

# ALABAMA STATE EXPENDITURE PLAN (SEP)

## Project #16: Three Mile Creek Watershed Restoration

### Project Description/Summary

- a) This project proposes two activities: 1) the stabilization/restoration of approximately 8,200 linear feet of stream in Twelve Mile Creek; and 2) the dredging of Langan Park Lake. This project supports the restoration and protection of water quality of the Gulf Coast Region's fresh, estuarine, and marine water resources by reducing sediment transport into Twelve Mile Creek, Three Mile Creek, and ultimately into Mobile Bay.

Activities also consist of the overall administration of this grant, including, but not limited to, project development and oversight, contracting, and sub-recipient monitoring.

- a. **Need:** As identified in the Three Mile Creek Watershed Management Plan, the unstable banks of Twelve Mile Creek are degrading water quality downstream in Langan Park Lake and Three Mile Creek. Concrete-lined channels or other hardening mechanisms upstream of the subject area have replaced vegetated stream banks. While this concrete lining provides better conveyance for storm water and reduces flooding, it also prohibits infiltration, thereby increasing storm water runoff volumes and pollutant loads and eliminates natural habitat from the bed and banks of the stream. Better conveyance, in this case, results in increased velocities within the subject area. These high velocities cause erosion which produces downcutting in the streambed. This downcutting exacerbates the problem by reducing floodplain connectivity, thereby further increasing velocity. Erosion continues to aggravate problems by destabilizing stream banks producing mass wasting. Extensive sanitary sewer structures lie within the stream banks and stream bottoms. Erosion and mass wasting has accelerated to the point that several of these structures have entirely lost their protective trenching and exposing them to the many hazards of the stream. This exposure of the sewer lines dramatically increases the risk of complete failure which results in sewer spills. Mobile Area Water and Sewer System actively maintains these lines by importing fill which provides an additional erosion and sedimentation source.

Biological pollutants in the form of invasive species are degrading habitat and displacing native species. In fact, at least four of Alabama's 10 worst invasive weeds exist at the site (Alabama Invasive Plant Council).

Langan Park Lake, a focal point of the surrounding Langan Municipal Park (Park), where citizens in decades past enjoyed water activities such as paddle boats, has been severely impacted by sedimentation. The Park provides many recreational, educational, and cultural activities throughout the year enjoyed by thousands of people throughout the region. However, over the years, the waters have become more swamp-like, making the lake more of an eyesore than an amenity. The continued sedimentation of

## ALABAMA STATE EXPENDITURE PLAN (SEP)

Langan Park Lake devalues the Park and surrounding cultural and sports institutions, making redevelopment in the area more difficult.

The cost of no action further compounds the degradation of Twelve Mile Creek resulting in the continued sedimentation of downstream features like Langan Park Lake, Three Mile Creek, and eventually Mobile Bay.

**Purpose:** The purpose of the project is to reduce further bank de-stabilization, thereby reducing sedimentation to downstream features like Langan Park Lake and Three Mile Creek. Improvements in water quality, storm water management, and flood control support the work in Langan Park Lake to restore its capacity and usefulness.

**Objective:** The objectives of this project include:

- Reduce downstream sedimentation by stabilizing Twelve Mile Creek from East Drive to Langan Park Lake;
  - Restore and protect existing utility structures and assets caused by downcutting and widening of the stream;
  - Eradicate or control invasive species;
  - Provide instream structures to reduce stream velocity/energy and increase habitat; and
  - Dredge Langan Park Lake to its original capacity and usefulness.
- b. This activity is located in the Gulf Coast region and will be carried out in the City of Mobile in Mobile County, Alabama.
- c. This project is anticipated to begin on 7/1/19 and end on 6/30/2023 (4 years).
- d. This project will be implemented by the City of Mobile.
- b) This project improves water quality, restores habitat, and improves hydrologic function in Three Mile Creek which eventually flows into Mobile Bay, the fourth largest estuary in the United States. These improvements lead to enhanced ecosystem health, ecosystem services, and recreational opportunities contributing to the restoration of the Gulf economy.

### Eligibility and Statutory Requirements

This activity is located in the Gulf Coast Region and is eligible for Spill Impact Component funding under Category #1 - Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast (primary). Secondary activities include Category #2 - Mitigation of damage to fish, wildlife, and natural resources; Category #3 - Implementation of a federally approved marine, coastal, or comprehensive conservation management plan, including fisheries monitoring; Category #6 - Infrastructure projects benefiting the economy or ecological resources, including port infrastructure; Category #7 - Coastal flood protection and related

## ALABAMA STATE EXPENDITURE PLAN (SEP)

infrastructure; and Category #10 - Promotion of tourism in the Gulf Coast Region, including recreational fishing.

