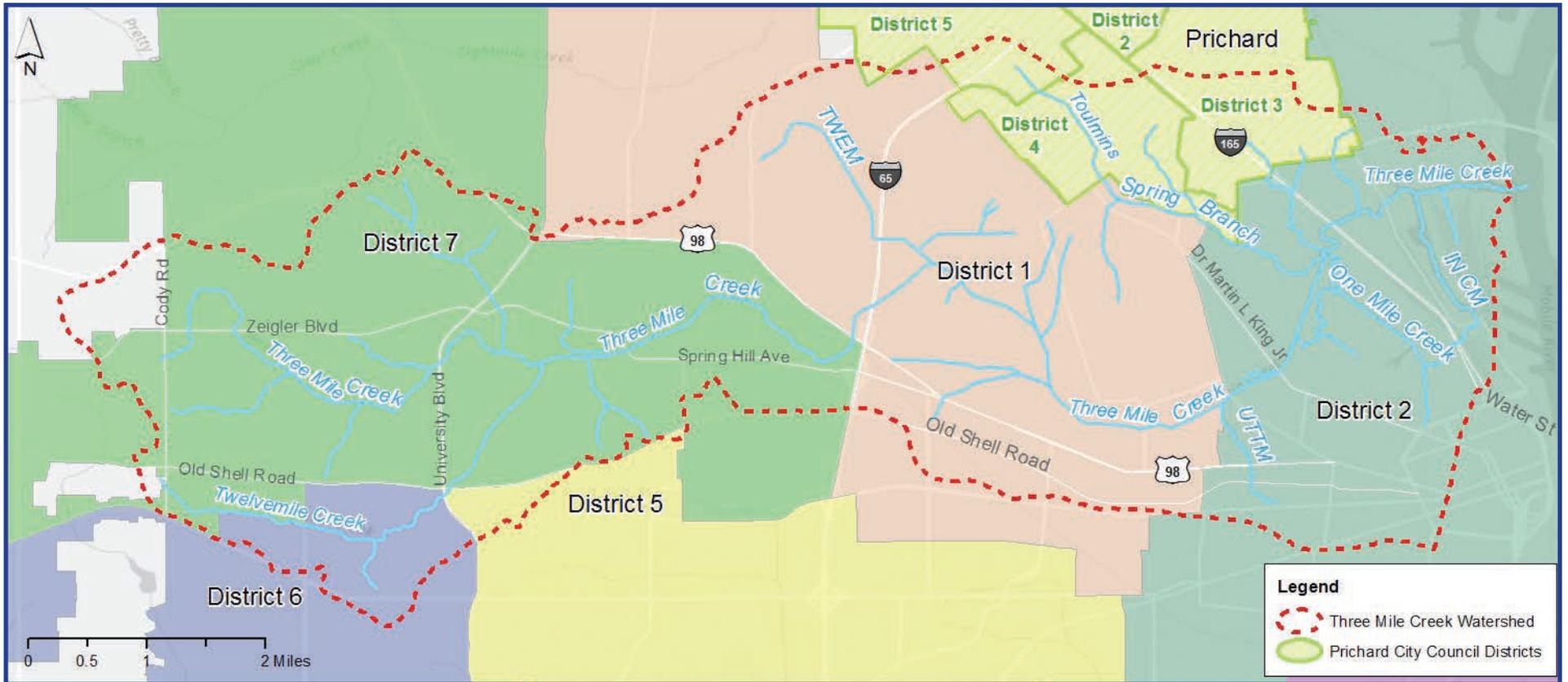


Restoring Three Mile Creek

One Neighborhood at a Time



Imagine Three Mile Creek flowing through the heart of Mobile
with trails along its banks – a greenbelt stretching from the University of South Alabama
to the Mobile River – with neighborhoods linked by walking and biking trails
and a series of anchor parks along the Creek, some existing and some new.



Mobile and Prichard city council districts in the Three Mile Creek Watershed.

