

RESTORE Council Activity Description

General Information

Sponsor:

Alabama Department of Conservation and Natural Resources

Title:

Coastal Alabama Regional Water Quality Program

Project Abstract:

The RESTORE Council has approved \$16,130,750 as Category 1 planning activities in Council-Selected Restoration Component funding for the Coastal Alabama Regional Water Quality Program, sponsored by the Alabama Department of Conservation and Natural Resources (ADCNR). In addition, the Council has also identified a separate \$19M implementation component as an FPL Category 2 priority for potential future funding. The program supports the primary RESTORE Comprehensive Plan goal to restore water quality and quantity. The program and projects included for implementation may include, but are not limited to: planning related work (e.g., project prioritization and selection, engineering and design (E&D), and permitting and compliance activities), construction of or upgrades to stormwater and wastewater management systems, low impact development/green infrastructure activities, and septic to sewer conversions. Prior to conducting E&D and/or construction activities, ADCNR will develop a process for project identification and project selection. E&D, permitting and implementation will be conducted according to State and Federal engineering and design guidelines and construction standards.

Multiple stakeholder forums in coastal Alabama have prioritized the improvement of water quality for promoting ecosystem health as an important driver of restoring the environment and economy of coastal Alabama. Bacterial and nutrient loading from pollutant sources results in harmful algal blooms, oyster reef closures, hypoxia development, and thus has indirect consequences on coastal workforce and economies. Program duration is 10 years.

FPL Category: Cat1: Planning/ Cat2: Implementation

Activity Type: Program

Program: South Alabama Water Quality Improvements Program

Co-sponsoring Agency(ies): N/A

Is this a construction project?: Yes

RESTORE Act Priority Criteria:

- (I) Projects that are projected to make the greatest contribution to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region, without regard to geographic location within the Gulf Coast region.
- (II) Large-scale projects and programs that are projected to substantially contribute to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast ecosystem.
- (III) Projects contained in existing Gulf Coast State comprehensive plans for the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

(IV) Projects that restore long-term resiliency of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands most impacted by the Deepwater Horizon oil spill.

Priority Criteria Justification:

#1 Projects that are projected to make the greatest contributions. Improving water quality is a foundational restoration action that will yield the greatest contributions to restoring and protecting coastal living and marine resources.

#2 Large scale projects that substantially contribute. Water quality is a pervasive concern across the Gulf coast and implementing large scale repairs, upgrades, and/or alternative treatment solutions will substantially contribute to downstream ecosystem health of multiple coastal habitats and coastal living marine resources.

#3 Projects contained in existing Gulf State comprehensive plans. Water quality has been identified in the Coastal Alabama River Basin Management Plan (5), the Mobile Bay National Estuarine Program Comprehensive Conservation Management Plan (6) as well as the National Wildlife Federation (7) planning documents as being a priority for Gulf-wide restoration.

#4. Long term resiliency. Water quality improvement, and the decrease of point and non-point source pollution into receiving waters enhances the long-term resilience of multiple coastal and marine living resources by improving water column integrity.

Project Duration (in years): 10

Goals

Primary Comprehensive Plan Goal:

Restore Water Quality and Quantity

Primary Comprehensive Plan Objective:

Restore, Improve, and Protect Water Resources

Secondary Comprehensive Plan Objectives:

N/A

Secondary Comprehensive Plan Goals:

N/A

PF Restoration Technique(s):

Reduce excess nutrients and other pollutants to watersheds: Erosion and sediment control

Reduce excess nutrients and other pollutants to watersheds: Stormwater management

Reduce excess nutrients and other pollutants to watersheds: Wastewater system improvements

Location

Location:

Coastal Alabama; Mobile and Baldwin Counties.

HUC8 Watershed(s):

South Atlantic-Gulf Region(Choctawhatchee-Escambia) - Florida Panhandle Coastal(Perdido Bay)

South Atlantic-Gulf Region(Alabama) - Alabama(Lower Alabama)

South Atlantic-Gulf Region(Mobile-Tombigbee) - Mobile Bay-Tombigbee(Mobile-Tensaw)

South Atlantic-Gulf Region(Choctawhatchee-Escambia) - Florida Panhandle Coastal(Perdido)

South Atlantic-Gulf Region(Pascagoula) - Pascagoula(Escatawpa)

South Atlantic-Gulf Region(Pascagoula) - Pascagoula(Mississippi Coastal)

State(s):

Alabama

County/Parish(es):

AL - Baldwin

AL - Mobile

Congressional District(s):

AL - 1

Narratives

Introduction and Overview:

Restoration of water quality has been identified as a major restoration goal by the state of Alabama and the Alabama Department of Conservation and Natural Resources (ADCNR). Multiple stakeholder engagement forums with coastal Alabama communities, municipalities, and non-governmental organizations have all prioritized the improvement of water quality for promoting ecosystem health as an important driver of restoring the environment and economy of coastal Alabama (MBNEP 2019). Within the Mobile Bay National Estuary Program (MBNEP) Comprehensive Conservation and Management Plan (CCMP), water quality was identified as one of the six guiding values (MBNEP 2019). Alabama has recently invested significantly in millions of dollars of water quality improvements via the RESTORE Spill Impact Component and RESTORE Direct Components across Mobile and Baldwin Counties, including projects in Fairhope, Mount Vernon, Bayou La Batre, Dauphin Island, Mobile, Satsuma and Chickasaw (AGCRC 2018, AGCRC 2019). These projects are in varying stages of completion but all projects are monitored by DCNR as part of their oversight responsibilities and lessons learned will be incorporated into this program as it is adaptively managed over time.

