Creek Watershed discharge to other waterbodies their collection systems have failed frequently, resulting in overflows and leaks discharging untreated sewage to drainage ditches and streams draining to the impaired segments. Collection system operators are required to report these non-permitted discharge events to ADEM.

Figure 7 shows sanitary sewer overflows from the Prichard and MAWSS collection systems from 1997 to April 2002. A list of these overflows as reported to ADEM may be found in the 2005 TMDL report. Based upon the reports, the overflow events shown in Figure 7 resulted from blockage in lines due to grease, infiltration and inflow due to heavy rain, and pump failure.

The Prichard Water Works and Sewer Board was served with a Consent Decree handed down in the Mobile County Circuit Court in December 1996 requiring the Board to take “all appropriate steps necessary to eliminate further non-permitted discharges of untreated or partially treated wastewater.” (ADEM, 1997) Furthermore, MAWSS was also served with a Consent Decree signed in April 2002.

Table 5. Permitted municipal point sources in the watershed that have collection systems upstream of the impaired segments (ADEM 2005).

NPDES Permit	Type of Facility	Facility Name or Permittee	Significant Contributor of Fecal Coliform
AL0023205	Municipal	Prichard Carlos A. Morris WWTP	Yes
AL0055204	Municipal	Prichard Stanley Brooks WWTP	Yes
AL0020885	Municipal	Chickasaw Lagoon	No
AL0023094	Municipal	Mobile Smith WWTP	No
ALS000002	MS4	Mobile Co. Commission; City of Saraland; City of Creola; City of Pritchard; City of Saraland; City of Satsuma; City of Chickasaw; AL DOT	Yes*
ALS000007	MS4	City of Mobile; AL DOT	Yes*

* Note: In the MS4 service area, pollutant loads which could include urban runoff and/or failing septic systems are considered in the load allocations. Unpermitted sources, such as illicit discharges and sanitary sewer overflows, have a 100% reduction and are not considered part of the watershed allocations or load allocations.

Table 6. NPDES Permit Limits for Point Sources (ADEM 2005).

NPDES Permit	Facility Name or Permittee	Flow (mgd)	Receiving Waterbody
AL0023205	Prichard Carlos A. Morris WWTP	4.0	Threemile Creek
AL0055204	Prichard Stanley Brooks WWTP	1.5	Chickasaw Creek
AL0020885	Chickasaw Lagoon	1.5	Chickasaw Creek
AL0023094	Mobile Smith WWTP	12.8	Threemile Creek
ALS000002	Mobile County Commission and associated permittees (see Table 3-1)	---	Numerous
ALS000007	City of Mobile and AL DOT	---	Numerous

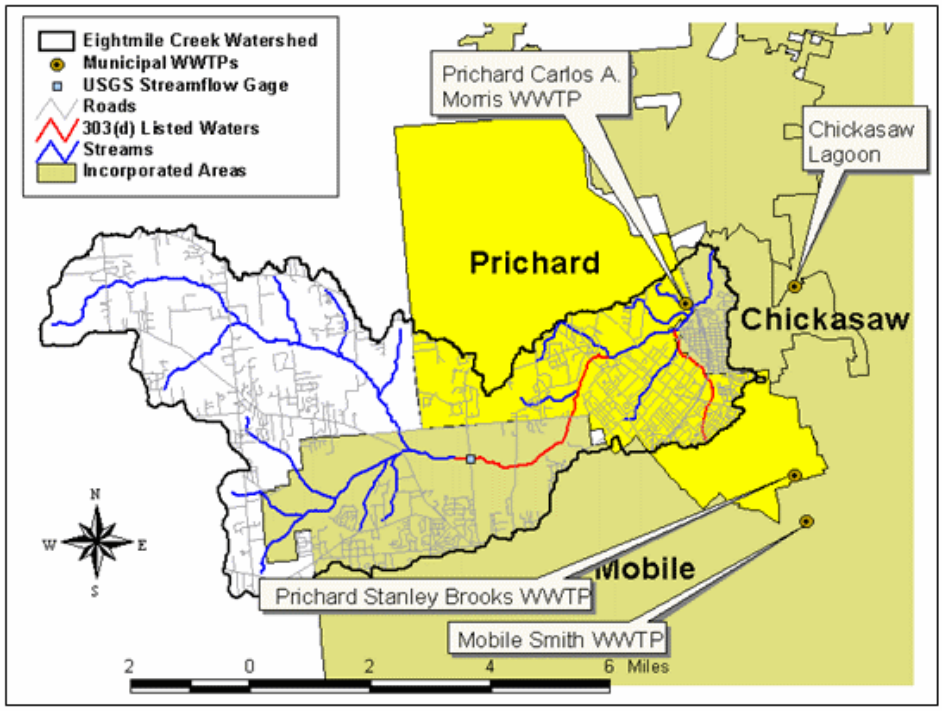

Figure 6. Municipal WWTPs with Collection Systems in the Eightmile Creek Watershed, Including Gum Tree Branch (ADEM 2005).

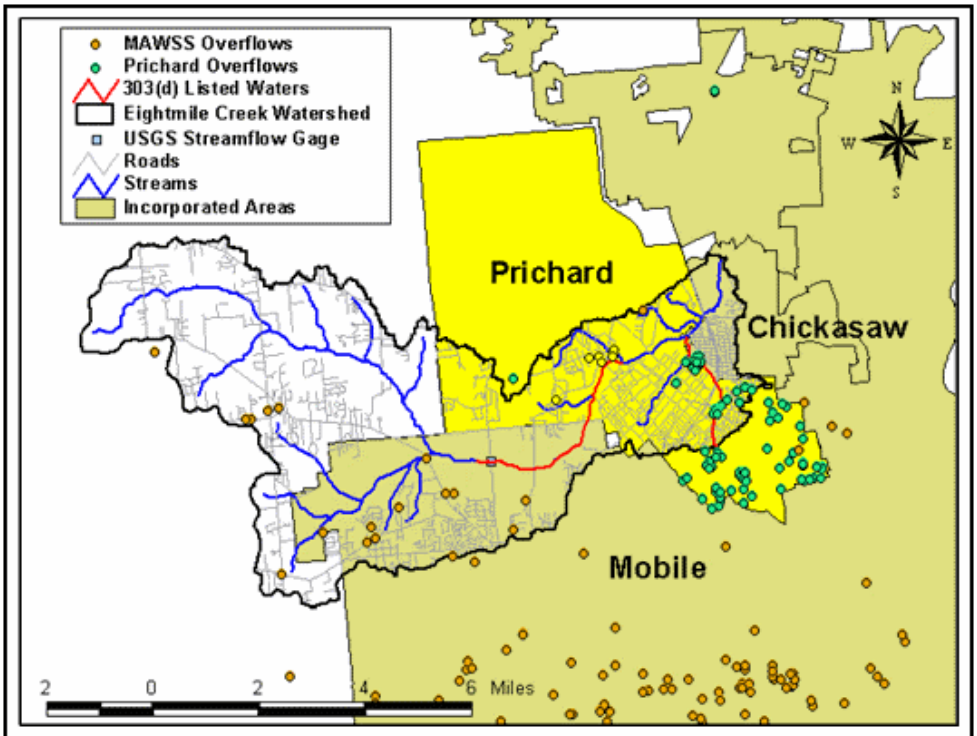

Figure 7. Sanitary Sewer Overflows Reported from 1997 to April 2002 (ADEM 2005)

Nonpoint Sources in the Eight-Mile Creek Watershed

Urban land areas are a potential source of fecal coliform runoff from failing septic systems, failing sanitary sewer collection systems, urban animals, and illicit discharges. As shown in Table 3, the urban component is 14 percent of the land use. The land use coverage is dominated by forest at 57 percent with row crops and pasture comprising the rest at 7 percent and 18 percent, respectively. Table 3 displays all of the land use coverages by subwatershed. Figure 5 shows the distribution of the land use for areas contributing to Eightmile Creek and Gum Tree Branch.

The anthropogenic inputs of fecal coliform can be categorized by estimates of the population connected to sewer in addition to the population with onsite wastewater (septic) systems. The population data are summarized in Table 2 from US Census resources. Table 7 summarizes the US Census information by tract and lists the number of septic systems within each subwatershed from the 1990 Census reports. Figure 8 shows the US Census tracts to correspond with Table 7. Given the percent of population change in the area, the 2000 population and number of septic systems are estimated by tract for each subwatershed, and presented in Table 8. If the population decreased between 1990 and 2000, the number of septic systems was assumed to be constant for this analysis.

Sanitary sewer overflows are a predominant source of fecal coliform into Eightmile Creek and the Gum Tree Branch. Due to the large contribution of loadings into the system, an inventory of reported overflows was summarized into Tables 9 and 10. Figure 10 shows pictures of an overflow event captured by ADEM on the Gum Tree Branch in 1998.

Table 7. Number of Septic Systems in 1990 by US Census Tract (from ADEM 05).

Census Tract	1990 Population	Persons per Household	Number of Housing Units	Using Public Sewer	Onsite Wastewater System	Other	Area (sq. mi.)	2000 Population*
34.01	780	2.79	296	255	41	0	2.0	790
34.02	2,752	2.82	1,007	784	223	0	3.5	2,789
34.04	2,455	2.84	921	779	142	0	0.9	2,488
34.05	2,040	2.72	754	711	43	0	0.8	2,067
34.07	6,165	2.91	2,249	743	1,498	8	8.4	6,248
34.08	3,789	2.82	1,409	1300	109	0	3.1	3,840
40	4,957	3.08	1,812	1776	31	5	0.7	4,137
48	3,258	3.04	1,345	1329	11	5	0.8	2,719
49	4,688	3.00	1,666	1546	106	14	2.0	3,912
50	2,179	2.96	822	792	30	0	1.2	1,818
51	1,581	2.65	640	630	10	0	0.4	1,513
53	2,393	2.22	1,093	1086	7	0	2.1	2,290
61.01	8,745	2.97	3,118	650	2,461	7	75.1	7,298
61.02	2,987	2.92	1,132	103	1,023	6	10.4	2,493
61.03	3,446	3.09	1,197	156	1,019	22	6.5	2,876
63.01	5,621	2.98	1,972	61	1,881	30	33.0	6,751
63.02	4,483	2.98	1,566	124	1,428	14	11.4	5,384
64.02	4,368	3.05	1,582	178	1,379	25	6.2	5,246
161.03	1,372	2.79	506	124	382	0	1.3	1,145

*Estimated

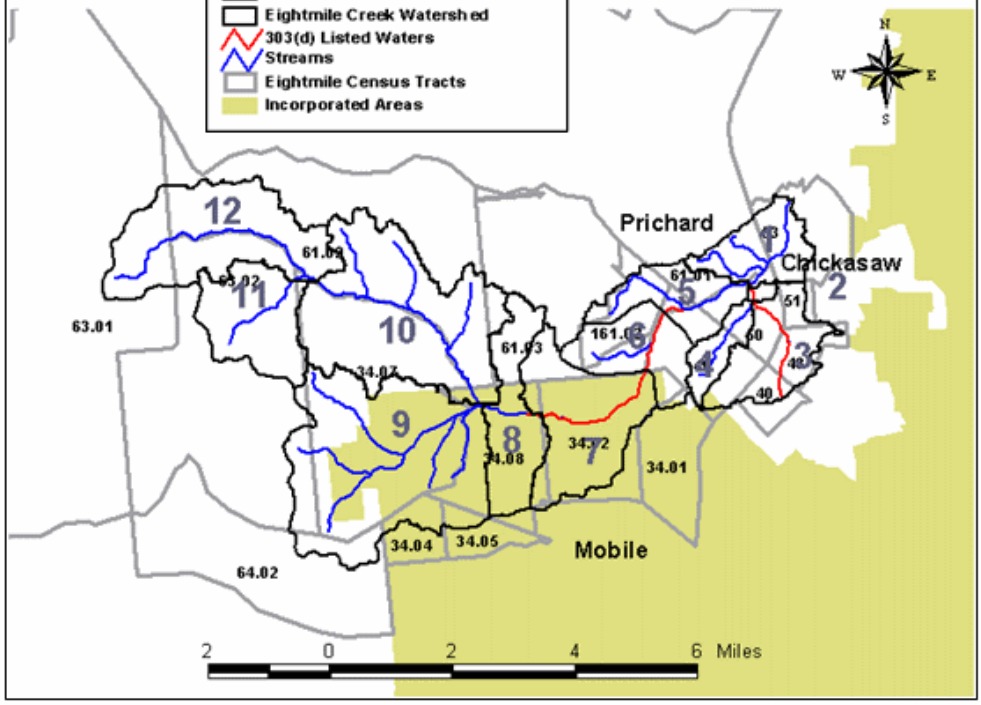

Figure 8. US Census Tracts Used for Estimating the Number of Septic Systems (from ADEM 05).