Community Partners

U. S. Army Corps of Engineers
 U.S. Environmental Protection Agency
 U. S. Fish and Wildlife Service
 Natural Resources Conservation Service
 Alabama Department of Conservation
 and Natural Resources
 Alabama Department of Environmental
 Management
 Alabama Department of Transportation
 Alabama Forestry Commission

Dauphin Island Sea Lab
 Geological Survey of Alabama
 Mobile Bay National Estuary Program
 Coastal Alabama Clean Water Partnership
 Bishop State Community College
 University of South Alabama
 City of Mobile
 City of Mobile/Keep Mobile Beautiful
 City of Prichard

Mobile County Commission
 Mobile Housing Board
 Mobile Area Water and Sewer System
 Water and Sewer Board of Prichard
 Alabama Power
 Mobile Area Chamber of Commerce
 Mobile Gas/Sempra
 Scotch Gulf Lumber
 SIMS Metal

Infirmiry Health System
 USA Medical Center
 USA Children's & Women's Hospital
 Alabama Coastal Foundation
 J. L. Bedsole Foundation
 MLK Redevelopment Corporation
 Mobile Baykeeper
 Partners for Environmental Progress
 The Nature Conservancy

The Three Mile Creek Watershed: A Target of Transformation

Three Mile Creek and its surrounding watershed present an extraordinary opportunity to the cities of Mobile and Prichard to transform a community liability into a community amenity and waterway destination. Crossing and draining suburban and urban landscapes of greater Mobile, Alabama, TMC suffers from the negative effects of stormwater runoff and decaying infrastructure. Sources of degradation include trash/litter, bacteria from sewage (pathogens), excessive nutrients, invasive species, and erosion and sedimentation.

Until the mid-twentieth century, this creek, originally called the Portage on Bayou Chatoge (*SHAT-oh-gay*) by the French, was Mobile's source of drinking water. A combination of insufficient quantity and impacts to quality caused by increasing urbanization forced the city to go farther west to Big Creek Lake for its water in 1952. By the end of the twentieth century, urbanization had deteriorated the water quality of the Creek to a level only recommended for Agricultural and Industrial Water Supply, the lowest of the State of Alabama's water use designations and quality standards. **The stream failed to meet even those lowest of water quality standards** as it carried stormwater from city streets and wastewater discharge from treatment plants to the Mobile River. Its waters have been **placed on the State 303(d) list for impairment by organic enrichment and low dissolved oxygen, nutrients, and pathogens.**

The majority of TMC's 30-square mile watershed lies within Mobile city limits and includes portions of five City Council Districts, all three Mobile

County Commission Districts, and portions of three City Council Districts of the City of Prichard. Along its banks are the University of South Alabama (USA); the USA Medical Center, the Mobile Infirmary, and USA Children's and Women's Hospital; Langan, Lyons, and Tricentennial parks; several public housing developments; and a historically significant area



Images of creek baptism in Three Mile Creek. Photo credit Billy Skipper papers, courtesy of The McCall Library, University of South Alabama.

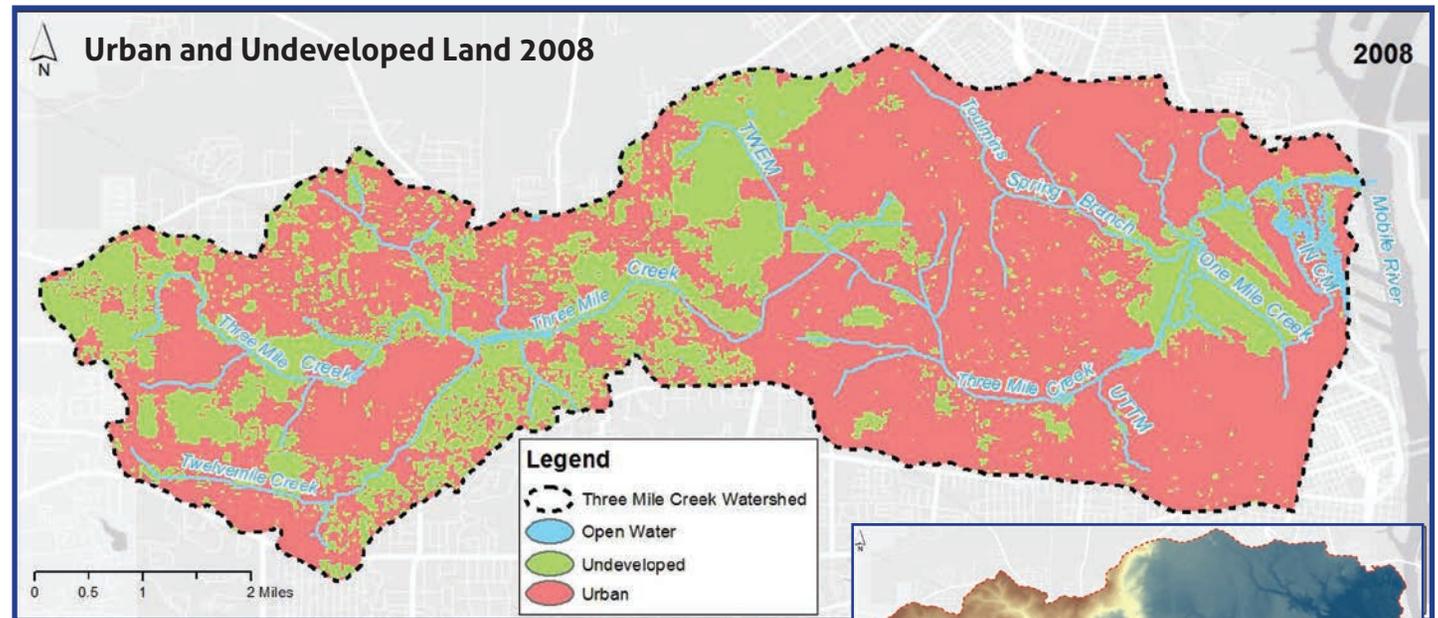
known as the Bottom. It drains neighborhoods in west Mobile, northern Spring Hill, Crichton, Midtown, Toulminville and the Bottom before winding through wooded wetlands and heavily industrialized areas before discharging into the Mobile River. The diversity of residents within the TMC Watershed deserves special attention. The urbanized downstream area that includes the Bottom is populated by a traditionally-underserved African-American community. Nearly 25% of household incomes across the watershed fall below the national poverty line. The Creek provides valuable resources to these residents, not only in terms of drainage infrastructure, but also as a source of food. On any given day, many can be seen along the Creek fishing from its banks.