### Comprehensive Plan Goals and Objectives

This project is consistent with the following Comprehensive Plan goals:

- Goal 2: Restore Water Quality and Quantity – Restore and protect water quality of the Gulf Coast region’s fresh, estuarine, and marine waters; and
- Goal 4: Enhance Community Resilience – Build upon and sustain communities with capacity to adapt to short- and long-term changes; and
- Goal 5: Restore and Revitalize the Gulf Economy – Enhance the sustainability and resiliency of the Gulf economy.

This project supports the following Comprehensive Plan objectives:

- Objective 2: Restore, Improve, and Protect Water Resources – Restore, improve, and protect the Gulf Coast region’s fresh, estuarine, and marine water resources by reducing or treating nutrient and pollutant loading; and improving the management of freshwater flows, discharges to and withdrawals from critical systems;
- Objective 5: Promote Community Resilience – Build and sustain Gulf Coast communities’ capacity to adapt to short- and long-term natural and man-made hazards, particularly increased flood risks associated with sea-level rise and environmental stressors. Promote ecosystem restoration that enhances community resilience through the re-establishment of non-structural, natural buffers against storms and flooding.

### Major Milestones

- a) Milestone 1: Procurement
- b) Milestone 2: Baseline monitoring
- c) Milestone 3: Complete construction (Section 1)
- d) Milestone 4: Complete construction (Section 2)
- e) Milestone 5: Dredge Langan Park Lake
- f) Milestone 6: Post-implementation monitoring

### Success Criteria/Metrics/Outcomes

The anticipated outcome of the Three Mile Creek Watershed Restoration project will be:

- Stabilization and restoration of streambank in Twelve Mile Creek and the dredging of Langan Park Lake

## ALABAMA STATE EXPENDITURE PLAN (SEP)

Table 17. Proposed Projects Success Criteria/Metrics/Outcomes

Activity	Anticipated Project Success Criteria/Metrics	Short-term outcome	Long-term outcome
Stabilization and restoration of streambank in Twelve Mile Creek and the dredging of Langan Park Lake	Stabilize and restore 8,200 linear feet of streambank  8 sewer crossings protected / repaired  Dredge 310,000 cubic yards of sediment  Develop monitoring plan to assess water quality improvements	Pollutant source repaired  Reduced sediment in Langan Park Lake	Improved water quality with corresponding decrease in pollutants  Reduction in sewer spills

Additional success criteria capturing the ecological benefits of this project will be selected at the grant application stage.

### Monitoring and Evaluation

- a) Submission of final E&D to ADCNR for review and approval
- b) Provide evidence to ADCNR that all required permits were obtained (including SHPO)
- c) Submit results of bid process to ADCNR prior to awarding contracts
- d) ADCNR will conduct periodic onsite reviews
- e) Submission of quarterly and final reports
- f) Post construction monitoring as required

### Best Available Science

Studies have found that aquatic macrophytes “community biomass decreases with increasing velocity” (Madsen 76). Loss of these communities limit their important ecosystem services, including “(1) improving water quality; and (2) stabilizing sediments, reducing sediment resuspension, erosion and turbidity” (Madsen 72). The compounding problems of increased velocity, loss of vegetation, downcutting, and mass wasting accelerate erosion causing heavy sediment inputs to the Langan Park Lake blanketing benthic flora and fauna with layers of silt. This blanketing may destroy feeding grounds

## ALABAMA STATE EXPENDITURE PLAN (SEP)

and spawning sites as well as entire populations, causing radical changes in the lake ecosystems (EPA 192). Continued sediment loading leads to advanced eutrophication, swampy or marshy conditions, and finally total infilling of the prior lake environment (Castro 1995). The sediment particles also contain pollutants that impact water quality, including oxygen-demanding substances and nutrients (Three Mile Creek Watershed Management Plan 53, 60, 61).

This project is consistent with the values and recommendations set forth in the MBNEP's Comprehensive Conservation and Management Plan 2013-2018, available on the MBNEP [website](#), the Three Mile Creek Watershed Management Plan, also available on the MBNEP [website](#).

Alabama Invasive Plant Council. Alabama's 10 Worst Invasive Weeds. Alabama Invasive Plant Council; Alabama's 10 Worst Invasive Weeds. Accessed 15 Aug 18. The article is available from the [Alabama Invasive Plant Council](#).