Table 8. Number of Septic Systems by Subwatershed (from ADEM 05).

Subbasin	1990 Population	Number of Housing Units	Using Public Sewer	Septic System	Other	2000 Population*	2000 Septic System*
1	1,273	558	527	31	0	1,188	31
2	216	82	79	3	0	180	3
3	8,305	3,204	3,122	72	10	7,071	72
4	1,721	621	582	35	4	1,437	35
5	1,943	708	479	226	3	1,622	226
6	2,437	875	550	319	6	2,065	319
7	2,855	1,041	765	275	2	2,840	275
8	2,391	879	697	179	3	2,350	179
9	7,147	2,622	1,348	1,266	8	7,371	1305
10	3,506	1,291	385	900	6	3,362	900
11	1,028	360	33	324	3	1,226	388
12	1,354	493	40	449	4	1,387	460

*Estimated

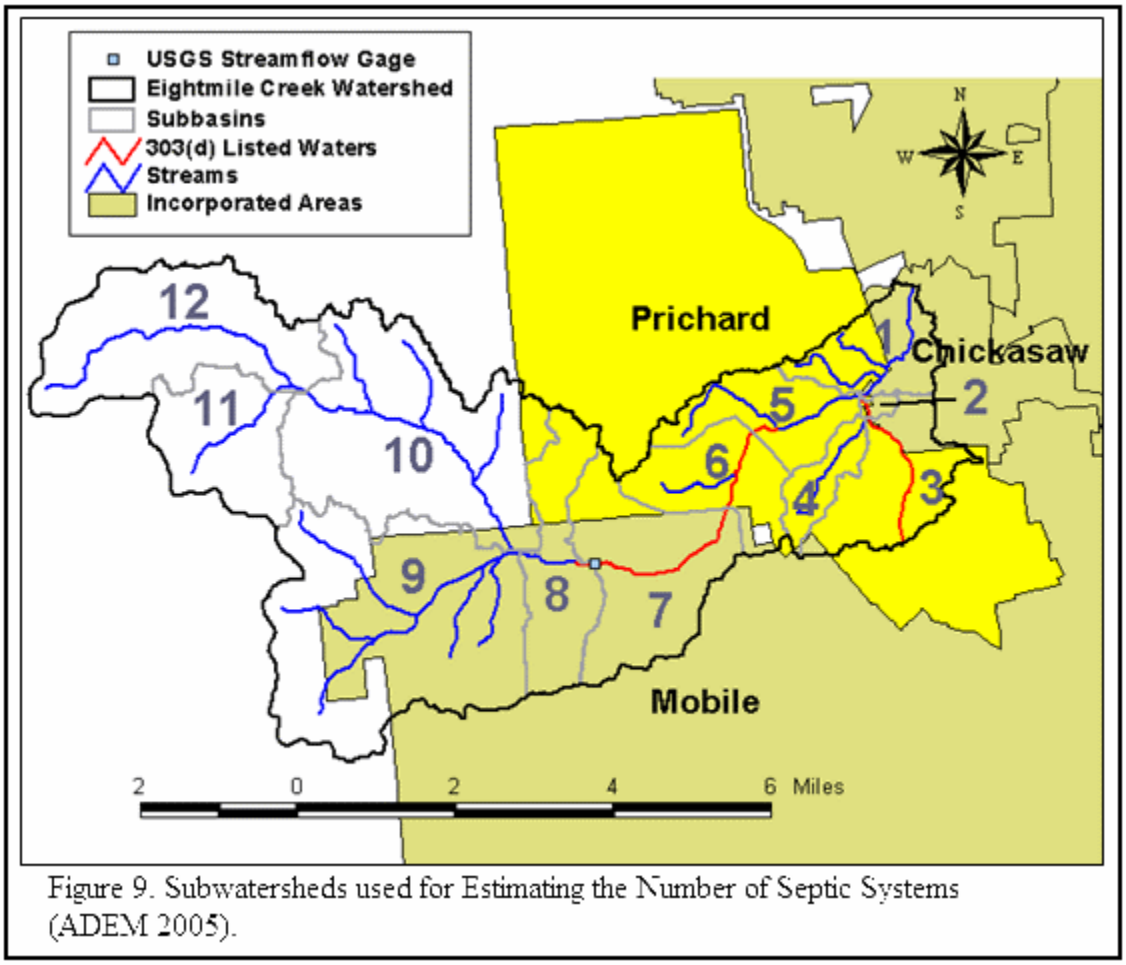

Figure 9. Subwatersheds used for Estimating the Number of Septic Systems (ADEM 2005).

Figure 10. Gum Tree Branch Sanitary Sewer Overflows (ADEM 2005).

Table 9. Reported Events and Estimated Volumes of Sanitary Sewer Overflows (ADEM 2005).

Year	Gum Tree Branch		Eight Mile Creek	
	No. of Reported Overflows	Volume (gallons)	No. of Reported Overflows	Volume (gallons)
1996	1	40,000		
1997	12	1,985,000	2	31,200
1998	3	138,000	2	26,750
1999	2	21,000	2	19,000
2000	10	423,000	7	24,300
2001	1	500	11	40,139
2002	4	21,000	4	8,320

Table 10. Reported Causes for Sanitary Sewer Overflows in 2000 and 2001 (ADEM 2005).

Reporting Agency Reason for Spill	Prichard		MAWSS	
	No. of Spills	Percent of Total	No. of Spills	Percent of Total
Infiltration & Inflow	55	44	79	33.8
Grease/Blockage	26	20.8	109	46.6
Broken Line	21	16.8	38	16.2
Pump Station Failure	19	15.2	8	3.4
Other	4	3.2	0	0
Total	125	100	234	100

Load Reduction Estimates

In ADEM's 2005 TMDL analysis, a loading curve approach was developed as a result of the sufficient amount of data and information available in the watershed. With the known sources of fecal coliform loads such as septic system failures, sanitary sewer overflows, leaking sewer lines, and illicit discharges, a loading curve was determined to be the most appropriate method of analyzing existing data on a consistent scale.

For Eightmile Creek and the Gum Tree Branch, an instantaneous fecal coliform load was selected as the appropriate endpoint for the TMDL. Geometric mean data were collected during 1996, 1997, and 1998, on Eightmile Creek, but the violations of the instantaneous versus the geometric mean were more prevalent during 1996 and 1997. Even though the 1998 dataset was limited, the existing loads were included in the loading curve approach. For these two TMDLs, a reduction based on the geometric mean criteria would not be protective of the instantaneous criteria for the critical conditions period. Therefore, the TMDL is expressed as counts per day based on the instantaneous criteria.

Utilizing the loading curve approach, the TMDL was developed by applying the critical conditions to the existing load, examining the difference between the existing load and TMDL, and calculating a percent reduction. Since sanitary sewer overflows and illicit discharges are not permitted activities, the TMDL calls for complete removal of both of these sources. The remaining sources of fecal coliform are leaking sewer lines and failing septic systems. A 72% reduction was determined from the loading curve.

As shown in Table 11, the TMDL represents the total maximum daily load for the waterbodies to meet criteria for fecal coliform. Since it was impossible to determine the proportion of the TMDL attributable to MS4 pipes and conveyances, the load allocation and MS4 wasteload allocation are designated as identical percent reductions from the existing conditions. The required reductions will be sought through implementation measures with follow-up monitoring conducted according to ADEM's basin rotation schedule.

Table 11. Required Load Reductions for Eightmile Creek and Gumtree Branch (ADEM 2005).

Impaired Segment	Existing Load (counts/day)	TMDL (counts/day)	Required Percent Reduction for LA	Required Percent Reduction for MS4 WLA
Eight Mile Creek	5.43 E+12	1.53 E+12	72%	72%
Gumtree Branch	5.30 E+12	1.19 E+12	78%	78%

Best Management Practices

In order to improve and preserve the water quality of the Eightmile Creek Watershed, best management practices (BMPs) need to become general knowledge and applied through education, voluntary adoption, and regulatory enforcement. Some BMPs to reduce pollution from non-point sources include:

1. Determine the scope of failure for septic systems in the Eightmile Creek Watershed in order to aide addressing this problem and tracking progress in its remediation.
2. Gradual remediation of failing residential septic systems through both education/incentives and regulation such as time-of sale inspections.
3. Public demonstrations and education on the proper maintenance of septic systems suitable for the geological environment of the Eightmile Creek Watershed.
4. Promotion and construction of clustered community wastewater treatment facilities for the areas that currently contain numerous older and often failing septic systems.
5. Riparian corridor restoration and soil retention through planting of trees and shrubs and maintenance of natural vegetative cover along stream banks.
6. Provide education on low-impact development practices to prevent non-point source pollution.
7. Reduction of runoff from commercial and residential lawns through education, soils tests, fertilizer application plans, rain gardens, and retention basins.
8. Work with city and county regulatory agencies to change ordinances and enforce BMPs for development.

Action Plan

The initial focus of this Watershed Management Plan is on three major water quality goals:

1) Remediation of failing septic systems and prevention of system failure through education, regulation, cost-share programs, promotion of clustered/regulated community treatment systems, and other incentives, and support the efforts of the Mobile Area Water and Sewer System and Prichard Water and Sewer Board to continue to upgrade and expand sanitary sewer infrastructure and encourage residents to connect to municipal sewage systems when possible.

According to the Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems published by the EPA, 1995 census data indicated that 10% of nationwide septic systems were failing (EPA 2003). In addition half of the septic systems were installed more than 30 years ago when regulations to ensure proper installation and functioning were lax or non-existent. This entire watershed is therefore considered a priority region for implementing wastewater treatment BMPs including advanced onsite treatment and community clustered wastewater treatment systems.

A cluster system combines elements of centralized sewer systems and septic systems. Each home or business has an interceptor tank for primary treatment, where bacteria digest the wastes. Instead of being discharged to a drainfield at the site, the liquid effluent is filtered and conveyed to a collection line, which transports it offsite for further treatment and discharge to the soil at a nearby location that serves the whole neighborhood or subdivision. Because the liquid effluent has already been partially broken down and filtered in each home's interceptor tank, it contains a minimum of solids and needs only to be trickled through a sand or synthetic filter bed for further purification before it is discharged to groundwater or surface waters. Solids remain in each home's tank, decomposing and reducing in volume, and any residual sludge is periodically pumped out and disposed of at the municipal facility. Cluster systems are an attractive option due to their relative low cost to install, operate, and maintain relative to the costs associated with expansion of traditional municipal sanitary sewage systems. The cluster system also has the added benefit of reducing loads to dated municipal sewer infrastructure.

The Mobile Area Water and Sewer System currently operates several clustered wastewater treatment systems in Mobile County. One of the first modules was designed to treat wastewater from 214 homes and a school. The system has a potential expansion to 240,000 gallons per day (gpd) to accommodate the potential build out of up to 1,072 homes. A second facility has a capacity of 170,000 gpd to handle the potential build out of 790 homes. These treatment systems are typically located on land given to the utility by the developer. The developer also shares in the cost of construction of the effluent sewers and treatment filters. By providing a cluster treatment system, the development density can be increased by about 20%. The additional lots help offset the investment in the system (White et al. 2000).

2) Reduction of stormwater runoff through education on home and yard products, low-impact development practices, incentive programs, workshops, and field days.

Non-point source pollution in the region is also being accelerated by development outside of downtown Mobile where large subdivisions are being placed upon what was once predominantly forested land. Impacts of detention, silt fences, and other BMPs to help prevent stormwater pollution are difficult to measure since the scope of the runoff problem has not been quantified. Education about the impacts of stormwater, its affects on water quality, and enforcement of required runoff prevention measures is seen as the most feasible answer to this water quality threat now.