Water quality is monitored by the Alabama Department of Environmental Management and several local entities. The 2020 ADEM 303(d) list of impaired water bodies in Mobile and Baldwin Counties includes a number of water bodies that are listed as impaired for pathogens, with sources including urban runoff, storm sewers, on-site wastewater systems and municipal wastewater systems. These impaired waterbodies include, but are not limited to: Mississippi Sound, Portersville Bay, Grand Bay, Fowl River, Silver Creek, Mobile Bay, Pelican Bay, Boggy Branch, and others (ADEM 2020). Alabama will conduct the planning and implementation of the Coastal Alabama Regional Water Quality Program (the Program). The program and projects included for implementation may include, but are not limited to: planning related work (e.g., project prioritization and selection, engineering and design, and permitting and compliance activities), construction of stormwater and wastewater management systems (including upgrades and repairs to existing systems), low impact development/green infrastructure activities, and septic to sewer conversions. Prior to conducting engineering and design and/or construction activities, ADCNR will develop a process for project identification and project selection. Engineering and design, permitting, and implementation will be conducted according to State and Federal engineering and design guidelines and construction standards.

There are five goals within the RESTORE Councils comprehensive plan. This Program addresses one of those goals, Goal #2: Restore Water Quality and Quantity. The Program ties in with RESTORE Councils primary objective of Restore, Improve, and Protect Water Resources.

Under the 2016 Comprehensive Plan update the Council advanced the following commitments:

- Regional ecosystem-based approach to restoration: Through extensive collaboration engagement opportunities as a result of the CPS support funds, it is clear that water quality is a priority goal for the Restore Council members from Florida to Texas. Addressing water quality degradation and impairment is a foundational component of restoring/enhancing a host of living and coastal marine resources. Addressing water quality sustains multiple elements of local Alabama coastal stakeholder communities as well as regional resilience to multiple living coastal marine resources within Mississippi, and across the Gulf, cultures, economies, and societies are sustained by ecological services that are impacted by water quality issues.
- Leveraging resources and partnerships: The State of Alabama has invested significant funding under National Fish and Wildlife Foundation Gulf Environmental Benefit Fund (NFWF-GEBF) as well as the initial Funded Priorities List (FPL) into developing watershed planning documents that have opportunities to fund prioritized water quality related improvement projects. Additionally, the

Alabama Recovery Council has identified several Direct Component (B1) and Spill Impact component (B3) water quality improvement projects that will leverage and coordinate with the planning process and eventual project selection under this program. Lastly, GOMESA funding is anticipated to be leveraged into the implementation of this water quality improvement program, maximizing the number of projects that could get implemented and providing unforeseen contingency funding if needed.

- Engagement, Inclusion, and Transparency: Since 2010, ADCNR and the State of Alabama have provided multiple opportunities for the public to identify restoration funding priorities. Water quality improvement has been a strong and consistent theme in this public input. Within the MBNEP stakeholder engagement efforts for the CCMP development, water quality, its assessment and improvement, are identified as a priority restoration activity.
- Science-based decision-making: Utilizing the best available science available to ADCNR as well as relying on the local knowledge of the cities and municipalities to water quality issues, wastewater and stormwater maintenance concerns and repair history, ADCNR will prioritize and select water quality projects for implementation. Additionally, technical expertise will be provided through a small technical work group during the project evaluation and categorization process.
- Delivering results and measuring impacts: Monitoring the pervasive water quality degradation and the indirect impacts on living coastal and marine resources is challenging. This program will monitor individual projects (impact dependent on purpose) and roll up water quality improvements from a construction, E&D, and permitting perspective to gauge broader program success.

The improvement of water quality conditions has multiple environmental benefits (Capps 2019). Through water quality improvement (i.e., nutrient and other pollutant reduction) multiple living coastal marine resources benefit, including humans. A decrease in nutrient loads into downstream receiving water bodies reduces the development of algal blooms (as well as harmful algal blooms) reducing the opportunity for hypoxia to develop and result in mortality of sedentary benthic organisms and harm to mobile marine resources such as fisheries. Water quality degradation of coastal water bodies in Alabama is both an economic (recreational and commercial) and environmental stressor. Bacterial and nutrient loading from pollutant sources results in harmful algal blooms, oyster reef closures, hypoxia development, and thus indirect consequences on coastal workforce and economies. A number of water quality assessments conducted in Alabama underscore the importance of addressing water quality impairments stemming from wastewater discharge and stormwater runoff holistically (see MBNEP 2012, MBNEP 2014, MBNEP 2016, MBNEP 2018, MBNEP 2019).

Total Cost: \$35,130,750M. Water quality implementation is scalable, with 90% of these funds being used for implementation.

Timeline: 10 years.

ADCNR will work and partner with coastal cities, municipalities and utility associations to implement water quality improvement program objectives. This Program aligns with the planning framework approach to reduce excess nutrients and other pollutants to watersheds and downstream receiving waters. Further, this program will utilize planning framework techniques including storm-water management, erosion and sediment control, and wastewater system improvements.