Alabama Invasive Plant Council. *Cogongrass in Alabama*. Accessed 15 Aug 18. The article is available from the [Alabama Invasive Plant Council](#).

Castro, Janine, and Frank Reckendorf. USDA Natural Resources Conservation Service, 1995, *Effects of Sediment on the Aquatic Environment: Potential NRCS Actions to Improve Aquatic Habitat - Working Paper No. 6*. The paper is available from the NRCS [website](#).

Environmental Protection Agency. 1973. *Measures for the restoration and enhancement of quality of freshwater lakes*. EPA-430/9-73-005. Washington, D.C.

Madsen, J.D., Chambers, P.A., James, W.F. et al. *Hydrobiologia* (2001) 444: 71. This article is available from the Springer [website](#).

Shaneyfelt, R.C. and Metcalf C., 2014. *Coastal Alabama Pilot Headwater Stream Survey Study, ADEM-ACNPCP, MCSWCD and U.S. EPA-R4*; 53 pp.

*Three Mile Creek Watershed Management Plan*. Dewberry, 2014. This report is available from the Mobile Bay National Estuary Program [website](#).

USGS National Elevation Dataset. 1/9th Arc Second AL MS Mobile Bay Topobathy. U.S. Geological Survey, 2012, USGS National Elevation Dataset 1/9th Arc Second AL MS Mobile Bay Topobathy. The program is available from the USGS [website](#).

### Budget/Funding

- a) Estimated cost of the project and amount to be requested from Spill Impact Component Funds: \$12,081,900 (5-15% - Planning, 95-85% - Implementation). While it is noted that funding available under a grant award cannot exceed the amount described in the SEP for this project, the percentages listed in this section are estimated and will be more clearly cultivated in the grant application.
- b) No other funding sources are anticipated at this time.

## ALABAMA STATE EXPENDITURE PLAN (SEP)

### Partnerships/Collaboration (if applicable)

In 2015, the City adopted its current comprehensive plan, Map for Mobile. Protecting the City's natural resources at a watershed scale is an essential element identified in the plan as an important quality of life issue for our citizens. In 2015, Mayor Stimpson and the US Army Corps of Engineers (USACE) Mobile District's leadership formed the Joint Agency Task Force to leverage effort, funds, and energy to maximize ecosystem restoration within the Three Mile Creek watershed. The Joint Agency Task Force is comprised of multiple federal, local, and state regulatory agencies including the City of Mobile, USACE, ADEM, Mobile Bay National Estuary Program, Mobile County, The Nature Conservancy, Alabama State Port Authority, ADCNR State Lands Division, Mobile Area Water & Sewer System, and The University of South Alabama. The City has requested funding to implement an Integrated Water Resource Management (IWRM) process for recommending specific long-term improvements throughout the watershed that impact not only wildlife and water flow but also recreation and flooding. The IWRM study will provide a science-based guidance document for the Joint Agency Task Force to leverage funds to achieve the goal of ecosystem restoration within the Three Mile Creek watershed.

The Mobile Bay National Estuary Program (MBNEP) received RESTORE funds for project planning activity to include engineering and design of a stream restoration plan for restoring Twelve Mile Creek, and for development of an invasive species control program focused on aquatic vegetation in Three Mile Creek; preparation of necessary environmental compliance and regulatory clearances documentation; quality assurance; and pre-restoration monitoring. The Planning activity of the MBNEP RESTORE project ensures that the implementation phase can proceed in a timely and fully compliant manner and includes adequate baseline monitoring data to measure results following implementation. Funds for the planning and monitoring have been awarded in addition to funds to restore approximately 1,000 linear feet of stream.

### Leveraged Resources (if applicable)

The proposed project leverages RESTORE funds allocated (\$1.15M) to the MBNEP for restoration activities in Twelve Mile Creek, upstream of Langan Lake Park. Also, the grant for the MBNEP funds hydrologic modeling and invasive species management for the entire Twelve Mile Creek to ensure design compatibility. (Approved)

The City of Mobile is committed to providing in-kind services for grant management, project management, technical oversight, and \$320,000 (FY18) in engineering services. (Approved)

### Funds Used As Non-Federal Match (if applicable)

Not applicable at this time.

### Other

Not applicable at this time.

# ALABAMA STATE EXPENDITURE PLAN (SEP)



Figure 16. The Three Mile Creek Watershed Restoration Project will be implemented in the City of Mobile, Alabama.