3) Identifying and prioritizing key riparian corridors and streams for preservation and restoration to promote natural filtration of runoff and to provide recreational access to residents.

The 2006 City of Prichard, AL Comprehensive Plan recommends that the flood areas around the City's creeks should be used as buffers, which is an opportunity to retain natural areas within the city, maintaining the health of the stream. These buffer areas may be considered for recreational use. Compiling and prioritizing a comprehensive list of areas suitable for restoration is a necessary first step recommended in this plan. Currently, restoration activities are underway within the watershed on an unnamed tributary to Eightmile Creek that runs adjacent to a park in the City of Prichard. The project will restore a segment of the streambank and provide additional recreational access to residents and serve as an example for future restoration efforts within the Watershed (See Appendix E).

The following tables (Table 12 and Table 13) outline specific actions and projects that the Watershed Committee for this initial Eightmile Creek Watershed Management Plan have presented to address the main concerns, sanitary sewer failure, septic system failure, and non-point runoff. These projects are designed based on previous experience, feasibility, and regional demographics to provide the needed focus on projects that are most effective. The tables have been structured to clearly address issues deemed critical by the EPA in its guidance for the Nine Minimum Elements for Watershed Management Plans.

Table 12. BMP Action Plan

BMP/Reduction Action	Management Practices	Financial Assistance	Responsible Member	Schedule/ Milestones	Monitoring/ Evaluation
Create accountability for local septic issues	Promote use of a septic problem hotline	MCHD	MCHD	Complete by 2013	Monitor use and follow-up through user surveys
Create database for onsite septic system tracking and regulation	Compile a septic system database and track status, send out reminders for regular maintenance	MCHD, ADEM, 319 grant	MCHD, ADEM	Ongoing	Monitor public response to reminders for regular maintenance
Determine priority areas for septic system remediation	Map septic system locations in relation to soil types in order to target priority areas for remediation.	$5,000 MBNEP/ Auburn University	MBNEP	Complete by 2012	Identification of priority areas for septic system remediation
Bolster county and city regulations to prevent stormwater runoff from construction	Cities and counties require erosion prevention through riparian buffers and detention	City of Prichard, City of Mobile	City of Prichard, City of Mobile	Policy changes in local communities by 2016	Visually monitor runoff detention and filtering efforts
Promote rainwater detention and use	Implement rain barrel/cistern and rain garden program	CACWP	CACWP	Ongoing	Track use of rain barrels, cisterns, and rain gardens
Encourage use of environmentally friendly products for homes, businesses, lawns, and septic systems	Work with cities to create incentives for residents and businesses to use environmentally friendly products and LID practices	ACES, MBNEP, CACWP, MASGC, Local cities and communities, cost share grants, local retailers	CACWP	Ongoing	Document greater knowledge and use of environmentally friendly products and development practices.

Reduce Stormwater from new and existing developments	Create at least five examples of pervious concrete, rain gardens, detention basins, and other LID options	MBNEP, CACWP, grants, local businesses, cities, volunteers	CACWP	Ongoing	Public response/ requests for information/ others implementing LID tools
Increase recreational opportunities through the establishment of Greenways, riparian corridors, passive parks, etc.	Work with cities and county to locate properties suitable for recreational access.	MBNEP, CACWP, AFC, businesses, cities, volunteers	CACWP	Ongoing	Public response
Septic Tank Maintenance	Septic Tank Pump-Out program	MCHD, ADEM, USDA-NRCS, MAWSS, PWSB, local businesses, 319	CACWP	Ongoing	Sewage removed from households. Participant surveys to determine reception and value of educational program
Remediate failing septic systems with advanced wastewater treatment	Remediate failing septic systems in the watershed through education, enforcement, and cost-share programs	MCHD, ADEM, USDA-NRCS, MAWSS, PWSB, local businesses, 319	CACWP		Monitor system performance and impacts to surface water quality before and after remediation of systems
Remediate failing sanitary sewer systems	Work with MAWSS and PWSB to improve and expand infrastructure and encourage residential hook-ups where available	MAWSS, PWSB	MAWSS, PWSB, CACWP	Ongoing	Monitor system performance and impacts to surface water quality before and after remediation of systems

Education

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. The Watershed Planning Committee agreed that public education on water quality issues is the key to implementation of a successful watershed management plan. Some of the objectives for education include educating developers and home builders on best management practices for construction site and post-construction runoff prevention through the use of rain gardens, catchments, and other riparian buffers.

An education campaign is also needed to reach individual homeowners and offer them alternative, environmentally friendly products and practices to use on their homes, septic systems, and lawns. These may include yard waste recycling, runoff prevention (rain barrels, rain gardens, and bioswales), planting native varieties, getting soil tests, fertilizing only when needed, using rain barrels for yard watering and using less harsh chemicals in home and yard maintenance.

Table 13. Education and Outreach Plan

Education Opportunities	**Financial Assistance**	**Responsible Member**	**Schedule**	**Monitoring/Evaluation**
Educational Workshops and Field Days	ACES, AUMERC, MASGC, USDA-NRCS, ADCNR, MBNEP	ACES, AUMERC, MASGC, USDA-NRCS, ADCNR,	Five workshops by 2014	Follow up surveys
Educate local real estate communities about septic tank issues	ACES, MCHD, ADEM	CACWP	Two workshops by 2013	Community response/requests for more information and survey of willingness to help educate home buyers
Mobile County Watershed Festivals	USDA-NRCS	USDA-NRCS	One festival with 400 participants annually	Pre/Post surveys of water quality knowledge
Add local water quality news to TV and radio networks	MBNEP	MBNEP	Ongoing	Public feedback
Septic tank hotline	MCHD	MCHD	Ongoing	Tracking of calls received

Non-point Education for Municipal and Elected Officials (NEMO)	ADEM	ADEM, CACWP	Ongoing	Assessment of knowledge and behavior changes by participants
Alabama Water Watch (AWW)	Auburn U.	CACWP, MBNEP	Ongoing	Number of trained AWW monitors actively monitoring water quality within the watershed
Muddy Water Watch	Mobile Baykeeper	Mobile Baykeeper	Ongoing	Number of trained MWW monitors actively monitoring construction sites.
Websites/Social Media	MBNEP	MBNEP	Ongoing	Tracking of visitor numbers
Septic Tank Pump-Out Program	ADEM, MCHD, MAWSS, 319 grant	ADEM, MCHD, USDA-NRCS, CACWP	Ongoing	Assessment of knowledge and behavior changes by participants
Work with city and county regulatory agencies to change ordinances and enforce BMPs for development	MBNEP	MBNEP	Ongoing	Track changes to planning and zoning and ordinances and policies
Updates to the Eightmile Creek WMP every 5 years	MBNEP, CACWP, 319	MBNEP, CACWP	Ongoing-update every 5 years	Monitor public involvement in the WMP update process and ownership of its results and conclusions.

Monitoring for Water Quality and Watershed Changes

Organizations and individuals involved with this Watershed Management Plan and responsible for its continuation will need a measurement of the current water quality status and updates on how this changes over time to reflect changes in land use practices and development, natural forces, and conservation efforts. This information will allow the WMP to be changed and updated accordingly.

Currently there are several organizations gathering water quality data in the region including the Alabama Department of Environmental Management which collects water quality data in the Eightmile Creek Watershed as part of its routine rotating basin schedule. Studies by Auburn University are often published and easily accessible. Also, the Alabama Water Watch program trains volunteer water monitors and equips them with the tools necessary to track water quality changes within their own watersheds.

Future Needs

Watershed plans are designed to be revisited and evolve as water quality and conservation needs change within a watershed. Specifically responsible are watershed conservation groups such as the Mobile Bay National Estuary Program and the Coastal Alabama Clean Water Partnership, regulatory agencies such as the Mobile County Health Department and the Alabama Department of Environmental Management.

The Mobile Bay National Estuary Program, in cooperation with the Coastal Alabama Clean Water Partnership and other stakeholders, is eager to take immediate responsibility for implementing and updating this WMP. The MBNEP proposes to update this document by 2016 and again as needed every five years. This will allow for the completion of short-term goals and reassessment of progress towards long-term goals. The reassessment process will include reports to stakeholders on the progress of the tasks outlined in this WMP. Stakeholders will provide input for revisions to help this plan more accurately reflect changes in water quality status and land use changes.

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APPENDICES

APPENDIX A. Floral and Faunal Species of the Eight Mile Creek Watershed

Note that these lists were retrieved from multiple online recourses such as The Alabama Gap Analysis Project (http://www.auburn.edu/academic/forestry_wildlife/alabama_gap_analysis_project/) and The Alabama Natural Heritage Program (http://www.alnhp.org/submit_query.php).

Floral species of the Eightmile Creek Watershed

Uplands

Longleaf pine	*Pinus palustrus*
Southern red oak	*Quercus falcata*
Laurel oak	*Quercus hemispherica*
Dogwood	*Cornus florida*
Southern magnolia	*Magnolia grandiflora*
Persimmon	*Diospyros virginiana*
Winged sumac	*Rhus copallina*
Sparkleberry	*Vaccinium arboreum*
Blueberry	*Vaccinium elliotti*
Huckleberry	*Gaylussicia dumosa*
Foxglove	*Agalinis* spp.
Milkweed	*Asclepias* spp.
Sandhill lupine	*Lupinus diffusus*
Goldenrod	*Solidage* spp.
Panic grasses	*Panicum* spp.
Broomsedges	*Andropogon* spp.
Windmill grass	*Gymnopogon ambiguus*
Slash pine	*Pinus elliottii*
Saw palmetto	*Serenoa repens*
St. John's wort	*Hypericum fasciculatum*
Wax myrtle	*Myrica cerifera*
Pitcher plants	*Sarricenia* spp.
Sundew	*Drosera* spp.
Butterworts	*Pinguicula* spp.
Black titi	*Cliftonia monophylla*
Orchid species	*Pogonia ophioglossoides*
	Habenaria spp.
	Spiranthes spp.
Groundsel tree	*Baccharis halimifolia*
Marsh elder	*Iva frutescens*
Yaupon	*Ilex vomitoria*

Wetlands

Sedges	*Cyperus* spp.
Grasses	*Panicum* spp.
Reed	*Phragmites australis*
Wild rice	*Zizania aquatica*
Alligator weed+	*Alternanthera philoxeriodes*
Broad-leaved arrowhead	*Sagittaria latifolia*
Cattails	*Typha* spp.
Swamp tupelo	*Nyssa sylvatica*
Red maple	*Acer rubrum* spp.
Sweet gum	*Liquidamber styraciflua*
Bald cypress	*Taxodium distichum*
Wax myrtle	*Myrica cerifera*
Yaupon	*Ilex vomitoria*
Green briar	*Smilax* spp.
Muscadine	*Vitas rotundifolia*
Pepper bush	*Clethera alnifolia*
Bulrush	*Scirpus* spp.
Sawgrass	*Cladium jamaicense*
Wildmillet	*Echinochloa cusgalli*
Torpedo grass	*Panicum repens*
Giant cordgrass	*Spartina cynosuroides*
Spike grass	*Distichlis spicata*
Black needlerush	*Juncus roemerianus*

Submerged Grassbeds

Water nymph	*Najas guadalupensis*
Coontail	*Ceratophyllum demersum*
Pondweed	*Potemogeton* spp.
Tapegrass	*Vallisneria americana*
White waterlily	*Nymphaea odonata*
Floating heart	*Nymphoides aquatica*
Bladderwort	*Utricularia* spp.