Methods:

The Program will be very similar to the water quality improvement programs funded by the State of Florida, Mississippi, and Texas. Alabama's program will immediately support the restoration and

protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast Region (GCERC, 2016). Activities within this specific program will run concurrently and may include, but are not limited to, the following:

- Planning, project identification, project vetting, and project selection;
- engineering and design (E&D), and permitting;
- conversion from septic to sewer in coastal communities; and
- implementation of new or repairing/upgrading existing stormwater and wastewater systems and/or low impact development activities.

Planning, Project Identification, and Selection

In order to fund any engineering and design and construction projects ADCNR will develop a process for project identification and project selection. A selection process that will be implemented is described below.

Application Preparation: An application narrative will be put together that could include, but not be limited to, the following:

- water quality improvement activities proposed;
- location and receiving water body that it will impact;
- current impairments/ degradation of receiving water body;
- potential community need;
- ecological benefits of implementation;
- possible resiliency considerations; and
- matching funds / leveraging opportunities.

The project application window will be open between 45 – 60 days. Within this application window ADCNR will hold an info session / webinar for potential applicants. The information contained in the proposals in the above areas will inform the categorization and selection of projects for implementation.

Technical Team Review: A small technical group will review proposals according to an evaluation process that will review the information provided, address additional logistical considerations and additional evaluation criteria, as determined by ADCNR and the technical group. The technical group will categorize projects as follows:

- Category 1: those projects which have the potential to be most beneficial and/or that are closer to implementation;
- Category 2: Those projects which represent a medium priority or benefit;
- Category 3: Those projects that do not have enough information to make decisions or that are a better fit for another funding source.
- ADCNR reserves the right to move projects between categories.

Public Comment: The categorized project list will be presented to the public via a webinar or public meeting to receive public input in order to further evaluate and refine and reprioritize the list as appropriate. ADCNR, with the support of the technical team, will evaluate funding availability and leverage opportunities and will meet with the potential sub-recipients to get additional information on the projects as needed.

Project Selection: ADCNR, with input from the technical team, will select a slate of projects for inclusion in the program. The slate of projects may include several alternates, given possible logistical considerations and budget changes. ADCNR will engage the RESTORE Council on Category 1 and Category 2 projects, respectively, based on environmental compliance needs or inclusion, and will initiate the grant application process on behalf of the sub-recipient with the RESTORE Council.

E&D and Permitting

Engineering, design, and permitting of the identified projects will be considered for funding utilizing standard engineering practices, including certified and stamped plans. Depending on the style and type of system upgrade (conventional gravity sewers, pumping stations, treatment works, etc.), repair or construction, standard engineering principles or guidelines will differ. Specific engineering guidelines will be informed by Alabama state agency policy decisions.

Implementation

Implementation within the water quality improvement program will focus on stormwater and wastewater improvement practices. Any implementation will follow standard construction and environmental practices, and any other applicable state and federal requirements (Walsh et al., 2005a, b; Hogan and Walbridge, 2007; Walsh et al., 2016). Implementation may include a broad range of activities to treat and improve water quality moving downstream, including, but not limited to:

- connection of existing septic systems to main line sewer infrastructure;
- crushing and filling of discontinued septic systems;
- upgrades, repairs, and replacements of sewer lines, including cure in place pipe (CIPP) technologies;
- * installation of low impact development infrastructure/features;
- wastewater treatment plants, stormwater connections, manholes, and pump stations; and
- installation of water control structures and integration of existing drainage canals with green infrastructure.

Design teams may consider additional resources on new technologies tied to upgrades and improvements to wastewater collection systems (Sterling et al., 2010; FDEP, 2018) based on existing system needs, environmental/ permitting requirements and restrictions. All construction will be conducted following specific Alabama guidelines for construction practice implementation (e.g., The Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction sites and urban Areas; ASWCC, 2018). Additionally, this program will be coordinated with other water quality improvement efforts under other Deepwater Horizon related funding streams, including water quality activities funded under B1 and B3 through the Alabama Recovery Council as well as leveraged with \$30 million of GOMESA funding.

Environmental Benefits:

Elevated nutrient and bacterial loading and harmful algal bloom development are water quality problems that reoccur in Alabama coastal waters. Restoration and improvement of the quality of water, as a natural resource, will benefit the marine/coastal ecosystems, habitats, and fisheries within Alabama waters, and regionally within the Gulf. Water quality impacts of nutrient and bacterial pollution in coastal systems is a global phenomenon (Mallin et al., 2000; Bennett et al., 2001; Diaz and Rosenberg, 2008; Vörösmarty et al., 2010; Lymer et al., 2018; O'Mullan et al., 2019). A change in water quality is often associated with changes in water column conditions (i.e., hypoxia, eutrophication, and bacterial loads). The most visible water quality degradation is often associated with urban runoff, as well as discharge and sanitary sewer overflow issues, all of which are associated with wastewater management. There are numerous studies and governmental reports that point to SSOs, overflow issues, and other infrastructure failures impacting and contributing to decreases in water quality in downstream receiving systems, shellfish bed closures, and other environmental problems (e.g., EPA, 2004). The EPA estimates that there are at least 23,000 – 75,000 sanitary sewer overflows (SSOs) per year in the U.S. (EPA, N.D.), many of which are not specifically associated with impaired water listings, TMDLs, or other criteria. Replacement of aging or failing stormwater and wastewater infrastructure could also help communities

plan for and address anticipated impacts of climate change associated with sea level rise, changes in precipitation, etc. (Kessler 2011).