TMC is physically, spiritually, and historically ingrained into the fabric of the Mobile community. After the Civil War, an economy based in riverboat trade along the Mobile River and lumber industry triggered new development throughout the area, including a bustling African-American community. Churches used the Creek for baptisms, historical paintings depict horse races and hotels along its banks, and kids swam in its as-yet-unspoiled waters.

The cost of fully implementing this plan today will be in the millions of dollars. However, the cost of doing nothing is exponentially greater. Reduced property values, loss of tax revenue, an increased need for infrastructure repairs, and continued disruption and damage to valuable ecosystem services will cost far more over the long run.

Watershed Characteristics

The Three Mile Creek Watershed, located in Mobile County, Alabama drains 19,237 acres (30.06 mi) and stretches 14 miles from Cody Road, west of the USA, east to a confluence with the Mobile River. TMC is fed by six principal tributaries: Twelve Mile Creek (three miles long with a confluence at Langan Park), the Central Northern Tributary (two miles long with a confluence just east of I-65), an unnamed (central) tributary to TMC (one mile long with a confluence east and adjacent to the Mobile Infirmary), Toulmin Springs Branch (2.5 miles long with a confluence at the northern end of the bypass channel, just south of Conception Street Road), One Mile Creek (almost two miles long with a confluence with the historic streamway east of the bypass channel), and the Industrial Canal (about one mile long with a confluence just west of the Mobile River). Wetlands comprise less than 10% of the total area of the watershed (mostly in the north-central watershed around the Central Northern Tributary or in the lower watershed surrounding the historic streamway), with 1.5% open water (lakes, ponds, and stream), and the remaining 90% upland.

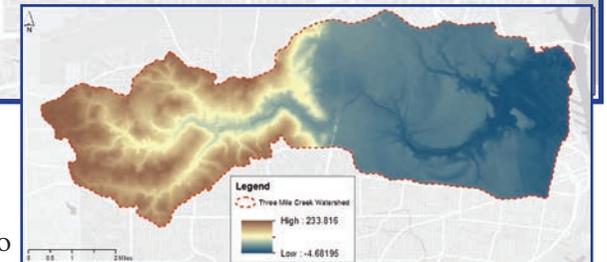


From its origin to its confluence with the Mobile River, TMC falls less than 50 feet or on average 2.5 feet per mile. Historically, flooding has been a major concern, especially in the lower reaches of TMC, which led to federal projects to reduce flooding in the 1980s. The U. S. Army Corps of Engineers widened and straightened the lower one third of the Creek, constructed a bypass channel between MLK Boulevard and Conception Street Road, and added five sets of water control weirs between Brawood Drive and Tricentennial Park. Construction of the bypass channel cut off flow into

the historic streamway that meandered through wooded wetlands adjacent to the Hickory Street Landfill.

Upstream near I-65, a natural ridge of 50-foot elevation crosses the watershed and its character changes from low coastal plains and tidal marsh into gently rolling terrain characteristic of pinewoods uplands with a maximum elevation of 256 feet.