Faunal species of the Eightmile Creek Watershed

Invertebrates

Hydrozoa	*Hydra americana*
Oligochaeta	*Ilyodrilus templetoni*
	Limnodrilus claparedianus
	Limnodrilus cervix
	Spirosperma ferox
	Branchiura sowerby
	Polychaeta *Amphectis gunneri*
	Hobsonia florida
	Laeonereis culveri
	Neanthes micromma
	Mediomatus ambeseta
	Streblospio benedicti
	Polydora cornuta
	Parandalia americana
Hirudinea	*Placobdella ornata*
Insecta	*Coelotanypus scapularis*
	Chironomus stageri
	Clinotanypus pinguis
	Cryptochironomus fulvus
	Glyptotendipes meridionalis
	Procladius bellus
	Dicrotendipes neomodestus
	Bezzia/Probezzia spp.
	Caenis diminuta
	Amphipoda *Corophium louisianum*
	Grandierellia bonnieroides
	Gammarus mucronatus
Myscidacea	*Bowmanella floridana*
Pelecypoda	*Rangia cuneata*
	Mulinia ponchartrainensis

Fish

Redear sunfish	*Lepomis microlophus*
Bluegill	*Lepomis macrochirus*
Orange-spotted sunfish	*Lepomis punctatus*
Longear sunfish	*Lepomis megalotis*
Green sunfish	*Lepomis cyanellus*
Black crappie	*Pomoxis nigromaculatus*
White crappie	*Pomoxis annularis*
Catfish	*Ictalurus* spp.
Largemouth bass	*Micropterus salmoides*
Southern flounder	*Paralichthys lethostigma*
Striped mullet	*Mugil cephalus*
shiners	*Notropis* spp.
Sheepshead minnow	*Cyprinodon variegatus*
topminnows and killifishes	*Fundulus* spp.
Tidewater silverside	*Menidia beryllinna*

Reptiles and Amphibians

toads	*Bufo* spp.
tree frogs	*Hyla* spp.
Bullfrog	*Rana catsebeiana*
Cricket frog	*Acris* spp.
salamanders	*Ambystoma* spp.
	Pseudotriton spp.
skinks	*Eumeces* spp.
Green anole	*Anolis carolinensis carolinensis*
Gulf Coast box turtle	*Terrapene carolina major*
Mississippi diamondback terrapin	*Malaclemys terrapin pileata*
Snapping turtle	*Chelydra serpentina serpentina*
Gopher tortoise	*Gopherus polyphemus*
Cooters	*Pseudemys* spp.
Grey rat snake	*Elaphe obsoleta spiloides*
Southern black racer	*Coluber constrictor priapus*
Copperhead	*Agkistrodon contorix contorix*
water snakes	*Nerodia* spp.
Pigmy rattlesnake	*Sistrurus miliarius*
Canebrake rattlesnake	*Crotalus horridus*
Diamondback rattlesnake	*Crotalus adamantus*
American alligator	*Alligator mississipiensis*

Birds

Permanent resident species

Red-tailed hawk	*Buteo jamaicensis*
Balck vulture	*Coragyps atratus*
Turkey vulture	*Cathartes aura*
Bobwhite	*Colinus virginianus*
Turkey	*Meleagris gallopavo*
American woodcock	*Philohela minor*
Mourning dove	*Zenaida macroura*
Chuck-will's-widow	*Camprimulgus carolinensis*
Screech owl	*Otus asio*
Barred owl	*Strix varia*
Carolina chickadee	*Parus carolinensis*
Carolina wren	*Thyrothorus ludovicianus*
Mockingbird	*Mimus polyglottus*
Brown thrasher	*Toxostoma rufum*
Red-winged blackbird	*Agelaius phoeniceus*
Cardinal	*Cardinalis cardinalis*
Rufus sided towhee	*Pipilo erythrophthalmus*
Killdeer	*Charadrius vociferus*
Snowy plover	*Charadrius alexandrinus*
Foster's tern	*Sterna forsteri*

Laughing gull	*Larus atracilla*
Black skimmer	*Rynchops niger*
Brown pelican	*Pelacanus occidenalis*
Great blue heron	*Ardea herodias*
Snowy egrat	*Egretta thula*
Black-crowned night heron	*Nycticorax nycticorax*
Clapper rail	*Rallus longiostris*

Winter resident species

Yellow bellied sapsucker	*Sphyrapicus varius*
Scissortailed flycatcher	*Muscivora forficata*
Eastern phoebe	*Sayornis phoebe*
Bewick's wren	*Thryomanes bewicki*
House wren	*Troglodytes aedon*
Winter wren	*Troglodytes troglodytes*
Robin	*Turdus migratorius*
Sharp-tailed sparrow	*Ammospiza caudacuta*
Evening grosbeak	*Hesperiphona vespertina*
Whip-poor-will	*Caprimulgus vociferus*
Common loon	*Gavia immer*
Horned grebe	*Podiceps auritus*
Double-crested cormorant	*Phalacrocorax auritus*
Hooded merganser	*Lophodytes cucullatus*
Common merganser	*Mergus merganser*
Pintail	*Anas acuta*
Green-winged teal	*Anas crecca*
Mallard	*Anas platyrhinchos*
American coot	*Fulica americana*
Semipalmated plover	*Charadrius semipalmatus*
Caspian tern	*Hydroporgne caspia*
Bonaparte's gull	*Larus philadelphia*
White pelican	*Pelacanus erythrorhynchos*
Marsh hawk	*Circus cyaneus*

Summer resident species

Cattle egret	*Bubulcus ibis*
Common nighthawk	*Chordiles minor*
Chimney swift	*Chaetura pelagica*
Acadian flycatcher	*Empidonax virescens*
Great-crested flycatcher	*Myiarchus crinitus*
Barn swallow	*Hirundo rustica*
Purple martin	*Progne subis*
Wood thrush	*Hylocichla mustelina*
Swainson's warbler	*Limnothlypis swainsonii*
Prothonotory warbler	*Protonotaria citrea*
Summer tanager	*Piranga rubra*
Green heron	*Butroides virescens*
Little blue heron	*Florida caerula*
Louisiana heron	*Hydranassa tricolor*
Least bittern	*Ixobruchus exilis*
Yellow-crowned night heron	*Nyctanassa violacea*
Osprey	*Pandian haliaetus*
Least tern	*Sterna albafrons*
Royal tern	*Thalasseus maximus*
Sandwich tern	*Thalasseus sandvicenis*

Migrant species

warblers	*Dendroica* spp.
flycatchers	*Empidonax* spp.
Cliff swallow	*Petrochelidon pryrronota*
Blue grosbeak	*Guiraca caerulea*
Bobolink	*Dolichonyx orzivorus*
Ruby-throated hummingbird	*Archilochus colubris*
American bittern	*Botalurus letigenosus*
Perigrine falcon	*Falco perigrinus*
Canada goose	*Branta canadensis*
Blue goose	*Chen caerulescens*
Black rail	*Lateralis jamaicensis*
Spotted sandpiper	*Actitis macularia*
Stilt sandpiper	*Micropalama himantopus*
Black tern	*Childonias niger*
Roseate tern	*Sterna dougalli*

Mammals

Opposum	*Didelphis marsupialis pigra*
Eastern cottontail rabbit	*Sylvilagus floridanus mallurus*
Grey squirrel	*Sciurus carolinensis carolinensis*
Striped skunk	*Spilogale putorius putorius*
Raccoon	*Procyon lotor varius*
Swamp rabbit	*Sylvilagus aquaticus littoralis*
Beaver	*Castor canadensis carolinensis*
Louisiana muskrat	*Ondatra zibethicus rivalicius*
River otter	*Lutra canadensis canadensis*
Mink	*Mustella vison mink*
White-tailed deer	*Odocoileus virginianus*
Bobcat	*Lynx rufus floridanus*
Grey fox	*Urocyon cinereoargenteus floridanus*
Florida black bear*	*Ursus americanus floridanus*
Nine-banded armadillo+	*Dasypus novemcinctus mexicanus*
Black rat+	*Rattus rattus*
Norway rat+	*Rattus norvegicus*
House mouse+	*Mus musculus brevirostris*
Nutria+	*Myocastor coypus bonariensis*

* Once common, these species are very rarely observed in the Eightmile Creek Watershed
+ Exotic introduced species

APPENDIX B. Eightmile Creek Watershed Planning Committee

Dave Armstrong, Alabama Department of Conservation and Natural Resources

Les Brown, Mobile Area Water and Sewer System

Dr. Bert Eichold, Mobile County Health Department

Ossia Edwards, Councilwoman, City of Prichard District 5

Troy Ephriam, Councilman, City of Prichard District 4

Stephanie Gapud, Alabama Forestry Commission

Patric Harper, US Fish & Wildlife Service

Patti Hurley, Alabama Department of Environmental Management

Charlene LeBleu, Auburn University

Kenneth Leslie, Alabama Forestry Commission

Mike McIntyre, Alabama Cooperative Extension Service

Joyce Nicholas, Mobile County Soil & Water Conservation District

Lee Reach, Alabama Department of Transportation

Charlie Reynolds, Alabama Department of Environmental Management

Randy Shaneyfelt, Alabama Department of Environmental Management Mobile Branch

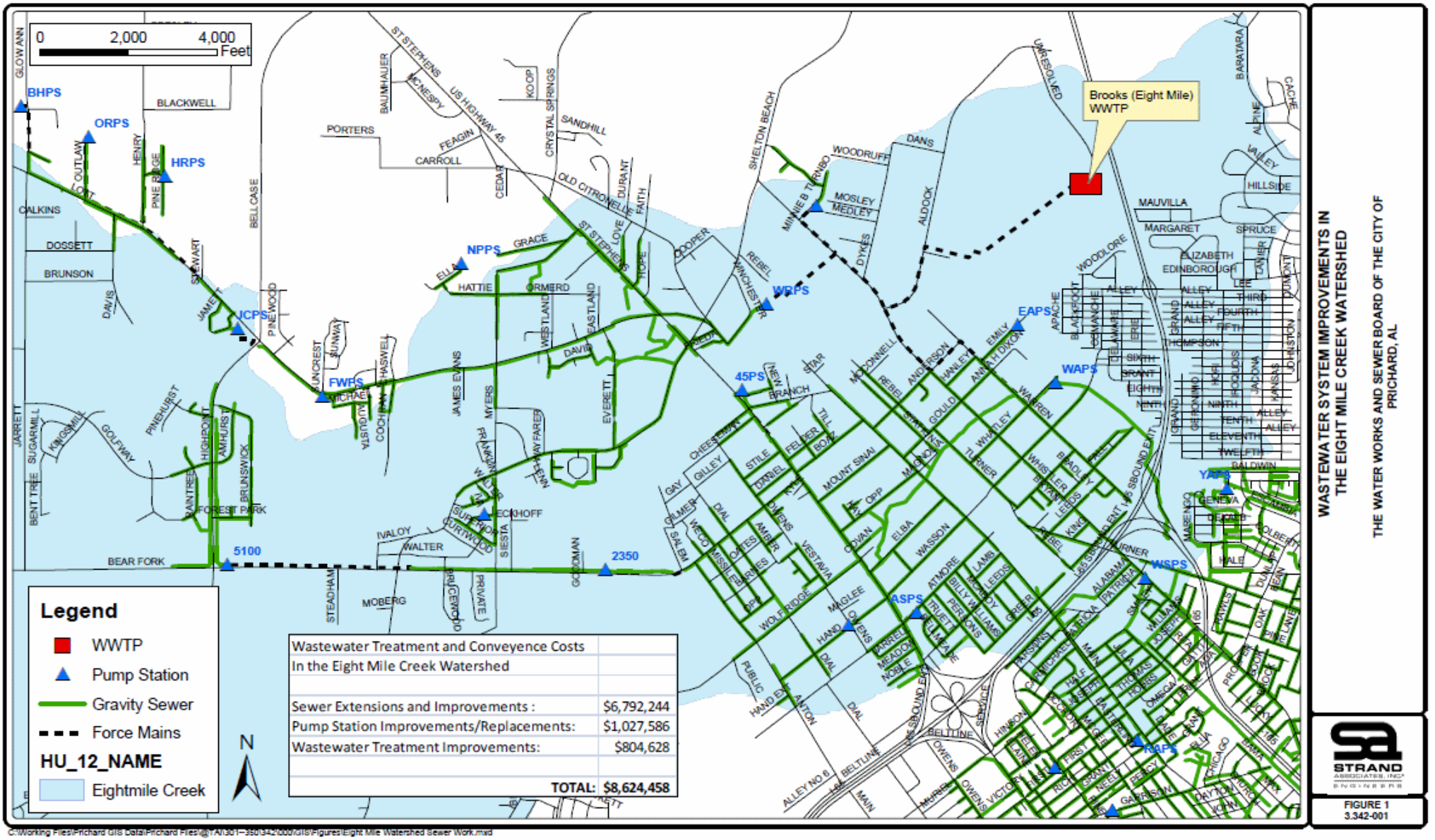
Steve Summersell, Alabama Department of Environmental Management Mobile Branch