The Program has the following objectives to improve water quality entering into Alabama coastal waters: 1) evaluation and assessment; 2) E&D and permitting; 3) implementation; and 4) monitoring.

Evaluation: Systematic water quality evaluation and assessment will identify the source, dynamics, and cost effective stormwater and wastewater improvement practices to improve water quality (Park et al., 1994; Sharpley et al., 2007; Spellman, 2008). A project evaluation and categorization process may inform project selection. Consideration of priorities identified in Mobile Bay NEP Watershed Management Plans will also be included in the evaluation process.

Engineering and Design: Engineering, design, and permitting of the identified solutions (standard engineering practices, including certified and stamped plans) will be informed by respective state engineering design standards. This objective identifies and evaluates wastewater related problems; assembles basic information; presents criteria and assumptions; and examines alternate projects with preliminary plans and cost estimates.

Implementation: Implementation of designed stormwater and wastewater improvement practices will follow standard construction and environmental practices, and any other applicable state and federal requirements (Walsh et al., 2005a, b; Hogan and Walbridge, 2007; Walsh et al., 2016). In addition, all implementation activities will follow construction best management practice requirements to mitigate both on-site and off-site environmental and societal risks (e.g., ASWCC, 2018)

Monitoring: Success monitoring will document project outcomes and project-specific changes to downstream receiving waters (Fu et al., 2019; Tolouei et al., 2019). This will include monitoring the success of the respective practices (Kondolf and Micheli, 1995; Spellman, 2008; Lindenmayer and Likens, 2009a, 2009b; Reynolds et al., 2016), specifically wastewater discharges.

The methodologies and objectives in the Scope of Work section follow best available science for water quality improvement projects, are scientifically defensible, and allow for an on-the-ground operational decision-making process to best improve water quality. Metrics are subject to change based on individual project considerations.

Metrics:

Metric Title: HM001: Nutrient reduction - Lbs. N avoided or removed

Target: TBD

Narrative: The number of pounds removed or avoided will be dependent on baseline information to be obtained at a later date.

Metric Title: HM003: Nutrient reduction - Lbs. P avoided or removed

Target: TBD

Narrative: The number of pounds removed or avoided will be dependent on baseline information to be obtained at a later date.

Metric Title: HM004: Sediment reduction - Lbs. sediment avoided or removed

Target: TBD

Narrative: The number of pounds removed or avoided will be dependent on baseline information to be obtained at a later date.

Metric Title: RES004: Upgrades to Stormwater and/or Wastewater Systems - CFU Reduction in bacterial loads

Target: TBD

Narrative: Target for metric regarding CFU reduction in bacterial loads is project-specific and will be dependent on baseline information to be obtained at a later date.

Metric Title: PRM011: Restoration planning/design/permitting - # E&D plans developed

Target: TBD

Narrative: The number of E&D plans will indicate the number of water quality implementation projects moved forward to implementation.

Metric Title: PRM013: Restoration planning/design/permitting - # environmental compliance documents completed

Target: TBD

Narrative: The number of permits/compliance documents will indicate the number of water quality implementation projects moved forward to implementation.

Metric Title: RES002: Watershed management - # upgrades to stormwater and/or wastewater systems

Target: TBD

Narrative: The number of implementation activities will indicate the number of projects implemented for water quality improvement.

Risk and Uncertainties:

There are several risks and uncertainties related to water quality improvement and the construction and implementation of water quality improvement projects.

Practice Implementation: Typically, cities and municipalities have working on the ground knowledge of the best infrastructure repairs and upgrades. Entities may be unsure about the water quality improvement benefits associated with a variety of newer technological options versus traditional repairs and upgrades. Planning and research around benefits of respective technologies reduces the risk and uncertainty of practice implementation.

Cost: Implementation costs may be highly variable considering undiscovered issues and logistics associated with newer technologies. Not being able to measure water quality improvements resulting from new technologies is a typical concern. The risk associated with undetectable improvements can be mitigated with due diligence and appropriate, tailored, monitoring targeting the area of concern. Uncertainty is further reduced by specifying tasks and objectives for planning and evaluation, clarifying and targeting the scientific basis for implementation, determining the types of practices implemented, which can result in respective costs reduction. Diligent project management and oversight is a key element of mitigating these risks.

Experience: Cities and municipalities are potential subaward recipients that, with long-term experience in implementing wastewater and stormwater improvement projects across coastal Alabama. They are familiar with environmental and societal risks associated with the implementation of a variety of

practices and, working with ADCNR will ensure that appropriate mitigation measures (best management practices) are in place. Risk considerations include environmental degradation from construction practices and mitigating offsite effects. Risks are mitigated in the near-term through the use of best management practices for erosion and sediment control (ASWCC, 2018). The implementation of the water quality improvement reduces the long-term environmental risk.

Sea Level / Storm surge: Sea level rise and storm surge are two risks and uncertainties to project implementation performance. Hummel et al. (2018) summarized a national assessment of coastal wastewater treatment facilities at risk for sea level rise. The Gulf coast of Alabama and Mississippi was classified as low risk, with low exposure across a sea level rise gradient from 1ft to 6ft. Given the variability in sea level rise prediction as well as the anticipated immediate ecosystem service benefits of the implementation of sewer and wastewater infrastructure, it is unlikely that pipe infrastructure implementation will consider sea-level rise. However, with respect to storm surge, certain upgrades (i.e., pump stations, backflow valves, electrical connections etc.) could be based on storm surge predictions and to ensure lack of failure under those conditions.