In 2010, the population within this watershed was 99,039, comprising about 25% of the total population of Mobile County. The predominant



land use in the watershed is residential, consisting of almost 42% of the total area, followed by commercial (26%) and transportation (17%). The remaining portions are industrial (6%) and undeveloped (9%, predominantly wetlands). Future growth is not expected to be a significant factor in the recovery of this watershed, since it is over 90% developed with greater than 37% impervious cover.

Impacts on the Watershed



Untreated stormwater runoff and pollutant loads from developed areas discharge directly to TMC and its tributaries. The discharge of untreated stormwater runoff to TMC is primary among sources of surface water quality degradation. The major challenges facing the TMC Watershed include:

1. Excessive water quality pollutants – “Gross pollutants,” like trash and organic debris, block drainage capacity, contribute nutrients, and decrease dissolved oxygen (DO), necessary for fish and other aquatic organisms. Nutrients from fertilizer, pet waste, and waste treatment output and pathogens from compromised infrastructure or sanitary sewer overflows also impair water quality in TMC.

Concrete-lined channels, like this one on Toulmins Spring Branch, prohibit infiltration and increase stormwater runoff volumes and pollutant loads to Three Mile Creek, degrading water quality and habitat.

Impacts on the Watershed



Erosion caused by stormwater runoff threatens infrastructure throughout the watershed. In this photo, bank erosion has exposed a section of sanitary sewer pipe along Twelve Mile Creek, increasing the risk of illicit discharges to the stream.

2. Illicit connections – Sanitary sewer pipes improperly connected to stormwater drainage systems or compromised over time provide a source of pollutants into stormwater outfalls and groundwater entering TMC. High concentrations of organic wastewater compounds and elevated pathogen concentrations during dry weather, especially in the downstream end of the Creek, provide further evidence of illicit connections.

3. Effects of stormwater runoff – Stormwater runoff discharging from streets, parking lots, and rooftops of the developed watershed underlie a host of water quality problems, most visibly trash and litter but including stream bank erosion and sedimentation from increased stormwater volume and velocity; increases in stream temperature; and pollutant loadings from trash, sediment, grass clippings, fertilizer and pet waste, and heavy metals and petrochemicals from road surfaces.

Impacts on the Watershed



Kayakers embark on their journey after another challenging portage.

4. Altered watershed hydrology – The flood control project completed by the USACE in the 1980s substantially altered the hydrology of the watershed. Weirs installed to provide storage and slow flows through the channel blocked tidal influence upstream. Berms constructed adjacent to the Creek isolated it from its floodplain. Channelization of TMC downstream resulted in isolation of the Creek from its historic streamway and adjacent tidal wetlands.

5. Altered creek geomorphology – Over the past decades the creek and its tributaries have been altered to suit immediate needs. Vegetated stream banks have been replaced by concrete-lined channels, improving stormwater conveyance but blocking infiltration, eliminating habitat and natural cleansing processes, and increasing runoff volumes, velocity, and pollutant loads. Riprap and gabions used to create vertical channel banks eliminate riparian buffers and natural connections to flood plains. Lost with those buffers are trees that provided shade that reduced water temperature, cover and resting and nesting areas for birds, and roots that stabilized stream banks and provided structure for fish.

Impacts on the Watershed

6. Submerged aquatic vegetation – Dense beds of largely exotic nuisance species of aquatic vegetation slow water flow, impede recreational paddling, and contribute significantly to low DO.

7. Potential groundwater contamination – The 57-acre Hickory Street Landfill, adjacent to One Mile Creek, was an unregulated dump from 1940 to 1970 and contains five million cubic yards of industrial and commercial waste. In the early 1980s it was covered with a two-foot clay cap that has subsequently been compromised by erosion. The eight-acre Mobile Gas Restoration Site at the headwaters of OMC was used from the early 19th through the late 20th centuries to make natural gas from coal and later as a school bus farm, so it is currently being monitored for potential groundwater contaminants. Both sites warrant further groundwater and sediment monitoring to determine if they are adversely affecting OMC or TMC.

8. Abundance of invasive species – Since their discovery in TMC ten years ago, Island Apple Snails have proliferated, leaving pink egg cases on emergent surfaces from Langan Park downstream to Telegraph Road. This exotic nuisance species threatens native aquatic vegetation species, especially in the Mobile-Tensaw Delta, despite efforts to eradicate them. Increasingly, Chinese tallow (popcorn trees), taro (elephant ears), alligator weed, and other invasive nuisance plant species displace native plants and the services that they provide to wildlife.