Bill Swopes, The Water and Sewer Board of Prichard

Oletha White, Prichard Environmental Restorative Keepers

Christian Miller, Mobile Bay National Estuary Program

APPENDIX C. Sanitary Sewage Infrastructure and Upgrades within the Eightmile Creek Watershed by the Water and Sewer Board of the City of Prichard


0 2,000 4,000 Feet
Brooks (Eight Mile) WWTP
BHPS
ORPS
HRPS
NPPS
JCPS
FWPS
45PS
WRPS
EAPS
WAPS
YAPS
WSPS
ASPS
FAPS
5100
2350
Legend
WWTP
Pump Station
Gravity Sewer
Force Mains
HU_12_NAME
Eightmile Creek
N
Wastewater Treatment and Conveyence Costs In the Eight Mile Creek Watershed
Sewer Extensions and Improvements : $6,792,244
Pump Station Improvements/Replacements: $1,027,586
Wastewater Treatment Improvements: $804,628
TOTAL: $8,624,458
WASTEWATER SYSTEM IMPROVEMENTS IN THE EIGHT MILE CREEK WATERSHED
THE WATER WORKS AND SEWER BOARD OF THE CITY OF PRICHARD, AL
STRAND ASSOCIATES, INC. ENGINEERS
FIGURE 1
3.342-001
C:\Working Files\Prichard GIS Data\Prichard Files\@TA\301-350\342\008\GIS\Figures\Eight Mile Watershed Sewer Work.mxd

APPENDIX D. Funding Opportunities

Table -1. Composite List of Federal Funding Opportunities (Grants, Loans, and Revenue Sharing) (MBNEP 2010)

Funding Program	Contact	Description
Clearinghouse for Federal Grant Opportunities (Grants.gov)	Grants.gov Contact Center Phone: 1-800-518-4726 (24 hours/day, 7 days/week)	Administered by the U.S. Department of Health and Human Services, Grants.gov is a central storehouse for information on over 1,000 grant programs and provides access to approximately $500 billion in annual awards. This site also includes information about project funding that is available under the American Recovery and Reinvestment Act. www.grants.gov www.grants.gov/ForApplicants www.grants.gov/GetStarted
EPA Catalog of Federal Funding Sources for Watershed Protection	N/A	The Catalog of Federal Funding Sources for Watershed Protection Web site is a searchable database of financial assistance sources (grants, loans, and costsharing) available to fund a variety of watershed protection projects. http://cfpub.epa.gov/fedfund
EPA Clean Water and Drinking Water State Revolving Loan/Grant Funds (FY 2010)	James Dailey ADEM P.O. Box 301463 Montgomery, AL 36130-1463 334-271-7805 Email: jwd@adem.state.al.us	The Clean Water State Revolving Fund and the Drinking Water State Revolving Funds (SRF) are low-interest loan programs intended to finance public water and wastewater infrastructure improvements in Alabama. ADEM administers these funds for EPA, performs the required technical/environmental reviews of projects, and disburses funds to recipients. In 2010, project assistance loans totaled $43,450,775 in the CWSRF. In addition, $7,411,000 was available to fund green infrastructure, water and energy efficiency, and other environmentally innovative projects. The states establish limits for project awards; there is no statutory limit. www.adem.state.al.us/waterdivision/SRF/SRFMainInfo.htm www.adem.state.al.us/programs/water/srf.cnt
EPA Community Action for Renewed Environment (CARE) Grants	Michelle Boyd Office of Policy & Management EPA Region 4 boyd.michelle@epa.gov 404-562-8159 Davian Marraccini marraccini.davina@epa.gov 404-562-8293	Community Action for a Renewed Environment (CARE) is a competitive grant program that offers an innovative way for a community to organize and take action to reduce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. By providing financial and technical assistance, EPA helps CARE communities get on the path to a renewed environment. www.epa.gov/care

Funding Program	Contact	Description
EPA Five-Star Restoration Program Grants	Myra Price USEPA Wetlands Division Washington, DC price.myra@epa.gov 202-566-1225 Gail Harrison, Water Mgmt. Div. EPA Region 4 harrison.gail@epa.gov 404-562-9410	This program provides challenge grants, technical support and opportunities for Information exchange to enable community-based projects that restore wetlands and streams. Grant awards typically range from $5,000 to $20,000. www.epa.gov/wetlands/restore/5star www.epa.gov/water/funding.html (List of funding and financing resources)
EPA Gulf of Mexico (GOM) Program	Esther Coblentz USEPA Gulf of Mexico Program Office, Mail Code EPA/GMPO Stennis Space Center, MS 39529 228-688-1281 coblentz.esther@epa.gov	The goals of the GOM Program are: (1) to assist states, Indian Tribes, interstate agencies, and other public or nonprofit organizations in developing, implementing, and demonstrating innovative approaches relating to the causes, effects, extent,prevention, reduction, and elimination of water pollution: and (2) to expand and strengthen cooperative efforts to restore and protect the health and productivity of the Gulf of Mexico in ways consistent with the economic well-being of the region. Focus is on the states of Alabama, Florida, Louisiana, Mississippi and Texas. Grant awards typically range from $13,000 to $330,000. www.epa.gov/gmpo www.cfda.gov (Search for Program 66.475.)
EPA Non-Point Source Grant Program (Clean Water Act Section 319)	Federal and State Funds administered by states in EPA Region 4.	Through its 319 program, EPA provides formula grants to the states and tribes to implement nonpoint source projects and programs in accordance with Section 319 of the Clean Water Act (CWA). Nonpoint source pollution reduction projects can be used to protect source water areas and the general quality of water resources in a watershed. Examples of previously funded projects include the design and implementation of BMP systems for stream, lake and estuary watersheds. Grant awards vary by State. For individual state contacts in Region 4, visit www.epa.gov/region4/water/nps/grants/index.html
EPA Region 4 Special Appropriations Grants (State and Tribal Assistance)	Natalie Ellington, Chief Infrastructure Section 404-562-9453 ellington.natalie@epa.gov	Special appropriations grants fund special projects that are specifically identified in the State and Tribal Assistance Grant (STAG) account of the EPA appropriation. The recipient and amount of each grant are identified by Congress. These special projects implement the planning, design, and construction of a variety of water and wastewater infrastructure projects. Eligible costs may include planning, design, land acquisition, and construction to the extent that they are reasonable to the project objectives. Recipients prepare a plan that describes how the environmental or public health objectives will be achieved. www.epa.gov/region4/water/gtas/specialappropriations.html

Funding Program	Contact	Description
EPA Targeted Watershed Grants (and Water Trading Funding)	Bob Rose, Office of Water, EPA Washington, DC rose.bob@epa.gov 202-564-0322 Morgan Jackson EPA Region 4 jackson.morgan@epa.gov 404-562-9393	Established in 2003, the Targeted Watersheds Grant program is designed to encourage successful community-based approaches and management techniques to protect and restore the nation's watersheds. Grant awards typically range from $300,000 to $900,000. In 2010, EPA plans to award up to $600,000 under this program to an eligible entity to manage an Urban Watershed Capability Building Grant. www.epa.gov/owow/watershed/initiative
EPA Wetlands Program Development Grants (State- Tribal-Local Governments and State Universities only)	Contact Region 4 EPA office. Morgan Jackson EPA Region 4 jackson.morgan@epa.gov 404-562-9393	The EPA Wetland Program Development Grants are intended to encourage comprehensive wetlands program development by promoting the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. Projects build the capacity of states, tribes, and local governments to effectively protect wetland and riparian resources. Projects funded under this program support the initial development of a wetlands protection, restoration or management program or support the enhancement/refinement of an existing program. Non-profits are not eligible to compete under the current RFP. Grant awards will range from $100,000 to $600,000. Anticipate 10 awards and total program funding of $2,300,000. Some award may involve or relate to geospatial information. www.epa.gov/region4/water/wetlands.wetlands grants.html www.epa.gov/owow/wetlands/grantguidelines/
FEMA Flood Mitigation Assistance Program	Lloyd Hake Public Assistance Branch Recovery Division 500 C Street, SW Washington, DC 20472 202-646-3428 lloyd.hake@dhs.gov	The Flood Mitigation Assistance (FMA) program provides funding to states, federally-recognized Indian tribal governments, and communities so that cost effective measures are taken to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP). The long-term goal of FMA is to reduce or eliminate claims under the NFIP through mitigation activities. Three types of grants are available under FMA: Planning, Project, and Technical Assistance. Grants cannot exceed $50,000 to any community applicant. www.fema.gov/government/grant/government www.dhs.gov

Funding Program	Contact	Description
FEMA Hazard Mitigation Grant Program	Contact your state Hazard Mitigation Officer and local government official(s) for specific details.	The Federal Emergency Management Agency Hazard Mitigation Grant Program (HMGP) provides states and communities with resources to invest in long-term actions that help to reduce the toll from potential natural and manmade hazards. The program also supports the implementation of mitigation measures during the Immediate recovery from a disaster. The HMGP funds projects to protect either public or private property, as long as the project fits within the overall mitigation strategy of the state an/or local government and complies with program guidelines. in response to flood hazards, eligible projects include the elevation, relocation or acquisition and demolition of flood-prone structures, stormwater management projects and certain types of minor flood control projects. The state Is responsible for setting priorities for funding and administering the HMGP. www.fema.gov/government/grant/hmgp.index.shtm
NOAA Broad Agency Announcement (BAA)	Steve J. Drescher Policy Advisor Steve.j.drescher@noaa.gov	The purpose of this notice is to request proposals for special projects and programs associated with NOAA's strategic plan and mission goals, as well as to provide the general public with information and guidelines on how NOAA will select proposals And administer discretionary Federal assistance under this BAA. Funding for potential projects in this notice is contingent upon the availability of Fiscal Year 2010, Fiscal Year 2011 and Fiscal Year 2012 appropriations. Publication of this Announcement does not oblige NOAA to review an application beyond an initial administrative review, or to award any specific project, or to obligate any available funds. www.nmfs.noaa.gov
NOAA Coastal Services Center Cooperative Agreements	James L. Free U.S. Department of Commerce National Oceanic and Atmospheric Administration National Ocean Service Coastal Services Center 2234 South Hobson Avenue Charleston, SC 29405-2413 843-740-1185 James.L.Free@noaa.gov	The National Oceanic and Atmospheric Administration (NOAA) guides the conservation and management of coastal resources through a variety of mechanisms, including collaboration with the coastal resource management programs of the nation's states and territories. The mission of the NOAA Coastal Services Center is to support the environmental, social, and economic well being of the coast by linking people, information, and technology. The vision of the NOAA Coastal Services Center is to be the most useful government organization to those who manage and care for our nation's coasts. Grant awards typically range from $40,000 to $1,700,000. www.csc.noaa.gov/funding

Funding Program	Contact	Description
NOAA Coastal Zone Management Administration Awards	John King U.S. Department of Commerce National Oceanic and Atmospheric Administration National Ocean Service 1305 East-West Highway 11th Floor Silver Spring, MD 20910 301-713-3155 john.king@noaa.gov	The program assists states in implementing and enhancing Coastal Zone Management programs that have been approved by the Secretary of Commerce. Funds are available for projects in areas such as coastal wetlands management and protection, natural hazards management, public access improvements, reduction of marine debris, assessment of impacts of coastal growth and development, special area management planning, regional management issues, and demonstration projects with potential to improve coastal zone management. Grant awards typically range from $900,000 to $2,700,000; the median award is $2,300,000. www.coastalmanagement.noaa.gov
NOAA Community-Based Habitat Restoration Partnership Grants	Melanie Gange U.S. Department of Commerce National Oceanic and Atmospheric Administration Office of Habitat Conservation, HC-3 1315 East-West Highway Silver Spring, MD 20910 301-713-0714 Melanie.Gange@noaa.gov	The NOAA Community-based Restoration Program provides funds for small-scale, Locally driven habitat restoration projects that foster natural resource stewardship within communities. The program seeks to bring together diverse partners to implement habitat restoration projects to benefit living marine resources. Projects might include restoring salt marshes, mangroves, and other coastal habitats; improving fish passage and habitat quality for anadromous species; removing dams; restoring and creating oyster reefs, removing exotic vegetation and replanting with native species; and similar projects to restore habitat or improve habitat quality for populations of marine and anadromous fish. www.nmfs.noaa.gov/habitat/restoration/funding_opportunities/funding.html
NOAA Estuary Habitat Restoration Project Funding	See website link at right	The Estuary Restoration Act (ERA) Council seeks projects that achieve costeffective restoration while promoting partnerships among agencies and between public and private sectors. Eligible habitat restoration activities may include (but are not limited to) improvement of estuarine wetland tidal exchange or reestablishment of historic hydrology; dam or berm removal; improvement or reestablishment of fish passage; appropriate reef/substrate/habitat creation; planting of native estuarine wetland and submerged aquatic vegetation; reintroduction of native species; control of invasive species; and establishment of riparian buffer zones in the estuary. Projects will be evaluated for their support of the Estuary Habitat Restoration Strategy. Awarded proposals may be funded by any of the five ERA agencies, depending on annual appropriated ERA funds. http://era.noaa.gov