Monitoring and Adaptive Management:

Monitoring will occur at the program and -project-specific level. Programmatic monitoring will rely on rolling up of individual project outcomes and the option to include a broader network of water quality monitoring stations and advisory databases to identify potential long-term changes that are a result of project implementation. Project-specific monitoring will include documentation of water quality improvements for the identified water resource issues (i.e., nutrients, sediment, bacteria, inflow and infiltration). As-built monitoring will include surveys and other data collection as needed. Pre-implementation and post-implementation monitoring for degradation sources will be monitored to observe trends over time which may be compared to long-term advisory information. There is the potential to document changes, but that will be highly dependent on the availability of data. Trends may also be paired with water flow and climate data to provide data for any documented changes. Additional monitoring that may take place for construction improvements could include pressure gauge and/or smoke testing, infiltration and inflow (I&I) testing and modelling, etc. Post implementation monitoring will identify project-specific outcomes. Each project may be adaptively managed based on outcomes from monitoring. Any project-specific monitoring metrics or measures identified will be cross-referenced with NRDA MAM manual (DWH 2017) as well as any associated water quality monitoring guidance from the Council Monitoring and Assessment Work Group.

In addition to the Program-wide metrics described, additional metrics may be added on a project specific basis, including but not limited to:

- Reduction in nutrient loading (HM001, HM002, HM003, etc.);
- Reduction in bacterial loading (no existing metric);
- Reduction in suspended sediment (e.g., HM004); and/or
- Upgrades to stormwater and/or wastewater systems (e.g., RES002).

These potential metrics will be assigned on a project-specific basis and all required documentation (ODP, DMP, GIS, etc.) will be provided at that time.

Data Management:

To the extent practicable, environmental and biological data generated during monitoring activities will be documented using standardized field datasheets. If standardized datasheets are unavailable or not

readily amendable to record project-specific data, then project-specific datasheets will be drafted prior to conducting any project monitoring activities. Original hardcopy datasheets, electronic notes, notebooks, and photographs will be retained by the ADCNR. Relevant project data that are handwritten on hardcopy datasheets or notebooks will be transcribed (entered) into standard digital format. All data will have properly documented FGDC/ISO metadata, a data dictionary (defines codes and fields used in the dataset), and/or a Readme file as appropriate (e.g., how data was collected, QA/QC procedures, other information about data such as meaning, relationships to other data, origin, usage, and format – can reference different documents). Electronic data files will be named with the date on which the file was created and will include a ReadMe file that describes when the file was created and by whom, and any explanatory notes on the file contents. If a data file is revised, a new copy will be made and the original preserved. Data will be made publicly available and accessible on a website that is still to be determined.

Collaboration:

Through the FPL collaborative planning process, Alabama identified an opportunity for a large-scale, multi-member, coordinated program for improving Water Quality across the Gulf. The States of Alabama, Florida, Mississippi, and Texas all share a collaborative desire to improve water quality, with Mississippi and Florida sharing watersheds and boundary waters to enhance regional water quality opportunities. The State of Alabama, via the Mobile Bay National Estuary Program, has funded the development of several watershed plans that have included grassroots engagement of coastal Alabama stakeholders to determine priorities as well as potential restoration actions and activities to address those restoration priorities. Water quality has shown to be a priority restoration objective for the stakeholders of coastal Alabama.

Public Engagement, Outreach, and Education:

ADCNR and the State of Alabama held a restoration summit in 2018 as well as several meetings for the Councils' planning framework for FPL 3. Water Quality was one of the priorities that was identified by the coastal stakeholders at the Summit. In addition, the Alabama Recovery Council public engagement effort resulted in several Bucket 1 and Bucket 3 Water Quality projects that were prioritized for funding.

To further facilitate Alabama stakeholder prioritization of water quality as a restoration priority, and to encourage transparency throughout the program life, there will be two info / webinar sessions during the project selection process:

- The first will be for potential applicants to provide additional thoughts, questions, and solicit input around proposed water quality improvement ideas;
- The second will be to provide decisions / results of project categorization process for all submitted projects

This second webinar will provide the public an opportunity to see the results of project categorization, and obtain feedback and comments on the projects. This information may be incorporated into the final DCNR decision making process for final project selection.

Leveraging:

Funds: \$3,000,000.00

Type: Bldg on Others

Status: Received

Source Type: Other

Description: In the 2015 Initial FPL, the Council funded the development of watershed plans for this geographic area, the establishment of an estuary program, and the implementation of submerged aquatic vegetation (SAV) restoration and monitoring.

Environmental Compliance:

This Program will partition funding between Category 1 Planning and Category 2 Implementation funding. The Category 1 planning activities are covered by the Council's NEPA Categorical Exclusion for planning, research or design activities (Section 4(d)(3) of the Council's NEPA Procedures). Subsequent FPL amendment(s) and additional environmental compliance will be needed to approve implementation funding for the Category 2 efforts under this program. It is well understood that funding placed in Category 2 is not guaranteed and is determined by NEPA.

Bibliography:

Alabama Department of Environmental Management (ADEM). 2020. 2020 Alabama 303(d) List. Available online: <http://www.adem.state.al.us/programs/water/wquality/2020AL303dList.pdf> Last accessed 06.09.2020.