*Dense emerged vegetation along the creek's margins (*Hvaraphilia* sp) inhibits recreation. (Location: Three Mile Creek downstream of Summerville Street.)*



Island Apple Snail



Island Apple Snail eggs are prevalent throughout the downstream segments of Three Mile Creek.

Watershed Management Measures

The effects of stormwater runoff in the Three Mile Creek watershed include excessive loadings of trash and litter, nutrients, oxygen-demanding substances, and pathogens. Once these pollutants are in Three Mile Creek, they produce elevated nutrient and pathogen levels and reduce dissolved oxygen in the water. Elevated nutrients and pathogens in the creek can also affect human health and welfare by making the water unsafe for human contact and producing algal blooms that limit recreation opportunities. Without more effective stormwater management, water quality and stream conditions within the watershed will continue to deteriorate. Because ongoing problems are made worse by each significant rain event, timely action is critical. By successfully addressing excessive stormwater runoff and the sedimentation that it causes, the long-term health of the streams, wetlands, and bays can recover.



Take Pride in Toulminville, Nov. 23, 2013.

The management measures recommended in the plan include restoration or mitigation of past environmental impacts, policy and regulatory changes, and opportunities to employ “cutting-edge” technologies for “green infrastructure” and “Low Impact Development.” The WMP recommends implementation of structural and non-structural management measures designed to achieve the goals established for TMC that target the primary causes of degradation. These include, but are not limited to, the following:

Five primary goals guided the development of the conceptual measures addressed in the plan:

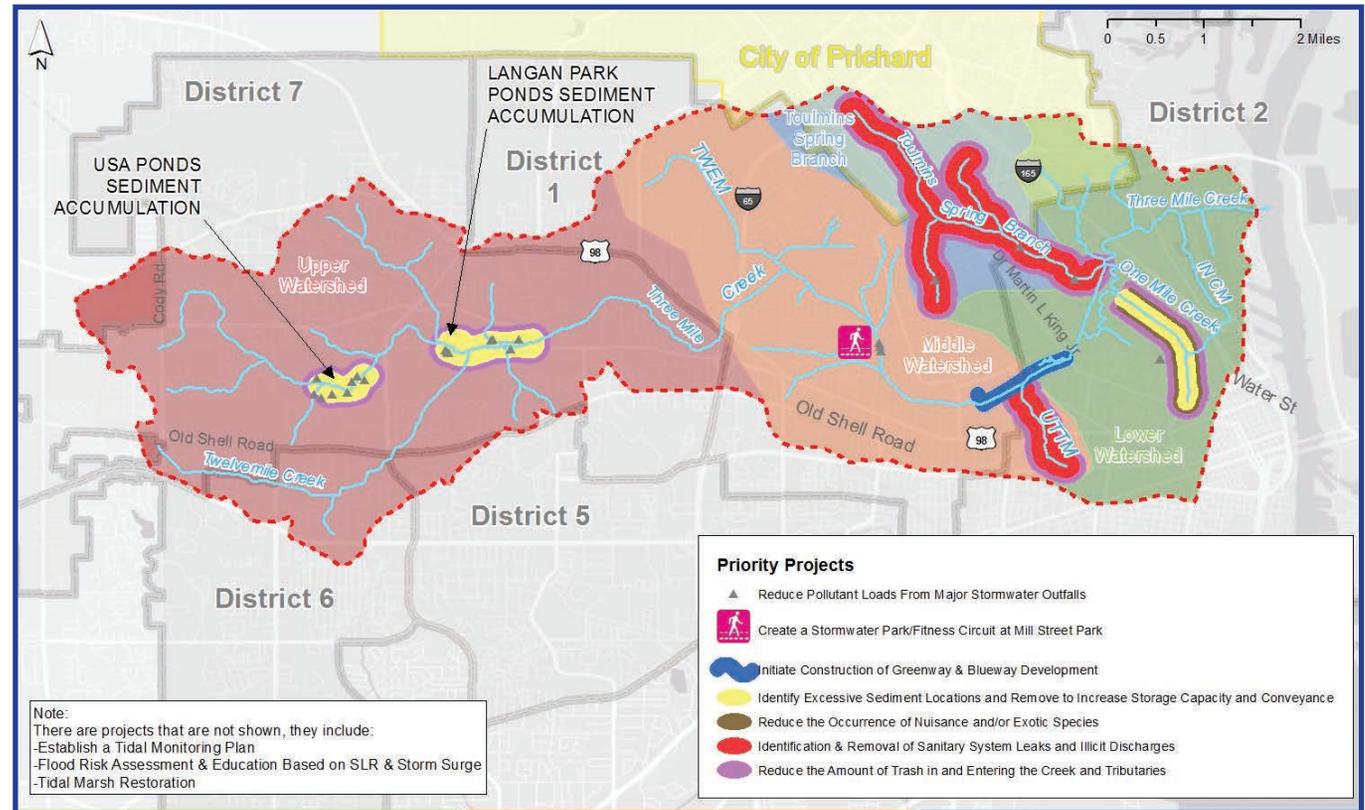
- Improve water quality
- Protect and improve the health of fish and wildlife
- Restore the heritage and cultural connection between the watershed and the community
- Plan and prepare for climate resiliency