Funding Program	Contact	Description
U.S. Army Corps of Engineers Aquatic Ecosystem Restoration (CAP Section 206)	Todd Boatman Mobile District Office 251-694-4101	Work done under this authority may carry out aquatic ecosystem restoration projects that will improve the quality of the environment, are in the public interest, and are cost-effective. There is no requirement that an existing Corps project be involved. The median grant awarded under this program is $300,000. A ceiling of $5,000,000 is established for each project. http://www.sam.usace.army.mil/pd/custguide/custguide.htm
U.S. Army Corps of Engineers Emergency Streambank and Shoreline Protection (Section 14)	Todd Boatman Mobile District Office 251-694-4101	Section 14 of the 1946 Flood Control Act provides authority for the Corps of Engineers to develop and construct emergency streambank and shoreline protection projects to prevent erosion damages to endangered highways, highway bridge approaches, public work facilities such as water and sewer lines, churches, public and private non-profit schools and hospitals, and other non-profit public schools and hospitals, and other non-profit public facilities. Each project is limited to a Federal cost of $1,000,000. http://www.sam.usace.army.mil/pd/custguide/custguide.htm
U.S. Army Corps of Engineers Environmental Infrastructure Program (Section 219)	Todd Boatman Mobile District Office 251-694-4101	Section 219 of the Water Resources Development Act of 1992 provides authority for the Corps of Engineers to assist non-Federal interests carry out water-related environmental infrastructure and resource protection and development projects. Such assistance may be in the form of technical planning, design assistance, and construction assistance. http://www.sam.usace.army.mil
U.S. Army Corps of Engineers General Investigation Study	Todd Boatman Mobile District Office 251-694-4101	Authority for the study must be provided by a specific Congressional resolution or identified in a Water Resources Development Act. The Congressional authority determines the purpose and scope of the study. Funds to conduct the study must be specifically identified for that purpose in an Appropriations Act. Studies could lead to recommendations for construction of a Corps construction project. http://www.sam.usace.army.mil

Funding Program	Contact	Description
U.S. Army Corps of Engineers Planning Assistance to the States (Section 22)	Todd Boatman Mobile District Office 251-694-4101	Section 22 of the Water Resources Development Act of 1974 provides authority for the Corps of Engineers to assist the States, local governments, and other non- Federal entities in the preparation of comprehensive plans for the development, utilization, and conservation of water and related land. Federal allotments for each State are limited to $500,000 annually, but are typically much less. Typical cost of an individual study is $25,000 to $75,000. The studies generally involve the analysis of existing data for planning purposes using standard engineering techniques, although some data collection is often necessary. Most studies become the basis for State and local planning decisions and can lead to a project under Section 206 or a congressionally authorized project in a future Water Resources Development Act. http://www.sam.usace.army.mil
U.S. Army Corps of Engineers Small Flood Damage Reduction Projects (CAP Section 205)	Todd Boatman Mobile District Office 251-694-4101	Work under this authority provides for local protection from flooding by the construction or improvement of structural flood damage reduction features such as levees, channels and dams. Non-structural alternatives are also considered and may include measures such as installation of flood warning systems, raising and/or flood proofing of structures, and relocation of flood prone facilities. http://www.sam.usace.army.mil/pd/custguide/custguide.htm
U.S. Army Corps of Engineers Watershed and River Basin Assessments (Section 729)	Todd Boatman Mobile District Office 251-694-4101	Section 729 of the Water Resources Development Act of 1986 provides for the assessment of the water resource needs of river basins and watersheds, including needs relating to watershed protection. Congress can issue a resolution giving the Corps authority to conduct a study, but must also appropriate funding for the study. There is no Federal cost limit. The usual product of such a study is a watershed planning document that integrates water resources management, evaluating a range of project options simultaneously to determine the best combination of projects to achieve multiple goals over the entire watershed rather than examining each potential project in isolation from others. The assessments may or may not recommend further studies or projects by the Corps or other Federal or State agencies. http://www.sam.usace.army.mil

Funding Program	Contact	Description
USDA Forest Service Urban and Community Forestry Challenge Cost-Share Grants	Nancy Stremple Urban and Community Forestry Staff, Mail Stop 1151 USDA Forestry Service 1400 Independence Avenue, S.W. Washington, DC 20250-1151 202-205-7829 nstremple@fs.fed.us	The U.S. Forest Service Urban and Community Forestry Challenge Cost-Share Grant Program seeks to establish sustainable urban and community forests by encouraging communities to manage and protect their natural resources. The program works to achieve a number of goals, including (1) effectively communicating information about the social, economic, and ecological values of urban and community forests ; (2) involving diverse resource professionals in urban and community forestry issues; and (3) supporting a holistic view of urban and community forestry. In particular, the program supports an ecosystem approach to managing urban forests for their benefits to air quality, stormwater runoff, wildlife and fish habitat, and other related ecosystem concerns. The Forest Service awards these grants based on recommendations made by the National Urban and Community Forestry Advisory Council, a 15-member advisory council created by the 1990 Farm Bill to provide advice to the Secretary of Agriculture on urban and community forestry. Grant awards typically range from $3,000 to $250,000. www.fs.fed.us/ucf/nucfac www.treelink.org/nucfac
USDA Natural Resources Conservation Service (NRCS) Emergency Watershed Protection Program	Contact your local USDA Service Center. For a list, see www.usda.gov/offices.html. Click on the County Office Locator	The USDA NRCS Emergency Watershed Protection (EWP) program helps protect lives and property threatened by natural disasters such as floods, hurricanes, tornadoes, droughts, and wildfires. EWP provides funding for such work as clearing debris from clogged waterways, restoring vegetation, and stabilizing river banks. The measures that are taken must be environmentally and economically sound and generally benefit more than one property owner. EWP also provides funds to purchase floodplain easements as an emergency measure. Floodplain easements restore, protect, maintain, and enhance the functions of the floodplain; conserve natural values including fish and wildlife habitat, water quality, flood water retention, ground water recharge, and open space; reduce long-term federal disaster assistance; and safeguard lives and property from floods drought and the products of erosion. EWP can provide up to 90 percent cost share in limited resource areas as determined by the U.S. Census. Grant awards typically range from $22,000 to $6,000,000. www.nrcs.usda.gov/programs/ewp

Funding Program	Contact	Description
USDA Natural Resources Conservation Service (NRCS) Watershed Protection and Flood Prevention Program	Contact your local NRCS office. Information listed on the web at http://offices.usda.gov or www.nrcs.usda.gov/about/organization/regions.html#regions.	Also known as the "Watershed Program" or the "PL 566 Program," this program provides technical and financial assistance to address water resource and related economic problems on a watershed basis. Projects related to watershed protection, flood mitigation, water supply, water quality, erosion and sediment control, wetland creation and restoration, fish and wildlife habitat enhancement, agricultural water conservation, and public recreation are eligible for assistance. Technical and financial assistance is also available for planning new watershed surveys. www.nrcs.usda.gov/programs/watershed
USDA Natural Resources Conservation Service (NRCS) Watershed Rehabilitation Program	Russell Morgan NRCS Conservation Planning and Technical Assistance 14th and Independence Avenue, S.W. Washington, DC 20250 202-690-4231 russell.morgan@wdc.usda.gov	This program provides Federal cost-share funding for the rehabilitation of aging dams that were installed primarily through the Watershed Protection and Flood Prevention Program over the past 55 years. The purpose for rehabilitation is to extend the service life of dams and bring them into compliance with applicable safety and performance standards or to decommission the dams so they no longer pose a threat to life and property. Grants typically range from $30,500 to $1,500,000; the median grant award is $200,000. www.nrcs.usda.gov/programs/WSRehab
USDA Natural Resources Conservation Service (NRCS) Wetlands Reserve Program	Contact local or state NRCS office or Conservation District office. Information listed on the web at http://offices.usda.gov	Through this voluntary program, the NRCS provides landowners with financial incentives to restore and protect wetlands in exchange for retiring marginal agricultural land. To participate in the program landowners may sell a conservation easement or enter into a cost-share restoration agreement (landowners voluntarily limit future use of the land, but retain private ownership). Landowners and the NRCS jointly develop a plan for the restoration and maintenance of the wetland. Specific grants assist landowners with this process may also be available to eligible organizations. There is no maximum award and the award size varies by state. www.nrcs.usda.gov
USDA Rural Development Water and Environment Program	Contact one of the Rural Development State or Area offices. Bay Minette Service Center 207 Faulkner Drive Bay Minette, AL 36507 251-937-3297, Ext. 4	The American Recovery and Reinvestment Act provides approximately $3.7 billion in loans and grants for rural water and wastewater infrastructure through the existing USDA Rural Development Water and Waste Disposal (WWD) loan and grant program. The WWD provides loans, grants, loan guarantees and technical assistance for drinking water, sanitary sewer, solid waste and storm drainage facilities in rural areas and cities and towns of ≤10,000. Public bodies, nonprofit organizations and federally recognized Indian tribes may qualify for assistance. Preference for funding will be given to projects that are ready to commence. http://www.usda.gov/rus/water/index.htm

Funding Program	Contact	Description
U.S. Department of Interior Coastal Impact Assistance (CIAP) for Non-Construction (Alabama Recipients Only)	Paula L. Barksdale Office of Minerals Management Services 703-787-1070 paula.barksdale@mms.gov	Funds are available to eligible counties within the State of Alabama to mitigate the impacts of outer continental shelf oil and gas activities (based upon allocation formulas prescribed by the Energy Policy Act). The purpose of the CIAP is to disburse funding ($250 million for each of the fiscal years 2007 through 2010) to eligible producing states and coastal political subdivisions for the purpose of conservation, protection, or restoration of coastal areas including wetlands; mitigation of damage to fish, wildlife, or natural resources; planning assistance and the administrative costs of complying comprehensive conservation management plan; and, mitigation of the impact of outer continental shelf activities through funding of onshore infrastructure projects and public service needs. The award floor is $1,000 and the award ceiling is $25,000,000. http://www07.grants.gov/search/basic.do (Search for Funding Opportunity NumberMMS09HQPA0013.) http://www.mms.gov/offshore/ciapmain.htm
U.S. Department of Interior Gulf of Mexico Energy Security Act (GOMESA)	Marcia Oliver Office of Minerals Management Services marcia.oliver@mms.gov	The Gulf of Mexico Energy Security Act of 2006 (GOMESA) shares leasing revenues for the four Gulf oil and gas producing states of Alabama, Louisiana, Mississippi, and Texas, and to their costal political subdivisions. GOMESA funds are to be used for coastal conservation, restoration, and hurricane protection. Under this act, Baldwin County was allocated $75,122 and the State of Alabama was allocated $651,166 in FY2009. http://www.mms.gov/offshore/GOMESARevenueSharing.htm
U.S. Department of Transportation Federal Highway Administration National Scenic Byways Discretionary Grant Program	Collette E. Boehm Special Projects Director Alabama's Coastal Connection P.O. Drawer 457 900 Commerce Loop (36542) Gulf Shores, AL 36547 251-974-4632 cboehm@gulfshores.com Cindi Ptak National Scenic Byways Program Manager 202-366-1586	To implement projects on roads designated as National Scenic Byways or All-American Roads, State scenic byways, or Indian tribe scenic byways. Eligible projects must be from one of the following eight eligible activities: State or Indian tribe Scenic Byway Programs, Corridor Management Plans, Safety Improvements, Byways Facilities, Access to Recreation, Resource Protection, Interpretive Information or Marketing. Alabama's Coastal Connection is a designated Scenic Byway. http://www.bywaysonline.org/grants