Alabama Gulf Coast Recovery Council (AGCRC). 2018. Alabama Multiyear Implementation Plan. Available online: <https://restorealabama.org/Portals/0/Documents/FINAL%20Alabama%20MIP.pdf?ver=2018-11-21104533-013>. Last accessed 06.09.2020.

Alabama Gulf Coast Recovery Council (AGCRC). 2019. Alabama State Expenditure Plan. Available online: https://restorethegulf.gov/sites/default/files/ALABAMA%20SEP%20-%20FINAL_508_2.22.19.pdf. Last accessed: 06.09.2020.

Alabama Soil and Water Conservation Committee (ASWCC). 2018. Alabama handbook for erosion control, sediment control, and stormwater management on construction sites and urban areas: Volume 1 – developing plans and designing best management practices. Available online: <https://www.dot.state.al.us/dsweb/divped/Stormwater/pdf/AlabamaHandbookforErosionControl.pdf> Last accessed: 3.23.2020

Bennett, E.M. Carpenter, S.R., Caraco, N.F. 2001. Human impact on erodible phosphorus and eutrophication: a global perspective. *Bioscience* 51(3): 227-234

Capps, K.A. 2019. Wastewater infrastructure and the ecology and management of freshwater systems. *Acta Limnologica Brasiliensia*, Vol 31. Available online: https://www.scielo.br/scielo.php?pid=S2179-975X2019000100903&script=sci_arttext. Last accessed: 6.12.2020.

Diaz, R.J., Rosenberg, R. 2008. Spreading dead zones and consequences for marine ecosystems. *Science*, 321, 626-929

Deepwater Horizon (DWH) Natural Resource Damage Assessment Trustees. 2017. Monitoring and Adaptive Management Procedures and Guidelines Manual Version 1.0. Appendix to the Trustee Council Standard Operating Procedures for Implementation of the Natural Resource Restoration for the DWH Oil Spill.

EPA (2004). Report to Congress on Impacts and Control of Combined Sewer Overflows and Sanitary Sewer Overflows. Environmental Protection Agency. Available online: https://www.epa.gov/sites/production/files/2015-10/documents/csosortc2004_full.pdf Last Accessed: 4.7.2020

EPA (no date). The Environmental Protection Agency – National Pollutant Discharge Elimination System (NPDES) – Sanitary Sewer Overflows (SSOs). Available online: <https://www.epa.gov/npdes/sanitarysewer-overflows-ssos> Last accessed: 4.7.2020

FDEP (2018). Restoring Bacteria-Impaired Waters: A toolkit to help local stakeholders identify and eliminate potential pathogen problems. Version 3.0. 63 pg. Available online: https://floridadep.gov/sites/default/files/Restoring_Bacteria-Impaired_Waters_Toolkit_082018.pdf Last Accessed: 4.7.2020

- Fu, X., Goddard, H., Wang, X., Hopton, M.E. 2019. Development of a scenario-based stormwater management planning support system for reducing combined sewer overflows (CSOs). *Journal of Environmental Management*, 236, 571-580
- GCERC, 2016. Comprehensive Plan Update 2016. Restoring the Gulf Coast's ecosystem and the economy. Gulf Coast Ecosystem Restoration Council, New Orleans, Louisiana.
- Hogan, D.M., Walbridge, M.R. 2007. Best management practices for nutrient and sediment retention in urban stormwater runoff. *Journal of Environmental Quality* 36, 386-395
- Hummel, M.A., Berry, M.S., Stacey, M.T. 2018. Sea level impacts on wastewater treatment systems along the US coasts. *Earth's Future* 6(4), 622-633.
- Kessler, R. 2011. Stormwater Strategies: Cities Prepare Aging Infrastructure for Climate Change. *Environmental Health Perspective*, 119(12) A514-A519. Available online: <https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.119-a514>.
- Kondolf, G.M., Micheli, E.R. 1995. Evaluating stream restoration projects. *Environmental Management* 19(1): 1-15
- Lindenmayer, D.B., Likens, G.E. 2009a. Improving ecological monitoring. *Trends in Ecology and Evolution* 24:200-201.
- Lindenmayer, D.B., Likens, G.E. 2009b. Adaptive monitoring: a new paradigm for longterm research and monitoring. *Trends in Ecology and Evolution* 24:482-486.
- Lymer, B.L., Weinberg, J., Clausen, T.J. 2018. Water quality management from source to sea: from global commitments to coordinated implementation. *Water International* 43(3), 349-360
- Mallin, M.A., Williams, K.E., Esham, E.C., Lowe, R.P. 2000. Effect of human development on bacteriological water quality in coastal watersheds. *Ecological Applications* 10(4): 1047-1056
- MBNEP 2019. Respect the connect. Comprehensive Conservation and Management Plan for Alabama's Estuaries and Coasts 2019-2023. Mobile Bay National Estuarine Program. Available online: http://www.mobilebaynep.com/images/uploads/library/CCMP_Handout_11.25.2019.pdf Last Accessed: 3.24.2020
- MBNEP 2018. West Fowl River Shoreline Survey Final Report. Mobile Bay National Estuary Program. Available online: http://www.mobilebaynep.com/images/uploads/library/Final_Report-NEPWFRshoreline-Full-082918.pdf. Last Accessed: 6.12.2020.
- MBNEP 2016. Water Quality Report for Toulmins Spring Branch Watershed. Mobile Bay National Estuary Program. Available online: http://www.mobilebaynep.com/images/uploads/library/Water_Quality_for_TSBW.pdf. Last Accessed: 6.12.2020.
- MBNEP 2014. Analysis of Sediment Loading Rates and Water Quality for the Bon Secour River Watershed, Baldwin County, AL. Mobile Bay National Estuary Program. Available online: http://www.mobilebaynep.com/images/uploads/library/GSA_Bon_Scour_River_Watershed_Sedimentation_and_Water_Quality_Assessment.pdf. Last Accessed: 6.12.2020.