Secondary objectives that influenced the formulation of management measures included:

- Develop 12.3 miles of continuous greenway.
- Develop a strategy for reducing pollutants in coordination with ADEM.
- Achieve State water quality standards for warm water fisheries.
- Eliminate all known illicit connections/sanitary inputs.
- Reduce amount of trash in waterways by 75%.
- Maintain design level of service for flood protection from USACE dams.
- Install environmental education signage in six existing or proposed parks.

Watershed Management Measures

The following projects have been identified as having the greatest potential to provide significant early benefits towards reaching the goals specified in the WMP and have been prioritized for early implementation. These projects are made up of one or more management measures and are distributed so that communities throughout the watershed will realize initial benefits from this restoration process.



➤ Stormwater

- Install Green infrastructure retrofits in public areas.
- Remove sediment (USA wet detention and Langan Park).
- Construct energy dissipater on Twelve Mile Creek.
- Improve trash management; initiate water-based collection program, and install GPRS strategically.

➤ Wastewater

- Remove illicit discharges to stormwater system.
- Remove failing septic systems.

➤ Ecology

- Improve management of invasive species.
- Restore streambank and riparian buffers.
- Restore wetlands.

➤ Access

- Build greenway(public/private easements).
- Build blueway (three access points, five portage enhancements).

➤ Sea Level Rise

- Restore tidal marsh landward of existing marsh.
- Install backwater control valves.

Cost Estimates and Financing Options

The costs of correcting the significant problems affecting the Three Mile Creek Watershed are anticipated to range between \$43 million and \$145 million, which includes addressing lack of recreational access and mitigating impacts associated with sea level rise. Doing little or nothing will result in deferred costs that will escalate as environmental deterioration continues. Implementing the measures in the plan will require a significant, steady stream of funding

► Alternatives for funding and financing improvements in the Three Mile Creek Watershed include:

- Water use service fees (i.e. stormwater utility fees)
- Funding from non-governmental organizations and other private sources
- Mitigation banks
- Impact fees
- Special assessments
- System development charges
- Environmental tax shifting
- Municipal bonds
- Capital improvement cooperative districts
- Alabama improvement districts
- Tax increment financing districts
- Federal grants, loans, and revenue sharing
- “Green” stimulus funding
- RESTORE Act/NFWF GEBF funding

First Steps

Successful implementation of the **44 management measures** recommended in the WMP will require the **long-term commitment** of significant **financial resources** and community support. Many financial opportunities, primarily federal grants and cooperative agreements, are available to help restore, enhance, and reconnect TMC to its surrounding communities. In recent years, increases in watershed recovery efforts by communities around the nation have significantly increased the competition for these resources. In order to be competitive in this environment, the WMP recommends establishing a model **Three Mile Creek Partnership (TMCP)** representing three primary support sectors:

- **Public** (local government)
- **Private** (business & industry)
- **Community** (place based civic, non-profit).

The TMCP can be created as a public-private partnership among the three entities mentioned above, or it could be established through a grassroots effort (e.g., a 501 [c][3] organization). The TMCP would be the coordinating body for all implementation activities specified in the WMP.

Community Outreach



A Community Outreach and Public Education Plan has been developed to promote the importance of implementing the management measures outlined to achieve:

- improvements in environmental quality;
- enhancements of the quality of life; and
- sustained or improved property values throughout the watershed into perpetuity.

The support of all stakeholders – including residents and those with commercial interests in the watershed – is vital to achieving the measures recommended in the plan.

The Vision is Simple

Three Mile Creek will once again
be a culturally, ecologically and economically
important waterway for Coastal Alabama.

For more information go to www.mobilebaynep.com