Funding Program	Contact	Description
U.S. Department of Housing and Urban Development Community Development Block Grant Program	Cindy Yarbrough Birmingham Field Office Director 950 22nd St. North Suite 900 Birmingham, AL 35203 PHONE: 205-731-2617 FAX: 205-731-2593 Email:AL_Webmanager@hud.gov	Over a 1, 2, or 3-year period, as selected by the grantee, not less than 70 percent of CDBG funds must be used for activities that benefit low- and moderate-income persons. In addition, each activity must meet one of the following national objectives for the program: benefit low- and moderate-income persons, prevention or elimination of slums or blight, or address community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community for which other funding is not available. http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs
U.S. Fish and Wildlife Service Coastal Program (Northern Gulf Coastal Program)	Dr. Ronnie J. Haynes U.S. Fish & Wildlife Service 1875 Century Blvd. Atlanta, GA 30345 PHONE: 404-679-7138 FAX: 404-679-7081 Email: Ronnie_Haynes2fws.gov Patrick Harper USFWS – Coastal 1208-B Main Street Daphne, AL 36526 PHONE: 251-441-5847 FAX: 251-441-6222 Email: Patric_Harper@fws.gov	The U.S. Fish and Wildlife Service Coastal Program works to conserve healthy Coastal habitats on public or private land for the benefit of fish, wildlife, and people in 22 specific coastal areas. The program forms cooperative partnerships designed to (1) protect coastal habitats by providing technical assistance for conservation easements and acquisitions: (2) restore coastal wetlands, uplands, and riparian areas: and (3) remove barriers to fish passage in coastal watersheds and estuaries. Program biologists provide restoration expertise and financial assistance to federal and state agencies, local and tribal governments, businesses, private landowners, and conservation organizations such as local land trusts and watershed councils. Grants made under this program typically range from $5,000 to $50,000. http://www.fws.gov/coastal/ In March 2010, the Northern Gulf Coast was added to the list of coastal areas and monies were appropriated for coastal restoration projects in Alabama, Mississippi, and Louisiana. http://www.fws.gov/daphne
U.S. Fish and Wildlife Service Landowner Incentive Program	Contact the state Fish and Wildlife office directly. See web site link at right.	The U.S. Fish and Wildlife Service Landowner Incentive Program (LIP) grant program provides competitive matching grants to states to establish or supplement landowner incentive programs. These programs provide technical and financial assistance to private landowners for projects that protect and restore habitats of listed species or species determined to be at-risk. LIP projects involve activities such as the restoration of marginal farmlands to wetlands, the removal of exotic plants to restore natural prairies, a change in grazing practices and fencing to enhance important riparian habitats, instream structural improvements to benefit aquatic species, road closures to protect habitats and reduce harassment of wildlife, and acquisition of conservation easements. Although not directly eligible for these funds, third parties such as nonprofit organizations may benefit from these funds by working directly with their states to see if either grants or partnering opportunities are available. Grants typically range from $180,000 to $960,000. http://wsfrprograms.fws.gov/Subpages/GrantPrograms/LIP/LIP.htm

Funding Program	Contact	Description
U.S. Fish and Wildlife Service National Coastal Wetlands Conservation Grant Program	Christy Kuczak Vigfusson Wildlife and Sport Fish Restoration Program U.S. Fish and Wildlife Service FA4020 4401 N. Fairfax Drive Arlington, VA 22203 703-358-1748 christy vigfusson@fws.gov	The U.S. Fish and Wildlife Service National Coastal Wetlands Conservation Grant Program provides matching grants to states and territories for coastal wetland conservation projects. Funds may be used for acquiring land or conservation easements, restoration, enhancement, or management of coastal wetland ecosystems. Projects must provide for long-term conservation of coastal wetlands. Grants typically range from $200,000 to $1,000,000 per project. http://www.fws.gov/coastal/CoastalGrants/ www.cfda.gov (Search program number 15.614.)
U.S. Fish and Wildlife Service North American Wetlands Conservation Act Grants Program	U.S. Fish and Wildlife Service North American Waterfowl and Wetlands Office 4401 North Fairfax Drive Room 110 Arlington, VA 22203 703-358-1784 dbhc@fws.gov	The U.S. Fish and Wildlife Service Division of Bird Habitat Conservation administers this matching grants program to carry out wetlands and associated uplands conservation projects in the United States, Canada, and Mexico. Grant requests must be matched by a partnership with nonfederal funds at a minimum 1:1 ratio. Conservation activities supported by the Act in the United States and Canada include habitat protection, restoration, and enhancement. Project proposals mustmeet certain biological criteria established under the Act. The maximum standard grant award is $1,000,000 and the maximum small grant award is $50,000. http://birdhabitat.fws.gov www.cfda.gov (Search program number 15.623.)
U.S. Fish and Wildlife Service Partners for Fish and Wildlife Program	U.S. Fish and Wildlife Service Branch of Habitat Restoration Division of Fish and Wildlife Management and Habitat Restoration 4401 North Fairfax Drive Room 400 Arlington, VA 22203 703-358-2201	The Partners for Fish and Wildlife Program provides technical and financial assistance to private landowners to restore fish and wildlife habitats on their lands. Since 1987, the program has partnered with more than 37,700 landowners to restore 765,400 acres of wetlands; over 1.9 million acres of grasslands and other upland habitats: and 6,560 miles of in-stream and streamside habitat. In addition, the program has reopened stream habitat for fish and other aquatic species by removing barriers to passage. Grants awarded under this program typically range from $200 to $25,000, but may go higher for special projects. www.fws.gov/partners www.cfda.gov (Search program number 15.631.)
U.S. Housing and Urban Development Community Development Block Grants (CDBG) Entitlement Grants	Contact state CDBG grantees. See list at web site to right.	The objective of this program is to develop viable urban communities, by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for persons of low and moderate income. Recipients may undertake a wide range of activities directed toward neighborhood revitalization, economic development and provision of improved community facilities and services. The average grant awarded under this program is $2,960,000. www.hud.gov/offices.cpd.communitydevelopment/programs.index.cfm

Funding Program	Contact	Description
U.S. Housing and Urban Development Sustainable Communities Planning Grant Program	Dorthera Yorkshire Program Analysis 202-402-4336	The Sustainable Communities Planning Grant Program is intended to help build the capacity of communities to address the complex challenges of growth and revitalization in the 21st century in a comprehensive, multidisciplinary way. Funding from this program will support the development and implementation of Sustainable Regional Development Plans. A priority will be placed on supporting regions that demonstrate a commitment to take well-developed plans and move them into implementation. The Appropriations Act directs the Secretary of HUD to establish a regional planning grant program that provides grants to assist regional entities and consortia of local governments with integrated housing, transportation, economic development, water infrastructure, and environmental planning. HUD's Office of Sustainable Housing and Communities is working in partnership with DOT and EPA to define all aspects of this Program. HUD will serve as the lead agency for all grants and will consult with its agency partners throughout the program. http://www.hud.gov/sustainability

Table -2. Selected Non-Governmental Organization and Other Private Funding Opportunities (MBNEP 2010)

Funding Program	Contact	Description
Chronicle of Philanthropy Guide to Grants	The Chronicle of Philanthropy 1255 Twenty-Third Street, N.W. Seventh Floor Washington, D.C. 20037 PHONE: 202-466-1200 FAX: 202-466-2078	The Guide to Grants is an electronic database of all foundation and corporate grants listed in The Chronicle since 1995. To search this database, users must purchase a subscription; subscription rates are available for terms ranging from one week to one year. http://philanthropy.com/section/Guide-to-Grants/270
Community of Science Database (COS)	1 North Charles Street Suite 2305 Baltimore, MD 21201 PHONE: 410-563-2378 FAX: 410-563-5389	COS is the leading global resource for hard-to-find information critical to scientific research and other projects across all disciplines. The COS Funding Opportunities web site allows users to search more than 23,000 records, representing over 400,000 funding opportunities, worth over $33 billion. A subscription fee may be required, depending on the type of organization conducting a search. http://www.cos.com
The Foundation Center	Contact may be made through the web site address shown in the column to the right.	The Foundation Center Foundation Finder allows users to search for basic information (contact information, web site address, and IRS 990 form) on 70,000 private and community foundations in the United States (free service). They also offer two subscription-based online searchable databases, the Foundation Director and Foundation Grants to Individuals. http://foundationcenter.org
The Kodak American Greenways Program	Christopher Veronda (Kodak) 585-724-2622 Vanessa Vaughan (The Conservation Fund) 703-908-5809 Or send an email to kodakawards@conservationfund.org .	Eastman Kodak Company, the National Geographic Society, and The Conservation Fund are the partners in the Kodak American Greenways Program, an annual program that recognizes outstanding individuals and organizations for exemplary leadership in the enhancement of our nation's outdoor heritage. The program was established in response to the recommendation from the President's Commission on Americans Outdoors that a national network of greenways be created. Since the program's inception in 1989, more than $800,000 has been granted to nearly 700 organizations in all 50 states. The program also provides small grants to land trusts, watershed organizations, local governments and others seeking to create or enhance greenways in communities throughout America. www.conservationfund.org/kodak_awards

Funding Program	Contact	Description
RBC Bank Blue Water Project Grants	Contact may be made through the web site address shown in the column to the right.	Ranging from $25,000 to $500,000, RBC Blue Water Project Leadership Grants focus on watershed protection and/or access to safe drinking water and are available to local, regional, national or transborder organizations for projects in any of the countries in which RBC is located, including Canada, the United States, the Caribbean and the United Kingdom. Watershed protection programs and projects include watershed awareness, community-based watershed stewardship, protection and restoration or sensitive natural areas, or sustainable water use and conservation. Organizations applying for Blue Water Project grants must have their 501(c) 3 status in the U.S. Deadline for current year applications was March 12, 2010. http://www.rbc.com/donations/blue-water-apply.html
Surdna Foundation Sustainable Environments Grants	Surdna Foundation 330 Madison Avenue 30th Floor New York, NY 10017 212-557-0010 questions@surdna.org	The Surdna Foundation seeks to create just and sustainable communities where consumption and conservation are balanced and innovative solutions to environmental problems improve people's lives. The Foundation works from a sustainable development perspective to demonstrate that a healthy environment is the backbone of a healthy economy and a democratic society. They fund three key related priority areas – Climate Change, Green Economy, and Transportation and Smart Growth – that aim to transform how Americans work, consume and move. Grants are approved in February, May, and September. www.surdna.org
Water Environmental Research Foundation (WERF) Cooperative Agreement	Laurie Kusek Communications Director Water Environment Research Foundation (703) 684-2470 Ext. 7908 lkusek@werf.org	WERF will receive $10 million in EPA funds to evaluate new technologies that will help utilities cope with aging and failing water and wastewater systems. As the recipient of this cooperative agreement, WERF will administer $6.25 million to address wastewater and stormwater infrastructure research. Funding for the research is through EPA's Aging Water Infrastructure Research Program, a research agenda that supports efforts to put the nation's aging infrastructure on a pathway toward sustainability. Research efforts will include innovative treatment technologies for wastewater, stormwater, water reuse, and drinking water. The innovative tools and cost-effective solutions that will be developed through this research should provide assistance to municipalities in their ongoing efforts to serve the public and improve water quality. www.werf.org

APPENDIX E. Reading Park Stream Restoration

Five Star Restoration Program

Full Project Narrative

Strategic Context:

1. Describe how the project implements or is complementary to an established **conservation and/or watershed management plan**.

   At present a host of partners are working together with the City of Prichard to develop a watershed management plan for the Eight Mile Creek Watershed. This partnership includes but is not limited to the Mobile Bay National Estuary Program (MBNEP), The Alabama Department of Environmental Management (ADEM), the Mobile County Soil and Water Conservation District and Coastal Alabama Clean Water Partnership (CACWP), the Prichard Environmental Restorative Keepers (PERK), and The City of Prichard. This plan will include: causes and sources of water impairments; expected load reductions; management measures; technical and financial assistance; information and education; an implementation schedule; measurable milestones; evaluation protocols; and effectiveness monitoring. The CACWP Coastal Basin Facilitator is working with ADEM to facilitate the development of this plan.