MBNEP 2012. Upper Fish River Bacterial Source Tracking Project: October 2008-March 2011. Addendum for the Mobile Bay National Estuary Program. Available online: http://www.mobilebaynep.com/images/uploads/library/Fish_River_Source_Tracking_Project_Addendum.pdf. Last Accessed: 6.12.2020.

O'Mullan, G.D., Juhl, A.R., Reichert, R., Schneider, E., Martinez, N. 2019. Patterns of sediment associated fecal indicator bacteria in an urban estuary: benthic-pelagic coupling and implications for shoreline water quality. *Science of the Total Environment* 656, 1168-1177

Park, S. W., Mostaghimi, S., Cooke, R.A., McClellan, P.W. 1994. BMP impacts on watershed runoff, sediment, and nutrient yields. *Water Resources Bulletin* 30,1011-1023.

Reynolds, J.H., Knutson, M.G., Newman, K.B., Silverman, E.D., Thompson, W.L. 2016. A road map for designing and implementing a biological monitoring program. *Environmental Monitoring and Assessment* 188, 399-424

Sharpley, A. N., Krogstad, T., Kleinman, P.J.A, Haggard, B.E., Shigaki, F., Saporito, L.S. 2007. Managing natural processes in drainage ditches for nonpoint source phosphorus control. *Journal of Soil Water Conservation* 62,197-206.

Spellman, F.R. 2008. *The Science of Water: concepts and applications*. 2nd Edition. CRC Press, Taylor and Francis Group, New York, NY; Chp: 3 (pp.45-95), Chp: 8 (pp.219-287), Chp: 9 (pp.289-323), Chp: 10 (pp.325-399).

Sterling, R., Simicevic, J., Allouche, E., Condit, W., Wang, L. (2010). *State of Technology for Rehabilitation of Wastewater Collection Systems*. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R10/078, 2010. Available online: https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NRML&dirEntryId=226504. Last Accessed: 4.7.2020

Tolouei, S., Burnet, J.B., Auxtixier, L., Taghipour, M., Bonsteel, J., Vo, S., Sauve, S., Prevost, M., Dorner, S. 2019. Temporal variability of parasites, bacterial indicators, and wastewater micropollutants in a water resource recovery facility under various weather conditions. *Water Research* 148, 446-458

Vörösmarty, C.J., McIntyre, P.B., Gessner, M.O., Dudgeon, D., Prusevich, A., Green, P., Glidden, S., Bunn, S.E., Sullivan, C.A., Reidy Liermann, C & Davies, P.M. 2010. Global threats to human water security and river biodiversity. *Nature*, vol. 467, no, 7315, pp. 555-561.

Walsh, C.J., Fletcher, T.D., Ladson, A.R. 2005a. Stream restoration in urban catchments through redesigning stormwater systems: looking to the catchment to save the stream. *Journal of the Northern American Benthological Society* 24(3), 690-705

Walsh, C.J., Roy, A.H., Feminella, J.W., Cottingham, P.D., Groffman, P.M., Morgan, R. P. 2005b. The urban stream syndrome: current knowledge and the search for a cure. *Journal of the Northern American Benthological Society* 24(3), 706-723.

Walsh, C.J., Booth, D.R., Burns, M.J. Fletcher, T.D., Hale, R.L., Hoang, L.N., Livingston, G., Rippy, M.A., Roy, A.H., Scoggins, M., Wallace, A. 2016. Principles for urban stormwater management to protect stream ecosystems. *Freshwater Science* 35(1), 398-411.

Budget

Project Budget Narrative:

A total of \$35,130,750 has been approved from FPL 3b to fund planning, implementation and monitoring associated with the Program. This project is scalable. The funds are solely intended to be used to determine and implement water quality related infrastructure improvement implementation. Any additional leveraging and cost sharing, from respective cities, municipalities, or additional Deepwater Horizon related funding streams are not part of this request. An estimated 45% is for “planning” activities, including overall program management, site-specific planning activities such as engineering and design and environmental permitting/compliance activities, and overall program monitoring and adaptive management. An estimated 50% is for construction and project implementation, which may include, but not limited to: individual project management and construction of proposed water quality improvements. Implementation within the Program may include, but not limited to, program management, individual project management, project implementation related work (e.g., engineering and design, any required permitting), construction of stormwater and wastewater management systems (including upgrades and repairs), as well as possible septic to sewer conversions. An estimated 5% is for project planning activities such as program planning, project selection and identification, as well as project administration, including administrative programmatic functions, coordination, and sub-recipient / contractual support for project implementation. An estimated 4% is for monitoring and adaptive management activities to ensure progress is made towards water quality improvement. An estimated 1% is for data management activities. The need for contingency costs will be considered as appropriate when developing individual project-specific budgets.

Total FPL 3 Project/Program Budget:

\$ 35,130,750.00

Estimated Percent Monitoring and Adaptive Management: 4 %

Estimated Percent Planning: 45 %

Estimated Percent Implementation: 50 %

Estimated Percent Project Management: 0 %

Estimated Percent Data Management: 1 %

Estimated Percent Contingency: 0 %

Environmental Compliance

Environmental Requirement	Has the Requirement Been Addressed?	Compliance Notes (e.g., title and date of document, permit number, weblink etc.)
National Environmental Policy Act	Yes	The Category 1 planning activities are covered by the Council's NEPA Categorical Exclusion for planning, research or design activities (Section 4(d)(3) of the Council's NEPA Procedures). Subsequent FPL amendment(s) and additional environmental compliance will be needed to approve implementation funding for the Category 2 efforts under this program.
Endangered Species Act	N/A	
National Historic Preservation Act	N/A	
Magnuson-Stevens Act	N/A	
Fish and Wildlife Conservation Act	N/A	
Coastal Zone Management Act	N/A	
Coastal Barrier Resources Act	N/A	
Farmland Protection Policy Act	N/A	
Clean Water Act (Section 404)	N/A	
River and Harbors Act (Section 10)	N/A	
Marine Protection, Research and Sanctuaries Act	N/A	
Marine Mammal Protection Act	N/A	
National Marine Sanctuaries Act	N/A	
Migratory Bird Treaty Act	N/A	
Bald and Golden Eagle Protection Act	N/A	
Clean Air Act	N/A	
Other Applicable Environmental Compliance Laws or Regulations	N/A	

Maps, Charts, Figures

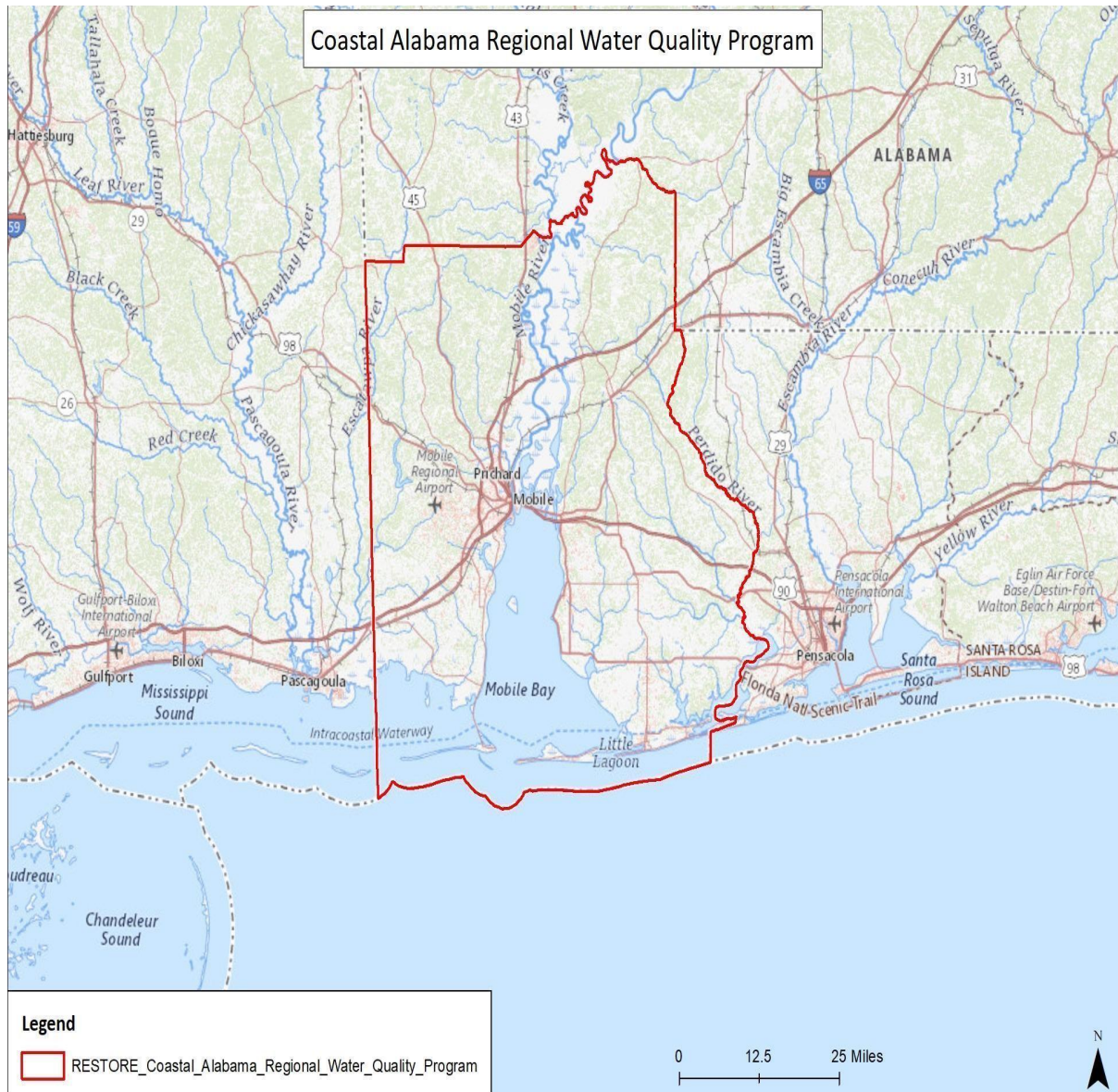


Figure 1: Map of Program Area