   This stream restoration project, which runs adjacent to a recently completed community park, will provide this partnership with a pilot implementation project for undertaking actions for improved environmental health. The restored stream will serve as an outdoor learning/engagement "center" for future water quality monitoring activities and other stewardship activities, while representing a first effort at developing "healthy outdoor alternatives for both children and adults throughout the community". Future goals include working with city government and others to develop a trail and passive park system that connects neighborhoods, schools, waterways, and commercial areas.

2. Specifically describe how the project will help meet **ecological and conservation needs** of priority species and habitats in priority watersheds.

Eight Mile Creek is the major and most downstream tributary to Chickasaw Creek which flows into the Mobile River and eventually into Mobile Bay and the Gulf of Mexico. Its watershed is subject to the impacts generally associated with urbanization: trash and litter carried into the creek by stormwater runoff, loss of natural shoreline triggered by increases in impervious surface, and sewage and pathogenic bacteria from aging/overloaded infrastructure. ADEM monitoring efforts have indicated severe problems with low concentrations of dissolved oxygen downstream of the confluence of the two creeks.

A 1979 study revealed that the section of Chickasaw Creek between Eight Mile Creek and the Mobile River received the highest combined point source loadings of total nitrogen, total phosphorus, and biochemical oxidation demand (BOD) of any stream in coastal Alabama, largely due to local pulp and paper operations, municipal water treatment plants, and inorganic chemical manufacturing plants. Although increasingly stringent standards imposed upon industry and municipal wastewater plants have effectively addressed their these impacts, the National Pollution Discharge Elimination System has been less successful addressing the impact of land clearing operations, urban runoff, and other non-point sources. Lower reaches of Chickasaw Creek are characterized by excessive amounts of organic carbon, mineral nutrients, and frequent citizen complaints regarding turbidity and fish kills.

While not providing a comprehensive solution to these problems, the proposed restoration of this tributary will contribute directly to the alleviation of sedimentation, turbidity, and nutrient enrichment downstream in Eight Mile Creek and ultimately Chickasaw Creek. Additionally, by virtue of its location in a passive park utilized by an economically depressedlimited, underserved community, this visible example of habitat restoration which will continue to be monitored by community members, will not only promote environmental stewardship, but also empower the community to undertake further environmental actions.

3. Describe the **measurable goals** (ecological; educational/outreach; and partnership/community capacity) you expect to achieve through this project. How does this project further your organization's mission and/or partnership's goals?

Measurable goals for this project include:

- The restoration of at least 350 linear feet of channelized stream to its natural/reference conditions, including the re-establishment of riparian buffer.
- Establishment of an educational site for showcasing environmentally appropriate techniques for managing riparian buffer areas in an urban setting
- Capacity building of a fledgling grassroots environmental group, the Prichard Environmental Restorative Keepers (PERK), through urban stream restoration and water quality monitoring activities.

The mission of the MBNEP is to promote the wise stewardship of the water quality and living resources of Alabama’s estuaries, which is made possible only through engaging a diverse community

of stakeholders committed to integrating environmental health with community and economic growth. The City of Prichard, AL, one of the State's most economically depressed communities, contains five miles of impaired streams. The extent of socio-economic disadvantage limits this community's ability to undertake restoration or other environmental actions, although, as evidenced by their Comprehensive Plan, the City puts great value on its natural resources. This project will support community desire and willingness to improve environmental conditions of the City at a time when the City suffers from severe funding limitations. It provides citizens of the City of Prichard with an opportunity to reclaim their community through the restoration of a creek that has historically served as a source of recreation. ???? Tom??By enhancing current collaborations and bringing new partners to the table, this project expands the capacity of PERK and empowers the citizens of the City of Prichard to address other environmental issues within their own community; the project further complements the restoration and conservation of critical habitat that is of primary concern to all stakeholders involved.

Restoration Objectives:

1. What specific **ecological objectives** do you hope to achieve through this project?

   The specific ecological objective of this project is to restore an urban stream to its natural function for at least 350 linear feet; including the restoration of aquatic and terrestrial habitats.

2. What specific on-the-ground **restoration activities** will be undertaken?

   The specific on-the-ground restoration activities to be undertaken will follow the recommendation of a stream assessment completed by Auburn University, Graphical Ecological Characterization of the Lower Eight Mile Creek Watershed (LeBleu, 2009). This assessment will identify data relative to the entrenchment ratio and/or width/depth ratio at full bank discharge and will determine the exact desired length, width and depth of the stream course. Components of the Stream Assessment are: existing conditions of stream; debris/invasive plants need be removed; map for the stream; sections and elevations of stream areas; perspectives of restored stream; suggested plant pallet for natural channel design; and a planting plan. This assessment will guide the following activities:

   - Community Clean-Ups – A series of community stream clean-up will be conducted to prepare the stream for restoration activities based on recommendations of above assessment. This These clean-ups will be coordinated by Mobile Baykeeper and PERK with assistance from the City of Prichard.
   - Engineering Plan- A restoration engineering plan will be developed to identify the technical specifications for re-grading and earth and debris removal to improve the course of water-flow to mimic natural/reference conditions.
   - Excavation and Stream bank Grading - The City of Prichard will provide in-kind services in the form of heavy equipment for excavation throughout the project area and to remove debris from the stream bank as necessary to restore natural/reference conditions.
   - Invasive Species Removal- Invasive species identified in stream assessment that remain will be removed manually (herbicide provided by MBNEP) or by heavy equipment throughout the project area as indicated by the engineering plan.

- Stream Bank Planting – Shoreline and adjacent area plantings will be conducted by community volunteers to reestablish native foliage along the riparian buffer as recommended by assessment and engineering plan.

3. What **quantitative and qualitative indicators** will you use to measure progress toward your ecological objectives?

Indicators of success for this project include the restoration of at least 350 linear feet of channelized stream to its natural/reference conditions and the re-establishment of riparian buffer to provide wildlife habitat. The success of this project will also be measured by the number of Prichard residents who actively participate in the volunteer activities generated by this project who continue to participate in PERK activities within a one year period of project completion.

4. What is your **long-term maintenance and monitoring** plan to sustain your restoration work?

The long-term maintenance and monitoring plan for this project includes:

Windshield Survey- The restored banks will be windshield surveyed for the presence of invasive plant species and signs of erosion. Invasive species will be routinely treated with appropriate, EPA-approved herbicides. The stream will be similarly surveyed to monitor relative rates of flow, course changes within the expanded flood plain, and presence of runoff carried trash and debris.

Volunteer Water Monitoring- Community volunteers will be trained in AWW protocols and will use AWW Test Kits and materials to monitor water quality/chemistry and pathogens/bacteria. The following suite of tests will be conducted to assess chemical water quality on a monthly basis at three locations, two within and one downstream of the stream segment:

- pH
- temperature
- total alkalinity
- total hardness
- dissolved oxygen
- turbidity
- salinity

Presence and concentrations of pathogens and bacteria will be tested for *E. coli* and other coliform bacteria. Data collected will be submitted routinely to AWW.

Educational Objectives:

1. What specific **educational and/or outreach objectives** do you hope to achieve through this project?

   The specific educational and outreach objectives of this project include:

   - The establishment of an educational site (including interpretive signage at the community park) for showcasing environmentally appropriate technologies for managing riparian buffer areas in an urban setting.
   - ADEM and CACWP will conduct Alabama Water Watch (AWW) volunteer water monitoring workshops to engage both students and residents in becoming volunteer water monitors to create a network that connects school children with neighborhood volunteers to begin monitoring in impaired streams.

2. Who are your **target audiences**?

   The target audiences for this project include residents, business owners, and employees and elected officials of the City of Prichard.

3. What specific **educational/outreach activities** will be undertaken?

   The community involvement component of this project will include both on site education of the resource, active engagement in restoration efforts and interpretive signage as an outreach mechanism for those that visit Reading Park. Specifically:

   - A series of three (3) Community Clean-Ups within the Watershed will involve at least fifty (50) volunteers each, removing all trash, litter, and small debris from both the stream and riparian areas.
   - Fifty twenty five (5025) volunteers will assist in the placement of native plants along the shoreline and adjacent graded areas to establish a functional riparian buffer zone
   - At least five (5) volunteers will be trained to be volunteer water quality monitors to track water quality in the restored stream over the course of a one year period following project completion.
   - At least five (5) volunteers will be engaged in monitoring project success through wind shield surveys of the project area at least quarterly for a one year period following project completion.
   - Passive education of the project, including restoration techniques used, the geography of the area (watershed), and the ecosystem function and services will be delivered via the installation of signage at Reading Park.
   - General outreach will be conducted throughout the community through the publishing of newspaper articles, website blog, MBNEP's newsletter, workshops, and presentations by MBNEP staff.

4. What **quantitative and qualitative indicators** will you use to measure progress toward your educational/outreach objectives? (*Number of children engaged in program, pre- and post- test scores on ecological awareness, etc.*)

   Indicators used to measure progress towards the educational/outreach objectives of this project include:

   - The number of Prichard residents who actively participate in volunteer activities generated by this project.
   - The number of volunteer participants who continue to participate in PERK activities within a one- year period of project completion
   - The number of trained volunteer citizen water monitors who continue to participate in AWW water monitoring activities within a one-year period of project completion
   - The number of school children, residents, business owners, and city officials in Prichard who were informed of the project through newspaper articles, website blogs, newsletters, workshops, and presentations by MBNEP staff

5. Describe how you will **evaluate success** in demonstrating a clear correlation between targeted audience behavioral changes and resulting impact on ecological/conservation target.

The overall success of this project is largely dependent upon engaging the residents of Prichard and broadening awareness of key environmental issues within their community; hence, increasing the number of residents who actively participate in PERK is a critical factor impacting the overall restoration and conservation goals of this project. Project volunteers who participate in community clean ups and restoration activities will be encouraged to join and actively participate in PERK, thereby adding to the capacity of PERK to continue to work towards improving local environmental conditions.

Partnership Capacity Objectives:

1. Briefly describe how your project is **building new, or enhancing/expanding existing partnerships/relationships**, then complete table for all involved (add rows as needed).

   This project continues to build upon the existing partnerships that have been established through the development of a comprehensive watershed management plan for the Eight Mile Creek Watershed, while brining a new partner to the table in Mobile Baykeeper.

	Partner	***Area of Expertise***	***Contribution(s) to the project***	***Dollar Value of Contribution(s)****
1	*MBNEP*	*Technical/Capacity building*	*Project management*	*5,000*
2	*CACWP*	*Technical/Capacity building*	*AWW Volunteer training/monitoring*	*1,112*
3	*Auburn University*	*Technical*	*Engineering/site design/on-site management*	*10,722*
4	*Mobile Baykeeper*	*Capacity building*	*Volunteer organization*	*3,000*
5	*City of Prichard*	*Construction*	*Equipment/construction labor*	*10,500*
6	*PERK*	*Capacity building*	*Volunteer recruitment*	*15,016*

(NOTE: your project must have at least five partners and the equivalent dollar value of their contributions should be reflected in the "matching contributions" section of your proposal.)

2. Describe your partnership's **long-term commitment** to building community capacity to enhance and sustain your local natural resources.

Administered through and funded by the EPA under provisions of the Clean Water Act (CWA) of 1987, the initial task for the MBNEP was the development of a Comprehensive Conservation Management Plan (CCMP) as a blueprint for conserving the Estuary. Through the efforts of literally hundreds of stakeholders and thousands of hours of volunteer time, our CCMP received final approval on April 22, 2002. Since that time, MBNEP has worked diligently to implement this plan and respond to emerging environmental challenges.

The mission of the MBNEP is to promote wise stewardship of the water quality characteristics and living resource base of the Mobile Bay estuarine system. It is a non-regulatory program, so implementation of the CCMP by is done by bringing together citizens; local, state, and federal government agencies; businesses and industries; conservation and environmental organizations; and academic institutions to meet the environmental challenges that face the unique and imperiled resources that characterize our coastal estuaries. We Stakeholders are engaged these groups in determining how to best treat the Bay, our associated coastal waters, and their surrounding watersheds to ensure their protection and conservation for our lifetimes and beyond.